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Outer Ring Road, Bellandur Post, Near Marathahalli
Bengaluru-560103, Karnataka, India

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Volume 1

Self Assessment Report (SAR)

B.E. - Electrical & Electronics Engineering

NEW HORIZON
COLLEGE OF ENGINEERING

Autonomous College Permanently affiliated to VTU, Approved by AICTE & UGC
Accredited by NAAC with 'A' Grade, Accredited by NBA

Self-Assessment Report for Accreditation of B.E - Electrical and Electronics Engineering (TIER-I)

NATIONAL BOARD OF ACCREDITATION



Volume 1

PREFACE

Education is a process of learning and acquiring knowledge. Our teachers are the key to process, they believe in each student's capabilities and facilitate them to explore, understand and therefore learn.

In New Horizon College of Engineering, we take immense pride in providing highest quality of education by paying utmost importance to teaching quality and practical learning. Our excellence is not just confined to the classroom. We are active in organizing conferences, workshops, seminars, guest lectures, co-curricular and extra-curricular activities. These activities and educational methodology helps in an overall development in our students, making them competent for success. Due to such comprehensive practices New Horizon College of Engineering is a favored engineering college in Bangalore.

We also take great pride in our excellent infrastructure and have ensured that the best of the technologies be incorporated in teaching learning process. We aspire to reach to a higher horizon, a horizon at which we are recognized at the national and the international levels and we well set for this feat.

I firmly believe that NHCE is again ready for its accreditation. It is in this context that we are submitting our Self-Assessment Report (SAR) to the NBA, New Delhi. A strenuous effort has been made to prepare the SAR and making the college ready for accreditation. I would like to express my cordial thanks to our beloved chairman Dr. Mohan Manghnani for guiding us through this journey.

Dr. Manjunatha

Principal

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Part A

Institutional Information

PART A: Institutional Information

1. **Name and Address of the Institution:**

   New Horizon College of Engineering,

   Outer Ring Road, Kadubisanahalli, Bellandur Post, Near

   Marathalli, Bangalore - 560103

2. **Name and Address of the Affiliating University:**

   Visvesvaraya Technological University

   Jnana Sangama, VTU Main Rd,

   Machhe, Belgaum, Karnataka 590018

3. **Year of establishment of the Institution:** 2001

4. **Type of the Institution:**

Institute of National Importance	☐
University	☐
Deemed University	☐
Autonomous	√
Any other (Please specify)	☐

Note:

1. In case of Autonomous and Deemed University, mention the year of grant of status by the authority.
2. In case of University Constituent Institution, please indicate the academic autonomy status of the Institution as defined in 12th Plan guidelines of UGC. Institute should apply for Tier 1 only when fully academically autonomous.

5. Ownership Status:

Central Government	☐
State Government	☐
Government Aided	☐
Self - financing	☑
Trust	☑
Society	☐
Section 25 Company	☐
Any Other (Please specify)	☐

6. Other Academic Institutions of the Trust/Society/Company etc., if any:

Table A.6

Name of the Institution(s)	Year of Establishment	Programs of Study	Location
New Horizon Public School	1982	Pre-primary to Standard 10	100 Feet Rd, HAL 2nd Stage, Indiranagar, Bengaluru, Karnataka 560008
New Horizon Pre-University	1982	1st PU and 2nd PU	3rd A Cross, 2nd A Main Rd, East of NGEF Layout, Kasturi Nagar, Bengaluru, Karnataka 560043
New Horizon College Marathalli	1998	B.B.A., B.Com., B.C.A.	Ring Rd, near Marathalli, Kaverappa Layout, Kadabeesanahalli, Bengaluru, Karnataka 560103
New Horizon College Kasturinagar	1998	B.B.A., B.Com., B.C.A.	3rd A Cross, 2nd A Main Rd, East of NGEF Layout, Kasturi Nagar, Bengaluru, Karnataka 560043

New Horizon International School	2022	Schooling	Hennur Gardens, Bengaluru
New Horizon Gurukul,	2010	Schooling	Bellandur, Bengaluru

7. Details of all the programs being offered by the institution under consideration:

Table A.7

S. No	Program Name	Program Applied level	Year of Start	Year of AICTE approval	Initial Intake	Intake Increase	Current Intake	Accreditation Status*	From	To	Program for consideration	Program for duration
1.	B.E Electrical and Electronics Engineering	UG	2001	2001	40	Yes	120	Granted accreditation for 3 years for the period (specify period)	2018	2022	Yes	4

**** Write applicable one:***

Applying first time

- *Granted provisional accreditation for two/three years for the period (specify period)*
- *Granted accreditation for 5/6 years for the period (specify period)*
- *Not accredited (specify visit dates, year)*
- *Withdrawn (specify visit dates, year)*
- *Not eligible for accreditation*
- *Eligible but not applied*

8. Programs to be considered for Accreditation vide this application

Table A.8

Sl. No	Level	Discipline	Program
1.	Under Graduate	Engineering & Technology	Electrical & Electronics Engg.
2.	Under Graduate	Engineering & Technology	Information Science & Engg.

9. Total number of employees:

A. Regular Employees (Faculty and Staff):

Table A.9a

Items	CAY: 2022-23		CAYm1: 2021-22		CAYm2: 2020-21	
	MIN	MAX	MIN	MAX	MIN	MAX
Faculty in Engineering (Male)	**126**	126	138	138	149	149
Faculty in Engineering (Female)	153	153	146	146	127	127
Faculty in Maths,Science & Humanities teaching in engineering program (Male)	16	16	18	18	20	20
Faculty in Maths, Science & Humanities teaching in engineering program (Female)	32	32	29	29	31	31
Non-teaching staff (Male)	56	56	59	59	56	56
Non-teaching staff (Female)	20	20	20	20	20	20

Note: *All the faculty whether regular or contractual (except Part-Time), will be considered. The contractual faculty (doing away with the terminology of visiting/adjunct faculty, whatsoever) who have taught for 2 consecutive semesters in the corresponding academic year on full time basis shall be considered for the purpose of calculation in the Faculty Student Ratio. However, following will be ensured in case of contractual faculty:*

1. *Shall have the AICTE prescribed qualifications and experience.*
2. *Shall be appointed on full time basis and worked for consecutive two semesters during the particular academic year under consideration.*
3. *Should have gone through an appropriate process of selection and the records of the same shall be made available to the visiting team during NBA visit*

CAY- Current Academic Year
CAYm1- Current Academic Year minus1= Current Assessment Year
CAYm2 - Current Academic Year minus2=Current Assessment Year minus 1

B. Contractual Staff Employees (Faculty and Staff):

Table A.9b

Items	CAY: 2022-23		CAYm1: 2021-22		CAYm2: 2020-21	
	MIN	MAX	MIN	MAX	MIN	MAX
Faculty in Engineering (Male)	**0**	**0**	**0**	**0**	**0**	**0**
Faculty in Engineering (Female)	**0**	**0**	**0**	**0**	**0**	**0**
Faculty in Maths,Science & Humanities teaching in engineering program (Male)	**0**	**0**	**0**	**0**	**0**	**0**
Faculty in Maths, Science & Humanities teaching in engineering program (Female)	**0**	**0**	**0**	**0**	**0**	**0**
Non-teaching staff (Male)	**0**	**0**	**0**	**0**	**0**	**0**
Non-teaching staff (Female)	**0**	**0**	**0**	**0**	**0**	**0**

10. Total number of Engineering Students:

Engineering and Technology- UG	Shift1 √	Shift2
Engineering and Technology- PG	Shift1 √	Shift2
Engineering and Technology- Polytechnic	Shift1	Shift2
MBA	Shift1 √	Shift2
MCA	Shift1 √	Shift2

Table A.10

Engineering and Technology- UG Shift-1

Item	CAY: 2022-23	CAYm1: 2021-22	CAYm2: 2020-21
Total no. of Boys	3520	3583	3690
Total no. of Girls	1403	1269	1228
Total no. of students	**4923**	**4852**	**4918**

Engineering and Technology- PG Shift-1

Item	CAY: 2022-23	CAYm1: 2021-22	CAYm2: 2020-21
Total no. of Boys	9	17	20
Total no. of Girls	15	19	15
Total no. of students	**24**	**36**	**35**

Engineering and Technology- MBA Shift-1

Item	CAY: 2022-23	CAYm1: 2021-22	CAYm2: 2020-21
Total no. of Boys	198	221	213
Total no. of Girls	164	139	146
Total no. of students	**362**	**360**	**359**

Engineering and Technology- MCA Shift-1

Item	CAY: 2022-23	CAYm1: 2021-22	CAYm2: 2020-21
Total no. of Boys	164	219	215
Total no. of Girls	79	108	127
Total no. of students	**243**	**327**	**342**

Note: *In case the institution is running programs other than engineering programs, a separate*

table giving similar details is to be included.

11. Vision of the Institution:

To emerge as an Institute of eminence in the fields of engineering, technology and management in serving the industry and the nation by empowering students with a high degree of technical, managerial and practical competence.

12. Mission of the Institution:

- To strengthen the theoretical, practical and ethical dimensions of the learning process by fostering a culture of research and innovation among faculty members and students.
- To encourage long-term interaction between the academia and industry through their involvement in the design of the curriculum and its hands-on implementation.
- To strengthen and mould students in professional, ethical, social and environmental dimensions by encouraging participation in co-curricular and extracurricular activities.

13. Contact Information of the Head of the Institution and NBA coordinator, if designated:

i. Name : Dr. Manjunatha
Designation : Principal
Mobile No : 9901916000
Email id : principal@newhorizonindia.edu

ii. NBA coordinator:
Name : Dr. Sanjeev Sharma
Designation : Dean – Quality Assurance & Skill Development Center & Professor/ECE
Mobile No : 7829176479
Email id : dean.qasdc@newhorizonindia.edu

Part B

Program Level Criteria

Department of
Electrical and Electronics Engineering

Criterion - 1

Vision, Mission and
Program Educational Objectives

CRITERION 1	VISION, MISION AND PROGRAM EDUCATIONAL OBJECTIVES	50

ABOUT THE INSTITUTE

New Horizon College of Engineering was established in 2001 as a self-financing minority institute by "New Horizon Educational and Cultural Trust," which has 50 years of experience in the field of high-quality education. The motto of the trust is "*In Pursuit of Excellence*", under the umbrella of New Horizon Educational institutions. There are seven high performing institutions that take care of the educational needs of a student from the pre-primary level to the professional stage.

New Horizon College of Engineering is presently an autonomous college affiliated to Visvesvaraya Technological University (VTU), Belagavi and approved by All India Council for Technical Education (AICTE) and University Grants Commission (UGC). It is an ISO 9001:2008-certified institution with 'A' grade from NAAC. The college is located in IT corridor of Bangalore, surrounded by MNCs and IT giants.

New Horizon College of Engineering has a scenic and serene campus that fosters personal and academic growth. The infrastructure facilitates the effective delivery of the curriculum. NHCE boasts of state-of-the-art facilities for its students. Students are encouraged to pursue their passions by providing cutting-edge technology and faculty support.

New Horizon College of Engineering started with four UG programs with an approved intake of 40 in Electrical and Electronics Engineering, 60 in Electronics and Communication Engineering, Information Science & Computer Science Engineering. Over the years, the Institution has grown leaps and bounds. Within a short span of time the institute acquired UG, PG & Research programs. The development in infrastructure, with the addition of new courses, along with the induction of educated and experienced faculty creates an excellent academic ambience. At present the institute offers under-graduate programs on Artificial Intelligence and Machine Learning, Computer Science and Engineering (Data Science), and 4 programs at the post-graduate level. The campus has 15 Industry sponsored laboratories, which are established in technical collaboration with the industries of high repute, and these center of excellences offer interdisciplinary courses with the curriculum framed by industry experts.

In addition, the institution has separate centers such as, Centre for Research & Development, Centre for Life Skills and Life-long Learning, Centre for Entrepreneurship Development, Industry-Institute Interaction Cell etc. The New Horizon Educational and Cultural Trust is a

recipient of Prestigious "Rajyotsava State Award 2012" by the Government of Karnataka. The Chairman of New Horizon Educational and Cultural Trust Dr. Mohan Manghnani, was awarded and conferred a title "*The Doyen – Guardian of Knowledge*" by The Hindu Group on 27th March, 2017. New Horizon College of Engineering has been awarded with Best Engineering College in South India. In addition, it has been awarded for filing the highest number of patents by the 32nd Indian Engineering Congress. The institution has been honored with best institution towards Industry Focus Education delivery for full employability. The institute has MoU between Ministry of Education in India and France (Indo-French), which aims to strengthen the overall education system for teachers as well as students. This agreement includes study-abroad program through which the students can study in the universities of France for a period of one semester while they are studying at NHCE.



Figure 1.1: Dr. Mohan Manghnani, Chairman and Managing Trustee of New Horizon Educational Institutions received the prestigious state award "Kannada Rajyotsava 2012" from the Hon'ble chief Minister of Karnataka.



Figure 1.2: Dr. Mohan Manghnani, Chairman of New Horizon Educational Institutions, was awarded and conferred "THE DOYEN – GUARDIAN OF KNOWLEDGE" by The Hindu Group on 27th March, 2017.



Figure 1.3: Dr. Marlene Kanga, President, World Federation of Engineering Organizations (WFEO) from Australia has presented an "Award for Filing Highest Number of Patents" to New Horizon College of Engineering (NHCE), Bangalore during 32nd Indian Engineering Congress held at Hotel Le Royal Meridian, Chennai on 21st December 2017, Organized by the Institution of Engineers (India) which is the largest professional body in the World. Padmashri Prof. R. M. Vasagam and Dr. R. Venkatesan, Chairman, IPR Cell, IEI, KLC both National Council Members of IEI look on.



Figure 1.4: Mr. Suresh Prabhu Hon'ble Minister for Commerce and Industry and Civil Aviation has presented an "Award for The Most Preferred Institute with Global Exposure" to New Horizon College of Engineering, Bangalore during the 12thAssocham Higher Education Summit 2019 at New Delhi on 21st February 2019.



Figure 1.5: New Horizon College of Engineering has been awarded "Technology Excellence Award" by 7th Indian Technology Congress-2019 for "Creating Front Ranking Higher Educational Institution". The award was presented by Dr. C.N. Ashwathanarayan - Deputy Chief Minister of Karnataka and Minister of Higher Education, IT& BT and Science & Technology on 4th September 2019 at NIMHANS Convention Center, Bengaluru. Padma Shri. Prof. R. M. Vasagam, Chairman, ITC Awards Committee and Dr.Wooday P Krishna, Vice President, ITC look on.

New Horizon College has signed a Memorandum of Understanding (MOU) with American technology giant IBM, establishing the New Horizon - IBM Global University Program.



Figure 1.6: New Horizon College of Engineering signed a MOU with American technology giant IBM

In ATAL RANKING OF INSTITUTIONS ON INNOVATION ACHIEVEMENTS (ARIIA), New Horizon College of Engineering has been designated as "BAND - EXCELLENT" in the category "Colleges/institutions (Private/Self-Financed- Technical)". New Horizon College of Engineering has been ranked 121 amongst the Top Engineering Colleges across India, as per the National Institutional Ranking Framework (NIRF 2022) Rankings, announced by MHRD, Government of India.

New Horizon College of Engineering is awarded as Excellence in Industry linked technical Education by the Confederation of Indian Micro, Small and Medium Enterprises and Global Council for the Promotion of International Trade in collaboration with SIDBI , MSME, GoI at "Brand10000SMEs 2022" award ceremony on 24th September 2022.

New Horizon College of Engineering has been adjudged as recipient of the "Certificate of Appreciation" at The Institution of Engineers (India) – Engineering Education Excellence Award for the contribution in the field of Engineering Education Ceremony held on 16th December 2022 at Chennai. Received the award from Dr. K Ponmudy, Hon'ble Minister for Higher Education, Government of Tamil Nadu and Dr. Sivathanu Pillai, Founder CEO & MD of BrahMos Aerospace, Former Chief Controller (R&D), DRDO.



Figure 1.7: New Horizon College of Engineering recipient of "The Institution of Engineers (India) – Engineering Education Excellence Award"

ABOUT THE DEPARTMENT

The field of Electrical and Electronics Engineering is the one that offers a new world of exciting challenges and opportunities. It is the forefront of practical technology used in day-to-day life which includes generation, transmission, distribution and utilization of electrical energy, electric motors, industrial automation, and electrical drives.

The Department of Electrical and Electronics Engineering at New Horizon College of Engineering (NHCE) was established in the year 2001 with an intake of 40 students. The intake of the department then increased to 120 during the year 2012. The department hosts a recognized 'Research Center' of Visvesvaraya Technological University (VTU), Belagavi and offers Ph.D. program.

The department deals with the technological aspects of Electrical and Electronics domain. The curriculum designed for the four year B.E. degree program ensures not only a sound understanding and strong foundation in all areas of Electrical and Electronics Engineering, but also promotes additional activities and updates, which will enhance employability as well as the entrepreneurship. The department carry out research in Power systems, Energy Management Systems, Electrical Vehicles, Embedded Systems, Smart Grids, Control and Instrumentation, Automation and Computer Programming. The department has undertaken several R&D projects funded by the KSCST, VGST, UGC and AICTE.

The Department of Electrical and Electronics Engineering takes pride in highly qualified, motivated and experienced faculty members. The faculty members have rich academic, research and industry experience. Apart from the regular faculty members, technology experts from reputed organizations visit department of EEE to interact with students, and to run industry relevant technology courses to enrich their competency skills.

The Department has a total strength of 319 students in the current undergraduate program. The course work of this program strongly emphasizes on learning the fundamentals and analyzing the latest technology, to develop the creativity amongst students, by encouraging them to take up real world projects. The Department has a vision of bringing out contemporary engineers, innovators, researchers and entrepreneurs for serving nation and society. The Department has eight laboratories equipped with modern tools and equipment, to fulfill the curriculum requirement and to carryout research activities. Class rooms are equipped with necessary teaching aids to provide healthy ambience for effective learning. Department conducts frequent workshops, seminars and guest-lectures to give an exposure

on current trends in the area of Electrical and Electronics Engineering. Students are motivated to participate in National and International co-curricular events, which happen both in-house and off-campus.

The department inclined towards bridging the gap between industry and academia by collaborating with Multinational Companies in the field of Electrical Engineering. Indo-French Center of Excellence in Electricity, Automation and Energy (IFCEEAE) is one such initiative evolved through "MoU" with French Ministry of National Education and Schneider Electric India Pvt. Ltd. The objective is to provide excellent career opportunities to students through exchange programs with French Universities, industrial training, innovative learning and R & D activities especially in the areas like Smart Grid, Internet of things (IoT), Energy Management Systems, Embedded systems, Supervisory Control and Data Acquisition (SCADA) and industrial automation. In addition to the eight professional core course labs, the industry-sponsored labs such as Schneider Electric, Cisco Networking Academy, Quest Global, SAP Next Gen Lab, HPE Vertica CoE, VMware IT Academy enable the students to practice and develop their technical skills. The department organizes seminars, workshops and extension programs to give our students the required skills as per the industry standards.

The department motivates students to participate in various activities to gain knowledge on changing technologies, to learn the skill of transforming project into product, and to be connected to professionals through the department student clubs 'E-soft' Club, 'Green Energy' Club, and 'U-create' Club. Apart from these clubs, students are encouraged to be part of co-curricular as well as extra-curricular clubs that function at the institutional level. In supporting to this, Department has established Institute of Electrical and Electronics Engineers (IEEE) – Power Electronics Society (PELS) Student Branch Chapter (Geo-Code: SBC66131), IEEE Industrial Electronics Society (IES) Student Branch Chapter (Geo-Code: SBC66131B) and IEEE Power and Energy Society (IEEE PES) Student Branch Chapter (Geo-Code: SBC66131D).The students have a greater exposure and flexibility in campus placements in core industries, IT sectors, Aerospace, Automotive industries and Public Sector Units (PSU).The students of Department of Electrical and Electronics Engineering get absorbed in reputed companies such as Intel, Cisco, Sankalp Semiconductors, Schneider Electric, IBM, Hewlett Packard, Sony, Nokia, Cognizant, Microchip, VMware, Wipro, TCS, Capgemini, ARM, Centurylink, FTD automation, ITC Infotech, L&T Infotech, Mindtree, Broadcom, Mphasis, Oracle, Qualcomm, Eurofins, and many other reputed organizations.

1.1. State the Vision and Mission of the Department and Institute (5)

INSTITUTE VISION

To emerge as an institute of eminence in the fields of engineering, technology and management in serving the industry and the nation by empowering students with a high degree of technical, managerial and practical competence.

INSTITUTE MISSION

To strengthen the theoretical, practical and ethical dimensions of the learning process by fostering a culture of research and innovation among faculty members and students.

To encourage long-term interaction between the academia and industry through their involvement in the design of curriculum and its hands-on implementation.

To strengthen and mould students in professional, ethical, social and environmental dimensions by encouraging participation in co-curricular and extracurricular activities.

DEPARTMENT VISION

To evolve into a centre of excellence in Electrical and Electronics Engineering for bringing out contemporary engineers, innovators, researchers and entrepreneurs for serving nation and society.

DEPARTMENT MISSION

To provide suitable forums to enhance the teaching-learning, research and development activities.

Framing and continuously updating the curriculum to bridge the gap between industry and academia in the contemporary world and serve society.

To inculcate awareness and responsibility towards the environment and ethical values.

1.1.1. Appropriateness / Relevance of the Statements

The department's Vision and Mission Statements exhibit its institution-centric uniqueness. The department seeks to accomplish and reflect the educational objectives of the Institute.

The statements continue to provide the motivating attitude and reflect the model of institutional behaviour that serves as the direction for the activities. The statements are precise, concise, and enhance the aims of the stakeholders.

Rationale for the Department's Vision:

As the technologies in the world changes rapidly, the department's vision is articulated by taking into an account of current advancements in Electrical and Electronics, as well as by envisioning the advents of the same in future.

Towards the accomplishment of its vision, the department offers varieties of courses such as 20 core courses, 28 professional elective courses and 15 open elective courses. In addition, the department guides and evaluates the mini-projects in each semester of II and III years, along with internship and main project in the final year. The department is also part of the study-abroad program, and the department motivates the students for higher education.

Rationale for the Department's Mission:

- To bring out contemporary engineers through the Centre of Excellence in Electrical and Electronics Engineering the department provides excellent infrastructure, state-of-the-art laboratories, well qualified and experienced faculty members which enables the students to excel in their career.
- The department updates the curriculum to meet the requirements of industries in consultation with the stake holders for equipping the students to serve the society through their innovation and research.
- The awareness is being created among the students towards the environment for serving the nation and society which enables them to improve the lives of individuals and communities, as well as the overall economy.

1.1.2. Consistency of the department statements with the institute statements

- In characterizing vision and mission of the department, most extreme consideration had been taken to be reliable with the institute vision and mission statements, with the feedback from the stakeholders as the input.
- The vision and mission statements of the department are highly correlated with vision and mission statements of the institute.

Table 1.1.1: Mapping of Department Vision with Institute Vision

Institute Vision	Department Vision
To [1]**emerge as an institute of eminence** in the fields of engineering, technology and management [2]**in serving the industry and the nation** by empowering students with a [3]**high degree of technical, managerial and practical** competence.	To [1]**evolve into a centre of excellence** in Electrical and Electronics Engineering for bringing out [3]**contemporary engineers, innovators, researchers and entrepreneurs** [2]**for serving nation and society.**

Table 1.1.2: Mapping of Department Mission with Institute Mission

Institute Mission	Department Mission
To [1]**strengthen** the theoretical, practical and ethical dimensions of the learning process by [2]**fostering a culture of research and innovation** among faculty members and students.	To provide suitable forums to [1]**enhance** the teaching-learning, [2]**research and development activities.**
To encourage [3]**long-term interaction between the academia and industry** through the involvement in the [4]**design of curriculum** and its hands-on implementation.	Framing and continuously [4]**updating the curriculum** to bridge the [3]**gap between industry and academia** in the contemporary world and serve society.
To strengthen and mould students in professional,[5]**ethical**,social and [6]**environmental dimensions** by encouraging participation in co-curricular and extracurricular activities.	To inculcate awareness and [6]**responsibility towards the environment** and [5]**ethical values.**

1.2. State the Program Educational Objectives (PEOs) (5)

The Program Educational Objectives (PEOs) of the UG program in Electrical and Electronics Engineering are established through consultation process amongst stake holders as described in section 1.4 and these address the following broad categories:

(i) Preparation: Employment/Higher studies
(ii) Core Competence: Discipline knowledge
(iii) Professionalism: Professional Value-Knowledge development
(iv) Life Long Learning: Environment

- What our graduates could do best?
- How our graduates would perform problem solving, and using which skills?
- What value addition our graduates will have?

The PEOs of the program are:

PEO-1: To provide good learning environment to develop entrepreneurship capabilities in various areas of Electrical and Electronics Engineering with enhanced efficiency, productivity, cost effectiveness and technological empowerment of human resource.

PEO-2: To inculcate research capabilities in the areas of Electrical and Electronics Engineering to identify, comprehend and solve problems and adopt themselves to rapidly evolving technology.

PEO-3: To create high standards of moral and ethical values among the graduates to transform them as responsible citizens of the nation.

1.3. Indicate where the Vision, Mission and PEOs are published and disseminated among Stakeholders (15)

1.3.1. Adequacy in respect of publication & dissemination

The Vision, Mission and PEOs are published and disseminated at:

- Institute website: https://newhorizoncollegeofengineering.in/about/
- Department website: https://department-of-electrical- nd -electronics-engineering.newhorizoncollegeofengineering.in/
- HOD's Chamber
- Staff rooms
- Class rooms
- Laboratories
- Department Notice Boards
- Department corridors
- Syllabus books
- Course files
- Lab manuals
- Practical record books
- Internal Assessment books
- Department Newsletter
- College Prospectus

The vision, mission and PEOs are disseminated to the stakeholders of the program, i.e., management, GCM (Governing Council Members), faculty, students, alumni, parents, professional bodies and employees through continuous interactions as per the Figure 1.3.1.

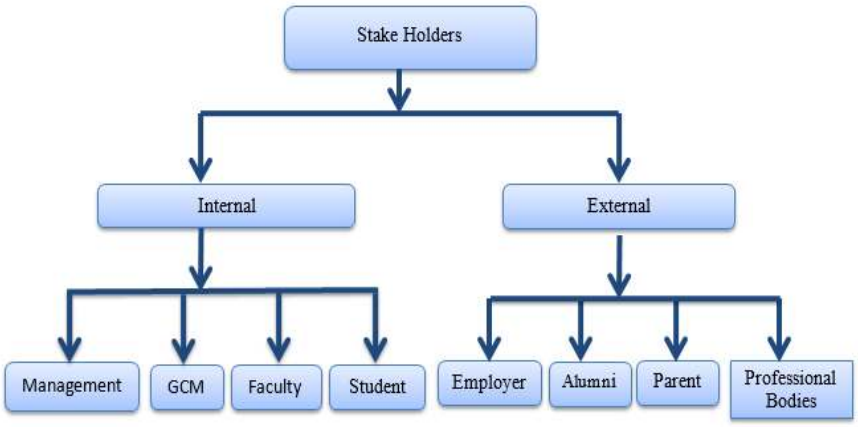


Figure 1.3.1: Stakeholders

1.3.2. Process of dissemination among stakeholders

As students are the department's immediate stakeholders, an orientation program is held at the beginning of each academic year for all IInd year students, during which the students are made aware of the department's vision, mission, and PEO statements. In addition, every year, a general interaction program is conducted to the pre-final and final year students separately, discussing the purpose as well as the importance of these statements.

Further, the Vision & Mission statements along with the PEOs, are disseminated to all the other stakeholders of the program, by the following means:

- Academic Council Meetings
- Department Advisory Board meetings
- Faculty meetings
- Student's Induction Program
- Alumni meetings
- Student workshops /Club activities
- Seminars/ Conferences
- Industry expert interactions
- Faculty Development Programs
- Professional activity meetings
- Parent-Teacher Meetings

In addition to the above, dissemination of PEOs to various stakeholders of the program is done at the meetings of faculty members, Board of Studies (BoS) and Program Assessment Committee (PAC).

1.3.3. Extent of Awareness of Vision, Mission & PEOs among the Stakeholders

The awareness of vision, mission and PEOs among the stake holders is created through regular meetings. The Vision and Mission and PEOs are elaborated to the gathering during meeting. The stake holders are asked to give inputs for the development of the department and to improve the curriculum to enable the students to be excel in the field of Electrical and Electronics Engineering. Based on the inputs received from the stake holders the curriculum is framed.

Stake holder's feedback will help to introduce the elective courses to meet the changing trends. Awareness is extended by societal activities, industrial visit and research publications. Faculties involve in various committees to check the consistency of the program and provides input for designing the program, establishment of PEOs/POs, Course outcomes and assessment.

Alumni feedback helps in the curriculum design to meet the changing trends in engineering and technology. They recall their experiences during their stay in the institute and advice the department with necessary inputs with respect to student's career.

Employer feedback gives higher focus to the program on future society to create awareness with the industries and gives inputs which bridges the gap between program and industry. Parents interact with the department for their specific expectations out of the program. Department associated with professional bodies arranges activities such as invited talks with industry persons and eminent professors of excellence for sharing experiences and research results, Workshop, Symposium, Project Design Contest to the students .'

To ensure awareness to the external as well as internal stakeholders, the Vision, Mission and PEOs are published in the institute's website, Departmental website, Principal's chamber, college brochure, college and Department newsletters, HoD's Chamber, staffrooms, departmental laboratories, and display boards in the department corridors. The extent of awareness is monitored during the regular interactions / relevant meetings.

1.4. State the process for defining the Vision and Mission of the Department and PEOs of the program (15)

1.4.1. Process for defining Vision and Mission of the department

The department established its Vision and Mission through consultative process involving the stake holders of the institute / department such as Management, Faculty members, students, staff, parents, alumni and employers, keeping in mind the future scopes of the department and the societal requirements, and this process is illustrated in Figure 1.4.1. In establishing the Vision and Mission of the department, the following steps were followed:

Step 1: Vision and Mission of the institute are taken as a basis.

Step 2: Program Assessment Committee (PAC) collects the views of Professional bodies, Industry experts, Alumni members and Parents and conducts brainstorming sessions to prepare draft statements.

Step 3: The PAC committee members formulate and prepare the draft vision and mission of the department. The Department Advisory Board (DAB) shortlist and finalize the statements.

Step 4: The statements are reviewed by Department Advisory Board (DAB) and Internal Quality Assurance Cell (IQAC) to check consistency with the Institute's Vision and Mission.

Step 5: If the statements are approved by DAB and IQAC, establish the vision and mission statements or else review and update the statement.

Step 6: The program coordinator disseminates the vision and mission statements to the stakeholders, BOS, ACM and Management.

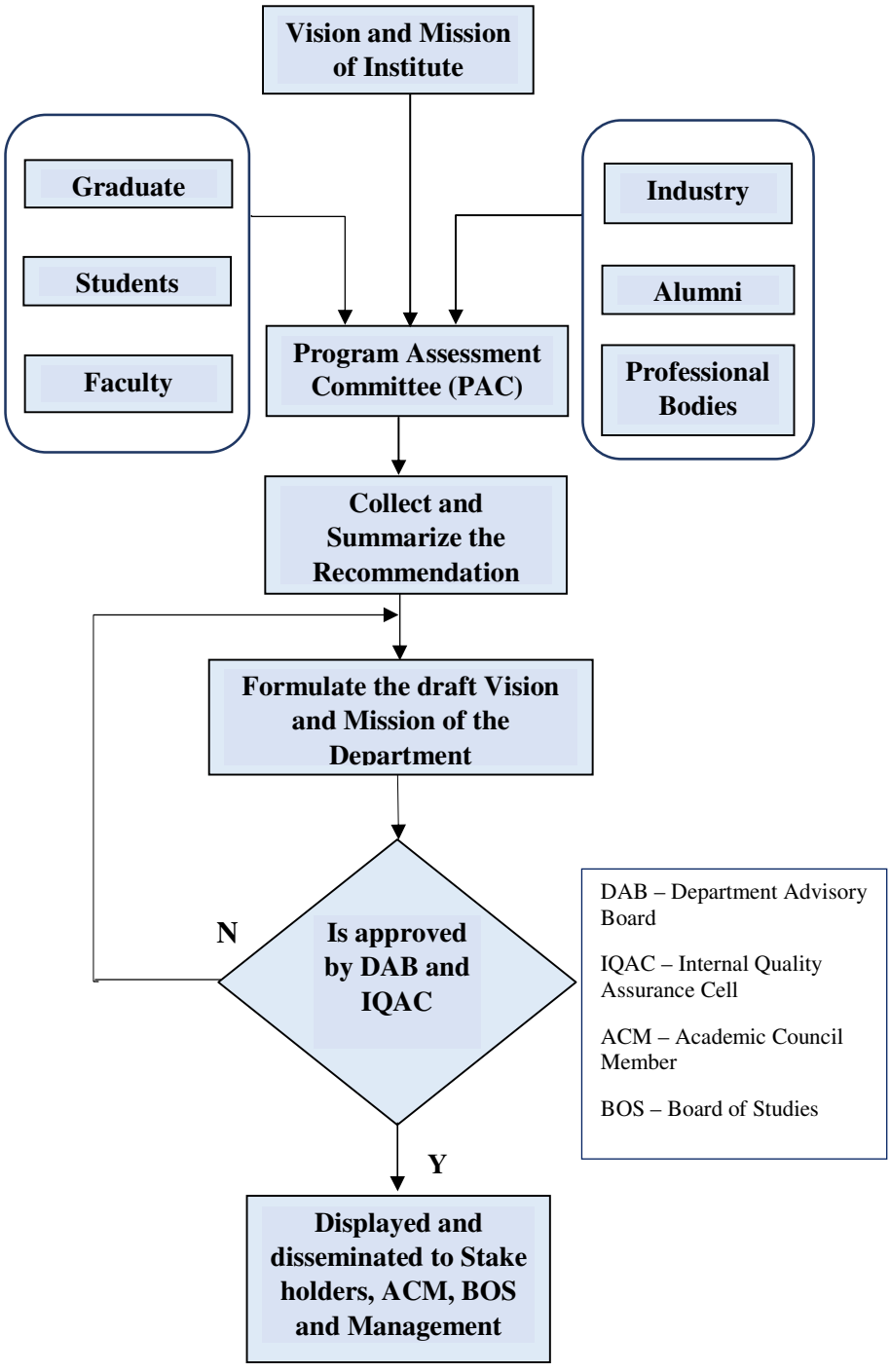


Figure 1.4.1: Process for defining Vision and Mission of the department

1.4.2. Process for defining the Program Educational Objectives of the Program:

The Program Educational Objectives are established through a consultation process involving the core constituents such as students, alumni, industry, faculty and employers and this process is illustrated in Figure 1.4.2. The PEOs are established through the following process steps:

Step 1: Vision and Mission of the department are taken as a basis to interact with various stakeholders, and program outcomes defined by NBA are also kept in view.

Step 2: Program Assessment Committee (PAC) collects the views of Professional bodies, Industry experts, Alumni members and Parents and conducts brainstorming sessions to prepare draft statements.

Step3: The PAC committee members formulate and prepare the draft PEOs of the department. The Department Advisory Board (DAB) shortlist and finalize the statements.

Step 4: The statements are reviewed by Department Advisory Board (DAB) and Internal Quality Assurance Cell (IQAC).

Step 5: If the statements are approved by DAB and IQAC, establish the PEO statements or else review and update the statement.

Step 6: The program coordinator disseminates the PEO statements to the stakeholders, BOS, ACM and Management.

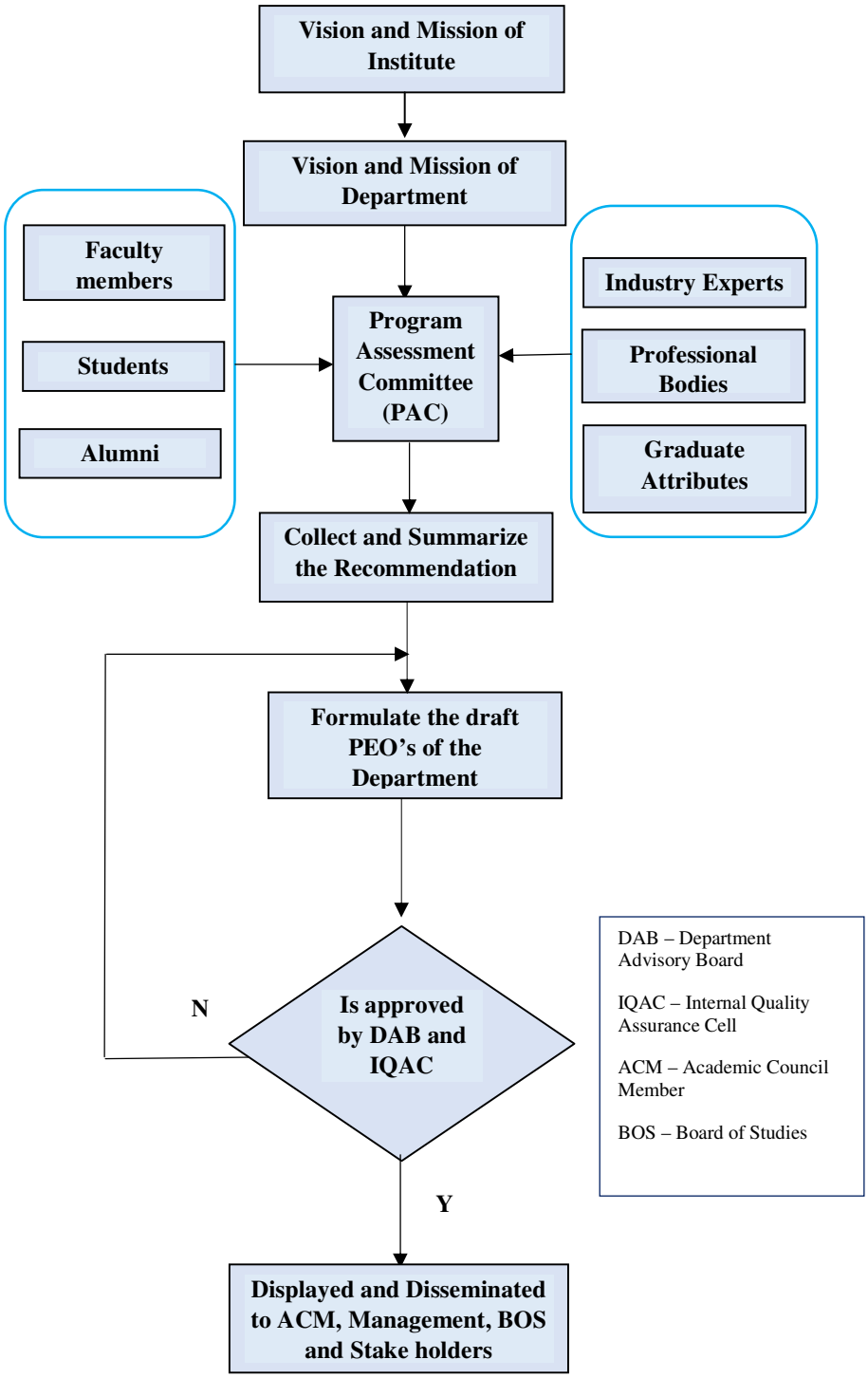


Figure 1.4.2: Illustration of the process for establishing the PEOs

1.5. Establish consistency of PEOs with Mission of the Department (10)

The consistency of PEOs with Mission of the department is shown in Table 1.5.1.

Table 1.5.1: Consistency of PEOs with Mission of the department

PEO Statements	To provide suitable forums to enhance the teaching-learning, research and development activities (M1)	Framing and continuously updating the curriculum to bridge the gap between industry and academia in the contemporary world and serve society (M2)	To inculcate awareness and responsibility towards the environment and ethical values (M3)
To provide good learning environment to develop entrepreneurship capabilities in various areas of Electrical and Electronics Engineering with enhanced efficiency, productivity, cost effectiveness and technological empowerment of human resource. (PEO1)	**3**	**3**	**2**
To inculcate research capabilities in the areas of Electrical and Electronics Engineering to identify, comprehend and solve problems and adopt themselves to rapidly evolving technology. (PEO 2)	**3**	**3**	**2**
To create high standards of moral and ethical values among the graduates to transform them as responsible citizens of the nation. (PEO 3)	**2**	**2**	**3**

Correlation levels are defined as:

1: Slight (Low) 2: Moderate (Medium) 3: Substantial (High)

Consistency/justification of co-relation parameters of the PEO-Mission matrix

Mission 1 Statement:

The correlation between **PEO1 and M1 is high** because, to produce graduates with understanding of fundamentals and applications of Electrical and Electronics Engineering we have to build strong foundation in Electrical and Electronics Engineering aspects by exposing students to state-of-the-art technology and research.

To enhance graduates with the ability to apply, analyze, design and develop electrical and electronic systems, we have to build strong foundation in Electrical and Electronics Engineering aspects by exposing the students to state-of-the-art technology and research. Hence the correlation between **PEO2 and M1 is high.**

The correlation between **PEO3 and M1 is medium** because PEO3 emphasizes more on moral and ethical values.

Mission 2 Statement:

The correlation between **PEO1 and M2 is high** because strengthening of the curriculum through interaction with industry experts is very much essential to equip the students with the enhanced efficiency, productivity, cost effectiveness and technological empowerment.

The correlation between **PEO2 and M2 is high** because the knowledge of latest technologies and the relevant application areas in the real world can be clearly comprehended by means of interaction with industry experts.

The correlation between **PEO3 and M2 is medium** as it is concerned with the professional and responsible behaviour of a student

Mission 3 Statement:

The correlation between **PEO1 and M3 is medium** as this PEO is more inclined towards creating awareness and responsibility.

The correlation between **PEO2 and M3 is medium** as this PEO is addressing to inculcate research capabilities and adopt themselves to rapidly evolving technology. By framing the departmental co-curricular clubs, the students are involved in organizing the different activities.

The correlation between **PEO3 and M3 is high** because both the mission and objectives are well aligned.

Table 1.5.2 gives the mapping of PEOs with the Mission of the Department.

Table1.5.2: Representation of mapping of PEOs with the Mission of the Department

PEOs	Mission	Levels	Justification
PEO1: To provide good learning environment to develop entrepreneurship capabilities in various areas of Electrical and Electronics Engineering with enhanced efficiency, productivity, cost effectiveness and technological empowerment of human resource.	**M1:** To provide suitable forums to enhance the teaching-learning, research and development activities	3	The department provides better learning environment with faculty members of high degree of academic professionalism, a culture of research and innovation, motivation and support through centralized forums like Institute innovation cell and Entrepreneurship and Development Cell is provided which enhances the efficiency of graduate to perform a wide range of computational problems involved in any working environment and accept new technical challenges.
	M2: Framing and continuously updating the curriculum to bridge the gap between industry and academia in the contemporary world and serve society.	3	Curriculum is updated in line with recent trends and in addition, Industry professionals are invited to deliver guest lectures, expert lectures and training to students in order to focus on their overall development and assist them in pursuing successful careers in industries
	M3: To inculcate awareness and responsibility towards the environment and ethical values.	2	Life Skills, Soft skills, and Professional Ethics courses offered to inculcate awareness and promote students in professional, ethical and social dimensions, thereby assisting them in sustaining a successful career in any working instance.
PEO2: To inculcate research capabilities in the areas of Electrical and Electronics Engineering to identify, comprehend and solve problems and adopt themselves to rapidly evolving technology.	**M1:** To provide suitable forums to enhance the teaching-learning, research and development activities	3	Fostering research and innovation in both academic and industry skill sets in engineering, prepares students for a modern technical environment
	M2: Framing and continuously updating the curriculum to bridge the gap between industry and academia in the contemporary world and serve society.	3	The curriculum is continuously updated to meet current requirements of the industry. Guest lectures and domain experts talks are organized to encourage students to interact with industry experts, and students are also motivated to participate in college and inter-college level project exhibitions and hackathons to gain exposure to real-world problems and challenges.
	M3: To inculcate awareness and responsibility towards the environment and ethical values.	2	Students are encouraged to participate in co-curricular and extracurricular activities as well to develop moral and ethical values
PEO3: To create high standards of moral and ethical values among the graduates to transform them as responsible citizens of the nation.	**M1:** To provide suitable forums to enhance the teaching-learning, research and development activities	2	The department encourages the students to gain moral ethical values along with the technical knowledge during lectures and R & D activities
	M2: Framing and continuously updating the curriculum to bridge the gap between industry and academia in the contemporary world and serve society.	2	The necessity for the moral and ethical values to be a responsible citizens of the nation is also taken into an account while framing the curriculum. These courses encourages the student to focus on importance of being a responsible citizen of the nation.
	M3: To inculcate awareness and responsibility towards the environment and ethical values.	3	The mini projects, internship, major projects and AICTE activity points as part of their curriculum are exposing the student to various opportunities in order to develop them as strong professionals and to be responsible for the nation.

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Department of
Electrical and Electronics Engineering

Criterion - 2

Program Curriculum and Teaching Learning Processes

CRITERION 2	PROGRAM CURRICULUM AND TEACHING LEARNING PROCESSES	100

2. Program Curriculum and Teaching Learning Processes (100)

2.1 Program Curriculum (30)

2.1.1 State the process for designing the program curriculum (10)

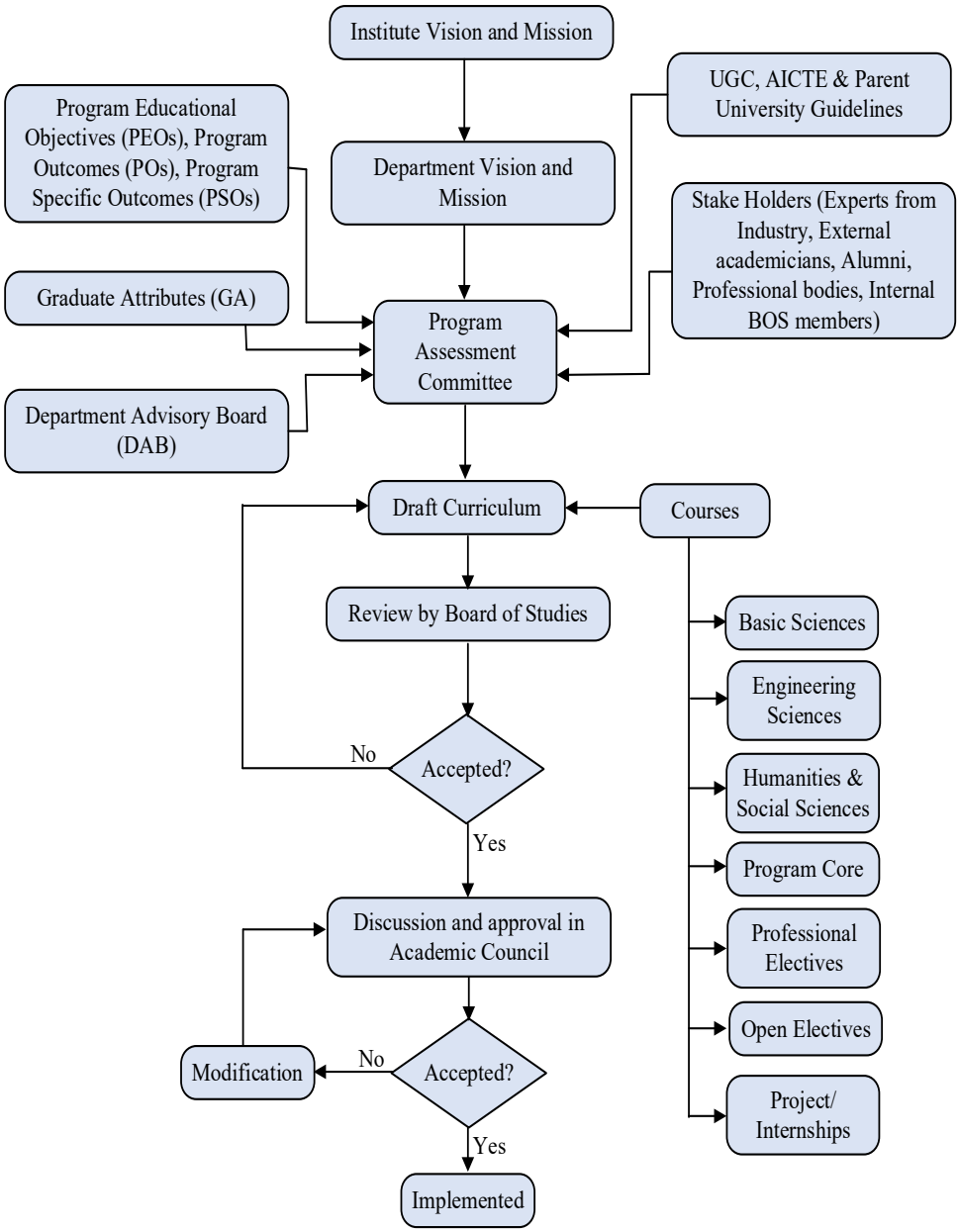


Figure 2.1.1: Process for designing/ revision of Program Curriculum

The program curriculum is created by the Program Assessment Committee (PAC) based on feedback from stakeholders including industry experts, external academicians, professional organizations, alumni and internal BoS members who take into account Program Educational Objectives, Program Specific Outcomes & Program Outcomes. The Board of Studies committee at the departmental level reviews the curriculum. The BoS constitutes internal faculty members, industry experts, senior academicians, nominee from the university and alumni. The developed curriculum is discussed and suggestions from the BoS members reviews and recommendations are included. The BoS meeting minutes are presented for approval at the academic council meeting. The committee approves the curriculum to be incorporated in the program.

2.1.2 Structure of the Curriculum (5)

The structure of the curriculum for the 2019-2023 student batch is shown in table B.2.1.2.

B.E. Program (Batch: 2019-2023)
Department of Electrical and Electronics Engineering

Table B.2.1.2: SCHEME OF TEACHING AND EXAMINATION (175 Credits)

Course Code	Course Title	Total Number of contact hours				Credits		
		Lecture (L)	Tutorial (T)	Practical (P)	Total Hours	Theory Credits	Practical Credits	Total Credits
19MAT11	Applied Mathematics-I	2	2	0	4	3	0	3
19CHE12	Engineering Chemistry	3	0	0	3	3	0	3
19CSE13	Introduction to Programming with C	3	0	0	3	3	0	3
19MEE14	Computer Aided Engineering Drawing	1	0	4	5	1	2	3
19ECE15	Basic Electronics	3	0	0	3	3	0	3
19CHL17	Engineering Chemistry Lab	0	0	4	4	0	2	2
19CSL18	Programming with C Lab	0	0	4	4	0	2	2
19HSS171	Essential English	1	0	0	1	0	0	0
19HSS172	Constitution of India and Professional Ethics	1	0	0	1	0	0	0
19MAT21	Applied Mathematics –II	2	2	0	4	3	0	3
19PHY22	Engineering Physics	3	0	0	3	3	0	3
19MEE23	Elements of Mechanical Engineering	3	0	0	3	3	0	3
19CIV24	Elements of Civil Engineering	3	0	0	3	3	0	3
19EEE25	Basic Electrical Engineering	3	0	0	3	3	0	3
19PHL26	Engineering Physics Lab	0	0	4	4	0	2	2
19EEL27	Basic Electrical Engineering Lab	0	0	4	4	0	2	2
19HSS271	Professional Communication	2	0	0	2	2	0	2
19EEE31	Applied Mathematics-III	2	2	0	4	3	0	3

20HSS321	Economics for Engineers	2	0	0	2	2	0	2
20HSS324/20HSS325	Aadalitha Kannada/Vyavaharika Kannada	1	0	0	1	1	0	1
19EEE33	Electronic Devices and Circuits	3	2	0	5	4	0	4
19EEE34	Digital System Design	3	2	0	5	4	0	4
19EEE35	Electric Circuit Theory	3	2	0	5	4	0	4
19EEL36	Analog and Digital Electronics Laboratory	0	0	3	3	0	1.5	1.5
19EEL37	Electric Circuit Theory Laboratory	0	0	3	3	0	1.5	1.5
19EEL38	Mini Project-I	0	0	4	4	0	2	2
19DMAT31	Basic Applied Mathematics-I	2	0	0	2	0	0	0
19EEE41	Applied Mathematics-IV	2	2	0	4	3	0	3
19HSS422	Life Skills for Engineers	3	0	0	3	3	0	3
19HSS423	Environmental Science and Awareness	1	0	0	1	0	0	0
19EEE43	Electromagnetic Theory	3	0	0	3	3	0	3
19EEE44	Microcontroller and Embedded Systems	3	0	0	3	3	0	3
19EEE45	DC Machines and Transformers	3	0	0	3	3	0	3
19EEE46	Linear Integrated Circuits	3	0	0	3	3	0	3
19EEL47	Microcontroller and Embedded Systems Laboratory	0	0	3	3	0	1.5	1.5
19EEL48	DC Machines and Transformers Laboratory	0	0	3	3	0	1.5	1.5
19EEL49	Mini project-II	0	0	4	4	0	2	2
19DMAT41	Basic Applied Mathematics-II	2	0	0	2	0	0	0
20EEE51	Transmission and Distribution	3	0	0	3	3	0	3
20EEE52	Control Systems	3	0	0	3	3	0	3
20EEE53	Synchronous and Induction Machines	3	0	0	3	3	0	3
20EEE54	Signals and Systems	3	0	0	3	3	0	3
20EEE55	Industrial Automation	3	0	0	3	3	0	3
20EEE56X	Professional Elective-I	3	0	0	3	3	0	3
20EEL57	Control Systems Laboratory	0	0	3	3	0	1.5	1.5
20EEL58	Synchronous and Induction Machines Laboratory	0	0	3	3	0	1.5	1.5
20EEL59	Mini project-III	0	0	4	4	0	2	2
20EEE61	Power System Analysis	3	0	0	3	3	0	3
20EEE62	Power Electronics	3	0	0	3	3	0	3
20EEE63	Power System Protection	3	0	0	3	3	0	3
20EEE64X / 20EEE64XA	Professional Elective-II	3	0	0	3	3	0	3
20EEE65X / 20EEE65XA	Professional Elective-III	3	0	0	3	3	0	3

20NHOP6XX	Open Elective-I	3	0	0	3	3	0	3
20EEL66	Power System Analysis Laboratory	0	0	3	3	0	1.5	1.5
20EEL67	Power Electronics Laboratory	0	0	3	3	0	1.5	1.5
20EEL68	Mini Project IV	0	0	4	4	0	2	2
20EEE71A	Special Electrical Machines	3	0	0	3	3	0	3
20EEE72A	Relay and High Voltage Engineering	3	0	0	3	3	0	3
20EEE73A	Electrical Drives and Vehicles	3	0	0	3	3	0	3
20EEE74XA	Professional Elective IV	3	0	0	3	3	0	3
20EEE75XA	Professional Elective V	3	0	0	3	3	0	3
20NHOP7XX	Open Elective-II	3	0	0	3	3	0	3
20EEL76A	Relay and High Voltage Engineering Laboratory	0	0	3	3	0	1.5	1.5
20EEL77A	Simulation Tools for Electrical Engineering Lab	0	0	3	3	0	1.5	1.5
20EEE78A	Project Phase I	0	0	4	4	0	2	2
20EEE81XA	Professional Elective VI	3	0	0	3	3	0	3
20EEE82XA	Professional Elective VII	3	0	0	3	3	0	3
20EEE83A	Internship	0	0	8	8	0	4	4
20EEE84A	Project Phase II	0	0	20	20	0	10	10
	Total	**126**	**14**	**98**	**238**	**126**	**49**	**175**

2.1.3 State the components of the curriculum (5)

Batch: 2019-2023, Credits -175

Table B.2.1.3: Program Curriculum Grouping Based on Course Components (Batch 2019-2023)

Course Component	Curriculum Content (% of total number of credits of the program)	Total Number of contact hours	Total number of credits
Basic Sciences	12.57%	34	22
Engineering Sciences	12.57%	28	22
Humanities and Social Sciences	4.57%	11	8
Program Core	41.14%	90	72
Program Electives	12%	21	21
Open Electives	3.43%	6	6
Project(s)	11.43%	40	20
Internships/Seminars	2.29%	8	4
Any other (Please Specify)	-	-	-
Total number of Credits			**175**

2.1.4 State the process used to identify extent of compliance of the curriculum for attaining the Program Outcomes and Program Specific Outcomes (10)

The structure of the curriculum designed for B. E. in Electrical and Electronics Engineering is well balanced and appropriate for Engineering program. The designed curriculum provides both depth and breadth across the range of Engineering topics. The curriculum is designed considering the program criteria of Engineering programs recommended by AICTE model curriculum.

The designed curriculum is well balanced and it has included various categories of courses from Basic sciences, Engineering sciences, Humanities and Social sciences. The curriculum includes core programs, professional and open electives, Projects and Internship components are necessary to analyze and design complex electrical and electronic systems containing hardware and software components.

The syllabus for each course has been designed to meet the compliance of the curriculum for attaining the POs and PSOs defined for the program.

The Program Specific outcomes (PSOs) of Electrical and Electronics Engineering are as follows:

PSO1: Graduates will be able to solve real life problems of Power Systems and Power Electronics using MiPower, PSPICE and MATLAB software tools and hardware.

PSO2: Graduates will be able to develop and support systems based on renewable and sustainable energy sources.

Process Description:

The course outcomes of all the courses in the program are mapped with the defined twelve POs and two PSOs. The mapping has been done based on the correlation levels defined by Board of Accreditation. The various correlation levels are “3” – substantial (High) Correlation, “2”- moderate (Medium) Correlation “1”- Slight (low) Correlation. “dash” – No Correlation

Table 2.1.4.a shows the substantial mapping of the courses with POs & PSOs for batch 2019-2023 and **Figure 2.1.4.a** shows the process to ensure the compliance and attainment of POs & PSOs.

It is ensured that the defined POs/PSOs are adequately covered by the courses being taught and each course is mapped substantially high with at least one PO. It also ensured that the POs/PSOs have high correlation with adequate number of courses.
The attainment of POs and PSOs are calculated through direct and indirect assessment methods.
Direct attainment is calculated through Continuous Internal Evaluation (CIE) and indirect attainment through feedback from graduates, employers, industry, and alumni.

Table 2.1.4.a: POs/PSOs Vs Courses Mapped with High Correlation for Batch 2019-2023

Pos /PSOs	Courses
PO1	Applied Mathematics – III, Electronic Devices and Circuits, Digital System Design, Electric Circuit Theory, Basic Applied Mathematics-I, Applied Mathematics-IV, Electromagnetic Theory, Microcontroller and Embedded Systems, DC Machines and Transformers, Linear Integrated Circuits, Basic Applied Mathematics-II, Transmission and Distribution, Control Systems, Signals and Systems, Industrial Automation, Object Oriented Programming using C++ and Java, MEMS and Applications, Power System Analysis, Power Electronics, Power System Protection, Data Structures and Algorithms using Python, Operation Research, VLSI Design, Advanced Industrial and Building Automation, Advanced Control Systems, Special Electrical Machines, Relay and High Voltage Engineering, Electrical Drives and Vehicles, Digital Signal Processing, FACTS and HVDC Transmission, Testing and Commissioning of Electrical Equipment, Energy Auditing and Demand Side Management, Utilization of Electrical Energy, Power System Operation and Control, Neural Networks and Fuzzy Logic in Electrical Engineering, Estimation and Costing of Electrical Systems, Smart Grid Technologies, Power Quality, Integration of Distributed Generation, Photovoltaic Systems and Applications, Simulation of Power Electronics, Biomedical Instrumentation, Applications of IOT in Electrical Engineering
PO2	Applied Mathematics – III, Electronic Devices and Circuits, Digital System Design, Electric Circuit Theory, Electromagnetic Theory, Microcontroller and Embedded Systems, DC Machines and Transformers, Linear Integrated Circuits, Transmission and Distribution, Control Systems, Signals and Systems, Object Oriented Programming using C++ and Java, MEMS and Applications, Power System Analysis, Power Electronics, Power System Protection, Data Structures and Algorithms using Python, Advanced Industrial and Building Automation, Advanced Control Systems, Special Electrical Machines, Digital Signal Processing, Power System Operation and Control, Neural Networks and Fuzzy Logic in Electrical Engineering, Estimation and Costing of Electrical Systems, Photovoltaic Systems and Applications, Simulation of Power Electronics, Applications of IOT in Electrical Engineering
PO3	Applied Mathematics – III, Electronic Devices and Circuits, Digital System Design, Electric Circuit Theory, Basic Applied Mathematics-I, Applied Mathematics-IV, Microcontroller and Embedded Systems, Basic Applied Mathematics-II, Transmission and Distribution, Industrial Automation, Object Oriented Programming using C++ and Java, Power System Analysis, Power System Protection, Advanced Industrial and Building Automation, Special Electrical Machines, Relay and High Voltage Engineering, FACTS and HVDC Transmission, Neural Networks and Fuzzy Logic in Electrical Engineering, Photovoltaic Systems and Applications, Applications of IOT in Electrical Engineering
PO4	Electronic Devices and Circuits, Electric Circuit Theory, Microcontroller and Embedded Systems, Signals and Systems, Object Oriented Programming using C++ and Java, Power System Analysis, Power System Protection, Data Structures and Algorithms using Python, Advanced Industrial and Building Automation, Energy Auditing and Demand Side Management, Neural Networks and Fuzzy Logic in Electrical Engineering, Applications of IOT in Electrical Engineering
PO5	Electronic Devices and Circuits, Digital System Design, Microcontroller and Embedded Systems, Signals and Systems, Industrial Automation, Object Oriented Programming using C++ and Java, Power System Analysis, Power System

	Protection, Data Structures and Algorithms using Python, Advanced Industrial and Building Automation, Special Electrical Machines, Applications of IOT in Electrical Engineering
PO6	Microcontroller and Embedded Systems, Environmental Science and Awareness, Industrial Automation, Electrical Drives and Vehicles, Testing and Commissioning of Electrical Equipment, Neural Networks and Fuzzy Logic in Electrical Engineering, Applications of IOT in Electrical Engineering
PO7	Environmental Science and Awareness, Data Structures and Algorithms using Python, Electrical Drives and Vehicles, Energy Auditing and Demand Side Management
PO8	Life Skills for Engineers, Environmental Science and Awareness, Energy Auditing and Demand Side Management, Professional Ethics, Neural Networks and Fuzzy Logic in Electrical Engineering
PO9	Microcontroller and Embedded Systems, Life Skills for Engineers, Power System Analysis, Neural Networks and Fuzzy Logic in Electrical Engineering, Estimation and Costing of Electrical Systems, Applications of IOT in Electrical Engineering
PO10	Basic Applied Mathematics-II, Life Skills for Engineers, Vyavaharika Kannada, Advanced Industrial and Building Automation, Neural Networks and Fuzzy Logic in Electrical Engineering, Estimation and Costing of Electrical Systems
PO11	Microcontroller and Embedded Systems, Industrial Automation, Power System Analysis, Advanced Industrial and Building Automation, Energy Auditing and Demand Side Management, Professional Ethics, Neural Networks and Fuzzy Logic in Electrical Engineering, Estimation and Costing of Electrical Systems, Applications of IOT in Electrical Engineering
PO12	Microcontroller and Embedded Systems, Life Skills for Engineers, Environmental Science and Awareness, Industrial Automation, Object Oriented Programming using C++ and Java, Power System Analysis, Power System Protection, Data Structures and Algorithms using Python, Advanced Industrial and Building Automation, Special Electrical Machines, Electrical Drives and Vehicles, Utilization of Electrical Energy, Power System Operation and Control, Estimation and Costing of Electrical Systems, Applications of IOT in Electrical Engineering
PSO1	Applied Mathematics – III, Electronic Devices and Circuits, Digital System Design, Electric Circuit Theory, Basic Applied Mathematics-I, Applied Mathematics-IV, Electromagnetic Theory, Microcontroller and Embedded Systems, DC Machines and Transformers, Linear Integrated Circuits, Basic Applied Mathematics-II, Transmission and Distribution, Control Systems, Signals and Systems, Industrial Automation, Object Oriented Programming using C++ and Java, MEMS and Applications, Power System Analysis, Power Electronics, Power System Protection, Data Structures and Algorithms using Python, Operation Research, VLSI Design, Advanced Industrial and Building Automation
PSO2	Advanced Control Systems, Special Electrical Machines, Relay and High Voltage Engineering, Electrical Drives and Vehicles, Digital Signal Processing, FACTS and HVDC Transmission, Testing and Commissioning of Electrical Equipment, Energy Auditing and Demand Side Management, Utilization of Electrical Energy, Power System Operation and Control, Neural Networks and Fuzzy Logic in Electrical Engineering, Estimation and Costing of Electrical Systems, Smart Grid Technologies, Power Quality, Integration of Distributed Generation, Photovoltaic Systems and Applications, Simulation of Power Electronics, Biomedical Instrumentation, Applications of IOT in Electrical Engineering

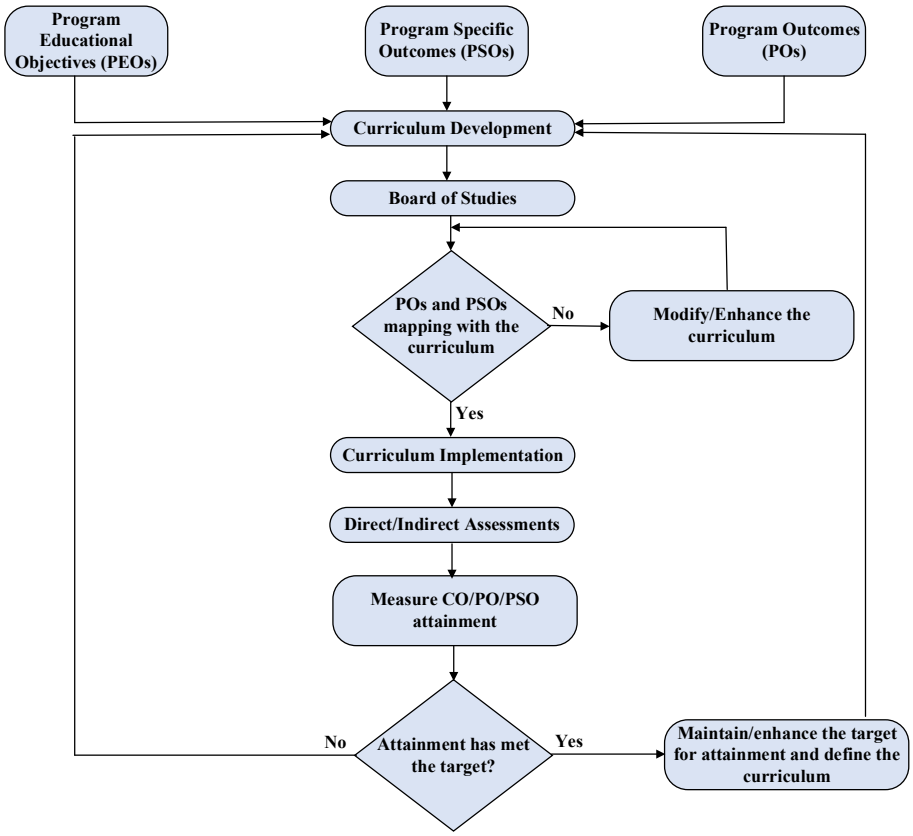


Figure 2.1.4.a: Process to ensure the compliance and attainment of POs & PSOs

2.2 Teaching and Learning Processes (70)

2.2.1 Describe processes followed to improve quality of teaching & learning (15)

Teaching is successful when it causes to learn, nothing is assumed to be taught unless it is learnt by the learner. Hence teaching and learning goes hand in hand. The process of teaching involves different methods of constructivist theory,experiential learning, and cognitive learning. The process followed to improve the quality of teaching and learning in the department of Electrical and Electronics Engineering is described in **Figure. 2.2.1.a**. To strengthen the teaching-learning process, following initiatives have been taken:

A. Adherence to Academic Calendar

Academic calendar and semester plan are prepared well in advance with all the activities of the academic year which includes continuous internal evaluation, assignments and quizzes.

a. Professional society activity.
b. Industrial visit.
c. Guest lectures/workshops.
d. Project review schedule.
e. Department club activities.

B. Pedagogical Initiatives - Content Delivery (method of instruction)
    a. Activity Based Learning
    b. Discussion Approach
    c. Experiential Learning
    d. Collaborative Learning
    e. Problem Solving
    f. Project Based Learning
C. Methodologies to support slow learners and encourage advanced learners
    a. Mentoring System
    b. Identification of slow learners / advanced learners
D. Quality of classroom teaching
E. Conduction of Experiments
F. Continuous Assessment in the laboratory
G. Student Feedback and action taken

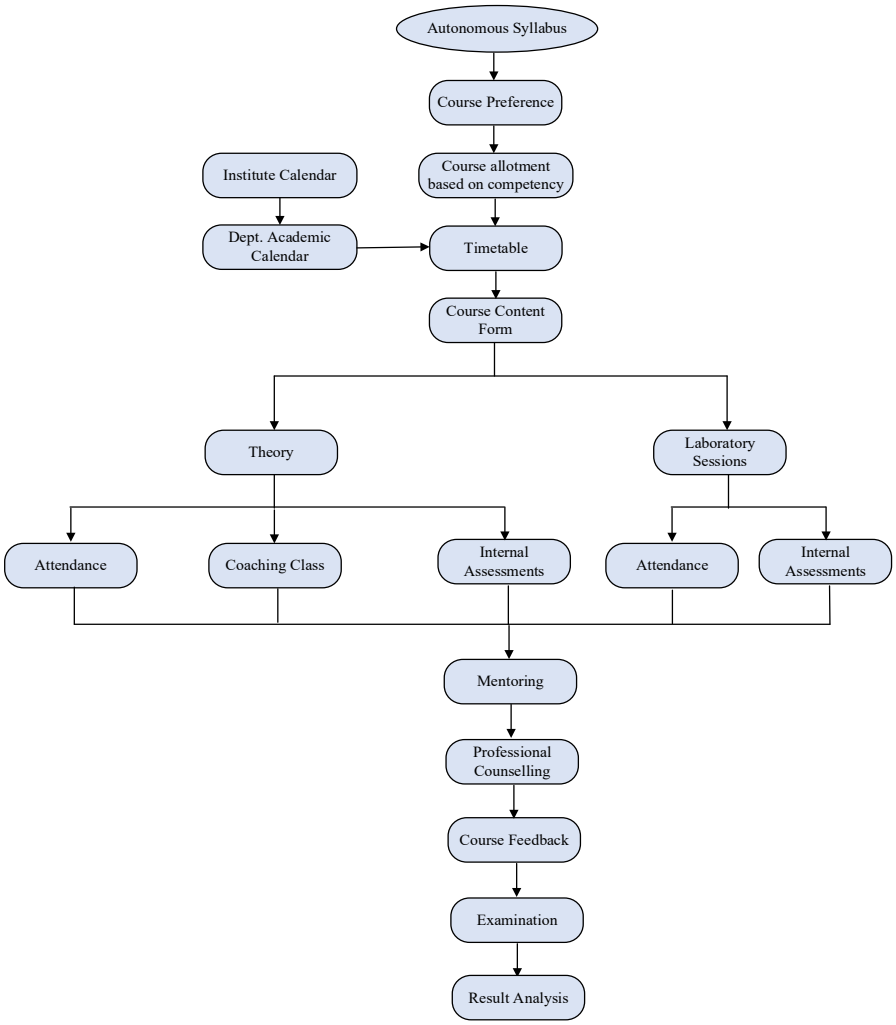
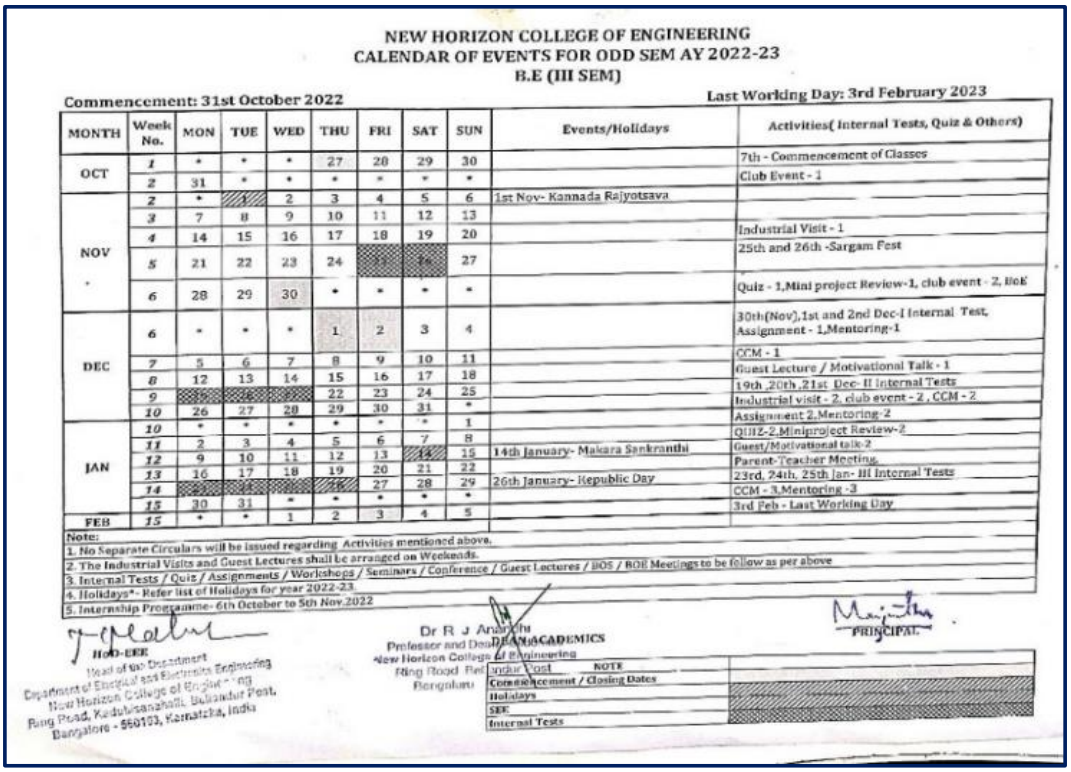


Figure 2.2.1.a: Teaching Learning Process

2.2.1.A. Adherence to Academic Calendar (2)

Academic Calendar: Department prepares the calendar of events in alignment with institute academic calendar prior to the commencement of the semester, a sample of calendar of events in adherence to the institute academic calendar is presented in **Figure 2.2.1.b1, 2.2.1.1b2 and 2.2.1.1b3**.

a. The academic calendar is prepared as per university (VTU) guidelines in consideration with the public holidays listed by parent university (VTU)
b. Dates for continuous internal evaluation (IA Test, Assignment, Quiz) are well planned in the calendar.
c. With prior consultation of the expert's dates of guest lecture, workshops and industrial visits are planned in the calendar.
d. It is available in the student management software tool (Contineo)



NEW HORIZON COLLEGE OF ENGINEERING
CALENDAR OF EVENTS FOR ODD SEM AY 2022-23
B.E (III SEM)

Commencement: 31st October 2022 — Last Working Day: 3rd February 2023

MONTH	Week No.	MON	TUE	WED	THU	FRI	SAT	SUN	Events/Holidays	Activities(Internal Tests, Quiz & Others)
OCT	1	*	*	*	27	28	29	30		7th - Commencement of Classes
	2	31	*	*	*	*	*	*		Club Event - 1
NOV	2	*		2	3	4	5	6	1st Nov- Kannada Rajyotsava	
	3	7	8	9	10	11	12	13		
	4	14	15	16	17	18	19	20		Industrial Visit - 1
	5	21	22	23	24			27		25th and 26th -Sargam Fest
	6	28	29	30	*	*	*	*		Quiz - 1,Mini project Review-1, club event - 2, BoE
DEC	6	*	*	*	1	2	3	4		30th(Nov),1st and 2nd Dec-I Internal Test, Assignment - 1,Mentoring-1
	7	5	6	7	8	9	10	11		CCM - 1
	8	12	13	14	15	16	17	18		Guest Lecture / Motivational Talk - 1
	9				22	23	24	25		19th ,20th ,21st Dec- II Internal Tests
	10	26	27	28	29	30	31	*		Industrial visit - 2, club event - 2 , CCM - 2
JAN	10	*	*	*	*	*	*	1		Assignment 2,Mentoring-2
	11	2	3	4	5	6	7	8		QUIZ-2,Miniproject Review-2
	12	9	10	11	12	13		15	14th January- Makara Sankranthi	Guest/Motivational talk-2
	13	16	17	18	19	20	21	22		Parent-Teacher Meeting
	14					27	28	29	26th January- Republic Day	23rd, 24th, 25th Jan- III Internal Tests
	15	30	31	*	*	*	*	*		CCM - 3,Mentoring -3
FEB	15	*	*	1	2	3	4	5		3rd Feb - Last Working Day

Note:
1. No Separate Circulars will be issued regarding Activities mentioned above.
2. The Industrial Visits and Guest Lectures shall be arranged on Weekends.
3. Internal Tests / Quiz / Assignments / Workshops / Seminars / Conference / Guest Lectures / BOS / BOE Meetings to be follow as per above
4. Holidays*- Refer list of Holidays for year 2022-23.
5. Internship Programme- 6th October to 5th Nov 2022

HOD-EEE
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Department of Electrical and Electronics Engineering
New Horizon College of Engineering
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Bangalore - 560103, Karnataka, India

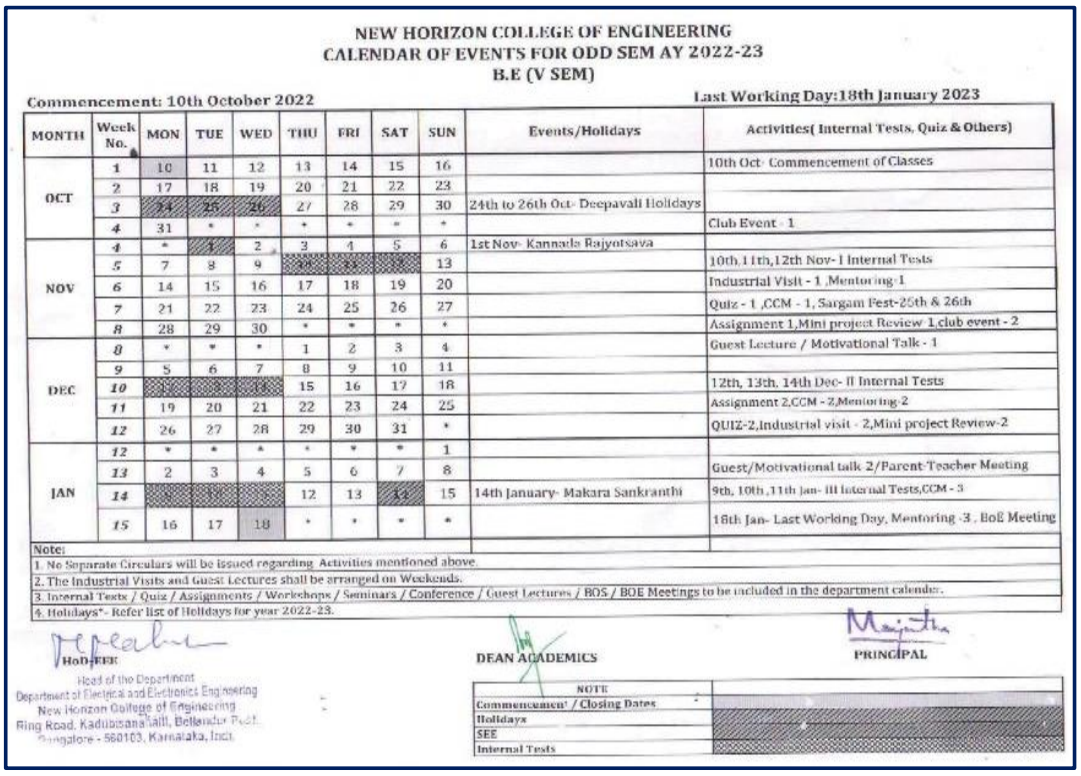
Dr R J Anandhi
Professor and Dean Academics
New Horizon College of Engineering
Ring Road Post
Bangalore

DEAN ACADEMICS

PRINCIPAL

NOTE
Commencement / Closing Dates
Holidays
SEE
Internal Tests

Figure 2.2.1.b1: Calendar of Events for Odd Semester 2022-23 (III Sem)



NEW HORIZON COLLEGE OF ENGINEERING
CALENDAR OF EVENTS FOR ODD SEM AY 2022-23
B.E (V SEM)

Commencement: 10th October 2022 — Last Working Day:18th January 2023

MONTH	Week No.	MON	TUE	WED	THU	FRI	SAT	SUN	Events/Holidays	Activities(Internal Tests, Quiz & Others)
OCT	1	10	11	12	13	14	15	16		10th Oct- Commencement of Classes
	2	17	18	19	20	21	22	23		
	3				27	28	29	30	24th to 26th Oct- Deepavali Holidays	
	4	31	*	*	*	*	*	*		Club Event - 1
NOV	4	*		2	3	4	5	6	1st Nov- Kannada Rajyotsava	
	5	7	8	9				13		10th,11th,12th Nov- I Internal Tests
	6	14	15	16	17	18	19	20		Industrial Visit - 1 ,Mentoring-1
	7	21	22	23	24	25	26	27		Quiz - 1 ,CCM - 1, Sargam Fest-25th & 26th
	8	28	29	30	*	*	*	*		Assignment 1,Mini project Review 1,club event - 2
DEC	8	*	*	*	1	2	3	4		Guest Lecture / Motivational Talk - 1
	9	5	6	7	8	9	10	11		
	10				15	16	17	18		12th, 13th, 14th Dec- II Internal Tests
	11	19	20	21	22	23	24	25		Assignment 2,CCM - 2,Mentoring-2
	12	26	27	28	29	30	31	*		QUIZ-2,Industrial visit - 2,Mini project Review-2
JAN	12	*	*	*	*	*	*	1		
	13	2	3	4	5	6	7	8		Guest/Motivational talk 2/Parent-Teacher Meeting
	14				12	13		15	14th January- Makara Sankranthi	9th, 10th ,11th Jan- III Internal Tests,CCM - 3
	15	16	17	18	*	*	*	*		18th Jan- Last Working Day, Mentoring -3 , BoE Meeting

Note:
1. No Separate Circulars will be issued regarding Activities mentioned above.
2. The Industrial Visits and Guest Lectures shall be arranged on Weekends.
3. Internal Tests / Quiz / Assignments / Workshops / Seminars / Conference / Guest Lectures / BOS / BOE Meetings to be included in the department calendar.
4. Holidays*- Refer list of Holidays for year 2022-23.

HOD-EEE
Head of the Department
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DEAN ACADEMICS

PRINCIPAL

NOTE
Commencement / Closing Dates
Holidays
SEE
Internal Tests

Figure 2.2.1.b2: Calendar of Events for Odd Semester 2022-23 (V Sem)

NEW HORIZON COLLEGE OF ENGINEERING
CALENDAR OF EVENTS FOR ODD SEM AY 2022-23
B.E (VII SEM)

Commencement: 1st September 2022 — Last Working Day:10th December 2022

MONTH	Week No.	MON	TUE	WED	THU	FRI	SAT	SUN	Events/Holidays	Activities(Internal Tests, Quiz & Others)
SEPT	1				1	2	3	4		1st Sept- Commencement of Classes
	2	5	6	7	8	9	10	11		
	3	12	13	14	15	16	17	18		
	4	19	20	21	22	23	24	25		
	5	26	27				*	*		28th, 29th,30th Sept- I Internal Tests
OCT	5	*	*	*	*	*	1	2		Assignment 1,Mentoring-1
	6	3			6	7	8	9	4th Oct- Ayudha Puja,5th Oct- Vijayadashami	Industrial Visit - 1, Project Review-1
	7	10	11	12	13	14	15	16		Quiz - 1 ,CCM - 1
	8	17	18	19	20	21	22	23		Guest Lecture / Motivational Talk - 1
	9				27	28	29	30	24th to 26th Oct- Deepavali Holidays	
	10	31	*	*	*	*	*	*		Club Event - 1
NOV	10	*					5	6	1st Nov- Kannada Rajyotsava	2nd, 3rd, 4th Nov- II Internal Tests
	11	7	8	9	10	11	12	13		Assignment 2,CCM - 2,Mentoring-2
	12	14	15	16	17	18	19	20		QUIZ-2 , Project Review-2
	13	21	22	23	24	25	26	27		Guest/Motivational talk-2
	14	28	29	30	*	*	*	*		club event - 2 , Parent-Teacher Meeting
DEC	14	*	*	*	1	2	3	4		5th, 6th, 7th Dec- III Internal Tests,CCM - 3
	15				8	9	10			10th Dec- Last Working Day,Mentoring -3,BoE Meeting

Note:
1. No Separate Circulars will be issued regarding Activities mentioned above.
2. The Industrial Visits and Guest Lectures shall be arranged on Weekends.
3. Internal Tests / Quiz / Assignments / Workshops / Seminars / Conference / Guest Lectures / IMS / BOE Meetings to be included in the department calendar.
4. Holidays* - Refer list of Holidays for year 2022

HOD-EEE — DEAN ACADEMICS — NOTE

Figure 2.2.1.b3: Calendar of Events for Odd Semester 2022-23 (VII Sem)

2.2.1.B. Course Delivery Methods & Pedagogical Initiatives (2)

- As soon as the course has been allotted to the faculty by the Head of the Department, faculty is instructed to prepare a lesson plan in adherence to the syllabus and calendar of events.
- The faculties are well prepared before the commencement of each class and deliver the lecture using different course delivery methods as shown in **figure 2.2.1.c**.

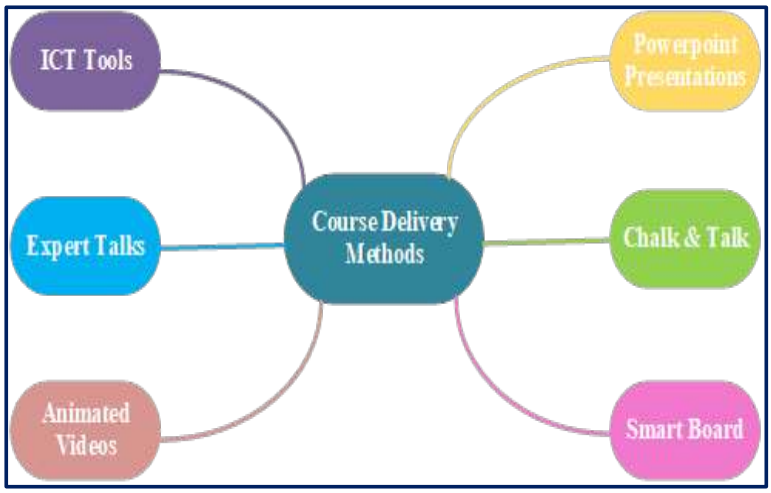


Figure 2.2.1.c: Course delivery methods

Pedagogical initiatives

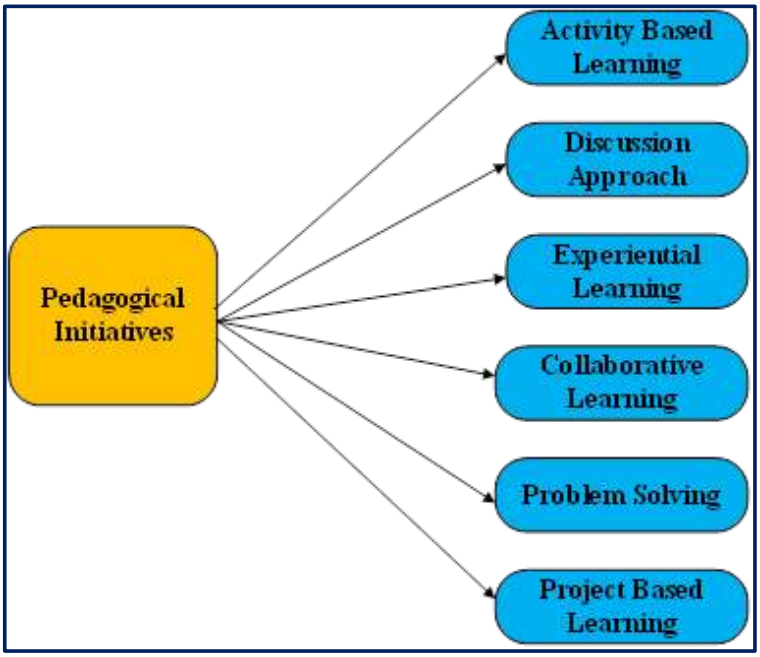


Figure 2.2.1.d: Pedagogical Initiatives

Course allocation is made based on the choice/ expertise of the faculty members well before the commencement of semester. A well-defined process for course allotment and load distribution is implemented at the department level. Choices are solicited from the faculty members. Once the courses are allocated, the faculty members prepare a detailed lesson plan, assessment plans for the assigned course. Course handout and relevant materials are also uploaded on digital library.

Pedagogies play an important role in delivering of content and it varies with the audience. Faculty members use various pedagogical methods for effective teaching learning process which are as follows:

- **ICT based learning:** The information and communication technologies are greatly employed to facilitate teaching and learning process effectively by means of hardware and software tools and devices. The quizzes are constructed and conducted in online mode via Quizizz, Google Forms. The course contents are digitally distributed using Google Classrooms, YouTube, Personal Websites & Drives. Virtual classes have conducted using Zoom, Microsoft Teams, and Google Meet video conferencing platforms. The students are encouraged to enroll for NPTEL and SWAYAM courses and complete it successfully.

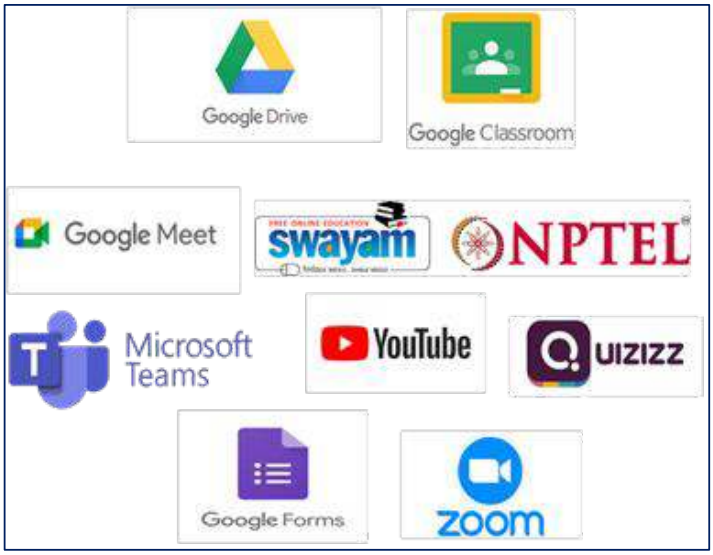


Figure 2.2.1.e: ICT Tools incorporated in teaching learning process

Collaborative / Cooperative teaching and learning:

In classroom students are encouraged to give presentations to improve their technical and professional skills. Students share knowledge or discuss topics in small group or in peer mode. Collaborative learning is based on the view that knowledge is a social construct. Collaborative learning can occur peer-to-peer or in larger groups.This often occurs in a class session after students are introduced to flipped classrooms.

The benefits of collaborative learning include:

a. Development of higher order thinking, oral communication and leadership skills.
b. Promotion of student-faculty interaction.
c. Self-esteem, and responsibility.
d. Preparation for real life social and employment situations

Table 2.2.1.a1: Innovative Teaching Practices Adopted for various courses during 2022-2023

S. No.	Name of the Faculty	Date	Course Code	Course Name	Innovative Teaching Methods
1	Dr. Vinoth Kumar K	16.11.2022	20EEE53	Synchronous and Induction Machines	Case study based approach
2	Dr. Vinoth Kumar K	17.11.2022	20EEE53	Synchronous and Induction Machines	
3	Ms. Pooja Jose	27.03.2023	20EEE61	Power System Analysis	Collaborative Learning

4	Dr. Vinoth Kumar K	03.11.2022	20EEE53	Synchronous and Induction Machines	Experiential Learning
5	Ms. Anitha A	07.11.2022	20EEE73A	Electrical drives and Vehicles	
6	Ms. Soumya K V	16.01.2023	21EEE36A	Electric Circuit Theory	
7	Ms. Soumya K V	26.04.2023	20EEE641A	Data Structures & Algorithms using Python	
8	Ms. Soumya K V	27.03.2023	20EEE641A	Data Structures & Algorithms using Python	
9	Mr. Kartheek Vankadara	29.03.2023	20EEE62	Power Electronics	
10	Ms. Kavitha Chenna Reddy	30.10.2022	20EEE72A	Relay and High Voltage Engineering	
11	Dr. R. Mohan Das	10.11.2022	20EEE71A	Special Electrical Machines	Flipped Classroom
12	Ms. Sangeetha C N	30.03.2023	20EEE61	Power System Analysis	
13	Dr. S. Sujitha	31.10.2022	20EEE754	Neural Network and Fuzzy Logic in Electrical Engineering	Group Learning Approach
14	Dr. Vinoth Kumar K	08.12.2022	20EEE53	Synchronous and Induction Machines	Mind Mapping Approach
15	Ms. Sangeetha C N	09.11.2022	20EEE51	Transmission and Distribution	
16	Ms. Sangeetha C N	09.12.2022	21EEE35A	Analog and Linear Integrated Circuit	
17	Dr. Vinoth Kumar K	19.12.2022	20EEE53	Synchronous and Induction Machines	
18	Mr. Kodandapani D	20.01.2023	21EEE37A	DC Machines & Transformers	Outcome of Discussion Approach
19	Ms. Manochitra G	08.11.2022	20EEE52	Control System	Problem Solving Approach
20	Ms. Kavitha Chenna Reddy	31.10.2022	20EEL76A	Relay and High Voltage Engineering	
21	Dr. Joshua Daniel Raj	15.11.2022	20EEE561A	OOPS using C++ and Java	Role Play Approach
22	Mr. Sunil S K	06.11.2022	20EEE742A	FACTS and HVDC Transmission	Simulation Approach
23	Ms. Anitha A	06.12.2022	20EEE73A	Electrical drives and Vehicles	
24	Ms. Kavitha Chenna Reddy	21.04.2023	20EEE821A	Photo Voltaic System & Applications	
25	Mr. Kartheek Vankadara	31.01.2023	21EEE36A	Electric Circuit Theory	
26	Ms. Pooja Jose	09.11.2022	20EEE54	Signals and Systems	Team Based Learning Approach
27	Ms. Soumya K V	11.11.2022	20EEE54	Signals and Systems	
28	Ms. Soumya K V	16.12.2022	21EEE36A	Electric Circuit Theory	
29	Mr. Kartheek Vankadara	22.12.2022	21EEE36A	Electric Circuit Theory	

Table 2.2.1.a2: Innovative Teaching Practices Adopted for various courses during 2021-2022

S. No.	Name of the Faculty	Date	Course Code	Course Name	Innovative Teaching Methods
1	Dr. Vinoth Kumar K	01.04.2022	20EEE62	Power Electronics	Experiential Learning
2	Dr. Vinoth Kumar K	06.06.2022	20EEE62	Power Electronics	
3	Ms. Anitha A	09.06.2022	20EEL67	Power Electronics Laboratory	
4	Ms. Anitha A	17.05.2022	20EEE62	Power Electronics	
5	Ms. Deepa V Bolanavar	26.04.2022	NHOP608	Schneider Industrial Automation	
6	Ms. Deepa V Bolanavar	28.04.2022	NHOP608	Schneider Industrial Automation	
7	Dr. A Singaravelan	05.05.2022	20EEE652A	CMOS VLSI Design	Activity Based Learning Approach
8	Dr. A Singaravelan	21.04.2022	20EEE652A	CMOS VLSI Design	
9	Mr. Sunil.S.K	05.07.2022	20EEE61	Power System Analysis	Case Study Based Learning Approach
10	Mr. Vinod Kumar S	13.05.2022	20EEE653	Advanced Industrial and Building Automation	
11	Dr. N. Prabhakaran	22.04.2022	19EEE44	Microcontroller and Embedded System	
12	Mr. Sunil. S. K	22.04.2022	20EEE61	Power System Analysis	
13	Dr. J Joshua Daniel Raj	12.05.2022	20EEE641A	Data Structures and Algorithms using Python	Innovative Approach
14	Ms. Kavitha Chenna Reddy	25.04.2022	20EEE63	Power System Protection	Lecturing and Discussion Approach
15	Ms. M Karthika	13.05.2022	20EEE821A	Photo Voltaic Systems and Application	Outcome of Discussion Approach
16	Mr. Ramakrishnan S	17.05.2022	19EEE46	Linear Integrated Circuits	Problem Solving Approach
17	Dr. J Joshua Daniel Raj	22.04.2022	20EEE641A	Data Structures and Algorithms using Python	
18	Ms. M Karthika	25.03.2022	20EEE821A	Photo Voltaic Systems and Application	Simulation Approach
19	Ms. Anitha A	25.04.2022	20EEE62	Power Electronics	
20	Dr. M Mahesh	26.03.2022	20EEE821A	Photo Voltaic Systems and Application	
21	Mr. Vinod Kumar S	01.06.2022	20EEE653	Advanced Industrial and Building Automation	Team Based Learning Approach
22	Ms. Kavitha Chenna Reddy	30.04.2022	20EEE63	Power System Protection	

Project Based Learning (PBL)

Project Based Learning (PBL) is significantly more effective than traditional instruction to train competent and skilled practitioners and it promotes long-term retention of knowledge and skills. It is an innovative practice that is used to implement Outcome Based Education. Students are encouraged to carry out multidisciplinary projects to apply their engineering knowledge from third semester onwards. 2-4 students in a group are allowed to choose their guide and in consultation with guide identify the project. The faculty mentor and the students collectively identify the Projects based on societal need and issues. At the end of the semester, projects are evaluated by the examiners. A sample list of projects is mentioned in **Table 2.2.1.b**.



Figure 2.2.1.f: Project Based Learning

A documentation sample of student's work carried out is shown below



Figure 2.2.1.g: Front page & sample of mini project work conducted by group of students

Table 2.2.1.b: Few samples of project-based learning topics and details

S.No.	USN	Name	Sem/ Year	Project Title	PO/PSOs
1.	1NH20EE061	Manasa G Reddy	V SEM – B Sec	Hybrid Energy Tree	PO1, PO2, PO3, PO4, PO5, PO8, PO9, PO10, PO11, PO12, PSO1, PSO2
2.	1NH20EE073	Neha			
3.	1NH20EE117	Tantapureddi Haritha			
4.	1NH20EE118	Tejashree T			
5.	1NH20EE005	Aditi J	V SEM – A Sec	IoT based bidirectional speed control and monitoring of single phase induction motor	PO1, PO2, PO3, PO4, PO5, PO8, PO9, PO10, PO11, PSO1, PSO2
6.	1NH20EE010	Amisha Athrey			
7.	1NH21EE402	Dheeresh Vijay Devadiga			
8.	1NH21EE405	Lingamma G Manasinakai			
9.	1NH22EE409	S.Suhel Ahmed	III SEM- A Sec	DC Chargeable Drilling Machine	PO1, PO2, PO3, PO4, PO5, PO8, PO9, PO10, PO11, PSO1, PSO2
10	1NH22EE402	Jayasourya U			
11	1NH22EE400	Akshata Pandit Sutar			
12	1NH22EE406	Likhith R			
13	1NH20EE064	Meghana I K	VI SEM- B Sec	Accident Prevention by Locking the Engine using MQ3	PO1, PO2, PO3, PO4, PO5, PO8, PO9, PO10, PO11, PSO1, PSO2
14	1NH20EE086	Rahul B			
15	1NH20EE105	Shivashankar A Mugali			
16	1NH20EE080	Prajwal J Mustagi			

Video based demonstration:

Demonstration of system or parts of a real-world system using modern tools.

Guest Lecture:

Department, with the prime vision of enhancing technical competency of our students, has organized various guest lectures by inviting experts from industry to lend valuable guidance on latest technical drive, industry expectations and avenues for knowledge enhancement. (Refer **Table 2.2.1.c1, 2.2.1.c2 and 2.2.1.c 3**).

Workshops:

Department organizes workshops to facilitate the students in having a hands-on training in a specific domain. (Refer **Table 2.2.1.d1 and 2.2.1.d2**).

- These workshops enable students in learning and realizing new and latest technologies.
- The students get platform to exhibit their ideas and implement them in reality.

Conference:

The department organizes National level conferences on recent technologies in to enrich the knowledge of students and researchers.

This conference provides a platform for students, researchers and faculty members to share their ideas and innovations. It also helps the attendees to interact with experts to enhance their ideas in the respective domain. **Table 2.2.1.e** lists the details of conference organized by the department.

Table 2.2.1.c1: Guest lecture details for the Academic Year 2022-2023

Sl. No.	Date	Topic /Subject	Name of the expert	Company/ Organization	Contribution to Curriculum	Sem
1	19.04.2023	Modern Trends in Power System Protection and Control	Mr. S. Vinoth Kumar	WPS Consultant India Private Limited	Delivered Theoretical session for power system protection	VI
2	11.04.2023	Phasor estimation algorithms and applications in protective relaying	Mr. Mariselvan Arumugam	NIT Tiruchirapalli	Delivered Theoretical session for power system protection	VI

Table 2.2.1.c2: Guest lecture details for the Academic Year 2021-2022

Sl. No.	Date	Topic /Subject	Name of the expert	Company/ Organization	Contribution to Curriculum	Sem
1	26.05.2022	Emerging Trends in Electrical Substation Design	Mr. S. Vinoth Kumar	Balfour Beatty Infrastructure India Private Limited	Delivered Theoretical session for power system protection	VI
2	18.05.2022	Guest talk on Smart Drives used in Mining Field	Mr. Jai Kumar	BEML LTD Mysore Complex	Delivered Theoretical session for introduction to power Electronics	VI, IV
3	22.01.2022	Industry Expert lecture on Motors for Industrial Applications	Kishore Kulkarni	Rajamane-Hedge Services K.I.A.D.B Industrial Area	Delivered Theoretical session for importance of Synchronous and Induction machines	V
4	17.01.2022	Guest lecture on Synchro-Phasor Technology	Mariselvam Arumuga	National Institute of Technology Tiruchirappalli	Delivered theoretical session for relay and high voltage engineering	VII
5	27.07.2021	Guest lecture on Evolving Technologies & Progressive Markets in Power Systems	Mr.Prasad S Ranga	Quik Tech Talk	Delivered theoretical session for recent technological development and skills to drive product development	IV

Table 2.2.1.c3: Guest lecture details for the Academic Year 2020-2021

Sl. No.	Date	Topic / Subject	Name of the expert	Company/ Organization	Contribution to Curriculum	Sem
1	31.05.2021	Webinar on Power Electronics Converters for Smart Microgrid	Dr. M. Kowsalya	Vellore Institute of Technology, Vellore, Tamilnadu	Delivered Theoretical session for Power Electronics	All students and faculty from other colleges
2	06.05.2021	IEEE Awareness Talk	Dr. Rajesh M. Pindoriya	Indian Institute of Technology, Mandi	Delivered Theoretical session for importance of IEEE	All students from other colleges
3	11.12.2020	Applications of Signal Processing	Dr. Guru Prasad S	Sri Siddhartha Institute of Technology, Puttur	Delivered Theoretical session for importance of Signal and Systems	V
4	08.12.2020	International Webinar on Low Earth Orbit Satellites	Dr. Rahul Sharma K	Attitude and Orbit Control Engineer		V, VII
5	04.11.2020	Role of Synchronous Machines in Industry	Mr. V. K. Arun Shankar	Danfoss Drives Segment, Sriperumbudur, Tamilnadu	Delivered theoretical session for importance of synchronous and induction machines	V

Table 2.2.1.d1: Workshop details for the academic year 2022-2023

Sl. No.	Name of the workshop	Number of participants	Date	Link to the activity report on the website
1	Recent Trends in Storage and Electric Vehicle Technologies	50	20.03.2023 to 24.03.2023	https://newhorizonindia.edu/nhengineering/department-of-electrical-and-electronics-engineering/soft-vidya-online-training-sessions-on-different-software-tools-for-electrical-and-electronics-engineering-applications/
2	National workshop on “New paradigm in renewable energy-Microgrids, EV”	99	11.03.2023	https://newhorizoncollegeofengineering.in/events/national-workshop-on-new-paradigm-in-renewable-energy-microgrids-ev-and-hydrogen/

Table 2.2.1.d2: Workshop details for the academic year 2020-2021

Sl. No.	Name of the workshop	Number of participants	Date	Link to the activity report on the website
1	Research Conclave on Power Electronics	100	25.01.2021 to 29.01.2021	https://department-of-electrical-and-electronics-engineering.newhorizoncollegeofengineering.in/department-of-eee-organized-5-days-research-conclave-on-power-electronics/
2	Workshop on ""“Real-time Simulation Tool for Electrical Engineers-Typhoon HIL”""	75	04.12.2020 to 05.12.2020	https://newhorizonindia.edu/nhengineering/department-of-electrical-and-electronics-engineering/eee-department-organized-two-days-online-hands-on-national-workshop-on-real-time-simulation-tool-for-electrical-engineers-typhoon-hil/
3	‘SoftVidya’	60	11.11.2020 to 16.11.2020	https://newhorizonindia.edu/nhengineering/department-of-electrical-and-electronics-engineering/soft-vidya-online-training-sessions-on-different-software-tools-for-electrical-and-electronics-engineering-applications/
4	Online Hands-on Workshop using MATLAB & SIMULINK Research Perspective	100	01.09.2020 to 04.09.2020	https://newhorizonindia.edu/nhengineering/department-of-electrical-and-electronics-engineering/department-of-eee-organized-online-hands-on-workshop-using-matlab-simulink-research-perspective/
5	AICTE Sponsored “National workshop on research challenges in advanced power converters for electrical engineering applications - RCAPCEEA-2020”	50	27.10.2020 to 29.10.2020	https://newhorizonindia.edu/nhengineering/department-of-electrical-and-electronics-engineering/national-workshop-on-research-challenges-in-advanced-power-converters-for-electrical-engineering-applications-eee-dept/

Table 2.2.1.e: Conference details

Sl. No.	Academic year	Name of the conference	Number of Participants	Date	Link to the activity report on the website
1	2023-2024	IEEE Sponsored International Conference on Multidisciplinary Research in Technology and Management (MRTM 2023)	Registration in progress	22.09.2023 to 23.09.2023	https://newhorizoncollegeofengineering.in/events/ieee-sponsored-international-conference-on-multidisciplinary-research-in-technology-and-management-mrtm-2023/
2	2020-2021	AICTE Sponsored International Conference on Research Perspectives: IOT in Hybrid Grid Integrated Renewable Energy Sources (ICRPHGIRES-2021)	150	24.03.2021 to 26.03.2021	https://newhorizonindia.edu/nhengineering/events/aicte-sponsored-international-conference-on-research-perspectives-iot-in-hybrid-grid-integrated-renewable-energy-sources-icrphgires-2021/

2.2.1.C. Methodologies to support slow learners and encourage advanced learners (2)

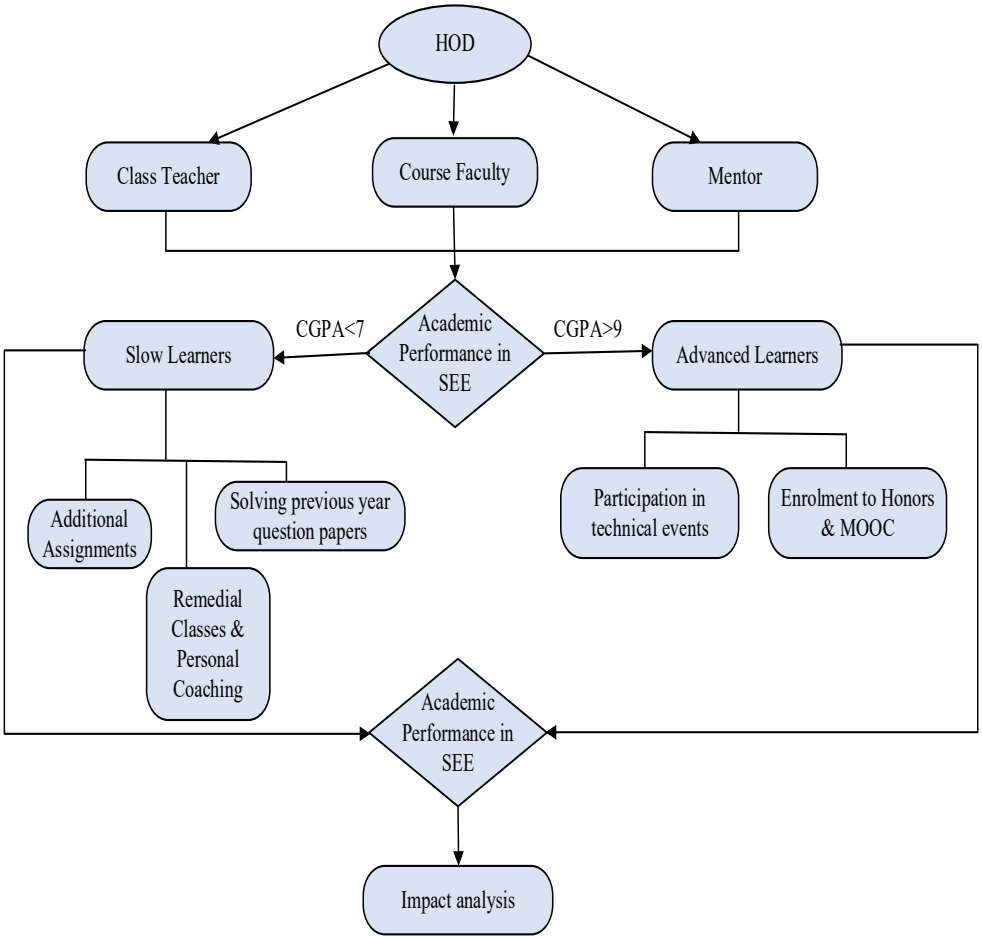


Figure 2.2.1.h: Process to identify and support weak students and encourage bright students

➢ **Methodology to Support Bright Students:**

Bright students are found on the basis of their class performances, involvement in classroom, internal assessments and grades. The following facilities are there for bright students to apply their learning on various platforms:

Involve fast learners for peer tutoring the slow learners.

- Students are motivated to take up value added courses, MOOC and e-learning courses.
- Students are given opportunity to take up study-abroad program for one semester.
- Encourage students to do open ended or challenging lab based experiments
- Students are motivated to take up competitive exams like GATE, GRE, TOEFL, IELTS, CAT, PGCET etc.
- Students are encouraged to become members of professional bodies like ISTE / IEEE / MTS and organize technical events.
- Bright and diligent students are motivated and inspired to get top ranks in their SEE and in competitive examinations through mentoring.

- The bright students are encouraged to participate in symposia, workshops and seminars at National and International levels.
- They are provided with the guidance about technical paper writing, prototype building and patent filing.
- Financial support is given for bright students if needed for attending conferences/ workshops etc.

➢ **Methodology to Support Slow Learners**:

The weak students are identified from their participation in classroom discussion, performance in the assessment tests (less than 10 out of 25), performance during the viva-voce, University result analysis, etc.

Actions taken:

- Department arranges remedial lectures for slow learners.
- Students are encouraged to conduct open ended lab based experiments
- The students are encouraged to participate in symposia, workshops and seminars at National and International levels.
- Additional question bank is given to students to improve their learning.
- Mentor informs the parents regarding improvement in the performance of their ward on regular basis. Mentors are facilitated to understand personal and professional difficulties of students and it is resolved.
- Participative and progressive slow learners are given chance to improve team work to motivate and appreciate their efforts.
- Problem solving sessions are done and make sure that they understand it & exercise problems are solved with.

Impact observed on bright students:

Table 2.2.1.f1: Details of Autonomous toppers (2020-21)

Sl. No.	USN	Name of the Student	Sem	CGPA
1	1NH20EE034	Disha M	I	9.84
2	1NH20EE034	Disha M	II	9.85
3	1NH19EE113	Swastik Shukla	III	9.56
4	1NH19EE042	Gauthammee K K	IV	9.58
5	1NH18EE727	M D Sagar Khan	V	9.66
6	1NH18EE727	M D Sagar Khan	VI	9.69
7	1NH17EE757	Vinod Choudhary S	VII	9.44
8	1NH17EE028	Leticia Dishel Vas	VIII	9.54

Table 2.2.1.f2: Details of Autonomous toppers (2019-20)

Sl. No.	USN	Name of the Student	Sem	CGPA
1	1NH19EE046	Harshitha R	I	9.74
2	1NH19EE113	Swastik Shukla	I	9.85
3	1NH19EE113	Swastik Shukla	II	9.88
4	1NH18EE727	M D Sagar Khan	III	9.71
5	1NH18EE727	M D Sagar Khan	IV	9.71
6	1NH17EE028	Leticia Dishel Vas	V	9.69
7	1NH17EE028	Leticia Dishel Vas	VI	9.44
8	1NH16EE046	Ritesh R Prabhu	VII	9.47
9	1NH16EE046	Ritesh R Prabhu	VIII	9.49



Figure 2.2.1.i: Sample of achievements by bright students



Elite

NPTEL Online Certification

(Funded by the MoE, Govt. of India)

This certificate is awarded to

MANU K

for successfully completing the course

Data Analytics with Python

with a consolidated score of 62 %

Online Assignments	25/25	Proctored Exam	36.71/75

Total number of candidates certified in this course: 7860

Prof. Sanjeev Manhas
Coordinator, Continuing Education Centre
IIT Roorkee

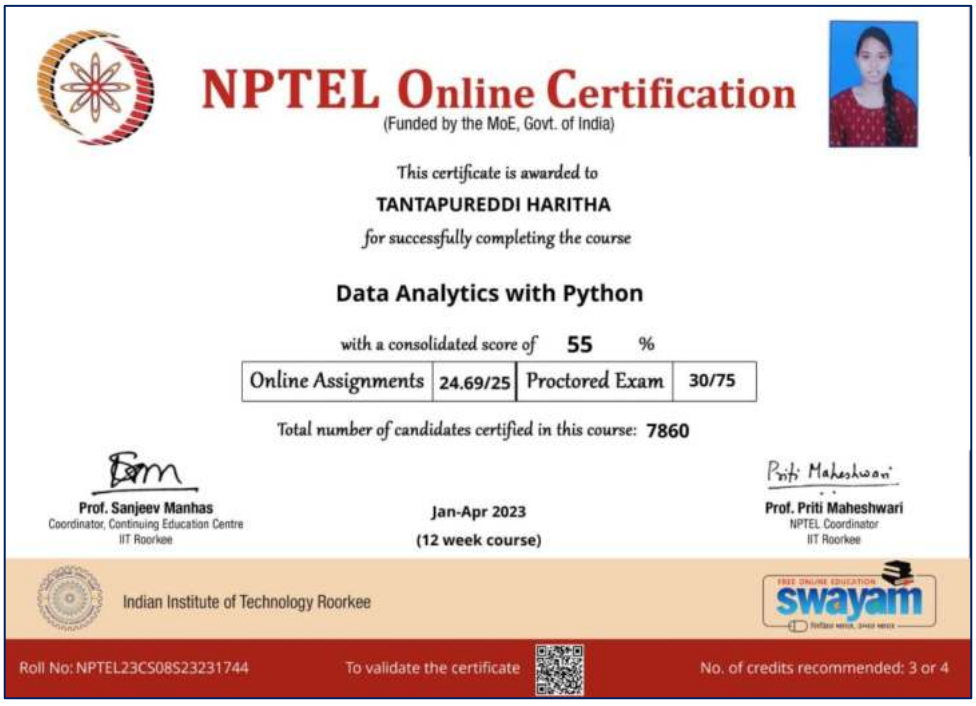
Jan-Apr 2023
(12 week course)

Prof. Priti Maheshwari
NPTEL Coordinator
IIT Roorkee

Indian Institute of Technology Roorkee

swayam

Roll No: NPTEL23CS08S53231178 To validate the certificate No. of credits recommended: 3 or 4



NPTEL Online Certification

(Funded by the MoE, Govt. of India)

This certificate is awarded to

TANTAPUREDDI HARITHA

for successfully completing the course

Data Analytics with Python

with a consolidated score of 55 %

Online Assignments	24.69/25	Proctored Exam	30/75

Total number of candidates certified in this course: 7860

Prof. Sanjeev Manhas
Coordinator, Continuing Education Centre
IIT Roorkee

Jan-Apr 2023
(12 week course)

Prof. Priti Maheshwari
NPTEL Coordinator
IIT Roorkee

Indian Institute of Technology Roorkee

swayam

Roll No: NPTEL23CS08S23231744 To validate the certificate No. of credits recommended: 3 or 4

Figure 2.2.1.j: NPTEL Course completion certificates

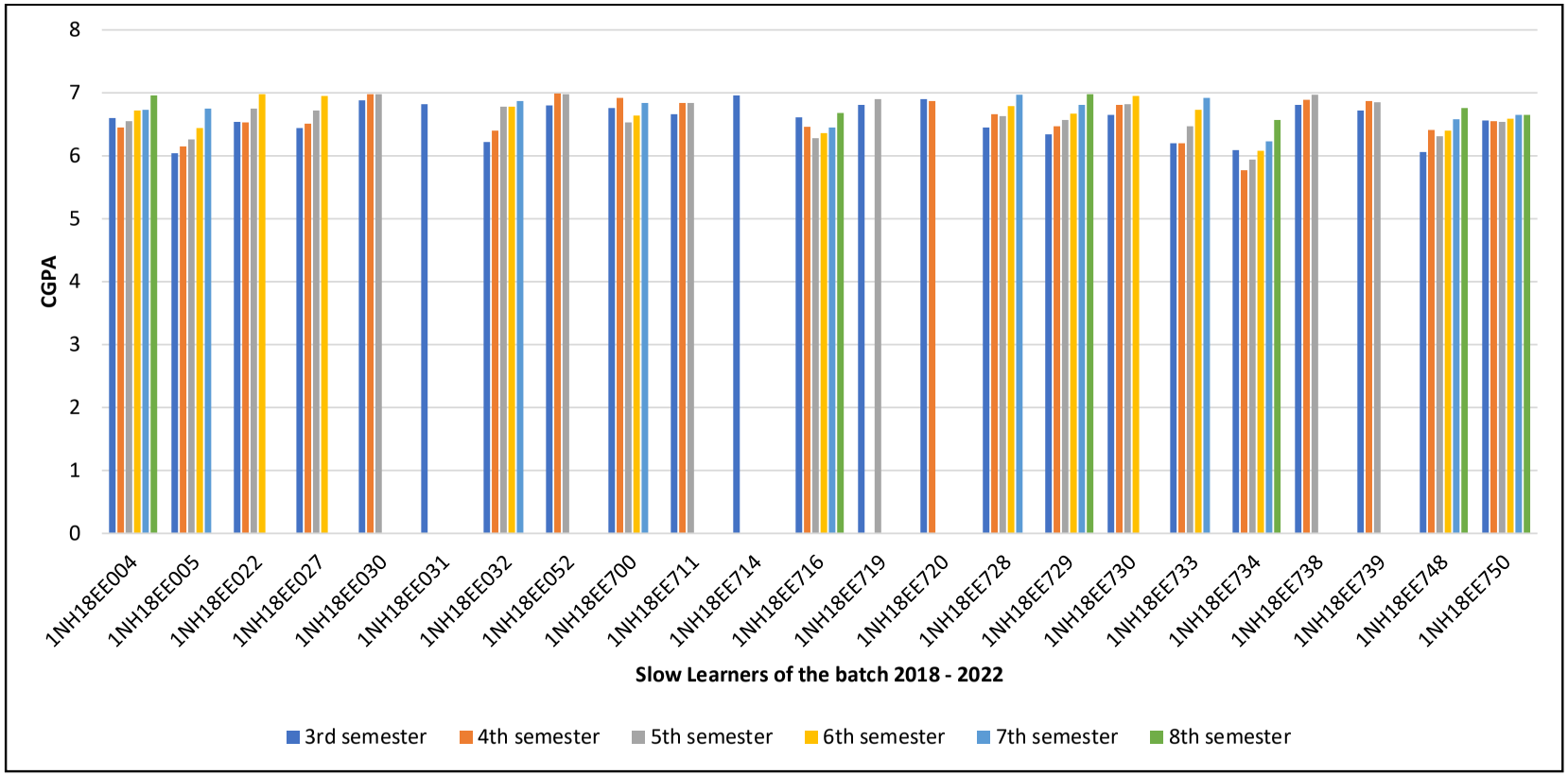


Figure 2.2.1.k: Impact observed on slow learners

2.2.1.D. Quality of classroom teaching (2)

Each classroom is spacious and equipped with smart board, white/black board and audio-visual aids to create a better ambience for effective teaching learning environment. Each lecture is scheduled for one hour. The faculties are well prepared before the commencement of the class to deliver the lecture. The lecture begins with the review on previous class and continues with the planned topic.

At the end of the lecture, students are encouraged to summarize, ask doubts from the content taught. The quality of content delivery in live lectures is evaluated randomly by the Principal/Directors/Deans/HODs. The evaluation parameters broadly include the plan of presentation, communication skill, delivery methods and awareness of students. On the basis of evaluation report, necessary feedback is given to the faculty members to improve the quality of lectures.



Figure 2.2.1.l: Sample Classroom photos with smart board

2.2.1.E. Conduct of experiments (2)

Laboratories are well-equipped to meet the requirements of the respective courses. The respective course coordinators and the lab instructors prepares the lab manual before the commencement of semester. The lesson plan for the lab course is also prepared in adherence to the calendar of events. During each lab session, the course coordinator briefs the aim and procedure of conducting the experiment.

The students are instructed to record the observations in the observation book and analyze the data to support theoretical understanding. The course coordinator ensures the smooth conduct of lab for every lab session.



Figure 2.2.1.m2: Sample photos of Labs

2.2.1.F. Continuous Assessment in laboratory (3)

Continuous evaluation is done by the faculty in every lab session for 15 marks based on rubrics as shown in **Table 2.2.1.g** and the average marks of all sessions will be considered for awarding final internal assessment.

Table 2.2.1.g and **Table 2.2.1.h** list the rubrics for continuous evaluation in every lab session and internal assessment respectively.

Laboratory Courses Evaluation includes conduction of experiments, record of observations and viva voce. The rubrics for continuous evaluation in every lab session is shown in **figure 2.2.1.n**.

Table 2.2.1.g: Rubrics used for continuous evaluation in every lab session

Parameters	**Allocated Marks**	**High**	**Medium**	**Low**
Conduction of experiment/Writing the programme	5	Given circuit rigged up got output/program executed with output.	Given circuit rigged up with partial output/given program was partially executed in the lab session	Given circuit not rigged up/given program was not executed in the lab session adequately.
		(4-5) Marks	(2-3) Marks	(0-1) Mark
Calculation/Execution of experiment	5	Student who does the calculation related to the experiment, clearly solves the problem and executes without error	Student who does incomplete interpretation of findings related to the experiment and executes it partially	Student who does not provide the interpretation of the finding and not solved the problem but attempted to solve
		(4-5) Marks	(2-3) Marks	(0-1) Mark
Result/Record writing	5	Completed record was submitted with all experiments conducted	Record was submitted but incomplete with the experiments conducted	Record was not submitted in the session adequately
		(4-5) Marks	(2-3) Marks	(0-1) Mark

New Horizon College of Engineering													
Course Name : SIMULATION TOOLS FOR ELECTRICAL ENGINEERING LAB										Department : Electrical and Electronics Engineering			
Course Code : 20EEL77A		Section : Section A				Max Marks : 25					Teacher : Dr. S. Sujitha		
S.No	Student Name	USN	RECORD	Writeup	Execution	Viva	Total CIE 1	RECORD	Writeup	Execution	Viva	Total CIE 2	AVG
Max Marks			15	10	10	5	25	15	10	10	5	25	25
1	FARAZ AHMED MULLA	1NH18EE014	15	6	6	4	22	15	2	6	2	19	21
2	ABDUL SAMED	1NH19EE001	15	10	10	5	25	15	10	10	4	24	25
3	ABHISHEK	1NH19EE003	15	10	10	4	24	15	10	10	4	24	24
4	ABHISEK BEDANT	1NH19EE004	15	10	10	5	25	15	10	10	4	24	25
5	ABRAR ALTAF DAR	1NH19EE005	15	10	10	4	24	15	10	10	5	25	25
6	AGARWAL RAHAT MANOJ KUMAR	1NH19EE007	10	8	8	4	18	15	8	8	3	22	20
7	AISHWARYA P	1NH19EE008	10	10	10	5	20	10	8	8	4	18	19
8	AISHWARYA V H	1NH19EE009	15	10	10	5	25	15	8	8	5	24	25
9	AISIRI M URS	1NH19EE010	15	8	8	4	23	15	6	6	3	21	22
10	AKSHATHASHREE S	1NH19EE011	15	10	10	4	24	15	10	10	3	23	24
11	AKSHAY V	1NH19EE012	15	8	8	4	23	15	8	8	2	21	22
12	ANIL HEGDE H	1NH19EE013	15	8	8	4	23	15	10	10	4	24	24

Figure 2.2.1.n: Evaluation for every lab session

Table 2.2.1.h: Rubrics used for continuous evaluation of lab internals

Parameters	Allocated Marks	High	Medium	Low
Procedure & Write-up	3	Student states the problem clearly and does the circuit diagram/design/program clearly	Student adequately defines the problem and does the circuit/diagram/program partially	Student fails to draw circuit diagram / program/algorithm adequately
		3 Marks	(1-2) Marks	(0-1) Marks
Conduction & Results	5	Student is able to conduct the given experiment with output	Student is able to conduct the given experiment satisfactorily	Student was not able to obtain expected output
		(3-5) Marks	(1-2) Marks	(0-1) Marks
Viva Voce	2	Student is able to answer the questions clearly	Student is able to answer the questions reasonably	Student not able to answer the questions completely but states relevant keywords
		2 Marks	1 Marks	(0-1) Marks

New Horizon College of Engineering													
Course Name : SIMULATION TOOLS FOR ELECTRICAL ENGINEERING LAB								Department : Electrical and Electronics Engineering					
Course Code : 20EEL77A		Section : Section A				Max Marks : 25					Teacher : Dr. S. Sujitha		
S.No	Student Name	USN	RECORD	Writeup	Execution	Viva	Total CIE 1	RECORD	Writeup	Execution	Viva	Total CIE 2	AVG
Max Marks			15	10	10	5	25	15	10	10	5	25	25
1	FARAZ AHMED MULLA	1NH18EE014	15	6	6	4	22	15	2	6	2	19	21
2	ABDUL SAMED	1NH19EE001	15	10	10	5	25	15	10	10	4	24	25
3	ABHISHEK	1NH19EE003	15	10	10	4	24	15	10	10	4	24	24
4	ABHISEK BEDANT	1NH19EE004	15	10	10	5	25	15	10	10	4	24	25
5	ABRAR ALTAF DAR	1NH19EE005	15	10	10	4	24	15	10	10	5	25	25
6	AGARWAL RAHAT MANOJ KUMAR	1NH19EE007	10	8	8	4	18	15	8	8	3	22	20
7	AISHWARYA P	1NH19EE008	10	10	10	5	20	10	8	8	4	18	19
8	AISHWARYA V H	1NH19EE009	15	10	10	5	25	15	8	8	5	24	25
9	AISIRI M URS	1NH19EE010	15	8	8	4	23	15	6	6	3	21	22

Figure 2.2.1.o: Continuous internal evaluation sample

2.2.1.G. Student feedback of teaching learning process and actions taken (2)

The department conducts Class Committee Meetings (CCM) after every continuous internal evaluation. The committee consists of five students from different knowledge levels and course coordinators presided by CCM chair (senior faculty member). The students are addressed to mention their concerns towards the courses and any other constructive aspects. The minutes of meeting recorded by the CCM chair will be reviewed by the HoD, which will also be reviewed by the Office of Dean Academics.

The institute maintains centralized feedback through the software portal (Contineo) for analyzing the performance of the faculties for every course assigned.

Some of the parameters are clarity in explaining the subject, subject explained was easy to understand; content quality is relevant and useful; faculty answers to your queries/questions; coverage of topic/course in on time; the concepts were explained with examples; faculty preparation for the class; faculty guidance for preparation of seminar, conference and exam; punctuality of the faculty for the class; communicates distinctly and effectively; treats students with respect and courtesy; control of the classroom by faculty; relevance of assignments to the subject; overall satisfaction; discussion of any interesting topic beyond the syllabus but relevant to the field; usefulness of the question papers of internal tests in your preparation for the examination; helpfulness of the online course material (question bank, etc.) and assignments for you to understand and prepare and for tests and examination; accessibility availability after the class hours in the college.

Actions taken:

The infrastructure requirements are rectified by the concerned department.

The course requirements are communicated to the respective course coordinators.

The faculties who have not satisfied the requirements of the institute in teaching learning process will be directly counselled by the Office of Dean Academics. The concerned faculty is advised to inculcate different pedagogical initiatives for creating better understanding of course to the students.

2.2.2 Quality of end semester examination, internal semester examination question papers, assignments and evaluation (15)

The department conducts three Continuous Internal Evaluation (CIE) per semester. The CIE coordinator of the department implements the process effectively in coordination with internal Board of Examiners (BoE), faculty members and para-teaching faculty members. The CIE process implementation is shown in the figure 2.2.2.a.The Board of Examiners (BoE) meeting is scheduled before the commencement of CIE to scrutinize the question paper for the inclusion of the corresponding COs, POs and RBT levels. Each question in internal test is mapped to COs and RBT levels as prescribed in the syllabus.

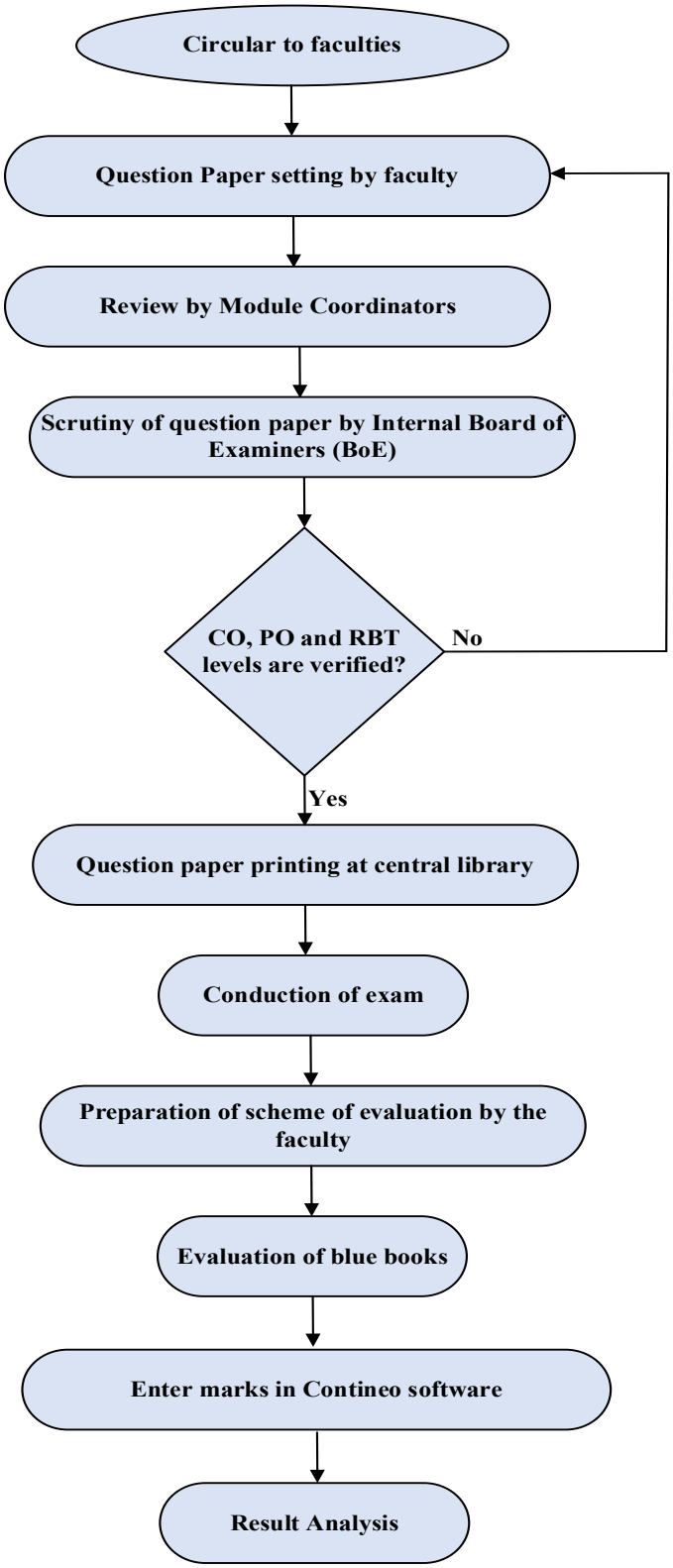
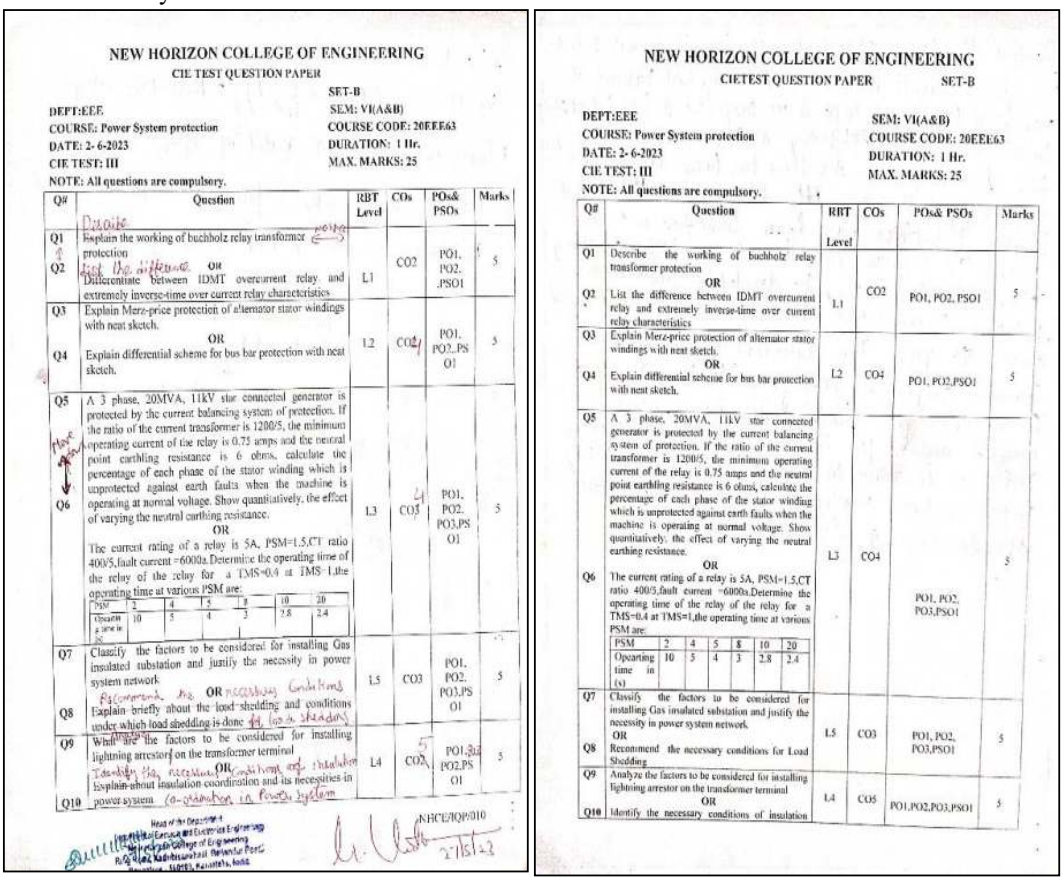


Figure 2.2.2.a: Process for internal semester question paper setting and evaluation and effective process implementation

Internal Question paper preparation:

1. Through HoD question paper requisition circular will be sent to all the faculty member asking to follow the RBT level and the COs in the question paper (as per Dean Academics guidelines).
2. Minimum five days of submission dates from the issue of circular will be given to faculty member to submit the question paper as per the template circulated by IQASDC.
3. Department Internal Test Board of Examination (BoE) will be constituted to scrutiny the internal test question paper (as per Dean Academics guidelines).
4. After the scrutiny, any discrepancies are found in the question papers, those question paper will be sent to the respective faculty members for correction.
5. After scrutiny and correction question papers are sent for printing.
6. Received question papers from the printing are sorted and bundled according to room allotment.
7. Question papers are distributed according to test time table.
8. The CIE question paper consists of the questions to assess the students at various cognitive levels. It also has the co-relation between the COs and POs. The sample question paper is shown in figure 2.2.2.b for the course Power System Protection.



NEW HORIZON COLLEGE OF ENGINEERING

CIE TEST QUESTION PAPER — SET-B

DEPT:EEE — SEM: VI(A&B)

COURSE: Power System protection — COURSE CODE: 20EEE63

DATE: 2- 6-2023 — DURATION: 1 Hr.

CIE TEST: III — MAX. MARKS: 25

NOTE: All questions are compulsory.

Q#	Question	RBT Level	COs	POs& PSOs	Marks
Q1	Explain the working of buchholz relay transformer protection	L1	CO2	PO1, PO2, PSO1	5
Q2	OR Differentiate between IDMT overcurrent relay and extremely inverse-time over current relay characteristics				
Q3	Explain Merz-price protection of alternator stator windings with neat sketch.	L2	CO4	PO1, PO2, PSO1	5
Q4	OR Explain differential scheme for bus bar protection with neat sketch.				
Q5	A 3 phase, 20MVA, 11kV star connected generator is protected by the current balancing system of protection. If the ratio of the current transformer is 1200/5, the minimum operating current of the relay is 0.75 amps and the neutral point earthling resistance is 6 ohms, calculate the percentage of each phase of the stator winding which is unprotected against earth faults when the machine is operating at normal voltage. Show quantitatively, the effect of varying the neutral earthing resistance.	L3	CO3	PO1, PO2, PO3,PSO1	5
Q6	OR The current rating of a relay is 5A, PSM=1.5,CT ratio 400/5,fault current =6000a.Determine the operating time of the relay of the relay for a TMS=0.4 at TMS=1,the operating time at various PSM are: PSM 2 4 5 8 10 20; Operating time in (s) 10 5 4 3 2.8 2.4				
Q7	Classify the factors to be considered for installing Gas insulated substation and justify the necessity in power system network	L5	CO3	PO1, PO2, PO3,PSO1	5
Q8	OR Explain briefly about the load shedding and conditions under which load shedding is done				
Q9	What are the factors to be considered for installing lightning arrestors on the transformer terminal	L4	CO5	PO1,PO2,PSO1	5
Q10	OR Explain about insulation coordination and its necessities in power system				

NHCE/IQP/010

NEW HORIZON COLLEGE OF ENGINEERING

CIETEST QUESTION PAPER — SET-B

DEPT:EEE — SEM: VI(A&B)

COURSE: Power System protection — COURSE CODE: 20EEE63

DATE: 2- 6-2023 — DURATION: 1 Hr.

CIE TEST: III — MAX. MARKS: 25

NOTE: All questions are compulsory.

Q#	Question	RBT Level	COs	POs& PSOs	Marks
Q1	Describe the working of buchholz relay transformer protection	L1	CO2	PO1, PO2, PSO1	5
Q2	OR List the difference between IDMT overcurrent relay and extremely inverse-time over current relay characteristics				
Q3	Explain Merz-price protection of alternator stator windings with neat sketch.	L2	CO4	PO1, PO2,PSO1	5
Q4	OR Explain differential scheme for bus bar protection with neat sketch.				
Q5	A 3 phase, 20MVA, 11kV star connected generator is protected by the current balancing system of protection. If the ratio of the current transformer is 1200/5, the minimum operating current of the relay is 0.75 amps and the neutral point earthling resistance is 6 ohms, calculate the percentage of each phase of the stator winding which is unprotected against earth faults when the machine is operating at normal voltage. Show quantitatively, the effect of varying the neutral earthing resistance.	L3	CO4	PO1, PO2, PO3,PSO1	5
Q6	OR The current rating of a relay is 5A, PSM=1.5,CT ratio 400/5,fault current =6000a.Determine the operating time of the relay of the relay for a TMS=0.4 at TMS=1,the operating time at various PSM are: PSM 2 4 5 8 10 20; Operating time in (s) 10 5 4 3 2.8 2.4				
Q7	Classify the factors to be considered for installing Gas insulated substation and justify the necessity in power system network	L5	CO3	PO1, PO2, PO3,PSO1	5
Q8	OR Recommend the necessary conditions for Load Shedding				
Q9	Analyze the factors to be considered for installing lightning arrestor on the transformer terminal	L4	CO5	PO1,PO2,PO3,PSO1	5
Q10	OR Identify the necessary conditions of insulation				

Figure 2.2.2.b Sample internal question paper before and after scrutiny

Blue book distribution, attendance sheet and Room allotment:

1. Students need to write their respective blue book number on attendance sheet before signing for attendance in front of their USN.
2. Each student blue book number entry and student signature in the attendance sheet will be checked by room invigilator.
3. On each attendance sheet (room, semester and course wise) Student's USN, Name, Blue book number, and signature.
4. Each room invigilators enter the number of absent and present in the attendance sheet along with date and signature.
5. According to time table in each class room, on each desk two students will be allotted (not more than 32 students).
6. One faculty member is allotted to each class room.
7. Students room allotment details are displayed on each class room notice board and semester examination notice board.
8. Blue book and question paper distribution from Internal test control room.
9. Room Invigilator list will be prepared according to time table and the room requirement and circulated to all the faculty members.

Quality of Evaluation:

1. All the course coordinators are informed to prepare scheme of evaluation according to marks allotted to each question.
2. Faculty members evaluate the answer scripts according to the scheme of evaluation prepared by them.
3. Faculty members discuss the question paper and show the answer scripts to students in the respective classes.
4. If any discrepancies are found in allocation of marks, then the faculty clarify their doubts and if necessary, changes the marks
5. The sample of answers and evaluation are maintained as blue books.

Continuous Internal Evaluation CIE:

Continuous assessment is conducted for theory as well as laboratory courses. In theory courses, questions are asked based on the Course Outcomes and RBT levels. Whereas in continuous assessment is conducted on the basis of predefined rubrics.

Theory Courses Evaluation:

The Distribution of marks for theory courses and their weightage is as follows in table

Table 2.2.2.a: Marks distribution for theory courses

Assessment Tool	Marks	Weightage
CIE 1	25	25 Marks
CIE 2	25	
CIE 3	25	
Assignments / Quizzes / Case Studies / Co-curricular Activities / Self Study	25	25 Marks
Semester End Examination (SEE)	100	50 Marks

The figure below shows the Continuous Internal Evaluation marks break-up.

NEW HORIZON COLLEGE OF ENGINEERING
Department of Electrical and Electronics Engineering
CIE BREAKUP AY:2022-2023 (ODD SEM)- 160 credits (I&III semester) -175 credits (V & VII semesters)

Sl No	Subject Code	Subject Name	Semester	Test 1	Test2	Test 3	Assignment 1	Assignement 2	Quiz 1	Quiz 2	Self Study Report / Co-Curricular Report (If Applicable)	Lab Internal Test (If Applicable)	Mini project &Project Phase		Total CIE Marks
1	21EEE15A/25A	Basic Electrical Engineering	1	25	25	25	10	10	2.5	2.5					50
2	21EE322A	Digital system design using verilog	3	25	25	25	5	5	2.5	2.5	10				50
3	21EEE35A	Analog and linear integrated circuits	3	25	25	25	7.5	7.5	5	5					50
4	21EEE36A	Electric circuit theory	3	25	25	25	7.5	7.5	5	5					50
5	21EEE37A	DC machines and transformers	3	25	25	25	7.5	7.5	5	5					50
6	21EEL35A	Analog and linear integrated circuits Laboratory	3									25			25
7	21EEL36A	Electric circuit theory Laboratory	3									25			
8	21EEL37A	DC machines and transformers Laboratory	3									25			
9	21EEE38A	Mini Project I	3										25	25	50
10	20EEE51	Transmission and Distribution	5	25	25	25	7.5	7.5	5	5					50
11	20EEE52	Control Systems	5	25	25	25	7.5	7.5	5	5					50
12	20EEE53	Synchronous and Induction Machines	5	25	25	25	7.5	7.5	5	5					50
13	20EEE54	Signals and Systems	5	25	25	25	7.5	7.5	5	5					50
14	20EEE55	Industrial Automation	5	25	25	25	7.5	7.5	5	5					50
15	20EEE561A	Professional Elective I-Object Oriented Programming using C++ and JAVA	5	25	25	25	5	5	2.5	2.5	10				50
16	20EEL57	Control Systems Laboratory	5									25			25
17	20EEL58	Synchronous and Induction Machines Laboratory	5									25			25
18	20EEL59B	Mini Project III	5										25	25	50
19	20EEE71A	Special Electrical Machines	7	25	25	25	7.5	7.5	5	5					50
20	20EEE72A	Relay and High Voltage Engineering	7	25	25	25	7.5	7.5	5	5					50
21	20EEE73A	Electrical Drives and vehicles	7	25	25	25	7.5	7.5	5	5					50
22	20EEE742A	Facts and HVDC transmission	7	25	25	25	7.5	7.5	5	5					50
23	20EEE754A	Neural Network and Fuzzy logic in Electrical Engineering	7	25	25	25	5	5	2.5	2.5	10				50
24	20EEL76A	Relay and High Voltage Engineering Laboratory	7									25			25
25	20EEL77A	Simulation tools for Electrical Engineering Laboratory	7									25			25
26	20EEE78A	Project Phase I	7										25	25	50

Figure 2.2.2.c: Continuous Internal Evaluation marks breakup for academic year 2022-2023 (odd semester)

Semester End Examination:

- The Controller of Examination (CoE) of the institute initiate the question paper setting process in the mid of the semester. In regard to this, the course coordinators are informed to prepare question paper template in accordance to distribution of marks for various RBT levels. The question paper template consists of ten questions, two from each module to be set uniformly covering the entire syllabus. Further, the course coordinators are also instructed to furnish the details of internal and external question paper setters. The course coordinators will provide the details of two external question paper setters and three internal question paper setters. The templates and question paper setter details are collected by BoS coordinator and the same will be sent to CoE.
- Semester End Examination is conducted by CoE of the institute. CoE communicates to the external and internal members to prepare the questions as per the guidelines and instructed to follow the question paper template strictly. The BoE constituted by the department consist of external and internal examiners. The BoE ensures the quality of question papers with respect to the question paper template, COs and RBT levels.
- The schedule of examination is circulated to the students in advance. The centralized examination coordinators allocates the invigilation duties to the faculties.

Quality of Assignment and its relevance to COs

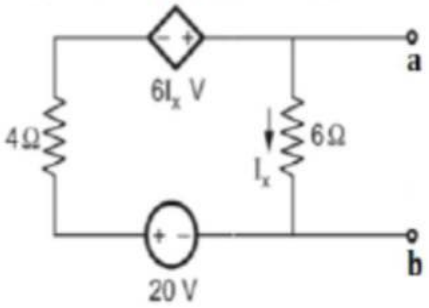
- Assignment is one of the assessment tools for continuous internal evaluation. Assignment conduction week is mentioned well in advance in calendar of events. Two assignments are given per course in a semester which is intimated through calendar of events well in advance. The assignment questions are framed in such a way to encourage self-learning habit in students. Assignment questions are prepared according to RBT levels and COs as per the template circulated by IQASDC. Three different assignment sets are created for each assignment. The group 1 assignment will be attended by the students whose USNs ending with 0, 3, 5 and 7; the group 2 assignment will be attended by the students whose USNs ending with 1, 6 and 8; the group 3 assignment will be attended by the students whose USNs ending with 2, 4 and 9. Assignment scheme is prepared by the faculty for evaluation.A sample of assignment question papers is shown below.

NEW HORIZON COLLEGE OF ENGINEERING
New Horizon Knowledge Park, Ring Road, Marathalli
Autonomous College Permanently Affiliated to VTU, Approved by AICTE & UGC
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DEPARTMENT OF ELECTRICAL & ELECTRONICS ENGINEERING

ASSIGNMENT 2 – GROUP 1
(USN ending with 0, 3, 5, 7)

Course : ELECTRIC CIRCUIT THEORY — Course code :21EEE36A/19EEE35
Sem / Sec : 3/A&B — Max. marks : 7.5
Release Date : 26-12-2022 — Due Date : 02-01-2023

Q#	Question	RBT Level	COs	POs & PSOs	Marks
1.	Explain Thevenin's Theorem.	L2	CO2	PO2, PO3, PSO1	1.5
2.	Two coupled coils have self-inductances L_1=50mH and L_2=200mH, and a coefficient of coupling k=0.50. If coil 2 has 1000 turns and i_1=5.0sin400t(A), solve to find the voltage at coil 2 and the flux Φ_1	L3	CO2	PO2, PO3, PSO1	2.5
3.	Determine the Norton's equivalent circuit across the terminals a-b in the network shown. 	L4	CO3	PO2, PO3, PSO1	2.5
4.	Justify with proper equations the response which occurs in a source free series RC circuit.	L5	CO4	PO2, PO3, PSO1	1

NHCE/AQP/016

Figure 2.2.2.d1: Sample assignment question paper for group 1

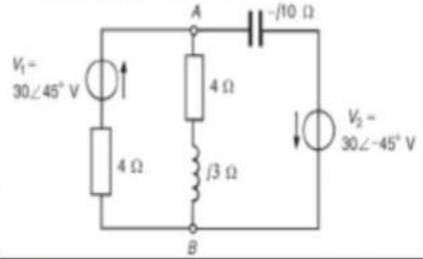
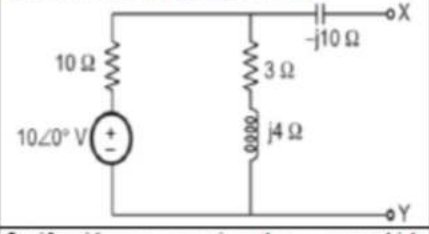
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DEPARTMENT OF ELECTRICAL & ELECTRONICS ENGINEERING

ASSIGNMENT 2 – GROUP 2
(USN ending with 1, 6, 8)

Course : ELECTRIC CIRCUIT THEORY
Sem / Sec : 3/A&B
Release Date : 26-12-2022

Course code :21EEE36A/19EEE35
Max. marks : 7.5
Due Date : 02-01-2023

Q#	Question	RBT Level	COs	POs & PSOs	Marks
1.	Distinguish between series and parallel resonant circuits.	L2	CO3	PO2, PO3, PSO1	1.5
2.	Use superposition theorem to obtain the current flowing in (4+j3)Ω impedance. 	L3	CO2	PO2, PO3, PSO1	2.5
3.	Obtain the Thevenin's equivalent circuit for the circuit between the terminals X and Y. 	L4	CO2	PO2, PO3, PSO1	2.5
4.	Justify with proper equations the response which occurs in a source free series RL circuit.	L5	CO4	PO2, PO3, PSO1	1

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Figure 2.2.2.d2: Sample assignment question paper for group 2

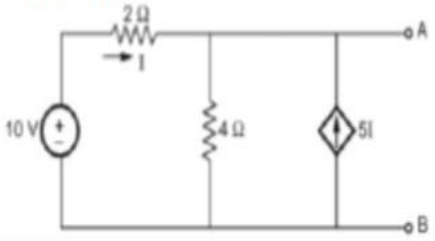
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DEPARTMENT OF ELECTRICAL & ELECTRONICS ENGINEERING

ASSIGNMENT 2 – GROUP 3
(USN ending with 2, 4, 9)

Course : ELECTRIC CIRCUIT THEORY
Sem / Sec : 3/A&B
Release Date : 26-12-2022

Course code :21EEE36A/19EEE35
Max. marks : 7.5
Due Date : 02-01-2023

Q#	Question	RBT Level	COs	POs & PSOs	Marks
1.	Explain maximum power transfer theorem and derive the expression for maximum power.	L2	CO2	PO2, PO3, PSO1	1.5
2.	Illustrate series resonant circuit with appropriate equations.	L3	CO3	PO2, PO3, PSO1	2.5
3.	Obtain the Thevenin's equivalent circuit at the terminals A-B. 	L4	CO2	PO2, PO3, PSO1	2.5
4.	Justify with proper equations the response which occurs in a source free series RLC circuit.	L5	CO4	PO2, PO3, PSO1	1

NHCE/AQP/016

Figure 2.2.2.d3: Sample assignment question paper for group 3

2.2.3 Quality of student projects (20)

Identification of projects and allocation methodology to Faculty Members

Project work carried out by the students aim at applying of theoretical and practical knowledge gained to provide technical solutions to real world problems. We also ensure that the projects address and attain the POs and PSOs. The students are encouraged and motivated to do quality projects that address the environment friendliness, societal needs, safety etc.

The department convenes an awareness meeting to the students to know the significance of the project in their program. The meeting is presided by HoD and faculty members addressing the guidelines and timelines. The students are informed to find a project considering environment, safety, ethics, cost, type and standards.

Students can choose from the suggested projects or find a problem statement for the execution of the project based on their area of interest. Students have to identify their team members and submit the synopsis to the project coordinator. The project coordinators classify the types of projects in relevance to POs and PSOs. Based on the students' chosen area and faculty competency skills, a guide will be allotted. In order to continuously monitor the project progress, the department conducts three project reviews and evaluates accordingly. First project review will be conducted which involves project synopsis presentation by the project team in the presence of review panel constitutes senior faculty members, guide and project coordinators. The marks are been awarded as per the rubrics prescribed by the department. The accepted projects carried forward by the project team else the project team is advised to redefine the problem statement and submit the redefined abstract based on the inputs given by the panel members.

The second review is conducted as per the calendar of events to ascertain the progress of the project. The review committee evaluates the project based on the rubrics framed by the department. The demonstration of working prototypes will be carried out in the third review. The review committee evaluates the demonstration and awards the marks as per the prescribed rubrics.

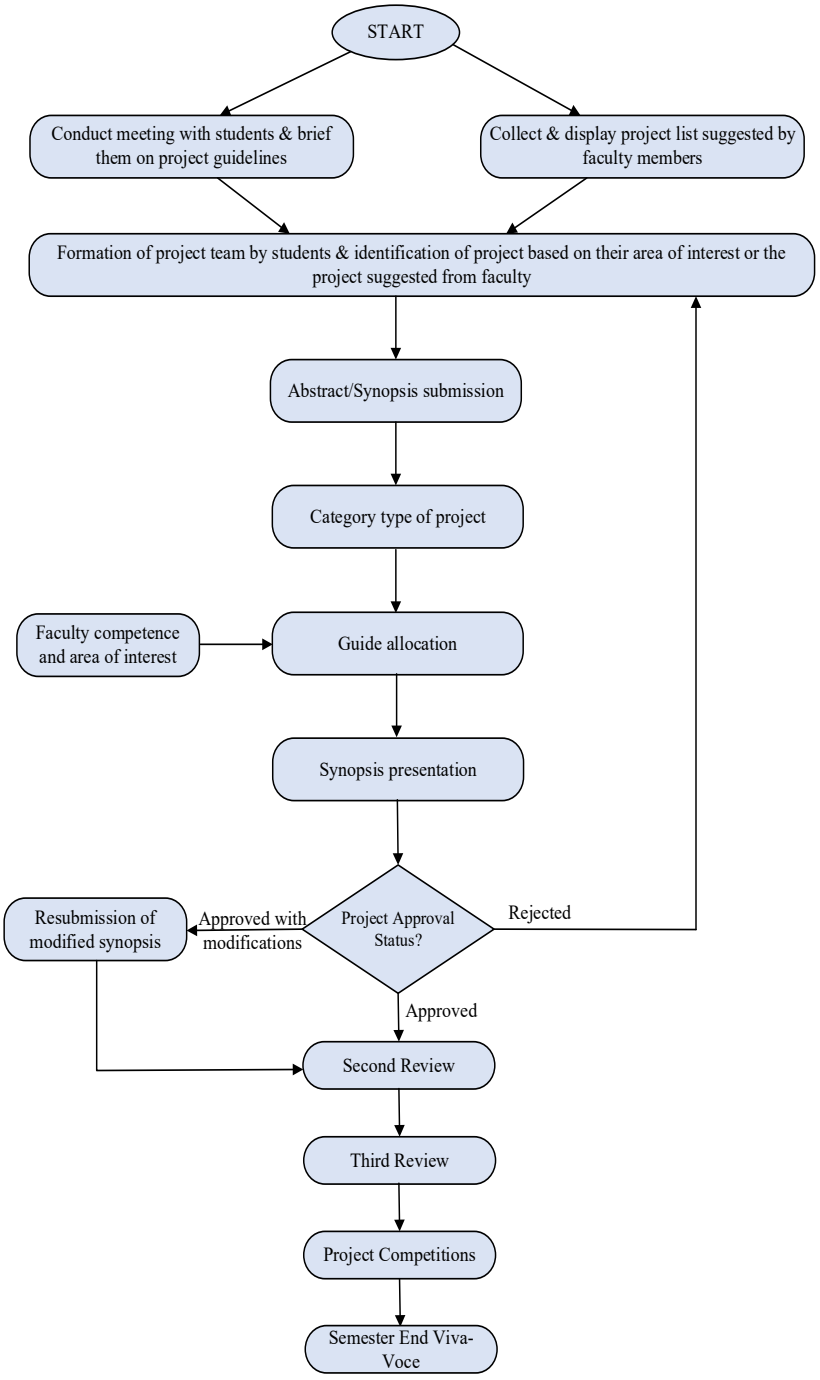


Figure 2.2.3.a: Process Flow of BE Final Year Project

Types and relevance of the projects and their contribution towards attainment of POs and PSOs

All projects carried out by the students are mapped with PO's and PSO's based on the type of project and their applications addressing issues related to environment and societal safety.

Table 2.2.3.a1: List of few samples of student final year projects Batch 2022-23

S. No.	Project Batch No.	Name of the Student	Title of the Project	Type of Project (Application /Product/ Research/Review)	Environment Related	Societal Safety	Mapping with POs/ PSOs
1	B10	Rachna Palli, Sowmyashree, Jeshwanth V Vernon Victor	PLC based 3-axis Router Machine	Product (Industry Related)		✓	PO1, PO2, PO3, PO4, PO5, PO8, PO9, PO10, PO11, PSO1, PSO2
2	A08	Aisiri M Urs, Harshitha R, M Rohit Kumar Reddy, Koushik P	Quad chair pro-sports wheelchair	Product		✓	PO1, PO2, PO3, PO4, PO5, PO6, PO8, PO9, PO10, PO11, PSO1, PSO2
3	A06	Aishwarya P, Charishma A, Gautamee KK Kesamreddy Deepthi	Prepaid Energy Meter with Theft detection using IOT	Product		✓	PO1, PO2, PO3, PO4, PO5, PO6, PO8, PO9, PO10, PO11, PSO1, PSO2
4	A04	Abrar Altaf Dar, Ankit Kumar, Ezra D Cunha, Gaurav P Kumar	Solar powered IOT based early flood warning system	Product	✓	✓	PO1, PO2, PO3, PO4, PO5, PO6, PO8, PO9, PO10, PO11, PSO1, PSO2
5	A12	Faraz Ahmed Mullah, Hemanth G N, J Prajwal, M Gopal	Autopilot using neuro evalution of augmenting topologies	Application		✓	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8, PO9, PO10, PO11, PSO1, PSO2
6	A14	Mohan P, Nandan D Salanke, Vijay Meti, Shiva Shankara M	Non-invasive sugar monitoring device using tears	Product		✓	PO1, PO2, PO3, PO4, PO5, PO6, PO8, PO9, PO10, PO11, PO12, PSO1, PSO2
7	B08	Ravi Nandan, Roopeshwar Reddy, Vinod Kumar R, W Y Jhansi Priya	Artificial Intelligence based Self-Driving Car using Robotic Model	Application		✓	PO1, PO2, PO3, PO4, PO5, PO6, PO8, PO9, PO10, PO11, PSO1, PSO2
8	B11	Sanskriti Agarwalla, Sharmi Kanaujia, Sheikh Sameer, Tabasum Manzoor	Design and Implementation of Solar Autonomous Car	Product		✓	PO1, PO2, PO3, PO4, PO5, PO8, PO9, PO10, PO11, PO12, PSO1, PSO2
9	B07	P. Sindhu, Yashvantha P, Muntazir Abid, Muntazir Ali Mir	Sequential Control and Monitoring of distribution lines in Substation	Application	✓	✓	PO1, PO2, PO3, PO4, PO5,PO8, PO9, PO10, PO11, PSO1, PSO2

Table 2.2.3.a2: List of few samples of student final year projects Batch 2021-22

S. No.	Project Batch No.	Name of the Student	Title of the Project	Type of Project (Application /Product/ Research/Review)	Environment Related	Societal Safety	Mapping with POs/ PSOs
1.	B1	Pranav R Naik, Rahul Vijay, Lingadhalr Puneeth Venkat Sai Varma, R Supraja	Optimization of Battery Performance in Electric Vehicles	Application		✓	PO1, PO2, PO3, PO4, PO5, PO6, PO8, PO9, PO10, PO11, PSO1, PSO2
2	B6	Mdsagar Khan, L Ashwini B, K, Utkarsh Alok, Vivek Ranjan	Solar Based Energy Efficient Hybrid SLBLDC Motor for Agriculture	Product	✓	✓	PO1, PO2, PO3, PO4, PO5, PO6, PO8, PO9, PO10, PO11, PSO1, PSO2
3	B7	Niranjan C, Ramesharajaursu K R, Abhimanyuiyer, Dhanush L	Implementation and Design of COBOTS in Floriculture	Application	✓	✓	PO1, PO2, PO3, PO4, PO5, PO6, PO8, PO9, PO10, PO11, PSO1, PSO2
4	B12	C Bhavana Singh, Bhavana Yc, Bindhu V	Electric bicycle fabrication using split charging technology	Product		✓	PO1, PO2, PO3, PO4, PO5, PO6, PO8, PO9, PO10, PO11, PSO1, PSO2
5.	A10	Kiran U, Naveen Kumar K R, Rohan N, Shreysh Babu	Artificial Intelligence and IoT based traction motor drive condition motoring in hybrid electric vehicles	Application		✓	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8, PO9, PO10, PO11, PO12, PSO1, PSO2
6.	A8	Greeshma Chenna Reddy, Chitra S Kavipriya E. Sahana B	Modelling & Design of Solar Refrigerator for Vaccine Transport in Remote Areas	Product		✓	PO1, PO2, PO3, PO4, PO5, PO6, PO8, PO9, PO10, PO11, PSO1, PSO2
7	A1	Nischal Dinesh, Prajwal, Sarthak Das Ashu Anand	Implementation of Solar Powered Electric Hybrid Vehicle using Artificial Intelligence	Product	✓	✓	PO1, PO2, PO3, PO4, PO5, PO7, PO8, PO9, PO10, PO11, PO12, PSO1, PSO2
8	B2	Niranjan K R, Shashidhar P H, Shiva Prasad L P, Pavan R	Integrated AI and IoT in Real Time Locating System for Energy Efficient Home Automation	Application	✓	✓	PO1, PO2, PO3, PO4, PO5, PO6, PO8, PO9, PO10, PO11, PSO1, PSO2
9	B9	Sayanth PV,Vishal Suresh, Adithya Hegde, Nahush S	Uninterrupted Autonomous Power Distribution System for Residential Loads	Application		✓	PO1, PO2, PO3, PO4, PO5, PO8, PO9, PO10, PO11, PSO1, PSO2
10	B10	T Harshavardhan Reddy, Shivangi Pandey, Chandan N, Shivan Tiwary	Automatic Speed control of an Electric Vehicle Using Raspberry -pi	Application		✓	PO1, PO2, PO3, PO4, PO5, PO8, PO9, O10, PO11, PSO1, PSO2

Table 2.2.3.a3: List of few samples of student final year projects Batch 2020-21

S. No.	Project Batch No.	Name of the Student	Title of the Project	Type of Project (Application /Product/ Research/Review)	Environment Related	Societal Safety	Mapping with POs/ PSOs
1.	A1	Yashwanth B S, Vybhav A Dushyanth Kumar U, Gnanesh Nayak K Y	Detection and Prevention of Electrical Power Theft and Wireless Alert System	Application		✓	PO1, PO2, PO3, PO4, PO5, PO6, PO8, PO9, PO10, PO11, PSO1, PSO2
2	A2	Aditya D Aparanji, Lohith V,D Nikhil Kumar, Jayanth N	Microcontroller Based Novel and Intelligent Control Circuitry to Monitor Electrical Parameters at Substation	Application		✓	PO1, PO2, PO3, PO4, PO5, PO6, PO8, PO9, PO10, PO11, PSO1, PSO2
3	A3	Shriya Reddy, Sai Hemanth Reddy,Sai Raghuram Amogh, Thamimulla	Solar Refrigerator for Portable Refrigeration	Product		✓	PO1, PO2, PO3, PO4, PO5, PO6, PO8, PO9, PO10, PO11, PSO1, PSO2
4	A4	K Ayusha Raj,Deepa Km, Monisha Reddy	Smart Medicine Pill Box Using Microcontroller	Product		✓	PO1, PO2, PO3, PO4, PO5, PO6, PO8, PO9, PO10, PO11, PSO1, PSO2
5.	A5	Richard Christopher, Kureti Venkat Nishit, Syeda Sarah Batool, Sindhu R	Real time safety monitoring system for COVID-19	Research	✓	✓	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8, PO9, PO10, PO11, PO12, PSO1, PSO2
6.	A6	Nithya V,Nithya H V, Manasa G	Smart Transformer Maintenance and Protection	Application		✓	PO1, PO2, PO3, PO4, PO5, PO6, PO8, PO9, PO10, PO11, PSO1, PSO2
7	A7	Sadashiv N Mantur,Yashwanth Gowda S, Bhanu Prakash Naidu S, Shri Harsha S	Multipurpose Military Support and Rescue Robot	Product		✓	PO1, PO2, PO3, PO4, PO5, PO8, PO9, PO10, PO11, PO12, PSO1, PSO2
8	A8	Jaydeep Maity,Anant Krishna, K Malswamkima,,Pritam Samanta	Smart Car Parking and Management System Using IOT	Application		✓	PO1, PO2, PO3, PO4, PO5, PO6, PO8, PO9, PO10, PO11, PSO1, PSO2
9	A9	Leticia Dishel Vas, Preksha Deshmukh	A Novel Smart DOL Starter Circuit for Electrical Machines	Product		✓	PO1, PO2, PO3, PO4, PO5, PO7, PO8, PO9, PO10, PO11, PSO1, PSO2
10	A10	Anagha V,Dhanush Hm,G Samprita,Shankar Chavan	Design of an Automatic Power Phase Selector	Research		✓	PO1, PO2, PO3, PO4, PO5, PO7, PO8, PO9, PO10, PO11, PSO1, PSO2



Figure 2.2.3.b: Sample pictures of the projects

Process for monitoring and evaluation

The progress of a project is monitored by the guide on weekly basis. All students will report to project guide on weekly basis and discuss the work done, challenges faced during the project work. The continuous progress is assessed through periodic review by panel (first review and second review before final review) for 150 marks based on Rubrics, as shown in **table 2.2.3.b1 and 2.2.3.b2**, which is then scaled down to 50 Marks.

Projects will be evaluated on the basis of working principle, implementation methodology, design of block diagram & components specifications, application of projects and future scope. Demonstration of the project work and the final output. Viva-Voce by panel of experts.

Process to access individual and team performance

Table 2.2.3.b1: Rubrics for Major Project – 2022-2023

Rubrics for Major Project First Review			
Parameter	**>70%**	**40 to 70%**	**<40%**
Literature Survey	Referred to more than Five articles; appropriately summarized; includes recent references	Referred to more than three articles; appropriately summarized; NO recent references	No references included
Problem Statement	Problem statement is clear, can be implemented and tested, and addresses one of the 21st Century Technological Challenges	Problem statement clear, NOT feasible for implementation, and does NOT address the 21st Century Technological Challenges	Problem statement NOT clear
Contribution to society, concern for environment	Community and safety measures clearly specified	Community clearly specified; however, safety measures not specified	Environmental safety is not addressed
Technologies Implied/ Identification of essential concepts	Proper description and justification of essential concepts included (Mathematical, Science, Engineering and Management)	Limited description of essential concepts (Mathematical, Science, Engineering and Management) without necessary details/ justification	There is no mention of the essential concepts
Project scheduling and work delegation	Clear distribution of workload among the team members Use of Gantt chart for Project Scheduling.	Distribution of workload among the team members is not scheduled properly but used Gantt chart for Project Scheduling	No distribution of proper workload among team members and no Gantt chart.

Rubrics for Major Project Second Review			
Parameter	**>70%**	**40 to 70%**	**<40%**
Detailed block diagram/Explanation of Algorithm used in project	Proper Explanation of block diagram and algorithm used in project	Limited description and explanation of block diagram and algorithm used in project	Incomplete details of the block diagram and algorithm used
Technologies Implied/ Explanation along with results	Proper description and justification of intermediate results obtained in second phase of the project	Limited description of intermediate results obtained without necessary details/ justification in second phase of the project	Incomplete description of intermediate results obtained in second phase of the project
Progress/ Intermediate Results	Proper demonstration of intermediate results	Limited demonstration of intermediate results	Incomplete demonstration of intermediate results
Project scheduling and work delegation	Clear distribution of workload among the team members Use of Gantt chart for Project Scheduling	Distribution of workload among the team members is not scheduled properly but used Gantt chart for Project Scheduling	No distribution of proper workload among team members and no Gantt chart.

Rubrics for Major Project Third Review			
Parameter	**>70%**	**40 to 70%**	**<40%**
Presentation and Justification of Final Output	Proper Explanation and justification of output obtained in the final phase of project	Limited Explanation and justification of output obtained in the final phase of project	No justification of output obtained in the final phase of project
Demonstration of final results	Successful demonstration of output of the project during final phase	Partial demonstration and explanation of output of the project during final phase	No working model/simulation results of output of the project during final phase
Project Report	Submission of report on time as per the report guidelines	Submission of report on time but guidelines are not followed properly	No timely submission of report and guidelines are also not followed properly
Project scheduling and work delegation	Clear distribution of workload among the team members Use of Gantt chart for Project Scheduling	Distribution of workload among the team members is not scheduled properly but used Gantt chart for Project Scheduling	No distribution of proper workload among team members and no Gantt chart.

Table 2.2.3.b2: Rubrics for Major Project – Academic Year (2021-2022)

Rubrics for Major Project First Review			
Parameter	**>70%**	**40 to 70%**	**<40%**
Problem Identification	Problem identified is in accordance with current technology (latest), proper statement of problem with many examples.	Problem identified is not based on latest technology, proper statement of problem with limited examples.	Incomplete description of problem statement, no relevant examples mentioned.
Literature Survey	Referred to more than Five articles; appropriately summarized; includes recent references.	Referred to more than three articles; appropriately summarized; NO recent references.	No references included.
Hardware/Software Specification	Proper Specification of Hardware/Software used in the project.	Limited Specification of Hardware and software used in project.	Incomplete specification of hardware and Software used in the project.
Expected Results and applications	Proper idea of nature of graphs /model to be built and applications where it can be used.	Limited idea of nature of graphs /model to be built and applications where it can be used.	There is no mention of the expected results.

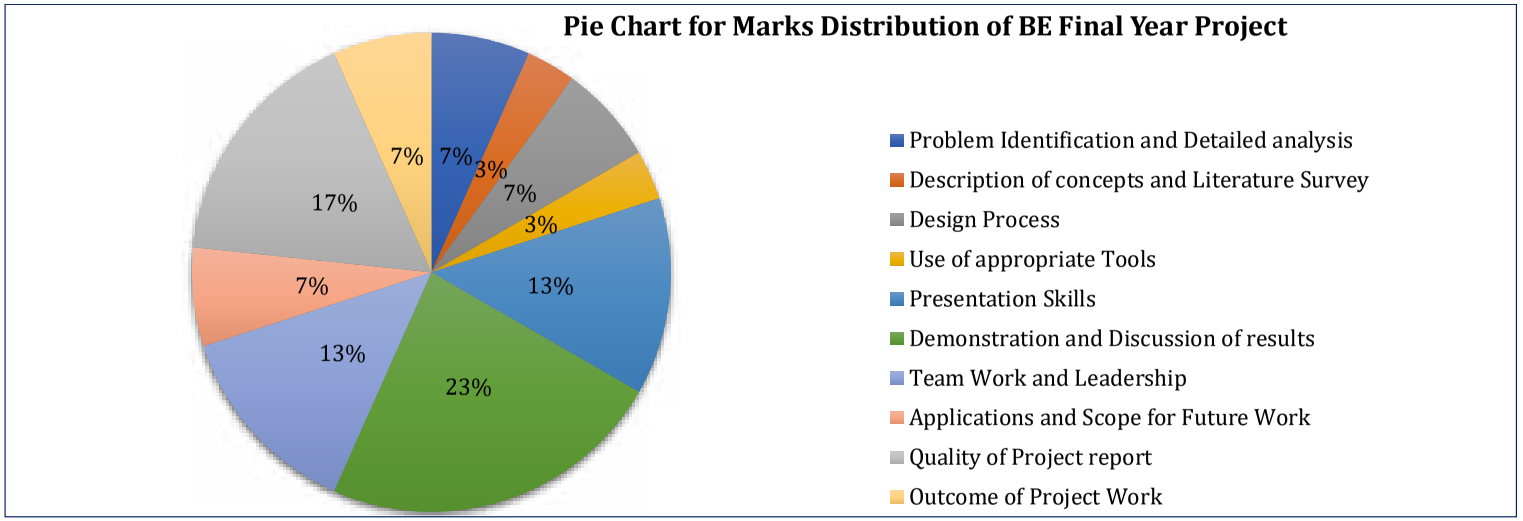


Figure 2.2.3.c: Mark Distribution for Internal Evaluation- Major Projects

The process of mini project identification, allocation and monitoring and evaluation is summarized in **table 2.2.3.c**.

Table 2.2.3.c: Processes of Mini-project identification, allotment, monitoring and evaluation

Steps	Tasks	Related process description
Step-1	Project Identification	• Projects are identified by the students in their respective area of interest. • Students must submit a synopsis based on their identified project. • Project coordinators approve the synopsis or ask for its resubmission if required.
Step-2	Allotment	• Projects Guides are allocated to them based on faculty expertise and synopsis submitted. • The laboratory is assigned, and the resources are provided to students for project development.
Step-3	Continuous Monitoring	• The progress of a project is monitored by the guide on weekly basis. • The continuous monitoring is done through two periodic reviews by panel (first review and final review).
Step-4	Evaluation	• Internal Assessment of the project team members is done based on project objectives and quality of the project by the internal guide along with the review panel member (Problem statement, Effectiveness of the solution, presentation, report with plagiarism check certificate, and individual contribution, etc). • The continuous progress is assessed through periodic review by panel (first review and final review) for 25 marks each based on Rubrics given in table 2.2.3h, 2.2.3i. Final IA marks are calculated by taking the average of two reviews. • Semester End Examination is conducted wherein the project team members are assessed by an Internal and an External examiner. This includes presentation by the project team and demonstration of the project followed by Viva-Voce.

Table 2.2.3.d1: Rubrics for Mini Project - First Review

First Review - Evaluation Rubrics - Mini-Projects				
PART-A: Project Identification / Implementation - 20 Marks				
1	Problem Statement	**Allotted marks: 5**		
		Excellent (4 - 5)	**Good (2 - 3)**	**Fair (0 - 1)**
		4 - Problem statement is excellent & scope for future enhancement 5 - Problem statement is excellent	3 - Concept is clear & able to frame the problem statement 2 - Able to frame the problem statement	Statement is not clear
2	Requirement collection	**Allotted marks: 3**		
		Excellent (3)	**Good (2)**	**Fair (0 - 1)**
		Identifying the proper requirements with sufficient information. (Both functional & nonfunctional).	Specifying the requirements with less information.	Few requirements are specified.
3	Methodology	**Allotted marks: 2**		
		2 - Well defined	1- Moderately defined	0- Not defined properly
4	Presentation Skill	**Allotted marks: 5**		
		Excellent (4 - 5)	**Good (2-3)**	**Fair (0-1)**
		5- Interactive Presentation well aligned with problem statement and proper template 4 - Presentation aligned with problem statement and proper template.	3- Engaging Presentation, moderately aligned with problem statement and proper template 2- Engaging Presentation &insufficient information	1-Presentation was not aligned with problem statement and less information.
5	Q & A	**Marks Allotted: 5**		
PART-B: Meeting Guide/Deadline/Individual Contribution- 05 Marks				
1	Meeting Guide	**Allotted marks: 5**		
		Excellent (4 - 5)	**Good (2 - 3)**	**Fair (0-1)**
		5- Regular, Progress in Work is excellent & Timeline followed 4 -Regular, progress in work is excellent & Timeline not followed	3 - Regular, progress in work satisfactory & Timeline followed 2 - Regular, progress in work satisfactory &Timeline not followed	1- Not Regular, progress in work not satisfactory & Timeline not followed

Table 2.2.3.d2: Rubrics for Mini Project – Final Review

Second Review - Evaluation RubricsMini Projects						
PART A - Demonstration / Implementation – 15 Marks						
1	Work Done	**Allotted marks: 10**				
		Excellent (10)	Very Good (8-9)	Good (6-7)	Satisfactory (3-5)	Poor (1-2)
2	Q & A	**Allotted marks: 05**				
		Excellent (5)	Very Good (4)	Good (3)	Satisfactory (2)	Poor (1)
PART B- Proper Formatting / Presentation- 05 Marks						
1	Presentation	**Allotted marks: 05**				
		Excellent (5)	Very Good (4)	Good (3)	Satisfactory (2)	Poor (1)
PART C - Report and Plagiarism Check - 05 Marks						
1	Report copy and Plagiarism report	**Allotted marks: 5**				
		Excellent (5)	Very Good (4)	Good (3)	Satisfactory (2)	Poor (1)

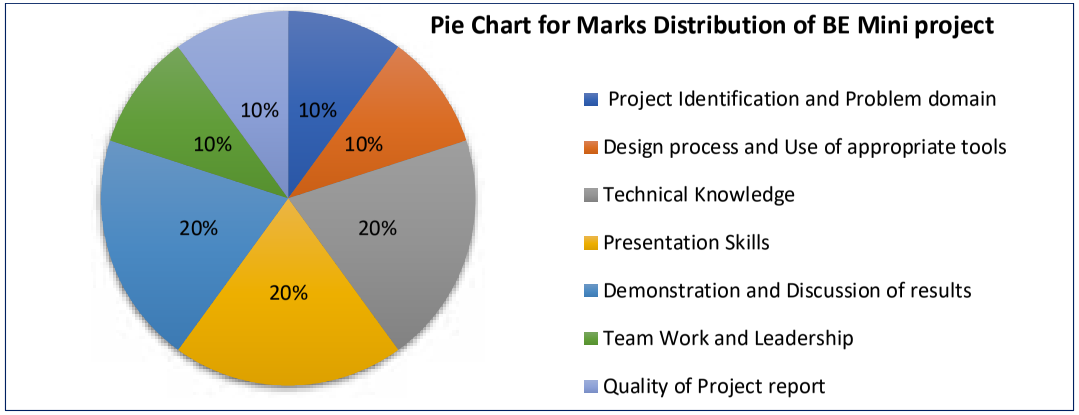


Figure 2.2.3.d: Mark Distribution for Internal Evaluation- Mini Projects

All projects carried out by the students are mapped with PO's and PSO's based on the type of project and their applications addressing issues related to environment and societal safety. Few sample mini projects mapped with PO's is shown in **table 2.2.3.e**.

Table 2.2.3.e: List of few samples of Mini projects

S. No.	Sem	Project Batch No.	Name of the Student	Title of the Project	Type of Project (Application/ Product/ Research/Review)	Environment Related	Societal Safety	Mapping with POs/ PSOs
1	5	2	Mohammed Imad, Sanjan R, Shashank Joshi, Sneha S A	Affordable Social Distance Monitoring System	Application	✓	✓	PO1, PO2, PO3, PO4, PO5, PO6, PO8, PO9, PO10, PO11, PSO1, PSO2
2	5	4	Abhay Shetty K N, Beula Jasmine, BhagavantarayYaragall, Varun P C	Load shedding time management with Programmable Interface	Application	-	✓	PO1, PO2, PO3, PO4, PO5, PO7, PO8, PO9, PO10, PO11, PSO1, PSO2
3	3	9	Manjunath V, Alwin Savio K X, Amod S Kulkarni, Mohammed Naumaan	Fire Extinguisher Robot	Product	✓	✓	PO1, PO2, PO3, PO4, PO5, PO8, PO9, PO10, PO11, PSO1, PSO2

Evidences of papers published/Awards received by projects etc. (3)

Students are also encouraged to present their project work in National/international Conferences, and project exhibitions. Students are motivated to file patent for their innovative projects design/ model. They are also motivated to publish a paper based on their project work in journals. The list of paper published or presented is listed in **table 2.2.3.f1 & table 2.2.3.f2** for the academic years 2022-2023 & 2021-2022. KSCST funded projects are listed in **tables 2.2.3.g1, 2.2.3.g2 and 2.2.3.g3**.

Students enhance their innovative project work to convert it into relevant technology application or product. While carrying out the project work students learn how to work in team and individually. Students are also involved in deciding the budget of their project and accordingly selecting the components without compromising the functionality. This aids students to gain finance and management related skills. Further it steers students to enter into entrepreneurship.

Table 2.2.3.f1: List of Scopus Indexed Publications out of project work for 2022-2023

Sl. No.	Student Name	Paper Title	Conference Name	Date of Publication
1	Mohammed Omer Ali Siddhartha Sunil Singh Tahoora Imtiyaz Nayrah M A	A Review on Self Stabilizing Platform in Scope of Merchant Navy Applications	2022 First International Conference on Artificial Intelligence Trends and Pattern Recognition (ICAITPR)	3-Aug-22
2	Mohammed Omer Ali Siddhartha Sunil Singh Tahoora Imtiyaz Nayrah M A	PID Controller Based Self Stabilizing for Inertia Platform using Electrical Parallel Technology	2022 IEEE 2nd Mysore Sub Section International Conference (MysuruCon)	13-Dec-22
3	Shiva R V Sagar Kulkarni Lavin Ponnappa M M	ANFIS based Vibration Monitoring System for Agriculture Pumping System with Fuzzy Logic Inference	2022 3rd International Conference on Smart Electronics and Communication (ICOSEC)	22-Nov-22
4	Greeshma Chennareddy Chitra S Kavipriya E Sahana B	Modelling and Design of Solar-Powered DC Refrigerator for Vaccines Transportation in Remote Areas	2022 3rd International Conference on Smart Electronics and Communication (ICOSEC)	22-Nov-22
5	Vishwanath Patil P.MD.Muthahir Khan Bharateshshiradoni Venkan gouda	An Accident Identification and Alerting System by Using Raspberry Pi	2022 IEEE 2nd Mysore Sub Section International Conference (MysuruCon)	13-Dec-22
6	Vishwanath Patil P.MD.Muthahir Khan Bharateshshiradoni Venkan gouda	Implementation of Smart Vehicle Accident Detection using Raspberry PI in Smart Cities	2022 4th International Conference on Inventive Research in Computing Applications (ICIRCA)	29-Dec-22
7	Sayanth PV Vishal Suresh Adithya Hegde Nahush S	Analysis of Performance Enhancement for DC Distribution for Residential Distribution Network using hybrid AC DC Distribution Network	2022 International Conference on Edge Computing and Applications (ICECAA)	8-Nov-22
8	C Bhavana Singh Bhavana YC Bindhu V	Data Analytics for Parameter Estimation of an Electric Bicycle using IoT	2022 7th International Conference on Communication and Electronics Systems (ICCES)	29-Jul-22
9	Abhishek ANIL HEGDE H Dhruva S Srinivas Krishna Chaitanya	A review of remote health monitoring system for patients sing IoT	International Conferene on Automation, Computing and Renewable Systems (ICACRS-2022)	7-Feb-23
10	Aishwarya P Charishma A Gautammee KK	A Review of Theft Diagnosis from Smart Energy Meter Using IoT	2022 6th International Conference on Electronics, Communication and Aerospace Technology	16-Jan-23

	Kesamreddy Deepthi			
11	M Rohith Kumar Reddy Harshitha R	Design and fabrication of Quad Bike for physically Challenged person	International Conference on Smart Generation Computing, Communication and Networking (Smart Gencon)	6-Apr-23
12	Anoopkumar H S Chethan D R Deekshith More B Kushal A Y	Herbs Ailment Diagnosis using AI Techniques for Sustainable Innovation in Agriculture	2023 4th International Conference on Innovative Trends in Information Technology (ICITIIT)	20-Mar-23
13	Dechamma V S J Likitha Jayanth R Prajwal R M	Study of Interfacing PLC With HMI for Industrial Applications	2023 Second International Conference on Electronics and Renewable Systems (ICEARS)	5-Apr-23
14	Faraz Ahmed Mullah Hemanth G N J Prajwal M Gopal	A Review on Autopilot using Neuro Evaluation of Augmenting Topologies	2023 International Conference on Intelligent Data Communication Technologies and Internet of Things (IDCIoT)	1-Mar-23
15	Shiva Shankara M Binay Kumar Yadav P. Sindhu	A Review of Sequential Control & Monitoring of Distribution Lines in Substations	2022 International Conference on Automation, Computing and Renewable Systems (ICACRS)	7-Feb-23
16	Ravi Nandan Roopeshwar Reddy Vinod Kumar R W Y Jhansipriya	Artificial Intelligence based Self-Driving Car using Robotic Model	2023 Third International Conference on Artificial Intelligence and Smart Energy (ICAIS)	27-Mar-23
17	Manoj kumar H V Manoj kumar P Naveen R N Sandeep Naik R	AI and IoT based detection of pesticide in organic fruits and vegetables	2023 International Conference on Intelligent and Innovative Technologies in Computing, Electrical and Electronics (IITCEE)	10-Apr-23
18	Maruthi B Rahul Santhosh Melvin D Sathish	A review of dynamic wireless transfer system technology used in solar wireless electric vehicle charging station	2022 International Conference on Automation, Computing and Renewable Systems (ICACRS)	7-Feb-23
19	Meghana N T Vandana R Vidya G R	Solar Powered Multi-functional agricultural robot	International Conference on Knowledge Engineering and Communication Systems (ICKECS-2022)	17-Mar-23
20	Rachna Palli Sowmya Shree Jeshwanth V	Study of Stepper motor control using programmable logic controller (PLC) based on Industry 4.0	2022 International Conference on Smart Generation Computing, Communication and Networking (SMART GENCON)	6-Apr-23
21	Aishwarya P Charishma A Gautammee KK Kesamreddy Deepthi	IoT detection based energy meter integrated with smart devices	2023 Second International Conference on Electronics and Renewable Systems (ICEARS)	5-Apr-23

22	Aisiri M Urs Harshitha R M Rohith Kumar Reddy Koushik P	Electric Quad Bike with hybrid charging mode for physically challenged	2023 7th International Conference on Computing Methodologies and Communication (ICCMC)	4-Apr-23
23	Meghana N T Vandana R Vidya G R	Solar Powered Autonomous Multipurpose Agricultural Robot Using Bluetooth	2023 Second International Conference on Electronics and Renewable Systems (ICEARS)	5-Apr-23
24	Abhishek Bedant Kumar Abhishek Madhav Reddy C Kota Vikramaadhitya	Non-Invasive Method of Detecting Anemia using AI & IoT	2023 International Conference on Innovative Data Communication Technologies and Application (ICIDCA)	20-Apr-23
25	Manish Sarthak Ghorai Shariq Ahmed Subhajit Das	Wild Animals Intrusion Detection for Safe Commuting in Forest Corridors using AI Techniques	2023 3rd International Conference on Innovative Practices in Technology and Management (ICIPTM)	10-May-23
26	Meghana S Santhosh Kummi Suraj Raju Jadhav U Mohammed Arshad	A Novel EV Charging Using Stationary Bike	2023 3rd International Conference on Innovative Practices in Technology and Management (ICIPTM)	10-May-23
27	Sanskriti Agarwalla Sharmi Kanaujia Sheikh Sameer Tabasum Manzoor	Silent Surveillance Autonomous Drone For Disaster Management And Military Security Using Artificial Intelligence	2023 3rd International Conference on Innovative Practices in Technology and Management (ICIPTM)	10-May-23
28	Shaif Alam Swastik Shukla Zahra Goher Sultana	Study of Battery Management System using Watchdog Software	2023 3rd International Conference on Innovative Practices in Technology and Management (ICIPTM)	10-May-23
29	Abdul Samedh Darshan R Faiz Ur Rahman	Automated Tumbler Cleaner	2023 3rd International Conference on Innovative Practices in Technology and Management (ICIPTM)	10-May-23
30	Aishwarya V H Akshatha Shree Anusha S Khushi J Vibhuthi	Implementation of Accident Detection and Reporting System Using IOT	2023 3rd International Conference on Innovative Practices in Technology and Management (ICIPTM)	10-May-23
31	R. Varun Ritika kapoor Tejas V Shambhavi Bhagat	Analysis Of Electrical Parameters for Formula Style Electric Vehicle	2023 3rd International Conference on Innovative Practices in Technology and Management (ICIPTM)	10-May-23

Table 2.2.3.f2: List of Scopus Indexed Publications out of project work for 2021-2022

Sl. No.	Student Name	Paper Title	Conference Name	Date of Publication
1	Nischal Dinesh Prajwal Sarthak Das Ashu Anand	A review of solar powered electric Bi-hybrid vehicle compared with IC Engine Vehicles using graph analytics with AI	2022 4th International Conference on Smart Systems and Inventive Technology (ICSSIT)	25-Feb-22
2	Nischal Dinesh Prajwal Sarthak Das Ashu Anand	Artificial Intelligence Based Solar Powered Electric Bi-hybrid Vehicle Compared with IC Engine Vehicles Using Graph Analytics	2022 International Conference for Advancement in Technology (ICONAT)	10-Mar-22
3	Darshini Machamma M S Appaji Mohammed Tauqeer Ali Darshini Machamma M S	IoT Based Parameters Calculation of Electric Bicycle using OpenModelica Simulation Tool with Data Analytics Technology	2022 IEEE International Conference on Distributed Computing and Electrical Circuits and Electronics (ICDCECE)	13-Jun-22
4	Darshini Machamma M S Appaji Mohammed Tauqeer Ali	An IoT based Data Analytics for Electric Bicycle using OpenModelica Simulation Tool	2022 International Conference for Advancement in Technology (ICONAT)	10-Mar-22
5	Mohammed Omer Ali Siddhartha Sunil Singh Tahoora Imtiyaz Nayrah M A	A Review on Triboelectric Nanogenerators (TENGs) using Internet of Things	2021 International Conference on Forensics, Analytics, Big Data, Security (FABS)	09-Feb-22
6	Shiva R V Sagar Kulkarni Lavin Ponnappa M M	An implementation of soft computing approach of smart control for induction motor using ANFIS	2022 4th International Conference on Smart Systems and Inventive Technology (ICSSIT)	25-Feb-22
7	Greeshma Chennareddy Chitra S Kavipriya E Sahana B	Renewable energy based efficient portable DC refrigerator for rural electrification and convenience - An Overview	2022 Second International Conference on Artificial Intelligence and Smart Energy (ICAIS)	30-Mar-22
8	Jibran Zaidi Vikram Nirupavardhan Jaffer	A review of Arduino based hand gesture controlled robot using IoT	2022 Second International Conference on Artificial Intelligence and Smart Energy (ICAIS)	30-Mar-22
9	Pranav R Naik Rahul Vijay Lingadhal R Puneeth Venkat Sai Varma	A Review on Optimization Techniques of Charging the Battery in EV	2022 Second International Conference on Artificial Intelligence and Smart Energy (ICAIS)	30-Mar-22

	R Supraja			
10	Pranav R Naik Rahul Vijay Lingadhal R Puneeth Venkat Sai Varma R Supraja	A review on optimization techniques of battery charging in electric vehicles	2022 2nd International Conference on Artificial Intelligence and Signal Processing (AISP)	25-Apr-22
11	C Bhavana Singh Bhavana YC Bindhu V	Analysis of Parameter Estimation of an Electric Bicycle Using IoT with Data Analytics Technique	2022 4th International Conference on Smart Systems and Inventive Technology (ICSSIT)	25-Feb-22
12	Joanna Alicia D Deepthi D Shawin Krishna Bellam Sreekanth reddy	A Survey on Detection of Power theft in Transmission and Distribution	2022 International Conference on Computer Communication and Informatics (ICCCI)	31-Mar-22
13	Karthik N Lakshmipathi C Anirudh Sanjay G	A survey on Smart Traffic Control System for Emerging vehicles	2022 International Conference on Computer Communication and Informatics (ICCCI)	31-Mar-22

Table 2.2.3.g1: List of Projects funded by KSCST for the academic year 2022-2023

SI. No.	Title of the Project	Name of the Student	Guide Name
1	Design and fabrication of Quad Bike for physically Challenged	1NH19EE010 - Aisiri M Urs 1NH19EE046 - Harshitha R 1NH19EE066 - M Rohit Kumar Reddy 1NH19EE403 - Koushik P	Dr. Sujitha S
2	Artificial Intelligence based SRLF-Driving car using Robotic Model	1NH19EE125 - W Y Jhansipriya 1NH19EE123 - Vinod Kumar R 1NH19EE085 - P Ravi Nandan 1NH19EE127 - YannamRoopeswar Reddy	Ms. Surat Pyari Atti Dr. Sujitha S
3	Design and Implementation of solar fed food alert system using Bolt Wi-Fi Module	1NH19EE005 - Abrar Altaf Dar 1NH19EE016 - Ankit Kumar 1NH19EE033 - Ezra James D'Cunha 1NH19EE040 - Gaurav P Kumar	Ms. Karthika M Dr. Mohan Das R
4	Silent surveillence autonomous drone for disaster management and military security using artificial intelligence	1NH19EE106 - Sharmi Kanaujia 1NH19EE097 - Sanskriti Agarwalla 1NH19EE103 - Shaik Sameer 1NH19EE114 - Tabasum Manzoor	Ms.Soumya K V Dr. Sujitha S
5	Prepaid Energy Meter with Theft detection using IoT	1NH19EE008 - Aishwarya P 1NH19EE023 - Charishma A 1NH19EE042 - Gautammee K K 1NH19EE055 - Kesamreddy Deepthi	Dr. Vinoth Kumar K

Table 2.2.3.g2: List of Projects funded by KSCST for the academic year 2021-2022

SI. No.	Title of the Project	Name of the Student	Guide Name
1	Artificial Intelligence and IoT based traction motor drive condition motoring in hybrid electric vehicles	1NH18EE026 - Kiran U 1NH18EE035 - Naveen Kumar K R 1NH18EE046 - Rohan N 1NH18EE056 - Shreysh Babu	Dr. Sujitha S Mr. Lithesh J
2	Optimization of Battery Performance in Electric Vehicle	1NH18EE736 - R Puneeth Venkat Sai Varma 1NH18EE735 - Pranav R Naik 1NH18EE738 - Rahul Vijay Lingadhal 1NH18EE737 - R Supraja	Dr. Vinoth Kumar K Mr. Mni Prakash T
3	Implementation of parameter estimation of an electric bicycle using IoT for village / rural/disabled community	1NH18EE708 - Bhavana YC 1NH18EE709 - Bindhu V 1NH18EE710 - C Bhavana Singh	Dr. Vinoth Kumar K
4	Solar Driven Vaccine Refrigerator using environment-friendly refrigerants for Off-Grid locations	1NH18EE017 - Greeshma Chennareddy 1NH18EE010 - Chitra S 1NH18EE013 - Kavipriya E 1NH18EE050 - Sahana B	Dr. Vinoth Kumar K Dr. Gunapriya B
5	Implementation and design of cobots in floriculture	1NH18EE731 - Niranjan C 1NH19EE407 - Ramesharaja Ursu K R 1NH18EE700 - Abhimanyu Iyer 1NH18EE716 - Dhanush L	Dr. Singaravelan A
6	Solar based energy efficient hybrid SLBLDC motor for agriculture	1NH18EE727 - Md Sagar Khan 1NH18EE725 - L Ashwini B 1NH18EE724 - K Utkarsh Alok 1NH18EE069 - Vivek Ranjan	Mrs. Karthika M Dr. Mohan Das R
7	LORA based smart cities and home automation using IoT	1NH18EE722 - K Prasanna 1NH18EE702 - Ananda M A 1NH18EE723 - Kiran P Gowda 1NH18EE734 - Prajwal Raikar	Dr. Sujitha S Mrs. Rashmi N

Table 2.2.3.g3: List of Projects funded by KSCST for the academic year 2020-2021

SI. No.	Title of the Project	Name of the Student	Guide Name
1	Solar Refrigerator for Portable Refrigerator	1NH17EE025 - K Shriya Reddy 1NH17EE027 - K Sai Hemanth Reddy 1NH17EE030 - M Sai Raghuram Amough 1NH17EE058 - Thamimulla	Dr. Vinoth Kumar K
2	Implementation of Smart E-Vehicle Charging Station powered by Renewable Energy	1NH17EE756 - Vinith G A 1NH17EE733 - Pragathi Prakash 1NH17EE724 - Meghana I L 1NH17EE713 - Divya S V	Dr. Vinoth Kumar K
3	A collaborative robot to serve patients and to collect infectious wastage at the isolation ward	1NH17EE037 - Sridaran P 1NH17EE039 - Pooja V 1NH17EE048 - Sriram SP 1NH17EE049 - Sarika M	Dr. Singaravelan A
4	A Novel fault tolerant solution for underground transmission system monitoring by GSM	1NH17EE755 - Vandita Manohar 1NH17EE725 - Muahmmad Maaz	Ms. Roopa C
5	AI based Samrt Mirror using Raspberry PI	1NH17EE706 - Bharath Surya 1NH17EE718 - Kavitha SAH 1NH17EE745 - Raksha S 1NH17EE748 - Shaun Philipose John	Dr. Gunapriya B Mr. Vinod Kumar S
6	Recycled UVC Steilizer	1NH17EE701 - Abhilash Mithare 1NH17EE754 - Thomas Allwin Anto	Dr. Gunapriya B

The list of patents filed based on student's project work is listed in **table 2.2.3.h**.

Table 2.2.3.h: List of Patents filed by students

Sl.No	Title of Patent / Patent No./ Patent Application Number	Patent Journal/ Published Date	Inventors' Name	Status
1.	Design of waste heat recovery in windmill using TEG Application Number: 202241039511 A Dt 09/07/2022	India 39/2022 Dated 30/09/2022	Mr. Vinod Kumar S Dr. Vinoth Kumar K Dr. Mahesh M Mr. Shivashankara M Mr. Abdul Samed Mr. Darshan R	Published in AY 2022-23
2.	Design of underwater Li-Fi Communication System using Analog LDR Sensor Application Number: 202241039517 A Dt 09/07/2022	India 39/2022 Dated 30/09/2022	Dr. Prabhakaran N Dr. Vinoth Kumar K Dr. Singaravelan A Mr. MD Sagar Khan	Published in AY 2022-23
3.	Design of electric bicycle using split charging technology Application Number: 202241039518 A Dt 09/07/2022	India 39/2022 Dated 30/09/2022	Dr. Vinoth Kumar K Dr. Mahesh M Ms. Bhavana YC Ms. Bhavana Singh C Ms. Bindhu V	Published in AY 2022-23
4.	Design of accident identification and alerting system by using Raspberry Pi Application Number: 202241040766 A Dt 16/07/2022	India 39/2022 Dated 30/09/2022	Dr. Vinoth Kumar K Mr. Satish Kumar D Dr. Mahesh M Mr. P. M. D. Muthathir Khan Mr. Vishwanath Patil Mr. Venkan Gouda Mr. BharateshShiradoni	Published in AY 2022-23
5.	Design and validation the battery performance in electric vehicle using optimization method Application Number: 202241040767 ADt 16/07/2022	India 39/2022 Dated 30/09/2022	Dr. Vinoth Kumar K Mr. Muni Prakash T Mr. Pranav R Naik Mr. R Puneeth Venkat Sai Varma Ms. R Supraja Mr. Rahul Vijay Lingadhal	Published in AY 2022-23

6.	Design of Arduino based hand gesture controlled robot using IoT Application Number: 202241040769 A Dt 16/07/2022	India 39/2022 Dated 30/09/2022	Dr. Vinoth Kumar K Dr. Gunapriya B Mr. Jibran Zaidi Mr. Vikram Mr. LingareddygariNirupavardhan Reddy Mr. Jaffer	Published in AY 2022-23
7.	Design of PV based Smart Energy Efficient Hybrid Model for Irrigation using Sensorless BLDC Motor Application Number: 202241040711 A Dt 16/07/2022	India 39/2022 Dated 30/09/2022	Dr. Prabhakaran N Dr. Vinoth Kumar K Mrs. Karthika M Mr. MD Sagar Khan	Published in AY 2022-23
8.	Design of renewable energy based efficient portable DC refrigerator for rural electrification Application Number: 202241040772 A Dt 16/07/2022	India 39/2022 Dated 30/09/2022	Dr. Vinoth Kumar K Dr. Gunapriya B Dr. Singaravelan A Ms. Greeshma Chennareddy Ms. Chitra S Ms. Kavipriya E Ms. Sahana B	Published in AY 2022-23
9.	Design of two battery model for electric bicycle Application Number: 202241040774 A Dt 16/07/2022	India 39/2022 Dated 30/09/2022	Dr. Vinoth Kumar K Ms. Kavitha Chenna Reddy Mr. Nischal Dinesh Mr. Sarthak Das Mr. Prajwal Mr. Ashu Anand	Published in AY 2022-23
10.	Design of therapeutic threadmill and footrest for differently abled children Application Number: 202241047176 A Dt 19/08/2022	India 39/2022 Dated 30/09/2022	Mr. Vinod Kumar S Dr. Mahesh M Dr. Mohan Das R Mr. Mekala Rohith Kumar Reddy Ms. Harshitha R Mr. Koushik P Ms. Aisiri M Urs	Published in AY 2022-23
11.	Design of Bluetooth based remote voltage monitoring system for off-grid battery Application Number: 202241047180 A Dt 19/08/2022	India 39/2022 Dated 30/09/2022	Dr. Manujunatha Dr. Mahesh M Mr. Satish Kumar D Mr. Advaith Madhavan	Published in AY 2022-23

			Mr. Khadim Hussain Mr. K Javed Ajmal Mr. M P Jawahar	
12.	Design of waste heat recovery in windmill using TEG Application Number: 202241039515 A Dt 09/07/2022	India 08/2023 Dated 24/02/2023	Mr. Vinod Kumar S Dr. Vinoth Kumar K Dr. Mahesh M Mr. Shivashankara M Mr. Abdul Samed Mr. Darshan R	Published in AY 2022-23
13.	Design of assistant robot for home appliances Application Number: 202341007549 A Dt 06/02/2023	India 08/2023 Dated 24/02/2023	Dr. Vinoth Kumar K Ms. Sangeetha C N Mr.Baba Fakharuddin	Published in AY 2022-23
14.	Design of driver drowsiness detection and alert system Application Number: 202341007572 A Dt 06/02/2023	India 08/2023 Dated 24/02/2023	Ms. K,Sangeetha C N Mr. Kamalesh Badola Mr. Kushal Naik K Mr. Lava Kumar M N Mr. Mohammed Aman	Published in AY 2022-23
15.	Design of affordable social distance monitoring system using Raspberry PI Application Number: 202341007554 A Dt 06/02/2023	India 08/2023 Dated 24/02/2023	Ms. Surat Pyari Atti Dr. Vinoth Kumar K Ms. Sangeetha C N Mr. Mohammed Imad Mr. Sanjan R Mr. Shashank Joshi Ms. Sneha S A	Published in AY 2022-23
16.	Design of theft diagnosis from smart energy meter using IoT Application Number: 202341007559 A Dt 06/02/2023	India 08/2023 Dated 24/02/2023	Dr. Vinoth Kumar K Ms. Gautammee K K Ms. Aishwarya P Ms. Charishma A Ms. Kesamreddy Deepthi	Published in AY 2022-23
17.	Design of Lifi based text communication Application Number: 202341007560 A Dt 06/02/2023	India 08/2023 Dated 24/02/2023	Ms. Pooja Jose , Dr. Vinoth Kumar K Ms. Aamna Nafiza Ms. Disha M Ms. Harshika Ms. Hemavathi V	Published in AY 2022-23
18.	Design of wind solar hybrid system Application Number: 202341007561 A	India 08/2023 Dated	Ms. Kavitha Chenna Reddy Ms. Manasa G Reddy	Published in AY 2022-23

	Dt 06/02/2023	24/02/2023	Ms. Neha R Ms. Tantapureddi Haritha Ms.Tejashree T	
19.	Design of smart segregation bin Application Number: 202341007563 A Dt 06/02/2023	India 08/2023 Dated 24/02/2023	Mr. Kartheek Vankadara Mr. Bharath T Mr. Dayas A Dixen Mr. Dony Snehit P Ms. Infancia Pragna	Published in AY 2022-23
20.	Analysis of electrical parameters for formula style electric vehicle Application Number: 202341007562 A Dt 06/02/2023	India 08/2023 Dated 24/02/2023	Dr. Mohan Das R Mr. Vinod Kumar S Mr. Tejas Ms. Rithika Kapoor Mr. Varun R Ms. Shambavi Bhagat	Published in AY 2022-23
21.	Design of dynamic wireless power transfer system technology used in solar wireless electric vehicle charging stations Application Number: 202341020401 A Dt 23/03/2023	India 15/2023 Dated 14/04/2023	Dr. Vinoth Kumar K Mr. Maruthi B Mr. Rahul R Mr. Santhosh Melvin D Mr. Sathish S	Published in AY 2022-23
22.	Design of electric quad bike with hybrid charging mode for physically challenged Application Number: 202341020419 A Dt 23/03/2023	India 15/2023 Dated 14/04/2023	Dr. Sujitha S Mr. M Rohit Kumar Reddy Ms. Harshitha R Ms. Asiri M Urs Mr. Koushik P	Published in AY 2022-23
23.	A fully automated system for paralysis patient health management Application Number: 202341020423 A Dt 23/03/2023	India 15/2023 Dated 14/04/2023	Mr. Satish Kumar D Mr. Bisen Rochil Pradeep Ms. Sakshi Ms. Sanjana Ms. Shreya D Revankar	Published in AY 2022-23
24.	Design of wireless DC motor control Application Number: 202341020427 A Dt 23/03/2023	India 16/2023 Dated 21/04/2023	Ms. Manochitra G Ms. Harshitha K Ms. Deepika K Shetty Ms. Disha Ashok Nayak Ms. Harshitha V	Published in AY 2022-23
25.	Smart transport system for preventing animals attacks and accidents for village roads using AI techniques Application Number: 202341020431 A	India 16/2023 Dated 21/04/2023	Dr. J Joshua Daniel Raj Ms. Sangeetha C N Mr. Sarthak Ghorai	Published in AY 2022-23

	Dt 23/03/2023		Mr. Subajit Das Mr. Manish Mr. Shariq Ahmed	
26.	Ultrasonic radar sensor using Arduino Application Number: 202341020433 A Dt 23/03/2023	India 20/2023 Dated 19/04/2023	Ms. Sangeetha C N Dr. J Joshua Daniel Raj Mr. Yashwanth S Ms. Simran Kanwar Mr. Vikash Rawat Mr. Vinay Kumar	Published in AY 2022-23
27.	Design of smart blind stick Application Number: 202341020436 A Dt 23/03/2023	India 15/2023 Dated 14/04/2023	Ms. Manochitra G Ms. Janhavi G Ms. Keerthi M Ms. Lavanya N Ms. Deepika	Published in AY 2022-23
28.	Design of food monitoring system using IoT Application Number: 202341020448 A Dt 23/03/2023	India 15/2023 Dated 14/04/2023	Ms. Soumya K V Dr. Sujitha S Ms. Jayanth CK Mr. Ramakant H Dolli Mr. Sharath Kumar M Mr. Vignesh M	Published in AY 2022-23
29.	Design of error detection using hamming codes Application Number: 202341020452 A Dt 23/03/2023	India 15/2023 Dated 14/04/2023	Ms. Soumya K V Dr. Sujitha S Mr. Manu K Mr. Ponde Sumanth Mr. Raghavendra Mr. Yeshwanth M	Published in AY 2022-23
30.	An intelligent system for plant disease diagnosis using convolution neural networks Application Number: 202341020454 A Dt 23/03/2023	India 15/2023 Dated 14/04/2023	Mr. Satish Kumar D Dr. Joshua Daniel Raj J Mr. Anoopkumar H S Mr. Chethan D R Mr. Deekshith More B Mr. Kushal A Y	Published in AY 2022-23
31.	Design and Implementation of solar fed flood alert system using Bolt Wi-Fi Module	India 15/2023 Dated 14/04/2023	Ms. Karthika M Dr. Sujitha S	Published in AY 2022-23

	Application Number: 202341020457 A Dt 23/03/2023		Mr. Ezra James D'cunha Mr. Abrar Altaf Dar Mr. Gaurav P Kumar Mr. Ankit Kumar	
32.	Design of non-invasive method detecting Anemia Application Number: 202341021362 A Dt 25/03/2023	India 16/2023 Dated 21/04/2023	Ms. Anitha A Dr. Vinoth Kumar K Mr. Abhishek Bedant Mr. Madhav Reddy C Mr. Kumar Abhishek	Published in AY 2022-23
33.	Investigation of artificial intelligence and IoT based detection of pesticide in organic fruits and vegetables Application Number: 202341021366 A Dt 25/03/2023	India 16/2023 Dated 21/04/2023	Mr. Sunil S K Dr. Sujitha S Mr. Manoj Kumar V Mr. Naveen R N Mr. Sandeep Naik R Mr. Manoj Kumar P	Published in AY 2022-23
34.	Dual Axis Solar Tracker Application Number: 202341021366 A Dt 25/03/2023	TEMP/E-1/16618/2023-CHE	Mr. Vinod Kumar S Dr. Mohan Das R Ms. Meghana I K Ms. Prathvi Devanand Gaonkar Ms. Purvi Samanvitha S Mr. Rahul B Mr. Shivashankar A Mughali	Filled in AY 2022-23
35.	Design of solar powered multifunctional agricultural robot Application Number: 202341021405 A Dt 25/03/2023	India 16/2023 Dated 21/04/2023	Dr. Sujitha S Ms. Meghana N T Ms. Vidya G Ms. Vandana R	Published in AY 2022-23

2.2.4. Initiatives related to industry interaction (10)

The industry supported laboratories develop best learning process using a comprehensive understanding of industry's best practices for both students and faculties. This initiative imbibes professionalism, behavior aspects and awareness about industry expectations and also aligns aspirations of the students with the needs of the industries and promotes career counseling by organizing guidance lectures by senior corporate personnel. The details are as shown in **table 2.2.4.a**.

Table 2.2.4.a: Details of Industry supported Laboratories

Sl. No.	Name ofthe Company	Objective	Outcome
1.	Schneider Electric India Private Limited	• Framing Curriculum according to industry standards and using state-of-the-art industry device software. • Giving industrial exposure in the field of Industrial & Building Automation and bringing opportunities for mutual growth. • Providing a platform for experimental learning through projects, training, hands on workshops and internships. • Opening a two-way communication between institution and industry with various opportunities.	PO1,PO2,PO3,PO4,PO5,PO6,PO9,PO10, PO11,PO12 PSO1, PSO2 Training the students in the basics for industrial automation: equipment, architecture, design, input output connection, programming language, software programming, enabling the graduates to work in modern industries. • Student Exchange Program • Study Abroad Program • Training the different industry partners of Schneider Electric India. • Various Industry Institute Interaction programs in the form of FDP's, Workshops and Industrial Visits.
2.	VMWare IT Academy	• The Program is designed to introduce students to VMware technologies and equip them with technical skills needed for the modern IT world. • Faculty/ Students will gain access to technology and contents from VMware, which in turn prepare them for the new IT world.	PO1,PO2,PO3,PO4,PO5,PO6,PO9,PO10, PO11,PO12 PSO1, PSO2 • To introduce the students to Virtualization & Storage concepts and equip them with technical skills needed for the modern IT World. • Faculty & Students has been granted access to Technology, Course content and software from VMware. • Regular Faculty Development Programs and Workshops conducted by VMware official • Courses are offered as an elective
3.	Eurofins IT Solutions Lab	To develop an international frame work of "academic-industry" links, training program in continuing education for technical teachers, training of young engineers and technicians and to prepare them for the job market in the field of computers.	PO1,PO2,PO3,PO4,PO5,PO6,PO9,PO10, PO11,PO12 PSO1, PSO2 • Faculty at NHCE received training on C# & .Net at Eurofins company by their expert team • The lab serves as an excellent platform for developing real time application and serve research environment for students to work on efficiently

4.	CISCO Networking Academy	CCNA Routing and Switching provides an integrated and comprehensive coverage of networking topics, from fundamentals to advanced applications and services, while providing opportunities for hands-on practical experience and career skills development.	PO1,PO2,PO3,PO4,PO5,PO6,PO9,PO10, PO11,PO12 PSO1, PSO2 • To inculcate networking skills to meet the current and future needs of the Information Technology (IT) industry. • To enrich the young minds with intellectual, technical and practical skills for serving the fast-growing industry. • NHCE gets access to all resources, course materials, services, websites or other deliverables • The Cisco CCNA Routing and Switching curriculum is designed for Cisco Networking Academy to pursue more specialized ICT skills.
5.	HP Vertica	• The objective is to make fresh engineers and business management graduates more capable, creative & have innovative approach in thinking. • To develop resources those can be absorbed from College& ready to perform in various sectors like Banking, Telecom, Manufacturing, E- commerce, Retail etc. • HP will be engaged in overall development of students will invite Industry professional to enhance Big Data Analytics skills through hands on sessions, guest lecturers etc.	PO1,PO2,PO3,PO4,PO5,PO6,PO9,PO10, PO11,PO12 PSO1, PSO2 •To give students on two major insight on big data platforms: VERTICA and HADOOP • Regular Faculty Development Programs and Workshops conducted on Big Data technologies. • Both circuit and non-circuit branch students learn the courses offered by this lab to make a career in data analytics
6.	SAP Next Generation Lab	To mould the students to become industry ready by empowering them on fundamentals of ERP and machine learning and to advance the knowledge on SAP by providing hands-on sessions for different case studies	PO1,PO2,PO3,PO4,PO5,PO6,PO9,PO10, PO11,PO12 PSO1, PSO2 • SAP Nextgen lab provides learning platform in various technologies like SAP-ERP so that students can build their career as a techno functional consultant. • SAP also provides learning on most emerging technologies like machine learning and AI so that students can get exposed to trending programming knowledge like Python and R. • SAP next-gen club associated with this lab regularly conducts hands on sessions in various technologies
7.	Amazon	To inculcate the students to Build, Deploy and Manage sites, Apps or Processes as services in Cloud environments.	PO1,PO2,PO3,PO4,PO5,PO6,PO9,PO10, PO11,PO12 PSO1, PSO2 • All branches of EngineeringStudentscanoptAWStoolsasanopenelectivetoearncreditasapproved in the curriculum. • To enhances the employability quotient of the students across IT industry including Amazon. • Students registered under this program a real so provided an opportunity to

			pursue AICTE approved internship With Amazon
8.	Capgemini Industry 4.0Lab	To provide platform to create an ecosystem of resources for the digital needs in industrial segment and provide digital solutions from the engineering service industry and enhance their knowledge in Industry 4.0 through class room and online trainings, Hackathon and live projects.	PO1,PO2,PO3,PO4,PO5,PO6,PO9,PO10, PO11,PO12 PSO1, PSO2 Industry 4.0 lab will serve as a platform to create an ecosystem of resources for the digital needs in industrial segment. • To interact with subject matter experts in the digital solutions from the engineering service industry and enhance their knowledge in the field of Industry 4.0. • The students will be mentored through online trainings, hackathon and live projects. • Students are provided with internship and full time offer by Capgemini. • Live and interactive projects will be provided and mentored by Capgemini experts. • Visit by the students to Capgemini and freedom to interact with Capgemini Experts on technical solutions to projects. Visit to IoT related Technical Expos and Conferences.
9.	IBM Open Power Lab	Artificial enables creation of intelligent machines and through the establishment of COE for AI our endeavor is to create Intelligent humans	PO1,PO2,PO3,PO4,PO5,PO6,PO9,PO10, PO11,PO12 PSO1, PSO2 • Conducting research on rapidly advancing AI technologies • Enabling and facilitating industry-academia partnerships in research and development and fostering relationships through collaborative projects • Encouraging cross-disciplinary research in applied computing, in critical scientific and industrial domains, via research proposal submissions to funding agencies • Providing a state-of-the-art R&D facility for students, faculty and collaborators • Offering a comprehensive and meaningful computing environment for education by complementing the theoretical coursework with appropriate • laboratory coursework for students, and encouraging team participation and cross-disciplinary problem solving
10.	Robotic Process Automation	• To enhance the problem-solving skills, critical thinking and design thinking skills for creating bots to serve in socio- economic perspectives • To create their digital workforces and transform the way they operate, enabling them to manage and scale business processes with unprecedented speed.	PO1,PO2,PO3,PO4,PO5,PO6,PO9,PO10, PO11,PO12 PSO1, PSO2 • Faculty at NHCE have received training at Automation Anywhere premises on IQ BoT • They also got BoT insight to gain real-time, actionable insights into BoT activity across the enterprise for your digital workforce. • NHCE incorporated Robotic Process Automation into it's curriculum.

11.	Capgemini PLM Lab	To Develop students and make them industry ready by imparting the current trends of technology. Newer learning methods by industry and academia experts in the field of PLM	PO1,PO2,PO3,PO4,PO5,PO6,PO9,PO10, PO11,PO12 PSO1, PSO2 The Digital Engineering and Manufacturing services lab will open several opportunities for students in the field of Project Life Cycle Management. PLM Software on 3D Experience by Dassault will be used to train the students. The faculty have undergone an exclusive faculty development program on the same.
12	Capgemini VLSI Lab	To mould the students to thrive in a constantly growing semi Conductor industry focusing on innovation and productivity	PO1,PO2,PO3,PO4,PO5,PO6,PO9,PO10, PO11,PO12 PSO1, PSO2 • Capgemini Engineering accelerates end-to-end design, implementation and testing for ASICs, SoCs and FPGAs: from spec to silicon. RTL to GDSII turn key delivery. • This Centre of excellence has greater focus towards Chip Design and Physical Design of VLSI. • Faculty & Students have great access to Technology, Course content, software. • 90 ECE and EEE Students enrolled for this program are being trained and hired by Capgemini Engineering along with internship. • Massive Open Online Courses on Physical Design (VLSI) is encouraged. • Students perform the synthesis, floor planning, placement and routing as per the industrial standards using state of the art tools.
13	Altair	• To train students and educators for creating better ML model by accumulating the knowledge, innovation, skills development, and diversity in AI technology. • To create an AI professional with adequate knowledge to interpret both structure & unstructured data.	PO1, PO2,PO3,PO4,PO5,PO6,PO9,PO10, PO11,PO12 PSO1, PSO2 • Students can be certified by attending the certification examination provided by the Altair University, which is an added advantage for Internships and placement opportunities. • Students and Research scholars will start working on the advanced technologies will enable them to work on many real time projects.
14	5G Communication Lab	To explore the avenues of Next-Gen communication and to address thepromisingapplicationsof5Gsystems	PO1,PO2,PO3,PO4,PO5,PO6,PO9,PO10, PO11,PO12 PSO1, PSO2 • Faculty members also undergo various certificationcourseson5Gtechnology. • Exclusive sessional talks and workshop are conducted on 5G by experts from Capgemini engineering.
15	Fanuc Robotics	To make the students industry-ready by enriching them with intellectual, technical and practical skills in the field of Industrial Robotics and Automation.	PO1,PO2,PO3,PO4,PO5,PO6,PO9,PO10, PO11,PO12 PSO1, PSO2 • Students are provided with internship certification programs by Fanuc India Ltd. • Visit by the students to Fanuc India and freedom to interact with Fanuc India • Experts on technical solutions to industrial automation projects.

			• Faculty & Students have access to Robo-guide software, lab manual and Robot specifications for automation programming. • Faculties of Fanuc India Lab have undergone extensive training program for teaching this course.
16.	Intel	• To inculcate an industrial environment in VLSI Design for innovation and enablement in semiconductor industry • To make students acquire and contribute to front end VLSI design and make a difference in the society by innovating novel ways of modelling digital system	PO1,PO2,PO3,PO4,PO5,PO6,PO9,PO10, PO11,PO12 PSO1, PSO2 • Intel lab aims at producing the next generation of FPGA designers. • Faculty members have undergone rigorous training program by experts from Intel • Faculty members & Students have academic access to the latest generation of Intel • FPGAs and can engage in research on Intel FPGA •
17.	Siemens	• To impart technical skills in Machine learning, Data Analytics, Industrial IoT Technologies. • To strengthen the research culture of the institute by offering Research and Consultancy • To provides a platform for digital transformation.	PO1,PO2,PO3,PO4,PO5,PO6,PO9,PO10, PO11,PO12 PSO1, PSO2 • The industry provides industry- based courses to the students. • Students become skilled in automation services, cloud platforms and technologies, cyber security etc. • Students are benefitted with Internship opportunities and work on industry projects to gain real world experience.
18.	Juniper Networks	To make the student industry ready by enabling them to be responsible for configuring and monitoring devices running the Junos OS.	PO1,PO2,PO3,PO4,PO5,PO6,PO9,PO10, PO11,PO12 PSO1, PSO2 Faculty at NHCE received training at Juniper company LMS. • The courses are provided a brief overview of the Junos device families architectural components of the software and delves into foundational routing & configuration. • Students are trained by experienced faculty • Regular FDP's and workshops conducted by Juniper official
19.	Brillio	To shape the industry relevant curriculum that includes contextual digital strategy and technology big bels with hands on immersive program enabling engineers to be industry ready.	PO1,PO2,PO3,PO4,PO5,PO6,PO9,PO10, PO11,PO12 PSO1, PSO2 • Training the students and enabling them to work in modern industries. • Promoting knowledge spill-overs from the laboratories to the industry. • Designing special industry focused curriculum for students. • Faculty development programs and workshops for faculty. • Building core engineering skills through hands on training in new age technologies. • Build modern data architectures to accelerate decision making.

Industry involvement in the program design and Curriculum

The industry experts are involved in designing the curriculum. Additional open electives as per the suggestion from the industry experts are included as in **table 2.2.4.b**. **Table 2.2.4.c** shows list of open electives designed by industries included in the curriculum.

Table 2.2.4.b shows BOS members part of the industry

Table 2.2.4.b: Industry BOS members

Sl No	Industry Expert	Expert Details	Academic Year
1	Mr. Niamish Kumar Bareek	Trainee Automation Engineer, A Ideas Engineering Pvt. Ltd.	2022-2023
2	Mr. G M Suresh	Senior Manager, Delta Electronics India Pvt. Ltd., Bangalore	2021-2022
3	Ms. Charushri M	Market Research Analyst, Course5 Transformative Intelligence, Bangalore	2021-2022
4	Dr. Chandrasekhar B	Technical Lead, Automotive Design, TCS, Bangalore	2020-2021
5	Mr. Vishwambar Kulakarni	Project Engineer, Wipro Technologies, Bangalore.	2020-2021

Table 2.2.4.c: Open Electives

Sl.No.	IndustryAssociatedwith CentreofExcellence	CourseCode	CourseName	Department
1	MICROFOCUS	20NHOP601	Big DataAnalyticsusingHPVertica-1	CSE
2	VMWAREITAcademy	20NHOP602	VMWare VirtualizationEssentials-1	ISE
3	SapLabs	20NHOP607	SAP	ME
4	Schneider	20NHOP608	Schneider-IndustrialAutomation	EEE
5	Cisco	20NHOP609	Cisco-Routing&Switching-1	ECE
6	Cisco	20NHOP612	Cisco-Routing&Switching– 2	ECE
7	MicroFocus	20NHOP614	Blockchain	CSE
8	Capgemini	20NHOP615	Product LifeCycleManagement	ME
9	AutomationAnywhere	20NHOP620A	RoboticProcess Automation	CSE
10	Capgemini	20NH0P621A	Industry4.0	ME
11	Fanuc	20NHOP622A	ProgrammingofIndustrialRobot	ECE
12	Capgemini	20NHOP623A	5G Communication	ISE

Industry involvement in partial delivery of any regular courses for students

Schneider supported laboratory (Centre of Excellence) has been established in the Department of Electrical and Electronics Engineering. **Figure 2.2.4.a** shows our respected chairman Dr. Mohan Manghnani, inaugurating the Schneider CoE.



Figure 2.2.4.a: Inauguration of SCHNEIDER LAB, EEE NHCE

The Indo-French Centre of Excellence in Electricity, Automation and Energy in collaboration with Schneider Electric, was inaugurated on 12th March 2018 by Ms. Frédérique Vidal, Minister of Higher Education, Research and Innovation, Government of France, in the presence of Dr. Mohan Manghnani, Chairman, New Horizon Educational Institution and Mr. Shrinivas Chebbi, President-Partner Projects and Eco-Buildings, Schneider Electric India Pvt Ltd. Ms. Frédérique Vidal addressed and interacted with students who have enrolled for courses on Industrial Automation and advised students to be a part of Centre of Excellence to gain more hands-on expertise and also to get exposure to international standards of education.

Some of the takeaways of the above activity was to

Learn the benefits of a technology career.
Be connected to successful female role models
Learn how job seekers looking to switch careers can tap into a technology career.
Bring it all together with self-study courses.



Figure 2.2.4.b: Schneider Electric Indo-French Centre of Excellence (CoE) for Electricity Automation & Energy

The Schneider Electric Indo-French Centre of Excellence (CoE) for Electricity Automation & Energy offers professional elective courses for Electrical and Electronics Engineering as well as open elective courses for other programs.The industrial automation and advanced industrial & building automation courses have been offered as professional elective in V and VI semester respectively. The Schneider industrial automation course is being offered as open elective for other programs of study in VI and VII semesters.

INDUSTRIAL AUTOMATION

Course Code	**: 20EEE55/20NHOPXXX**	**Credits**	**: 03**
L:T:P	**: 3:0:0**	**CIE Marks**	**: 50**
Exam Hours	**: 03**	**SEE Marks**	**: 50**

Course Outcomes: At the end of the course, the student will be able to:

CO1	**Explore the various aspects of industrial automation.**
CO2	Analyze the architecture of PLC.
CO3	Select an appropriate communication protocol to communicate with PLC using Open Systems Interconnection Model.
CO4	Develop a suitable logic for various real time applications using specific programming language for PLC.
CO5	Develop Schneider Electric PLC for various industrial applications using dedicated software tool Unity Pro.
CO6	Build a Human Machine Interface for various applications through Vijeo Designer Software.

Mapping of Course Outcomes to Program Outcomes:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	2	-	-	-	3	1	1	2	2	3	3
CO2	3	2	3	2	3	3	1	1	2	2	3	3
CO3	3	2	3	2	3	3	1	1	2	2	3	3
CO4	3	2	3	2	3	3	1	1	2	2	3	3
CO5	3	2	3	2	3	3	1	1	2	2	3	3
CO6	3	2	3	2	3	3	1	1	2	2	3	3

Module	Contents of the Module	Hours	COs
1	**Basics of Automation:** Automation strategy-Evolution of instrumentation and control, role of automation in industries, benefits, types **Structure of PLC:** Evolution of PLC-Principle of operation-Elements of Power supply unit-PLC Scan-Memory Organization-Input Types-Types and Selection of PLC-Application-Schneider M340 pedagogic bench for wiring of input and output elements.	09	CO1, CO2
2	**Standard Communication Protocols:** Definition-Open System Interconnection (OSI) model, Communication standards-RS232 and RS485, Modbus-ASCII and RTU, Introduction to third party interface, concept of OPC (Object linking and embedding for Process Control), Internet protocols. **Application-** Analysis of a PLC configuration and communication devices	09	CO3

	Sensors in industrial automation: Types and characteristics of most used sensors in industry. Application to sensors in PLC environment. Analysis of several sensor (technologies, performances) and connections to PLC		
3	**PLC Programming** Types-Programming devices-Logical operations-Relay type instructions-Timer and Counter Instructions-Program Control Instructions-Data Manipulation Instructions-Data Compare Instructions-Arithmetic Instructions-Sequence Instructions-PID Instructions-PWM Functions-Applications-PLC programming using ladder and FBD methods as per IEC61131	09	CO1, CO2, CO4, CO5
4	**Sequential Functional Chart (SFC) Programming** SFC Structure-SFC Programming as per IEC61131, Advances in SFC-Applications	09	CO1, CO3, CO5
5	**Human Machine Interfacing (HMI)** Evolution of HMI, Building HMI graphics, Communication with PLC, Overview of software (Vejio Designer)-Applications	09	CO1, CO6

Textbooks:

1. Programming Industrial Control Systems Using IEC 1131-3 (IEE CONTROL ENGINEERING SERIES) Revised Edition, by Robert W. Lewis
2. Programmable Logic Controllers and Industrial Automation: An Introduction 2nd Edition, by Madhuchhanda Mitra and SamarjtSemgupta.
3. Industrial Controls and Manufacturing (Engineering) 1st Edition by Edward W. Kamen

Reference books:

1. Industrial Instrumentation Paperback, by K Krishnaswamy, S. Vijyachitra.
2. Overview of Industrial Process Automation Paperback, by K.L.S. Sharma
3. Industrial Process Automation Systems 1st Edition, by B.R. Mehta Y. Jaganmohan Reddy

Assessment Pattern:

CIE – Continuous Internal Evaluation (50 Marks)

Bloom's Taxonomy	**Tests**	**Assignments**	**Quizzes**	**Co-Curricular Activities**
Marks (Out of 50)	**25 Marks**	**10 Marks**	**5 Marks**	**10 Marks**
Remember	-	-	-	-
Understand	5	5	-	-
Apply	10	5	5	5
Analyze	-	-	-	5
Evaluate	-	-	-	-
Create	10	-	-	-

SEE-Semester End Examination (50 Marks)

Bloom's Taxonomy	**Tests**
Remember	-
Understand	10
Apply	15
Analyze	-
Evaluate	-
Create	25

ADVANCED INDUSTRIAL AND BUILDING AUTOMATION

Course Code	**: 20EEE653**	**Credits**	**: 03**
L:T:P	**: 3:0:0**	**CIE Marks**	**: 50**
Exam Hours	**: 03**	**SEE Marks**	**: 50**

Course Outcomes: At the end of the course, the student will be able to:

CO1	Understand the architecture of an advanced industrial automation system and SCADA.
CO2	Analyze and configure connections between elements of an advanced or a building automation system.
CO3	Analyze and configure the fire alarm system the components.
CO4	Analyze and configure connections of CCTV and access control system.
CO5	Understand the various security system for home automation.
CO6	Design and develop a basic CBUS application for building application management.

Mapping of Course Outcomes to Program Outcomes:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	2	2	3	3	2	1	-	2	2	2	3
CO2	3	3	3	3	3	2	2	1	1	3	3	3
CO3	3	3	3	3	3	2	2	1	2	3	3	3
CO4	3	3	3	3	3	2	2	1	2	3	3	3
CO5	3	2	2	3	3	2	1	-	1	3	2	3
CO6	3	3	3	3	3	3	2	1	2	2	3	3

Module	Contents of the Module	Hours	COs
1	**Introduction to Advanced PLC and SCADA** Need of SCADA systems, features of SCADA, Block diagram of SCADA, Function of SCADA, Network Protocols, Protocol standards, Serial Communication-Device Net-Control Net-Ethernet RS232, RS48, Modbus-Fieldbus-Probus-Subnetting-Subnet Mask-File transfer protocol **Practical activities** • PLC interface to SCADA using communication links RS232, RS48s and protocols (Modbus ASCII RTU) • Advanced PLC applications • SCADA Applications using energy management system (drives, …) • Application with Citect SCADA	09	CO1
2	**Introduction to Building management system and energy management system** Concept and application of Building Management System (BMS) and Automation, requirements and design considerations and its effect on functional efficiency of building automation system, architecture and components of BMS, Functions of EMS and block diagram of EMS **Practical activities** • Design of a EMS and BMS • Configuration of a EMS and BMS	09	CO2, CO6

	• Applications with Schneider software		
3	**Fire alarm systems** Applications, FAS architecture: types of architecture and examples. Fire alarm system devices and standards **Practical activities:** Fire- Fire Alarm System-The History, Need for Fire Alarm System, Basic Fire Alarm System, Classification of Fire Alarm System, Conventional Fire Alarm System, Addressable Fire Alarm System, Principles of Operations, Panel Components, Its • Design of a fire alarm system • Configuration of a fire alarm system • Applications with Schneider control panel and software tools.	09	CO3
4	**CCTV and access control systems** Access components, access control system design and standards. CCTV: Camera: Operation & types, Camera selection criteria, camera applications, DVR based system, DVM, network design, storage design. Components of CCTV system like cameras, types of lenses, typical types of cables, controlling system standards **Practical activities** • Design of a basic CCTV and access control system • Configuration of a basic CCTV and access control system • Applications with Schneider control panel and software tools.	09	CO4
5	**Home Automation Systems** Home automation system necessity-block diagram of home automation system-Introduction to Security Systems, Concepts-Components, Technology, Advanced Applications, Security Design-Concept of automation in access control system for safety, Physical security system with components, RFID enabled access control with components-Standards for communication: CBUS-KNX **Practical activities** • Design of a basic CCTV and access control systems • Configuration of a basic CCTV and access control system. • Applications with Schneider software tools.	09	CO4, CO5

Textbooks:

1. Intelligent Building Systems by Albert Ting-Pat So, WaiLok Chan, Kluwer Academic publisher,3rd ed., 2012
2. PLCs & SCADA: Theory and Practice by Rajesh Mehra, edition 2018
3. Design of Special Hazards and Fire Alarm Systems by Robert Gagnon, Thomson Delmar Learning; 2nd edition, 2007.
4. Turner, W. C, “Energy Management Handbook”, 5th Edition, 2004
5. Handschin, E. “Energy Management Systems”, Springer Verlag, 2090.

Reference books:

1. The High-Performance HMI Handbook 1st Edition, by Bill Hollifield (Author), Dana Oliver (Author), Ian Nimmo (Author), Eddie Habibi (Author)
2. Understanding Building Automation Systems (Direct Digital Control, Energy Management, Life Safety, Security, Access Control, Lighting, Building Management Programs) by Reinhold A. Carlson, Robert A. Di Giandomenico, pub. by R.S. Means Company, 2091

Assessment Pattern:

CIE – Continuous Internal Evaluation (50 Marks)

Bloom's Taxonomy	Tests	Assignments	Quizzes	Self-study Assessment
Marks (Out of 50)	**25 Marks**	**10 Marks**	**5 Marks**	**10 Marks**
Remember	5	1	1	-
Understand	6	3	1	-
Apply	5	4	1	10
Analyze	-	2	1	-
Evaluate	-	-	1	-
Create	9	-	-	-

SEE-Semester End Examination (50 Marks)

Bloom's levels	SEE-Theory Examination = 50
Remember	5
Understand	10
Apply	10
Analyze	10
Evaluate	5
Create	10

Impact analysis of industry institute interaction and actions taken thereof

The students of the department have shown keen interest to undertake courses offered by the Centre of Excellences. Students have successfully completed the enrolled courses. There is an enhancement in the employability of students and also it is observed that POs and PSOs attainment has increased.



2.2.4.c: Student interacting with Schneider Officials in Schneider CoE



2.2.4.d: Activities conducted in Schneider CoE

The presentation was given by Mr. Krishna Hedge and Mr. Shyam Prasad from Fluid and Control Industry, Bangalore. He had given a presentation on importance of automation on industry and the latest technologies available to perform remote operation. Along with a demonstration was made on the SCADA software and its real time applications. Hands-on training started with training on SFC basics and designing the sequential function chart in the unity pro software by the IFCEEAE faculty and hardware interface of SFC was executed.

NHCE has actively partnered with the Ministry of National Education, France in various educational activities and collaborations. As a result of this agreement and a number of visits to France by the NHCE delegation, few seventh semester students from all the B.E branches embarked and successfully completed student exchange program in reputed universities in France. The Universities in France have provided this rare opportunity to our students to experience their educational system, technology and culture.

Table 2.2.4.d: List of students who completed student exchange program in reputed universities in France

S. No.	Name	USN	Branch
1	Ayush Kumar Shah	1NH18CS035	BE (CSE)
2	Gouri Rajesh	1NH18CS068	BE (CSE)
3	Goutam Shanbhag	1NH18CS069	BE (CSE)
4	Babu Aman Singh	1NH18CS710	BE (CSE)
5	Gautam MG	1NH18CS065	BE (CSE)
6	Arnab Sangam	1NH18CS013	BE (CSE)
7	Manish Prem	1NH18EC067	BE (ECE)
8	Indrajith KR	1NH18EC041	BE (ECE)
9	Rahul Vijay	1NH18EE738	BE (EEE)
10	Roshini Priya	1NH18CS230	BE (CSE)



Figure 2.2.4.e: Students studied at different France universities

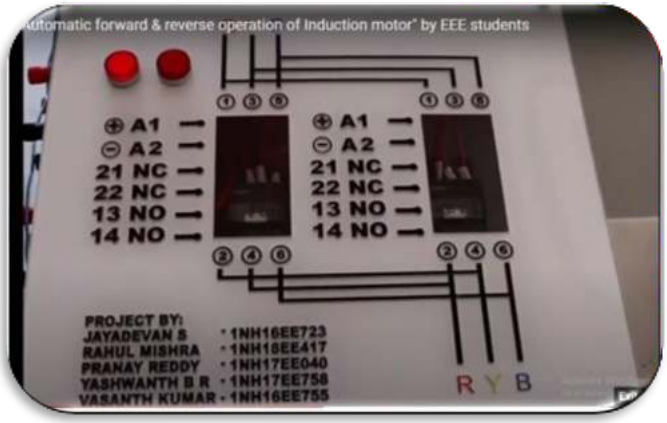


Figure 2.2.4.f: Students project on automatic forward & reverse operation of induction motors in Schneider Electric Indo-French Centre of Excellence

Table 2.2.4e: Student project in Schneider Electric Indo-French Centre of Excellence

S. No.	USN	Name of the Students	Title of the Project
1	1NH16EE723	Jayadevan S	Automatic forward & reverse operation of induction motors
2	1NH18EE417	Rahul Mishra	
3	1NH17EE040	Pranay Reddy	
4	1NH17EE758	Yeshwanth BR	
5	1NH16EE755	Vasanth Kumar	

2.2.5. Initiatives related to industry internship/summer training (10)

The department organizes industrial visits for students once in a year/semester to relevant organizations/companies to enable the students to experience the practical implementation of theoretical knowledge in real world. This gives them an insight of the work culture ethics prevailing in Industries.

Figure 2.2.5.a1, 2.2.5.a2 and 2.2.5.a3 shows visit to several industries.

Table 2.2.5.a1, 2.2.5.a2 and 2.2.5.a3 shows industrial visits.



Figure 2.2.5.a1: Industrial visit to Kaiga Atomic Power Station



Figure 2.2.5.a2: Industrial visit to RenXSolEcotech Private Limited

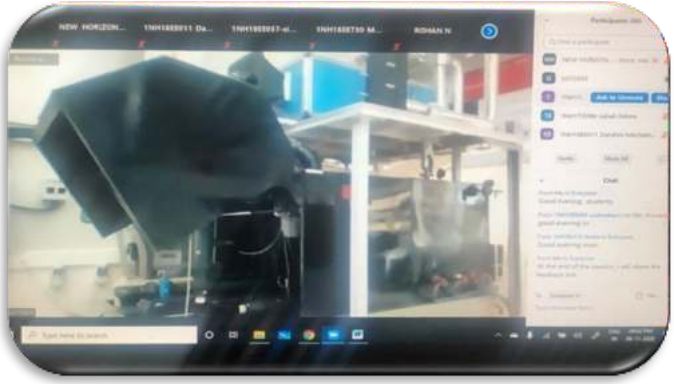


Figure 2.2.5.a3: Virtual industrial visit to Danfoss Industries Pvt. Ltd., Chennai

Table 2.2.5.a1: ACADEMIC YEAR 2022-2023

Sl. No	Date of Visit	Organization Visited	Sem	No. of Students Visited	Outcome
1	08.11.2022 to 12.11.2022	Mega Industrial Visit	V, VII	47	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8, PO9, PO10, PO11, PO12, PSO1, PSO2
2	13.9.2022& 14.09.2022	RenXSolEcotech Private Limited	V	24	PO6, PO7, PO8, PO9, PO10, PO11, PO12, PSO1, PSO2

Table 2.2.5.a2: ACADEMIC YEAR 2021-2022

Sl. No	Date of Visit	Organization Visited	Sem	No. of Students Visited	Outcome
1	28.05.2022	BEML Limited, Mysore	VI	100	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8, PO9, PO10, PO11, PO12, PSO1, PSO2
2	13.11.2021 & 27.11.2021	M/s. Rajamane& Hegde Services Pvt. Ltd	V	100	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8, PO9, PO10, PO11, PO12, PSO1, PSO2

Table 2.2.5.a3: ACADEMIC YEAR 2020-2021

Sl. No	Date of Visit	Organization Visited	Sem	No. of Students Visited	Outcome
1	06.10.2022	Danfoss Industries Pvt. Ltd., Chennai	V	115	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8, PO9, PO10, PO11, PO12, PSO1, PSO2

Industrial / internship / summer training of more than two weeks and post training Assessment

The department of EEE motivates students to undertake internship programs in various well-known firms both public and private sector. Students take up the industry internship training programs for their professional growth. Students are encouraged to undergo industry internship/summer training of their areas of interest / specialization for a duration of 45 days during the course of study. In addition to this, the department organizes training programs related to emerging industry trends and job functions. External trainers from reputed industrial organizations bring the latest technological evolutions to the students. Initiatives / Implementation and Impact Analysis of industry Internship/ Summer Trainings are as under

The internships are arranged collaboratively by the industrial internship coordinator of the department with the industry associates and student volunteers. A copy of the confirmation letter for training is submitted with the industrial internship coordinator / HoD. The Joining Report, providing the following information sent to the industrial internship coordinator/ HoD by the student immediately after joining the organization:

During training, the student keeps a daily record of his/her activities, which is countersigned by the industry supervisor.

The faculty mentor visits / remains in touch with the industry supervisor to monitor the progress of the intern.

On completion of training an internship report and student feedback are submitted to the industrial internship coordinator /HoD.

A Presentation is made by every student on his/her internship report before a panel constituted by the Department. This is followed by a viva to gauge the course outcome / program outcome achieved.

Table 2.2.5.b1&table 2.2.5.b2 lists the details of students who have attended various internship programs during the mentioned years. **Table 2.2.5.c**. gives the list of value added courses.

Table 2.2.5.b1: Industry Internship Details (2022-2023)

Sl. No	USN	Name of the Student	Company
1	1NH18EE014	Faraz Ahmed Mulla	Capgemini
2	1NH19EE001	Abdul Samed	Vijay Electric Co.
3	1NH19EE003	Abhishek	Cognizant
4	1NH19EE004	Abhisek Bedant	Capgemini
5	1NH19EE005	Abrar Altaf Dar	Capgemini (Maven Silicon)
6	1NH19EE007	Agarwal Rahat Manoj Kumar	Capgemini
7	1NH19EE008	Aishwarya P	MCR Technology Pvt. Ltd.
8	1NH19EE009	Aishwarya V H	Bangalore Metro Rail Corporation Ltd.
9	1NH19EE010	Aisiri	PLM Indishtech Pvt. Ltd.
10	1NH19EE011	Akshatha Sree S	Bangalore Metro Rail Corporation Ltd.
11	1NH19EE011	Akshatha Sree S	Bangalore Metro Rail Corporation Ltd.
12	1NH19EE012	Akshay V	Turno
13	1NH19EE013	Anil Hegde H	Cognizant
14	1NH19EE015	Anjana Kumari	Mahesh Power Control Instrument System
15	1NH19EE016	Ankit Kumar	K-Aka Technology Services (KTS)

16	1NH19EE018	Anoopkumar H S	Decibel Engineering Systems and Associates
17	1NH19EE019	Anusha.S	Bangalore Metro Rail Corporation Ltd.
18	1NH19EE023	Charishma	Capgemini
19	1NH19EE024	Chethan Dr	Vyoma Industries
20	1NH19EE025	Chirag Pathak	Computacenter
21	1NH19EE027	Dechamma	Cargill
22	1NH19EE028	Deekshith More	JP Morgan (Forage)
23	1NH19EE029	Deepak Kumar Sah	YGK Technology
24	1NH19EE030	Darshan R	Decibel Engineering Systems and Associates
25	1NH19EE032	Dhruva S	Tata Power Solar Systems Limited
26	1NH19EE033	Ezra James	Maven Silicon
27	1NH19EE035	Faoz Firoz	Capgemini
28	1NH19EE037	GN Hemanth Kumar	Steer Engineering
29	1NH19EE038	G Krishna Chaitanya	YGK Technologies
30	1NH19EE040	Gaurav P Kumar	K-Aka Technology Services (KTS)
31	1NH19EE042	Gautamee KK	Ernst and Young
32	1NH19EE044	Harshavardhan T	Turno
33	1NH19EE045	Harshita SV	Bangalore Metro Rail Corporation Ltd.
34	1NH19EE046	Harshitha	Tata Elxsi
35	1NH19EE047	J Likitha	Capegemini
36	1NH19EE048	J Prajwal	Ernst And Young
37	1NH19EE050	Jayanth R	Karnataka Power Corporation Ltd.
38	1NH19EE055	Kesamreddy Deepthi	Rayalaseema Thermal Power Plant (APGENCO)
39	1NH19EE057	Khushi	Bangalore Metro Rail Corporation Ltd.
40	1NH19EE058	Kiran Lal V	GustovalleyTechnovations
41	1NH19EE060	Kota Vikramadithya	GustovalleyTechnovations
42	1NH19EE061	Kumar Abhishek	Dynalektric Equipment Private Limited
43	1NH19EE062	Kushal AY	LTI Mindtree
44	1NH19EE065	M Gopal	Amberroot Systems Private Ltd.
45	1NH19EE066	M Rohith Kumar Reddy	Capgemini
46	1NH19EE067	Madhav Reddy C	Capgemini
47	1NH20EE401	Binay Kumar Yadav	Actio Service Provider
48	1NH20EE402	Danamma M	Bangalore Metro Rail Corporation Ltd.
49	1NH20EE403	Koushik P	YGK Technology
50	1NH20EE404	Madivalappa	Seg-Automotive India Private Limited
51	1NH20EE405	Mohan P	YGK Technologies
52	1NH20EE406	Nandan D Salanke	Transcaal Power Division Limited
53	1NH20EE407	Prajwal R M	Transcaal Power Division Limited
54	1NH20EE408	Shiva Shankara M	Computacenter
55	1NH20EE409	Sneha D R	Pralotech Solutions LLP
56	1NH20EE410	Vijay Meti	Steer Engineering
57	1NH18EE014	Faraz Ahmed Mulla	Capgemini
58	1NH18EE060	Vernon Victor	Bosch Bidadi Plant
59	1NH18EE407	Yashvantha P	Bosch Limited, Bidadi Plant
60	1NH19EE068	Manish	Elconics
61	1NH19EE069	Manoj Kumar H V	Selco Foundation

62	1NH19EE070	Manoj Kumar P	GstovalleyTechnovations
63	1NH19EE071	Maruthi B	EY India
64	1NH19EE072	Meghana N T	SEG Automotive India Private Limited
65	1NH19EE073	Meghana S	Selco Foundation
66	1NH19EE074	Mohammad Shawali	Sobha Limited
67	1NH19EE076	Muntazir Abid	STD 2nd
68	1NH19EE077	Muntazir Ali Mir	Recieving Station, Budgam
69	1NH19EE080	Naveen RN	Cognizant
70	1NH19EE083	P Sindhu	Media Ant
71	1NH19EE085	P Ravinandan Reddy	GstovalleyTechnovations
72	1NH19EE087	Poojith N	K-Aka Technology Services (KTS)
73	1NH19EE090	R Varun	Mindtree
74	1NH19EE091	Rachna Palli	PLM Indishtech Pvt. Ltd.
75	1NH19EE092	Rahul R	K-Aka Technology Services
76	1NH19EE093	Ritika Kapoor	BEL (Bharat Electronics Ltd)
77	1NH19EE095	Sandeep Naik R	GstovalleyTechnovations
78	1NH19EE097	Sanskriti Agarwalla	Polymer Industries
79	1NH19EE098	Santhosh Melvin D	Bosch, Bidadi
80	1NH19EE099	Santosh S Kummi	Karnataka Power Corporation Limited, Yalahanka
81	1NH19EE100	Sarthak Ghorai	K-Aka Technology Services
82	1NH19EE101	Sathish S	Aka Technology Services (KTS)
83	1NH19EE102	Shaif Alam	Rinac India Limited
84	1NH19EE103	Shaik Sameer	Airobosoft
85	1NH19EE104	Shambhavi Bhagat	Dell
86	1NH19EE105	Shariq Ahmed	SBEE Cables (India) Limited
87	1NH19EE106	Sharmi Kanaujia	South Eastern Railway
88	1NH19EE107	Sowmya Shree	Newline Engineers And Designers
89	1NH19EE109	Subhajit Das	K-AKA Technology Services
90	1NH19EE110	Suraj Raju Jadhav	Kaashiv Infotech
91	1NH19EE113	Swastik Shukla	Capgemini
92	1NH19EE114	Tabasum Manzoor	Capgemini
93	1NH19EE116	Tejas V	Capgemini Engineering
94	1NH19EE120	U Mohammed Arshad	YGK Technologies Pvt. Ltd.
95	1NH19EE121	Vandana R	Technologics Global Pvt. Ltd.
96	1NH19EE122	Vidya G R	Amberroot Systems Private Limited
97	1NH19EE123	Vinod Kumar R	Steer Engineering
98	1NH19EE124	Vyas Kodge	Sobha Ltd.
99	1NH19EE125	W Y Jhansipriya	K-Aka Technology Services
100	1NH19EE126	Y.Punith	Dynalektric
101	1NH19EE127	YannamRoopeswar Reddy	YGK Technologies
102	1NH19EE129	Zahra Goher Sultana	Esigelec
103	1NH18EE021	Jeshwanth V	Transcaal Power

Table 2.2.5.b2: Industry Internship Details (2021-2022)

Sl. No	USN	Name of the Student	Company
1	1NH18EE001	Abhishek Kumar	MPCIS
2	1NH18EE002	Allen Harish M	Automation Anywhere
3	1NH18EE003	Anirudh Ks	Cognizant
4	1NH18EE004	Appaji	Taurus power electronics
5	1NH18EE005	Ashuanand	Pantech Prolabs India Pvt. Ltd
6	1NH18EE006	Bharath B	Verzeo
7	1NH18EE008	Bhoomika J Kumar	Automation anywhere
8	1NH18EE009	C Lakshmipathi	Cognizant
9	1NH18EE010	Chitra S	McAfee Software Private Ltd. (Skyhigh Security)
10	1NH18EE011	Darshinimachamma M S	Hindustan Aeronautics Limited and Ernst & Young
11	1NH18EE012	Divyashree N	DXC
12	1NH18EE013	E Kavipriya	Ernst and Young
13	1NH18EE015	Gagana C	CGI
14	1NH18EE016	G.Sivakumar	Taurus Powertronics Private Limited
15	1NH18EE017	Greeshmachennareddy	SELCO Foundation
16	1NH18EE020	Jaffer Sadiq	Taurus Powertronics Private Limited
17	1NH18EE022	Jibran Zaidi Hussain	GTTC Electrical
18	1NH18EE023	K V Nandeesh	Verzeo
19	1NH18EE025	Karthik N	CGI
20	1NH18EE026	Kiran U	Cognizant India Pvt. Ltd.
21	1NH18EE027	L. Nirupavardhan	Spectra Assistive Private Ltd.
22	1NH18EE028	Manoj Kumar. M. B	Wipro
23	1NH18EE031	Mohammed Omer Ali	Noor Information for Communication & IT Est.
24	1NH18EE032	Mohammed Tauqeer Ali	Technologic Global Pvt. Ltd.
25	1NH18EE035	Naveen Kumar K R	Vardhan Consulting Engineers
26	1NH18EE036	Nayrah M A	Tickle Brains Software Pvt. Ltd.
27	1NH18EE038	Niranjan Kumar	Taurus Powertronics Pvt. Ltd.
28	1NH18EE039	Nischal Dinesh	Ticklebrains Software Pvt. Ltd.
29	1NH18EE040	Ponnappa Mm	Ticklebrains Software Pvt. Ltd.
30	1NH18EE041	Prabhath Raj	Mersen
31	1NH18EE044	Rachana R	Sri Shanthaveera Transformers Manufacturing Company
32	1NH18EE046	Rohan N	Hexaware
33	1NH18EE048	Rutik Laxman Belekar	Take It Smart
34	1NH18EE048	Rutikbelekar	Take It Smart
35	1NH18EE049	Sagar Kulkarni	Ticklebrains Software Pvt. Ltd.
36	1NH18EE050	Sahana B	Selco Foundation
37	1NH18EE052	Sanjay G	Technologics Global
38	1NH18EE053	Sarthak Das	Ticklebrains Software Pvt. Ltd.
39	1NH18EE054	Shekar V	KPTCL (Karnataka Power Transmission Corporation Ltd)
40	1NH18EE055	Shiva R V	Ticklebrains Software Pvt. Ltd.
41	1NH18EE056	Shreyshbabu	KPTCL
42	1NH18EE057	Siddhartha Sunilsingh	Potential Foods Pvt. Ltd.

43	1NH18EE061	Vikram.S	KPTCL Hoody
44	1NH18EE062	Vinayaka S Dhuleholi	Mersen Electrical Power
45	1NH18EE063	Vishwa Deepak Pandey	JSW Steel Ltd.
46	1NH18EE063	Vishwa Deepak Pandey	JSW Steel Ltd.
47	1NH18EE065	Muhammad Numan Bhat	1) VCE (Vardhan Consultant Engineers) , 2) JKPTCL (Jammu & Kashmir Power Transmission Corporation Limited)
48	1NH18EE066	Tahooraimtiyaz	Themathcompany
49	1NH18EE417	Rahul Mishra	Automation Anywhere
50	1NH19EE400	Kiran K V	CGI Consultant and Management Technology
51	1NH19EE402	Manjunath Ganapati Naik	Karnataka Power Transmission Corporation Limited
52	1NH19EE403	Sushma. M	Raichur Thermal Power Station (KPCL)
53	1NH19EE404	Sushmitha T S	KPTCL
54	1NH19EE405	V Sharon	KPTCL
55	1NH19EE406	Harisha S N	KPTCL Nimhans
56	1NH17EE712	Dheepakbaalajii	Techno Cloud Global
57	1NH18EE067	Sayanth PV	IAMPL
58	1NH18EE068	Pavan R	Cerner
59	1NH18EE069	Vivekranjan	Inventeron Pvt. Ltd.
60	1NH18EE700	Abhimanyuiyer	Sri Shanthaveera Transformers Mfg. Co.
61	1NH18EE701	Adithyahegde	KPTCL
62	1NH18EE702	Ananda M A	Taurus Powertronics Pvt. Limited
63	1NH18EE704	Ateeq Ur Rahman	Hashedin by Deloitte
64	1NH18EE705	B.Saibharath Reddy	R.T.P.P (APGENCO)
65	1NH18EE706	Bellamsreekanth Reddy	Cognizant
66	1NH18EE707	Bharateshshiradoni	KPTCL
67	1NH18EE708	Bhavana YC	KPTCL
68	1NH18EE709	Bindhu	HAL
69	1NH18EE710	C Bhavana Singh	SolworxS, Hindustan Aeronautics Limited
70	1NH18EE711	Chandan N	Technologics
71	1NH18EE712	Chandrashekar C	HAL Aerospace Division
72	1NH18EE714	Daggupati Siva Prasad	HAL Aerospace Division / GTTC
73	1NH18EE715	Deepthi D	Hindustan Aeronautics limited
74	1NH18EE716	Dhanush L	Sri Shanthaveera Transformers Mfg. Co.
75	1NH18EE718	Joanna Alicia D	Hindustan Aeronautics Limited
76	1NH18EE719	K.Abishek	Welkinrim Technologies
77	1NH18EE720	K.Ajay	KPTCL
78	1NH18EE722	K.Prasanna	Mu Sigma
79	1NH18EE723	Kiran. P. Gowda	Power Grid
80	1NH18EE724	Kulshresthautkarshalok	BARC (Bhabha Atomic Research Center)
81	1NH18EE725	Ashwini B Lokare	Vardhan Consulting Engineers
82	1NH18EE727	Mdsagar Khan	Vardhan Consulting Engineers
83	1NH18EE728	Mohammad Usman Khan	Jammu and Kashmir Power Department
84	1NH18EE729	Md Farhanulla Sharif	Kaa Shiv
85	1NH18EE730	Mohammed Sufiyan	Technologies Global Pvt. Ltd.
86	1NH18EE731	Niranjan C	KPTCL

87	1NH18EE732	Niranjan K R	KPTCL
88	1NH18EE733	Patan Mohammad Muthahir Khan	Wipro
89	1NH18EE734	Prajwal A Raikar	FTD Infocom
90	1NH18EE735	Pranav R Naik	Tata Motors
91	1NH18EE736	R Puneeth Venkat Sai Varma	KPTCL, Toyota
92	1NH18EE737	R Supraja	Internship 1- Hindustan Aeronautics Limited Internship 2- Ryver Technologies
93	1NH18EE739	Nahush S	KPTCL
94	1NH18EE740	Shawin Krishna S	Cognizant
95	1NH18EE741	Sridharshinisaravanan	Cognizant
96	1NH18EE742	Sankeerthini D	Hindustan Aeronautics Limited
97	1NH18EE743	Saranya S	Hindustan Aeronautics Limited
98	1NH18EE744	Satyavarapuvenkatapavan Kumar	HAL (Aerospace Division) & GTTC
99	1NH18EE745	Shaik Mahammad Adil	R.T.P.P (APGENCO)
100	1NH18EE746	Shashidhar P H	KPTCL
101	1NH18EE747	Shiva Prasad L P	Cognizant
102	1NH18EE748	Shivam	Jindal Steel Works
103	1NH18EE749	Shivangi Pandey	Ernst and Young
104	1NH18EE750	Srinjanachoudhuri	The Climber My Captain
105	1NH18EE751	T Harshavardhan Reddy	New Horizon College
106	1NH18EE753	Varun Sham Ks	KPTCL
107	1NH18EE754	Venkan Gouda	KPTCL
108	1NH18EE755	Vishal Gupta	Automation Anywhere
109	1NH18EE756	Vishal Suresh	KPTCL
110	1NH18EE757	Vishnupriya G G	HAL
111	1NH18EE758	Vishwanathpatil	KPTCL
112	1NH19EE407	Ramesharajaursu K R	Take It Smart (OPC) Pvt. Ltd.
113	1NH19EE408	Sandeshvantagodi	KPTCL



NEWLINE

INTERNSHIP COMPLETION LETTER

TO WHOMSOEVER IT MAY CONCERN

This is to certify that Ms. Sowmya Shree from New Horizon College of Engineering, Bengaluru has successfully completed the internship at Newline Engineers and Designers, Bengaluru as an 'Industrial Automation Intern' from 9th January 2023 to 31st March 2023. This internship was observed and assessed by our Automation Machinery Manufacturing team and can be claimed towards academic requirements and credits.

During the internship program, Ms. Sowmya Shree has successfully delivered Control panel design and assembly for industrial Machineries and their maintenance by demonstrating efficient technical process, analytical thinking, excellent leadership, and managerial skills. Her time management skills and problem-solving approach has made her a valuable resource to our organization.

We wish her the very best for her future endeavours.

Regards,

Latha J - Manufacturing Supervisor
Newline Engineers and Designers
Email: automation.newline@gmail.com
Contact: +91 9738210342

South Eastern Railway

Office of the Sr.DEE(G)SRC

No: Elec/Chg/SR C/27/319

To
The HOD-EEE
Department of Electrical & Electronics Engineering
New Horizon college of Engineering

Dt : 30.03.23

Sub : Release of Sharmi Kanaujia after Completion of Schedule Training

Ref : 1) Institute letter No : NHCE/EEE/2022-23/10 , Dt: 10.02.23

2) ADEE/TL/SRC\letter No:E Elect/Chg/SRC/27/263 ,Dt : 13.02.23

3) SRC/P/Elect/Estb/17 , Dt : 30.03.2023

In conection with above cited Ref letter the following students of New Horizon College of Engineering has been allowed for Training under SSE/Power/SRC For period of 45 days from 14.02.23 is hereby released on 30.03.23(A.N).

Sl.No	Name of student	Name of Institution
1	Sharmi Kanaujia	New Horizon College of Engineering

Copy to- Sr.DEE(G)SRC to information Pls.

ADEE/TL/SRC
For Sr.DEE(G)SRC
S.E.Railway

Figure 2.2.5.b: Sample internship completion certificates

Impact analysis of industrial training

1. Student confined that this program was helpful to enhance their knowledge.
2. Students realize the practical importance of the subjects.
3. Students had seen live project site and from this they have gained practical knowledge.
4. Students could use the knowledge of the training for campus interviews.
5. The industry standards and workplace culture is exposed to students, and they also understand the importance of being punctual and meeting the deadlines.
6. Communication skills of the students improved.
7. Students are inspired to work hard and get placed in such industries.
8. The moral and confidence of the students get boosted, which in long run helps them for self-employment.
9. Student employability is increased.

Student feedback on initiative

1. For feedback from training, faculty take viva examination of students.
2. Depending upon this result those who have poor knowledge on that particular topic, faculty encourages the students to participate in industrial workshops or other field visit for increasing their core knowledge.
3. Department in association with professional bodies conduct distinguished lectures, technical seminars, workshops and conferences to enhance the knowledge of students in program specific domains.

The Value-added short-term training is also executed in the department which aims to provide additional learner centric, skill oriented technical training, with the primary objective of improving the employability skills of students. The main objectives of the program are:

1. To provide students an understanding of the expectations of industry
2. To improve employability skills of students.
3. To bridge the skill gaps and make students industry ready.
4. To provide an opportunity to students to develop inter-disciplinary skills.

The **Table 2.2.5.c** below shows value added training program offered in the department by the industry expert.

The students are given opportunity to take up value added courses related to industry to enhance their competency skills.

Table 2.2.5.c: Value Added Courses

Academic year	Topic	From date	To date	No of students attended
2022-2023				
2022-2023	PV solar plant design using PV system	05-09-2022	14-09-2022	13
2022-2023	CASE andMaaS ["Connected, Autonomous, Shared, Electric Vehicles" and "Mobility as a Service"]	Planned	-	14
2022-2023	Embedded System Development using ARM and Embedded C	Planned	-	14
2021-2022				
2021-2022	Electrical AutoCAD	20-11-2021	04-03-2022	18
2021-2022	Training and certification programme on Robotics based Automation	25-07-2022	26-07-2022	18
2021-2022	Certificate course in Management & Leadership	26-03-2022	26-03-2022	18
2020-2021				
2020-2021	PPM Concepts + Primavera	23-09-2021	25-09-2021	18
2020-2021	Microsoft tools (MS Project)	27-09-2021	30-10-2021	18
2020-2021	OrCAD	16-07-2021	17-07-2021	18

The feedback received from the students show that there is an overall high satisfaction on the initiative of the institute and the department of Electrical & Electronics Engineering on organizing internship training, industrial visits, value added training and exchange programme. Students testimonial on Industry initiative on internship taken is shown below.

Student Testimonials on various industry institute activities

Zahra Gohar Sultana (1NH19EE129)



Being able to pursue in ESIGELEC that is a part the Excellent Ecole for the "The exchange program" that helped me deepen my knowledge. This opportunity has widened my intellect with the teachings of renowned faculties and at the same time help me in shaping my career. The global exposure during the academic year 2022-2023 has given me the opportunity to be able to build self-dependency. As France is a breathtaking country with diverse cultures and a great education system, this has given me a chance for various window of possibilities to my career. Furthermore, whenever an unbelievable open door presents itself, you should go snatch everything. NHCE has established a platform for enhanced growth in its pioneering efforts and I am immensely grateful for having been a part of this venture.

Rahul Vijay (1NH18EE738)



The France student exchange program has given me the international exposure during the academic year 2021-2022. I gained a lot of insight about the French culture. The activities of the cross-cultural class helped me to improve my Leadership skills and the way to interact with the people from different countries and different background. I was also given an opportunity to learn French. The overall experiences of the exchange program will help me in shaping my career. I am very much thankful to the home (NHCE) and host (ESIGELEC) universities for providing me such an opportunity.

Department of
Electrical and Electronics Engineering

Criterion - 3

Course Outcomes and
Program Outcomes

CRITERION 3	COURSE OUTCOMES AND PROGRAM OUTCOMES	175

3. COURSE OUTCOMES AND PROGRAM OUTCOMES (175)

3.1. Establish the correlation between the courses and the Program Outcomes (POs) & Program Specific Outcomes (PSOs) (25)

Introduction about the courses in the program

About Electrical & Electronics Engineering UG Program

- The curriculum of the Electrical & Electronics Engineering program comprises of various distinct areas namely; Program Core, Professional Elective Courses, Open Elective Courses, seminar, laboratory experiments, technical projects, co-curricular/extracurricular activities, etc. The program aims to train the students to enlighten new paths to prepare a student for a lifetime of continual learning and application of knowledge to real-life situations.
- This program features new broad-based curriculum and flexible program structure, balance of theoretical foundations, hands-on, and experiential learning, Emphasis on design-oriented thinking, creativity, life-long learning, Interdisciplinary, and Department-specific Specializations that prepares students to compete effectively in a world of high rapid technological advancements to pursue entrepreneurship and industry collaboration through engineering innovation.
- The program offers sufficient flexibility for the aspiring students to undergo various elective courses which provide ever challenging needs of technical excellence in all areas of electrical engineering with a strong focus on Digital System, Microcontrollers & Embedded Systems, Control Systems & Instrumentation, Power Electronics & Electrical Drives, Power and Energy Systems, Advanced Industrial & Building Automation, Smart Grid Technologies & Industrial IoT, High Voltage Engineering and emerging technologies like, Electric Vehicles, Solar Photo Voltaic Technologies with the aim of providing a sound background in the areas of Electrical and Electronics Engineering. This emphasizes a broad-based knowledge in general engineering, and engineering methodologies, and enables the students to appreciate the links between science and engineering to shape graduates into hard-core professionals who would become effective leaders and noteworthy technological innovators.
- The technical infrastructure and laboratory facilities are upgraded periodically and provide adequate opportunities for students and researchers to learn, innovate, and are introduced to engineering practice through laboratory courses, works visits, practical training, projects which provide the ability to apply technical skills to identify, formulate, and solve complex problems encountered in modern electrical engineering practices. This equips their ability to compete effectively in a world of rapid technological advancements. Departmental courses focus on changing paradigms of Evaluation and Assessment, the performance of students in a course is evaluated not only through examinations but also on a continuous basis which includes but not limited to interaction in the classrooms, quizzes, assignments, tutorials, laboratory work, term papers, and projects. Technology-enabled aids have been assimilated into continuation evaluation as

an integrated component. The Department provides Internships for all students in the core, Information Technology (IT) fields and public sectors of Electrical Engineering

- Opportunities and challenges continue to necessitate Electrical engineers to create the future by emerging advanced technologies that resolve global problems and enrich the quality of life. The consistent advancements and innovations proceeding in the domain of electrical engineering have paved the way for an immense opportunity for engineers to exercise their academic and theoretical expertise, and experiment with their ideas to make significant innovations and improvisations. The future is about Renewables, clean energy, electric cars, effective electricity transmission, and smart grid technology. Thus, job prospects in the power industry are in high demand for Electrical Engineers who graduated from this program

Focused Major Areas:

- Power and Energy system
- Power Electronics and Industrial Drives
- Advanced Industrial and Building Automation
- Microcontroller and Embedded System
- Electrical Machines and Special Machines
- Control System and Instrumentation

Focused Professional Electives:

- Artificial Neural Networks and Fuzzy Logic
- Industrial IoT Embedded systems
- Smart Grid Technologies
- Applications of IoT in Electrical Engineering
- Advanced Microcontroller and Applications
- Virtual Instrumentation
- MEMS and Applications
- Electrical Vehicle Drives
- FACTs and HVDC Transmission
- Simulation of Power Electronics
- Photo Voltaic Systems & Applications

Electrical and Electronics Engineering program encourages the students to use their critical thinking skills and creativity with the principles of scientific engineering and computer programming. The syllabus emphasizes in-depth technical knowledge and practical application skills in all disciplines of Electrical and Electronics Engineering. The students acquire the ability to understand and solve industrial problems in real time. The program provides the core courses which gives the information for the improvement of computational solutions to complex engineering problems in the society. It focuses on application programming and system software development. This program also offers courses from other disciplines like Electrical, Mechanical, Information Technology, and Computer Science and Engineering**.** In order to enhance the analytical thinking of the students, applied mathematics courses are offered from first to fourth semester. Apart from these courses the applied science courses like Physics, Chemistry, Professional Ethics and Human values have been included in the curriculum.

Program Outcomes (POs) & Program Specific Outcomes (PSOs)

The Program Outcomes (POs) & Program Specific Outcomes (PSOs) for the graduates of Electrical and Electronics Engineering are listed below.

List of Program Outcomes

Graduates of Electrical and Electronics Engineering can able to:

PO1: Engineering knowledge: Apply the knowledge of mathematics, science, engineering fundamentals and an engineering specialization to the solution of complex engineering problems in Electrical and Electronics Engineering.

PO2: Problem analysis: Identify, formulate, review research literature, and analyze complex engineering problems in Electrical and Electronics Engineering reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.

PO3: Design/development of solutions: Design solutions for complex engineering problems and design system components or processes of Electrical and Electronics Engineering that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.

PO4: Conduct investigations of complex problems: Use research-based knowledge and research methods including design of experiments in Electrical and Electronics Engineering, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.

PO5: Modern tool usage: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modelling to complex engineering activities in Electrical and Electronics Engineering with an understanding of the limitations.

PO6: The engineer and society: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice in Electrical and Electronics Engineering.

PO7: Environment and sustainability: Understand the impact of the professional engineering solutions of Electrical and Electronics Engineering in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.

PO8: Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

PO9: Individual and team work: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.

PO10: Communication: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.

PO11: Project management and finance: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

PO12:Life-long learning: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

List of Program Specific Outcomes

Graduates of Electrical and Electronics Engineering will be able to:

PSO 1: Graduates will be able to solve real life problems of Power system and Power Electronics using Mi Power, PSPICE and MATLAB software tools and hardware.

PSO 2: Graduates will be able to develop and support systems based on renewable and sustainable Energy sources.

Course Outcomes (COs)

Course Outcomes are the statements that help the students to understand the reason for pursuing the course and helps them to identify what they will be able to do at the end of the course. The course outcomes are defined by the course coordinator along with course instructors. By using action verbs and learning statements, COs have defined. For each courses, course outcomes may vary from 4 to 6 nos. These course outcomes are then mapped with the Program Outcomes (POs) and Program Specific Outcomes (PSOs). Then, it is submitted for the approval of the Department Advisory Board and the Board of Studies. Figure 3.1.1 shows Hierarchy of faculty involvement in CO Statement and mapping of COs, POs and PSOs.

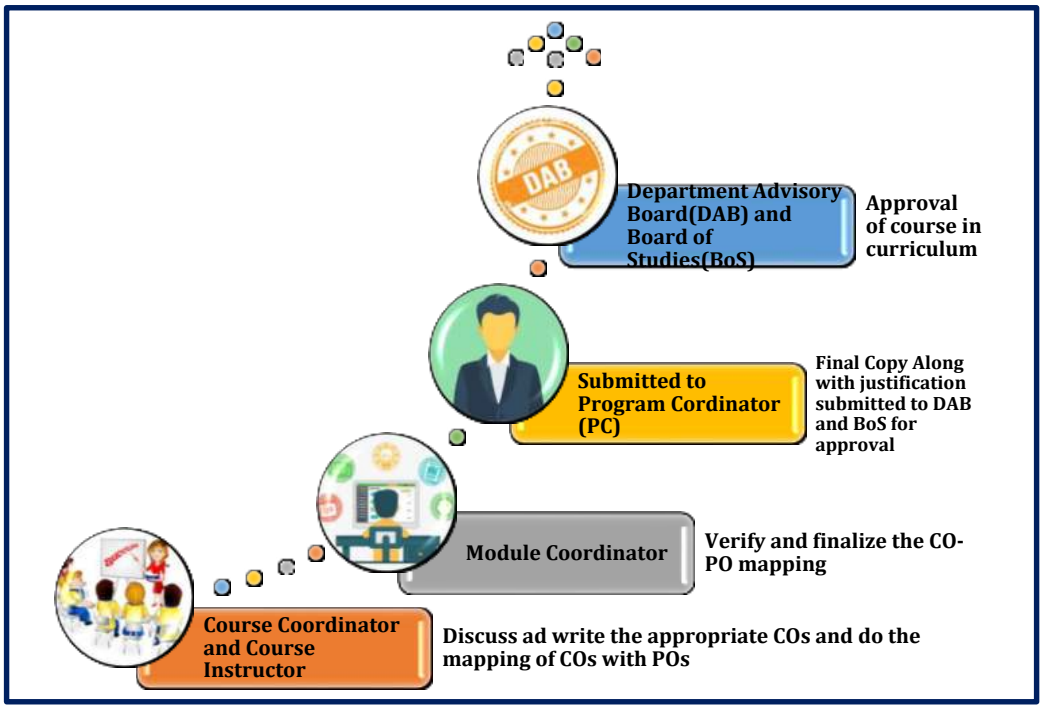


Figure 3.1.1 Hierarchy of faculty involvement in framing CO statement

The following section describes how COs are defined for a course namely, 20EEE62 Power Electronics. Based on the course content of this course, Six COs (CO1 to CO6) are defined in the table 3.1.1 shown below:

Table 3.1.1 Course outcomes of 20EEE62 - Power Electronics

Subject	20EEE62 POWER LECTRONICS
COs	**On completion of this course, students will be able to:**
20EEE62.1	Analyzevarious power semiconductor devices.
20EEE62.2	Investigate the protection, gating and commutation circuits.
20EEE62.3	Assess different types of controlled rectifiers, choppers and inverters.
20EEE62.4	Choose suitable harmonic reduction methods.
20EEE62.5	Analyze the performance of power converters on a digital platform.
20EEE62.6	Design power converters for industrial applications.

Mapping of CO with POs & PSOs

For all the courses mentioned in the program, the Course outcomes are mapped by the course coordinator and course instructors with the defined twelve POs and two PSOs. The mapping has been done based on the correlation levels defined by board of accreditation.

The various correlation levels are,

- "3" - Substantial (High) Correlation
- "2"- Moderate (Medium) Correlation
- "1"- Slight (Low) Correlation
- "dash" - No Correlation

Table 3.1.4 shows the Program Articulation Matrix for all the courses for the regulation 2018-2022 batch students. COs-POs and COs-PSOs matrices of all courses are framed.

However matrices for three courses are selected and presented in Table 3.1.2.1.a to 3.1.2.3.c it shows the Course Articulation Matrix, CO-PO mapping and its justification for following core courses.

- 19EEE33-Electronic devices and circuits
- 20EEE61-Power system analysis
- 20EEE821A - Photo voltaic systems and applications

To explain the mapping of COs with POs & PSOs, one core course 19EEE33 Electronic devices and circuits is taken into consideration.

Table 3.1.2.1.a Course Articulation Matrix of 19EEE33 Electronic devices and circuits

COs	19EEE33 Electronic devices and circuits
On completion of this course, students will be able to:	
19EEE33 .1	Investigate the characteristics of various semiconductor devices at different conditions
19EEE33 .2	Analyze the biasing circuits of BJT and FET and choose the appropriate circuit for amplification and switching applications
19EEE33 .3	Construct wave shaping, rectification and amplification circuits
19EEE33 .4	Design multistage power amplifiers and oscillator circuits for the given specifications
19EEE33 .5	Evaluate the effects of different types of negative and positive feedback amplification
19EEE33.6	Utilize simulation tools for performance analysis of a real time analog circuit.

Table 3.1.2.1.b CO-PO-PSO MAPPING of 19EEE33- Electronic devices and circuits

CO/ PO& PSO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
19EEE33 .1	3	3	-	3	-	-	-	-	-	-	-	-	1	1
19EEE33 .2	3	3	2	3	-	-	-	-	-	-	-	-	1	1
19EEE33 .3	3	3	3	3	-	-	-	-	-	-	-	-	1	1
19EEE33 .4	3	3	3	3	-	-	-	-	-	-	-	-	1	1
19EEE33 .5	3	3	3	3	-	-	-	-	-	-	-	-	1	1
19EEE33.6	3	2	2	2	3	-	-	-	-	-	-	-	1	1
Average	**3**	**2.8**	**2.6**	**2.8**	**3**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**1**	**1**

Table 3.1.2.1.c CO-PO-PSO JUSTIFICATION of 19EEE33- Electronic devices and circuits

COs	PO/ PSO	CL	Justification
19EEE33.1	PO1	3	Strongly mapped as the students will be able to apply the knowledge on the device characteristics in any of the complex problem
	PO2	3	Strongly mapped as the students will be able to analyze the device characteristics and solve the day today's problem
	PO4	3	Strongly mapped as the students will be able to conduct investigation of complex problems where the electronics devices are used
	PSO1	1	Slightly mapped as the students will be able to solve the real time problems related with electronic gadgets.
	PSO2	1	Slightly mapped as the students will be able to support the systems used for sustainability
19EEE33.2	PO1	3	Strongly mapped as the students will be able to identify the appropriate biasing circuit to implement.
	PO2	3	Strongly mapped as the students will be able to analyze the circuits for switching and amplification applications.
	PO3	2	Moderately mapped as the students will be able to design biasing circuits that satisfies the need
	PO4	3	Strongly mapped as the students will be able to find a feasible solution for the problem designed.
	PSO1	1	Slightly mapped as the students will be able to solve the real time problems with the knowledge of biasing circuits.
	PSO2	1	Slightly mapped as the students will be able to support the systems used for sustainability
19EEE33.3	PO1	3	Strongly mapped as the students will be able to construct the appropriate circuit for the given application
	PO2	3	Strongly mapped as the students will be able to formulate the circuits for applications.
	PO3	3	Strongly mapped as the students will be able to design wave shaping and amplification circuits that satisfies the need
	PO4	3	Strongly mapped as the students will be able to find a feasible solution for the problem designed.
	PSO1	1	Slightly mapped as the students will be able to solve the real life problems using software and hardware.
	PSO2	1	Slightly mapped as the students will be able to demonstrate the working of the system developed.

19EEE33.4	PO1	3	Strongly mapped as the students will be able to implement amplification and Oscillator system.
	PO2	3	Strongly mapped as the students will be able to analyze the oscillator and amplifier circuits
	PO3	3	Strongly mapped as the students will be able design the system for the given specification.
	PO4	3	Strongly mapped as the students will be able to analyze, interpret data and synthesis the information
	PSO1	1	Slightly mapped as the students will be able to demonstrate the working of the system developed.
	PSO2	1	Slightly mapped as the students will be able to support the systems used for sustainability
19EEE33.5	PO1	3	Strongly mapped as the students will be able to construct the appropriate feedback circuit for the given application
	PO2	3	Strongly mapped as the students will be able to evaluate the effects of feedback amplifiers.
	PO3	3	Strongly mapped as the students will be able to design feedback circuits that satisfies the need
	PO4	3	Strongly mapped as the students will be able to find a feasible solution for the problem designed.
	PSO1	1	Slightly mapped as the students will be able to demonstrate the working of the system developed.
	PSO2	1	Slightly mapped as the students will be able to support the systems used for sustainability
19EEE33.6	PO1	3	Strongly mapped as the students will be able to implement any circuit in software.
	PO2	2	Moderately mapped as the students will be able to analyze the circuits using simulation tools.
	PO3	2	Moderately mapped as the students will be able to design circuits that satisfies the need
	PO4	2	Moderately mapped as the students will be able to find a feasible solution for the problem designed.
	PO5	3	Strongly mapped as the students will be able to Create, select, and apply appropriate techniques and resources
	PSO1	1	Slightly mapped as the students will be able to solve the real life problems using PSPICE Software tools and hardware
	PSO2	1	Slightly mapped as the students will be able to support the systems used for sustainability

Table 3.1.2.2. a Course Articulation Matrix of 20EEE61-Power system analysis

Subject	20EEE61 -Power system analysis
COs	On completion of this course, students will be able to:
20EEE61.1	Develop per-unit reactance diagrams, bus incidence, Ybus and Zbus matrices for modelling the actual power system.
20EEE61.2	Determine steady state power flow analysis of power system using Gauss-Seidel, Newton-Raphson and fast decoupled iterative methods.
20EEE61.3	To analyze symmetrical and unsymmetrical faults in a power system.
20EEE61.4	To perform comparative study between various types of faults by solving numerical involving real time examples of a typical power system
20EEE61.5	Apply the methods to improve steady state and transient stability of power system.
20EEE61.6	Develop mathematical models for power system using dedicated software tools and thus analyze power system stability.

Table 3.1.2.2.b CO-PO-PSO MAPPING of 20EEE61-Power system analysis

CO/ PO& PSO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
20EEE61.1	3	3	3	-	3	2-	-	1	-	-	-	3	2	2
20EEE61.2	3	3	3	2	3	2	-	-	1	1	-	-	2	2
20EEE61.3	3	2	3	3	3	1	2	1	-	-	-	-	2	2
20EEE61.4	3	3	3	3	3	1	3	1	3	-	2	3	2	2
20EEE61.5	3	3	3	3	3	1	1	1	3	-	3	3	2	2
20EEE61.6	3	3	3	2	3	3	1	1	3	-	3	3	2	2
Average	**3**	**2.83**	**3**	**2.60**	**3**	**1.60**	**1.75**	**1**	**2.50**	**1**	**2.67**	**3**	**2**	**2**

Table 3.1.2.2.c CO-PO-PSO JUSTIFICATION of 20EEE61-Power system analysis

COs	PO/PSO	CL	Justification
20EEE61.1	PO1	3	Strongly mapped as the students can able to apply the knowledge of Mathematics and basic engineering fundamentals to calculate per unit values.
	PO2	3	Strongly mapped as the students will be able to analyze the given power system to obtain the impedance and reactance diagram to find sustainable conclusions.
	PO3	3	Strongly mapped as the students will be able to analyze complexities of the system to design components in power system.
	PO5	3	Strongly mapped as the students will be able to model the power system using modern tools by considering per unit quantities.
	PO6	2	Moderately mapped as the students will be able to apply contextual knowledge to identify the power flow in transmission line.
	PO8	1	Slightly mapped as the students will be able to apply ethical principles to identify issues related to power system.
	PO12	3	Strongly mapped as the students will be able to recognize and learn the innovative technologies in power system field.
	PSO1	3	Strongly mapped as the students will be able to solve the real life problems by applying the concept of Impedance and admittance matrices
	PSO2	3	Strongly mapped as the students will be able to develop the power system components by analyzing load flow through a given system by considering PU values and bus matrices..

20EEE61.2	PO1	3	Strongly mapped as the students will be able to apply the knowledge of Mathematics and basic engineering fundamentals to calculate bus voltage and bus power.
	PO2	3	Strongly mapped as the students will be able to analyze the given power system to obtain the load flow equations to find sustainable conclusions.
	PO3	3	Strongly mapped as the students will be able to analyze complexities of the system to design components in power system to satisfy specified needs.
	PO4	2	Moderately mapped as the students will be able to synthesis the information of the system through load flow study methods to provide valid conclusions.
	PO5	3	Strongly mapped as the students will be able to find the relevant tools Such as GS, NR methods to implement the problem stated.
	PO6	2	Moderately mapped as the students will be able to find solution for some societal needs.
	PO9	1	Slightly mapped as the students will be able to work as a team and jointly find a solution for the problem.
	PO10	1	Slightly mapped as the students will be able to communicate their work in reviews and paper presentations.
20EEE61.3	PO1	3	Strongly mapped as the students will be able to apply mathematical knowledge to find solution for different faults in power system.
	PO2	2	Moderately mapped as the students will be able to formulate and conduct research to analyze complex engineering problems to find sustainable conclusions.
	PO3	3	Strongly mapped as the students will be able demonstrate the system developed.
	PO4	3	Strongly mapped as the students will be able to design and conduct research to analyze load flow data to find valid conclusions.
	PO5	3	Strongly mapped as the students will be able to use modern tools to model the system.
	PO6	1	Slightly mapped as the students will be able to relate the system for Societal needs.
	PO7	2	Moderately mapped as the students will be able to relate the system for Environmental needs.
	PO8	1	Slightly mapped as the students will be able to apply ethical principles and commit to professional ethics.
	PSO1	3	Strongly mapped as the students will be able to demonstrate the working of the system developed.

20EEE61.4	PO1	3	Strongly mapped as the students will be able to apply knowledge in engineering fundamentals to analyze faults
	PO2	3	Strongly mapped as the students will be able to analyze different faults in real time scenario.
	PO3	3	Strongly mapped as the students will be able to develop System components.
	PO4	3	Strongly mapped as the students will be able to apply research based knowledge in fault calculations and compare results with existing works.
	PO5	3	Strongly mapped as the students will be able to use modern tools to model the system.
	PO6	1	Slightly mapped as the students will be able to relate the system for Societal needs.
	PO7	3	Strongly mapped as the students will be able to relate the system for Environmental needs.
	PO8	1	Slightly mapped as the students will be able to apply ethical principles and commit to professional ethics.
	PO9	3	Strongly mapped as the students will be able to work as a team and jointly find a solution for the problem related to power system stability.
	PO11	2	Moderately mapped as the students can participate as a team or an individual to manage projects.
	PO12	3	Strongly mapped as the students will be able to recognize and learn the innovative technologies in power system field.
	PSO1	3	Strongly mapped as the students will be able to demonstrate the working of the system developed.
	PSO2	3	Strongly mapped as the students will be able to develop and document the application power system analysis in the field of sustainable energy resources

20EEE61.5	PO1	3	Strongly mapped as the students will be able to apply knowledge in engineering fundamentals to identify the stability in power system.
	PO2	3	Strongly mapped as the students will be able to analyze different types of stability in power system.
	PO3	3	Strongly mapped as the students will be able to develop solutions for different power system stability problems.
	PO4	3	Strongly mapped as the students will be able to apply research based knowledge in stability and compare results with existing works related to stability in power system.
	PO5	3	Strongly mapped as the students will be able to use modern tools to model the systems to improve stability.
	PO6	1	Slightly mapped as the students will be able to relate the system for Societal needs.
	PO7	1	Slightly mapped as the students will be able to relate the system for Environmental needs.
	PO8	1	Slightly mapped as the students will be able to apply ethical principles and commit to professional ethics.
	PO9	3	Strongly mapped as the students will be able to work as a team and jointly find a solution for the problem related to power system stability.
	PO11	3	Strongly mapped as the students can participate as a team or an individual to manage projects.
	PO12	3	Strongly mapped as the students will be able to recognize and learn the innovative technologies in power system field.
	PSO1	3	Strongly mapped as the students will be able to develop and demonstrate the system using simulations for stability analysis.
	PSO2	3	Strongly mapped as the students will be able to develop and document the application power system analysis in the field of sustainable energy resources

20EEE61.6	PO1	3	Strongly mapped as the students will be able to apply knowledge in engineering fundamentals and Mathematics to model the Power system for stability analysis.
	PO2	3	Strongly mapped as the students will be able to analyze transient stability in power system using equal area criterion.
	PO3	3	Strongly mapped as the students will be able to develop solutions for different transient stability problems.
	PO4	2	Moderately mapped as the students will be able to apply research-based knowledge and knowledge through experiential learning related to stability.
	PO5	3	Strongly mapped as the students will be able to use modern tools to model the systems to improve transient stability.
	PO6	3	Strongly mapped as the students will be able to relate the system for Societal needs.
	PO7	1	Slightly mapped as the students will be able to relate the system for Environmental needs.
	PO8	1	Slightly mapped as the students will be able to apply ethical principles and commit to professional ethics.
	PO9	3	Strongly mapped as the students will be able to work as a team and jointly find a solution for the problem related to power system stability.
	PO11	3	Moderately mapped as the students can participate as a team or an individual to manage projects.
	PO12	3	Strongly mapped as the students will be able to recognize and learn the innovative technologies in power system field.
	PSO1	3	Strongly mapped as the students will be able to demonstrate the working of the system developed.
	PSO2	3	Strongly mapped as the students will be able to develop and document the application related to transient stability in the field of sustainable energy resources.

Table 3.1.2.3. a Course Articulation Matrix of 20EEE821A Photo voltaic systems and applications

Subject	20EEE821A Photo voltaic systems and applications
COs	**On completion of this course, students will be able to:**
20EEE821A.1	Understand the basics of photovoltaic cells
20EEE821A.2	Choose appropriate battery charging for different applications
20EEE821A.3	Develop maximum power point tracking techniques
20EEE821A.4	Analyze solar irradiation and design an appropriate solar PV system for power generation
20EEE821A.5	Evaluate and design standalone and grid connected PV systems based on the consumer demand
20EEE821A.6	Design appropriate PV arrays based on the applications

Table 3.1.2.3. b CO-PO-PSO MAPPING of 20EEE821A Photo voltaic systems and applications

CO/PO&PSO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
20EEE821A.1	3	3	3	2	2	-	1	-	1	-	1	1	1	3
20EEE821A.2	3	3	3	2	2	-	1	-	1	-	1	1	1	3
20EEE821A.3	3	3	3	2	2	-	1	-	1	-	1	1	1	3
20EEE821A.4	3	3	3	2	2	-	1	-	1	-	1	1	1	3
20EEE821A.5	3	3	3	2	2	-	1	-	1	-	1	1	1	3
20EEE821A.6	3	3	3	2	2	-	1	-	1	-	1	1	1	3
Average	**3**	**3**	**3**	**2**	**2**	**-**	**1**	**-**	**1**	**-**	**1**	**1**	**1**	**3**

Table 3.1.2.3. c CO-PO-PSO Justification of 20EEE821A Photo voltaic systems and applications

CO No.	PO/PSO	CL	Justification
20EEE821A.1	PO1	3	Strongly mapped as the students will be able to gain the engineering knowledge on solar PV concepts
	PO2	3	Strongly mapped as the students will be able to formulate the problem associated with the Solar PV
	PO3	3	Strongly mapped as the students will be able to design a solar PV module
	PO4	2	Moderately mapped as the students will be able to depict the project outcome and future scope.
	PO5	2	Moderately mapped as the students will be able to implement the application software pertaining to the PV.
	PO7	1	Slightly mapped as the students will be able to demonstrate the need of environment and sustainability.
	PO9	1	Moderately mapped as the students will be able to work as a team and present their work carried out
	PO11	1	Slightly mapped as the students will be able to manage the various phases of project development in PV environment.
	PO12	1	Strongly mapped as the students will be able to apply the communication and interpersonal skills acquired in their professional career.
20EEE821A.2	PO1	3	Strongly mapped as the students will be able to gain the engineering knowledge on battery systems of PV
	PO2	3	Strongly mapped as the students will be able to formulate the problem associated with the battery design
	PO3	3	Strongly mapped as the students will be able to design a battery management systems for solar PV module
	PO4	2	Moderately mapped as the students will be able to depict the project outcome and future scope.
	PO5	2	Moderately mapped as the students will be able to implement the application software pertaining to the battery.
	PO7	1	Slightly mapped as the students will be able to demonstrate the need of environment and sustainability.
	PO9	1	Moderately mapped as the students will be able to work as a team and present their work carried out
	PO11	1	Slightly mapped as the students will be able to manage the various phases of project development in battery PV environment.

20EEE821A.3	PO1	3	Strongly mapped as the students will be able to gain the engineering knowledge on MPPT concepts
	PO2	3	Strongly mapped as the students will be able to formulate the problem associated with the MPPT
	PO3	3	Strongly mapped as the students will be able to design a MPPT of solar PV module
	PO4	2	Moderately mapped as the students will be able to depict the project outcome and future scope.
	PO5	2	Moderately mapped as the students will be able to implement the application software pertaining to the MPPT.
	PO7	1	Slightly mapped as the students will be able to demonstrate the need of environment and sustainability.
	PO9	1	Moderately mapped as the students will be able to work as a team and present their work carried out
	PO11	1	Slightly mapped as the students will be able to manage the various phases of project development in MPPT.
	PO12	1	Strongly mapped as the students will be able to apply the communication and interpersonal skills acquired in their professional career.
20EEE821A.4	PO1	3	Strongly mapped as the students will be able to gain the engineering knowledge on solar PV concepts
	PO2	3	Strongly mapped as the students will be able to formulate the problem associated with the Solar PV power generation
	PO3	3	Strongly mapped as the students will be able to design a solar PV module
	PO4	2	Moderately mapped as the students will be able to depict the project outcome and future scope.
	PO5	2	Moderately mapped as the students will be able to implement the application software pertaining to the PV module design.
	PO7	1	Slightly mapped as the students will be able to demonstrate the need of environment and sustainability.
	PO9	1	Moderately mapped as the students will be able to work as a team and present their work carried out
	PO11	1	Slightly mapped as the students will be able to manage the various phases of project development in solar PV environment.
	PO12	1	Strongly mapped as the students will be able to apply the communication and interpersonal skills acquired in their professional career.
	PSO1	1	Strongly mapped as the students will be able to demonstrate the working of the system developed.
	PSO2	3	Strongly mapped as the students will be able to demonstrate the working of the system developed based on renewable energy sources

20EEE821A.5	PO1	3	Strongly mapped as the students will be able to gain the engineering knowledge on solar stand alone and grid connected systems
	PO2	3	Strongly mapped as the students will be able to formulate the problem associated with the Solar PV stand alone and grid connected systems
	PO3	3	Strongly mapped as the students will be able to design a solar PV module for stand-alone and grid connected systems
	PO4	2	Moderately mapped as the students will be able to depict the project outcome and future scope.
	PO5	2	Moderately mapped as the students will be able to implement the application software pertaining to the PV stand alone and grid connected systems.
	PO7	1	Slightly mapped as the students will be able to demonstrate the need of environment and sustainability.
	PO9	1	Moderately mapped as the students will be able to work as a team and present their work carried out
	PO11	1	Slightly mapped as the students will be able to manage the various phases of project development in PV environment.
	PO12	1	Strongly mapped as the students will be able to apply the communication and interpersonal skills acquired in their professional career.
	PSO1	1	Strongly mapped as the students will be able to demonstrate the working of the system developed.
	PSO2	3	Strongly mapped as the students will be able to demonstrate the working of the system developed based on renewable energy sources
20EEE821A.6	PO1	3	Strongly mapped as the students will be able to gain the engineering knowledge on solar PV concepts
	PO2	3	Strongly mapped as the students will be able to formulate the problem associated with the Solar PV
	PO3	3	Strongly mapped as the students will be able to design a solar PV module
	PO4	2	Moderately mapped as the students will be able to depict the project outcome and future scope.
	PO5	2	Moderately mapped as the students will be able to implement the application software pertaining to the PV.
	PO7	1	Slightly mapped as the students will be able to demonstrate the need of environment and sustainability.
	PO9	1	Moderately mapped as the students will be able to work as a team and present their work carried out
	PO11	1	Slightly mapped as the students will be able to manage the various phases of project development in PV environment.
	PO12	1	Strongly mapped as the students will be able to apply the communication and interpersonal skills acquired in their professional career.
	PSO1	1	Strongly mapped as the students will be able to demonstrate the working of the system developed.
	PSO2	3	Strongly mapped as the students will be able to demonstrate the working of the system developed based on renewable energy sources

Table 3.1.4 shows the Program Articulation Matrix for all the courses for the regulation 2018-2022 batch students. CO-POs and CO-PSOs matrices of all courses are framed. However matrices for one course per semester are selected and presented in Table 3.1.3. Course Articulation Matrix for six core courses are shown in Table 3.1.3.1 to 3.1.3.6

Table 3.1.3: SelectedCourses – Course Outcomes and CO-PO Mapping (OneperSemester)

Semester	CourseCode	Course Name
III	19EEE35	Electric Circuit Theory
IV	19EEE45	Dc Machines and Transformers
V	20EEE54	Signals and Systems
VI	20EEE62	Power Electronics
VII	20EEE71A	Special Electrical Machines
VII	20EEE73A	Electrical Drives and Vehicles

Table 3.1.3.a: Course Outcomes - ELECTRIC CIRCUIT THEORY – 19EEE35 (Third Semester)

Course Outcomes: At the end of the Course, the student will be able to:

CO	Statements
19EEE35.1	Analyse circuit parameters using network reduction techniques
19EEE35.2	Solve DC and AC circuits using network theorems
19EEE35.3	Obtain the frequency response of RLC circuits
19EEE35.4	Investigate the transient response of RLC circuits with DC and AC excitation
19EEE35.5	Analyze three phase circuits with different connections
19EEE35.6	Build an electric system for a given application

Table 3.1.3.b: Course Articulation Matrix - ELECTRIC CIRCUIT THEORY – 19EEE35 (Third Semester)

CO/PO& PSO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
19EEE35.1	3	3	3	3	-	-	-	-	-	-	-	-	2	2
19EEE35.2	3	3	3	3	-	-	-	-	-	-	-	-	2	2
19EEE35.3	3	3	3	3	-	-	-	-	-	-	-	-	2	2
19EEE35.4	3	3	3	3	-	-	-	-	-	-	-	-	2	2
19EEE35.5	3	3	3	3	-	-	-	-	-	-	-	-	2	2
19EEE35.6	3	3	3	3	-	-	-	-	-	-	-	-	2	2
Average	**3.0**	**3.0**	**3.0**	**3.0**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**2**	**2**

Table 3.1.3.c: Course Outcomes - DC MACHINES AND TRANSFORMERS – 19EEE45 (Fourth semester)

Course Outcomes: At the end of the Course, the student will be able to:

CO	Statements
19EEE45.1	Interpret the working principle and performance of DC Machines and analyze the effect of armature reaction and process of commutation in DC machines.
19EEE45.2	Identify a suitable DC machine along with starting and speed control techniques for various industrial applications.
19EEE45.3	Familiarize the constructional details and evaluate the performance of Transformer by conducting various tests.
19EEE45.4	Analyze the different configuration and phase conversion of three-phase transformer.
19EEE45.5	Interpret the construction details, principle of autotransformer and tap changing transformers.
19EEE45.6	Analyze the parallel operation and Identify the distinct types of transformer used in various industrial applications.

Table 3.1.3.d: Course Articulation Matrix - DC MACHINES AND TRANSFORMERS – 19EEE45 (Fourth semester)

CO/ PO& PSO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
19EEE45.1	3	3	2	2	2	2	1	1	2	2	1	1	-	1
19EEE45.2	3	3	2	2	2	2	1	1	2	2	1	1	-	1
19EEE45.3	3	3	2	2	2	1	1	1	2	2	1	1	-	1
19EEE45.4	3	3	2	2	2	1	1	1	2	2	1	1	-	1
19EEE45.5	3	3	2	2	2	1	1	1	2	2	1	1	-	1
19EEE45.6	3	3	2	2	2	2	1	1	2	2	1	1	-	1
Average	**3**	**3**	**2**	**2**	**2**	**1.5**	**1**	**1**	**2**	**2**	**1**	**1**	**-**	**1**

Table 3.1.3.e: Course Outcomes - SYNCHRONOUS AND INDUCTION MACHINES – 20EEE53 (Fifth semester)

Course Outcomes: At the end of the Course, the student will be able to:

CO	Statements
20EEE53.1	Investigate the performance of various three phase induction motors.
20EEE53.2	Select suitable starting and speed control technique(s) for three phase induction motors.
20EEE53.3	Analyze the types of single-phase induction motors.
20EEE53.4	Evaluate regulation of three phase Alternator.
20EEE53.5	Examine the effect of armature current, power factor and field current on a Synchronous motor.
20EEE53.6	Identify appropriate AC machines for real time applications.

Table 3.1.3.f: Course Articulation Matrix - SYNCHRONOUS AND INDUCTIONMACHINES – 20EEE53 (Fifth semester)

CO/ PO& PSO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
20EEE53.1	2	2	1	1	-	1	1	-	1	-	1	1	-	1
20EEE53.2	2	2	1	1	-	1	1	-	1	-	1	1	-	1
20EEE53.3	2	2	1	1	-	1	1	-	1	-	1	1	-	1
20EEE53.4	2	2	1	1	-	1	1	-	1	-	1	1	-	1
20EEE53.5	2	2	1	1	-	1	1	-	1	-	1	1	-	1
20EEE53.6	2	2	1	1	-	1	1	-	1	-	1	1	-	1
Average	**2**	**2**	**1**	**1**	**-**	**1**	**1**	**-**	**1**	**-**	**1**	**1**	**-**	**1**

Table 3.1.3.g: Course Outcomes - 20EEE62-Power Electronics (Sixth semester)

Course Outcomes: At the end of the Course, the Student will be able to:

CO	Statements
20EEE62.1	Analyse various power semiconductor devices
20EEE62.2	Investigate the protection, gating and commutation circuits
20EEE62.3	Assess different types of controlled rectifiers, choppers and inverters
20EEE62.4	Choose suitable harmonic reduction methods
20EEE62.5	Analyse the performance of power converters on a digital platform
20EEE62.6	Design power converters for industrial applications

Table 3.1.3.h: Course Articulation Matrix - 20EEE62-Power Electronics (Sixth semester)

CO/ PO& PSO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
20EEE62.1	3	2	1	1	-	-	1	-	-	-	-	-	2	2
20EEE62.2	3	2	2	2	1	-	1	-	-	-	-	-	2	2
20EEE62.3	3	3	2	2	2	-	1	-	1	-	-	-	2	2
20EEE62.4	3	3	2	2	2	-	1	-	1	-	-	-	2	2
20EEE62.5	3	3	2	2	2	-	1	-	1	-	-	-	2	2
20EEE62.6	3	3	2	2	3	-	1	-	1	-	-	-	2	2
Average	**3**	**2.67**	**1.83**	**1.83**	**2.00**	**-**	**1.00**	**-**	**1.00**	**-**	**-**	**-**	**2**	**2**

Table 3.1.3.i: Course Outcomes - 20EEE71A- Special Electrical Machines(Sseventh semester)

Course Outcomes: At the end of the Course, the student will be able to:

CO	Statements
20EEE71A.1	Acquire knowledge about construction and working principles of special electrical machines.
20EEE71A.2	Analyze the performance of special electrical machines.
20EEE71A.3	Acquire knowledge on various types of controllers for special motors
20EEE71A.4	Understand the linear and nonlinear characteristics of special electrical machines.
20EEE71A.5	Evaluate and formulate the EMF and torque equations.
20EEE71A.6	Choose appropriate special machines based on applications.

Table 3.1.3.i: Course Articulation Matrix - 20EEE71A- Special Electrical Machines(Seventh semester)

CO/ PO& PSO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
20EEE71A.1	3	3	3	2	3	2	2	1	1	1	1	3
20EEE71A.2	3	3	3	2	3	2	2	1	1	1	1	3
20EEE71A.3	3	3	3	2	3	2	2	1	1	1	1	3
20EEE71A.4	3	3	3	2	3	2	2	1	1	1	1	3
20EEE71A.5	3	3	3	2	3	2	2	1	1	1	1	3
20EEE71A.6	3	3	3	2	3	2	2	1	1	1	1	3
Average	**3**	**3**	**3**	**2**	**3**	**2**	**2**	**1**	**1**	**1**	**1**	**3**

Table 3.1.3.k: Course Outcomes - ELECTRICAL DRIVES AND VEHICLES – 20EEE73A(Seventh semester)

Course Outcomes: At the end of the Course, the student will be able to:

CO	Statements
20EEE73A.1	Understand the dynamics of electrical drives
20EEE73A.2	Analyze the operation of the Converter and Chopper fed dc drives
20EEE73A.3	Analyze the operation of the induction and Synchronous Motor AC drive
20EEE73A.4	Understand various types of motors used in electric vehicles and energy sources
20EEE73A.5	Analyze various types of electrical drives to meet the requirement of electrical vehicles
20EEE73A.6	Analyze need of electric vehicle and its environmental impact

Table 3.1.3.i: Course Articulation Matrix – ELECTRICAL DRIVES AND VEHICLES – 20EEE73A(Seventh semester)

CO/ PO& PSO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
20EEE73A.1	3	1	1	1	1	3	3	2	1	1	2	3	**1**	**1**
20EEE73A.2	3	1	1	1	1	3	3	2	1	1	2	3	**1**	**1**
20EEE73A.3	3	3	3	1	2	3	2	2	1	1	2	3	**1**	**1**
20EEE73A.4	3	3	3	1	2	3	3	2	1	1	2	3	**1**	**1**
20EEE73A.5	3	3	3	1	2	3	3	2	1	1	2	3	**1**	**1**
20EEE73A.6	3	1	1	1	1	3	3	3	3	1	2	3	**1**	**1**
Average	**3**	**2**	**2**	**1**	**1.5**	**3**	**2.83**	**2.17**	**1.33**	**1**	**2**	**3**	**1**	**1**

Program Articulation Matrix: Batch (2018-2022)

POs and PSOs. The strength of correlation of COs with POs and PSOs is indicated as “3” forsubstantial (high) correlation, “2” for moderate (medium) correlation and “1” for slight (low) correlation and “-“, if there is no correlation.If the course outcomes are attained,the Poscorrelatedtothese courseoutcomesare alsoattained

Table 3.1.4 Programme Articulation Matrix for all the courses of Batch : 2018-2022

Course Code	Course Title	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
18MAT11	Applied Mathematics I	3	3	3	2	2	-	-	-	-	2	-	3	-	-
18PHY12/22	Engineering Physics	3	2	2	-	-	-	-	-	2	-	-	1	-	-
18MEE13/23	Elements of Mechanical Engineering	3	1	3	-	3	2	1	-	-	3	-	1	-	-
18CIV14/24	Elements of Civil Engineering	3	2	1	1	-	-	-	-	-	-	-	1	-	-
18EEE15/25	Basic Electrical Engineering	3	3	2	1	1	-	-	-	-	-	2	-	-	-
18PHL16/26	Engineering Physics Lab	3	2	2	-	-	-	-	-	2	-	-	1	-	-
18EEL17/27	Basic Electrical Engineering Lab	3	3	2	1	1	-	-	3	-	-	-	2	-	-
18MAT21	Applied Mathematics II	3	3	3	3	3	-	-	-	1	3	-	3	-	-
18CHE12/22	Engineering Chemistry	3	3	-	-	-	-	3	-	-	-	-	3	-	-
18CSE13/23	Introduction to programming With C	3	3	3	1	3	-	-	-	3	1	-	1	-	-
18MEE14/24	Computer Aided Engineering Drawing	2	-	2	2	1	-	-	-	-	2	-	2	-	-

18ECE15/25	Basic Electronics	3	2	2	-	-	-	-	-	-	-	-	-	-	-
18CHL17/27	Engineering Chemistry Lab	3	3	-	-	-	-	3	-	-	-	-	3	-	-
18CSL18/28	Programming with C Lab	3	3	3	3	3	-	-	-	3	-	-	3	-	-
18HSS16/26	Professional Communication	-	-	-	-	-	-	-	3	2	3	-	3	-	-
19ECE31 /19EEE31	Applied Mathematics - III	3	3	3	2	2	-	-	-	1	1	-	2	1	1
19EEE33	Electronic Devices and Circuits	3	2.8	2.6	2.8	3	-	-	-	-	-	-	-	1	1
19EEE34	Digital System Design	3	3	2.8	2	3	-	-	-	-	-	-	-	1	1
19EEE35	Electric Circuit Theory	3	3	3	3	-	-	-	-	-	-	-	-	2	2
19HSS321	Economics for Engineers	2	2	1	-	1	-	2	2	2	1	2	2	-	-
19HSS323 /423	Environmental Science and Awareness	2.3	2	2	2	2	3	3	3	2	1	1.8	2.5	-	-
19EEL36	Analog and Digital Electronics Laboratory	3	3	2.5	2.5	-	-	-	-	2	2	-	-	2	2
19EEL37	Electric Circuit Theory Laboratory	3	3	3	3	3	-	-	-	2	2	-	-	2	2
19EEL38	Mini project I	3	3	3	2	3	-	2	1	3	1	3	2	2	2
19ECE41/ 19EEE41	Applied Mathematics – IV	3	2	3	2	2	-	-	-	1	1	-	1	1	1
19EEE43	Electromagnetic Theory	3	3	-	-	-	-	-	-	-	-	-	-	-	1
19EEE44	Microcontroller and Embedded Systems	3	2.6	2.6	2.8	3	2.8	2	1.8	2.5	1	2.7	3	1	2
19EEE45	DC Machines and Transformers	3	3	2	2	2	1.5	1	1	2	2	1	1	-	1
19EEE46	Linear Integrated Circuits	3	3	2.2	2.2	1.8	1	1	-	1	1	1.2	1	2	1

19EEL47	Microcontroller and Embedded System Laboratory	3	2.3	2.3	2.5	3	3	3	2	2	1	2	3	1	1
19EEL48	DC Machines And Transformers Laboratory	3	3	2	2	2	1	1	-	1	1	1	1	1	1
19EEL49	Mini Project II	3	3	3	2	3	-	2	1	3	1	3	2	2	2
19DMAT41	Basic Applied Mathematics-II	3	2	3	2	2	-	-	-	1	3	-	1	1	1
19HSS322 /422	Life Skills For Engineers	-	-	-	-	-	2	-	3	3	3	2	3	-	-
18HSS272	Constitution of India	-	-	-	-	-	1	-	3	1	-	-	3	-	-
20EEE51	Transmission and Distribution	3	3	2.6	2.4	1	2	1.5	-	-	-	-	-	-	1
20EEE52	Control Systems	3	3	2.5	2.5	-	-	-	-	2	-	-	-	-	1
20EEE53	Synchronous and Induction Machines	2	2	1	1	-	1	1	-	1	-	1	1	-	1
20EEE54	Signals and Systems	3	2.8	2	3	3	1	1	-	2	2	2	1	-	1
20EEE55	Industrial Automation	3	2	3	2	3	3	1	1	2	2	3	3	2	2
20EEE561	Data Structures and Algorithms	3	3	2	3	3	-	3	-	-	-	-	3	1	1
20EEL57	Control Systems Laboratory	3	3	2.5	2.5	2.7	-	-	-	2	1	-	-	2	2
20EEL58	Synchronous and Induction Machines Laboratory	3	3	2	2	-	1	1	-	1	1	1	1	-	1
20EEL59	Mini project III	3	3	3	2	3	-	1.25	1	3	1	3	2	2	2
20EEE61	Power System Analysis	3	2.83	3	2.6	3	1.6	1.75	1	2.5	1	2.67	3	2	2
20EEE62	Power Electronics	3	2.67	1.83	1.83	2	-	1	-	1	-	-	-	2	2
20EEE63	Power System Protection	3	3	3	3	3	2	-	1	-	-	-	3	2	2
20EEE641	Object Oriented Programming	3	3	3	3	3	-	-	-	-	-	-	3	1	1

20EE653	Advanced Industrial and Building Automation	3	2.67	2.67	3	3	2.17	1.67	1	1.67	2.67	2.67	3	2	2
20EEL66	Power System Analysis Laboratory	3	3	1.67	2.5	3	2.25	1.5	-	1	1.5	1.5	2	3	3
20EEL67	Power Electronics Laboratory	3	2	1.75	1.75	2	1	1	-	1.5	-	-	-	3	2
20EEL68	Mini project IV	3	3	3	2	3	-	1.25	1	3	1	3	2	2	2
20NHOP07	SAP	2.5	1.67	2	2	3	3	1	1	2	2	2.67	2	2	2
20NHOP11	Machine Learning	3	1	1	1	3	1	-	-	1	1	1	2	1	1
20NHOP13	Industrial IOT -Embedded System	3	3	3	3	3	2	1	1	3	3	3	3	1	1
20NHOP15	Product Lifecycle Management	3	2	3	1	3	0	0	0	1	0	1	0	1	1
20NHOP01	Big Data Analytics with HP Vertica 1	3	2	2	1	3	-	-	-	3	2	-	2	1	1
20NHOP02	VM Ware-Virtualization Essentials 1	2	2	2	2	2	1	-	-	1	2	1	1	1	1
20NHOP09	Cisco-Routing and Switching 1	3	3	3	3	3	2	2	2	3	3	-	3	1	1
20NHOP10	Data Analytics	3	-	-	-	-	-	-	-	-	1	-	-	1	1
20EEE71A	Special Electrical Machines	3	3	3	2	3	2	2	1	1	1	1	3	-	1
20EEE72A	Relay and High Voltage Engineering	3	2	3	2.17	1.17	1	1.17	1	1.83	1	1	1	-	1
20EEE73A	Electrical Drives and Vehicles	3	2	2	1	1.5	3	2.83	2.17	1.33	1	2	3	1	1
20EEE744A	Energy Auditing and Demand Side Management	3	1.33	1.67	2.67	2.17	1.67	3	3	-	-	2.5	2	-	1
20EEE754A	Neural Networks and Fuzzy Logic In Electrical Engineering	3	3	3	3	2	3	1	3	3	3	3	2	1	1
20EEE78A	Project Phase 1	3	2.25	2.66	3	2.25	2.5	2.5	3	3	3	2.5	3	3	3

20EEL76A	Relay and High Voltage Engineering Laboratory	3	3	3	3	3	-	-	-	2	1	-	-	-	2
20EEL77A	Simulation Tools for Electrical Engineering Laboratory	3	3	3	3	3	-	-	-	2	1	-	-	3	3
20NHOP701	Big Data Analytics with Hp Vertica I	3	2	2	1	3	-	-	-	3	2	-	2	1	1
20NHOP702	VM Ware-Virtualization Essentials I	2	2	2	2	2	1	-	-	1	2	1	1	1	1
20NHOP704	Big Data Analytics With HP Vertica II	3	3	1	1	3	-	-	-	3	2	-	2	1	1
20NHOP705	VM Ware Virtualization Essentials II	3	3	2	2	2	-	-	-	2	1	-	2	1	1
20NHOP707	SAP	2	2	2	2	3	3	1	1	2	2	3	2	2	2
20NHOP710	Data Analytics	3	2	3	3	3	-	-	-	3	1	-	1	1	1
20NHOP711	Machine Learning	3	1	1	1	3	1	-	-	1	1	1	2	1	1
20NHOP712	Cisco-Routing And Switching 1	3	3	3	3	3	2	2	2	3	3	-	3	1	1
20NHOP713	IIOT Embedded System	3	3	3	3	3	2	1	1	3	3	3	3	1	1
20NHOP714	Block Chain	3	3	3	2	3	-	-	1	1	1	1	3	1	1
20NHOP715	Product Life Cycle Management	3	2	3	1	3	0	0	0	1	0	1	0	1	1
20EEE812A	Smart Grid Technologies	3	3	2	2	1	2	-	-	2	1	1	2	1	2
20EEE821A	Photo Voltaic Systems and Applications	3	3	3	2	2	-	1	-	1	-	1	1	1	3
20EEE83A	Internship	3	2	2	3	2.25	2.5	2.5	3	3	3	2.5	3	2	3
20EEE84A	Project Phase II	3	2	2	3	2.25	2.5	2.5	3	3	3	2.5	3	3	3

3.2. Attainment of Course Outcomes(75)

3.2.1 Describe the assessment tools and processes used to gather the data upon which the evaluation of Course Outcome is based (10)

In Outcome Based Education, assessment is carried out to identify, collect, analyze and evaluate the data towards the achievement of course outcomes. The course outcomes are assessed based on direct assessment tools. The direct method of assessment includes internal test, assignments, quizzes, self-study, laboratory practical examination, internship, project work done etc. Course outcomes are evaluated based on the performance of students in Continuous Internal Evaluation (CIE) and Semester End Examination (SEE). CIE contributes 50% and SEE contributes 50% to the total attainment of a course outcome.

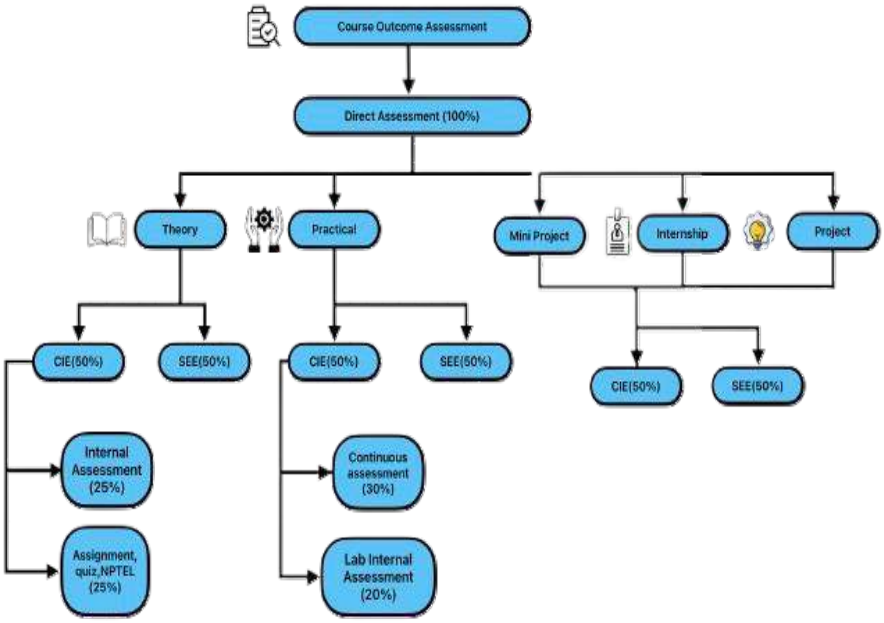


Figure 3.2.1.1 CO Assessment Tools

Figure 3.2.1.1 shows the assessment tools for CO assessment for the theory, practical, internship and project courses in the program. For the Theory courses, CIE consists of 2

quizzes, 2 assignments and three internal tests per semester. For the laboratory courses, assessments are done based on the continuous internal evaluation of students in every laboratory, internal test, and Semester End Lab Exams. For internship and Project courses, performance assessment is carried out based on reviews given by the students on the corresponding work done. Each and every review is focused in attaining the program outcomes. The direct assessment based on marks obtained by the individual student is then mapped with POs & PSOs through COs. For Semester End Examination, Controller of Examination will conduct the exam for 100 marks. The questions in SEE paper evenly cover all the COs of a course. The Semester End Exam marks are scaled down to 50 and then summed up with the Continuous Internal Evaluation marks for a total of 100 marks for attainment level calculations of COs.

Tools used in measuring Course Outcomes

The method of assessment method includes:

- Internal Assessment (IA)
- Assignments
- Quizzes
- Internal Laboratory Test
- Mini Projects
- Project
- Internship
- Semester End Examination (SEE)

Table 3.2.1.1: Direct Assessment Tools – CO Attainment

Course	Assessment Tools	Description
Theory Courses	Internal Assessment (IA) Test (1, 2 and 3)	This tool is used to evaluate the attainment of COs through direct and critical Questions related to the specific topics covered during the class. • Three internal assessment tests are conducted for all the courses and the average is considered. • The frequency of CO assessment is once per semester. • The questions in the test are mapped against COs of respective courses. • All three IA test questions are framed in such a way to ensure the coverage of all CO's. • Upon the completion of every test, course instructor enters the marks secured by the students. • The status of mapping and marks entry are reviewed by Program Coordinator. • Entered marks are taken for measuring the CO Attainment
	Assignment	• Two assignments per semester are given by course instructor. • Assignment questions include complex analytical problems and real time. • Course instructor prepares three sets of assignment paper, ensuring same • RBT levels and COs in all the sets. • Questions in all the sets are verified by Program Academic coordinator. Any • mismatch in sets is informed to course instructor for correction. • Attainment of COs is measured through questions prepared by the faculty to test the student's problem solving skills.
	Quiz	• Two Quizzes per semester are given by course instructor. • The questions are prepared for each of the courses and conducted to assess the Lower order skills (LOTs) and reasoning power of the students. • Quiz marks are assessed towards the attainment of COs.
	Semester End Examination	• Semester end examination is conducted for all the courses through descriptive mode as per the calendar of events. • The questions for this exam covers entire syllabus of the courses and questions are framed in such a way to cover all COs. • Each question is mapped with appropriate course outcomes. • Final marks are taken for assessing CO attainment.

Course	Assessment Tools	Description
Lab Courses	Continuous Internal Assessment (Conduction of Experiment, Lab observation and Record)	This assessment is carried out in the day to day evaluation of student performance in the laboratories with respect to conduction of experiments. • As per the syllabus, Experiments are planned for each laboratory course • and each experiment is mapped with any one of the defined COs.
	Internal Test (1 and 2)	• Two lab internals are conducted for all the lab courses and their averages are considered. • The performance of students in the laboratory is evaluated through appropriate rubrics for the attainment of COs.
	Semester End Lab Examination	Final exam of 3 hours' duration is conducted for lab courses. • This tool assesses the ability of a student to perform a given task by integrating the • knowledge gained from related theory course and regular lab sessions. • The exam is evaluated with appropriate rubrics that include conduction of experiments and viva voce of the experiment performed.
Internship	Continuous Internal Evaluation	The student undergoes an internship for the duration of 4 to 6 weeks. • Students are encouraged to carry out internship in reputed industries/ public sector to get the practical exposure from industries.mentors are allotted for students to guide them in internship guidance. • Students shall report the progress of the internship to the mentor in regular intervals. • The exam is evaluated with appropriate rubrics that include conduction of experiments and viva voce of the experiment performed.
	Semester End Examination	• Final exam of 3 hours' duration is conducted. • The exam is evaluated with appropriate rubrics that include conduction of experiments and viva voce of the experiment performed.

Course	Assessment Tools	Description
Project/Mini Project	Continuous Internal Evaluation	Project/Mini Project batches are formed as per the instruction given by project Coordinators. • Each faculty gives few topics in their domain for the students. • Students can select the topics based on their interest and carry out the project • under their guidance. • Synopsis will be submitted to the project coordinator for scrutinizing. • Each internal guide monitors the students on a weekly basis to observe the • progress in their work. • Project/Mini Project guide along with project Coordinator conducts three project/Mini Project reviews as per the guidelines, then submit the internal assessment to the Head of the • Department. • The Department also encourages the students to participate in project exhibition and also identifies the best 3 projects and the winners are awarded. • The performance of students in project work is evaluated through appropriate rubrics for the attainment of Cos.
	Semester End Examination	Final exam of 3 hours' duration is conducted. • The exam is evaluated with appropriate rubrics that include conduction of experiments and viva voce of the experiment performed.

Process of course data Collection:

Course coordinators are assigned to the courses with respect to their choices and specialization. The module and course coordinator define target set for each course outcome. This target setting is based on COs distribution on assessment tools and performances of students in previous exams and also the quality of student in the respective batches. Internal questions are prepared and mapped with COs. Upon completion of every Internal Assessment (IA) Test, the course instructors enter the marks secured by the student in each IA in the student assessment software through faculty login allotted. Using the similar online portal, marks entry for other direct assessment tools are carried out. They can choose the batch/semester/course and enter the marks question wise for evaluation of the respective course outcomes. The entered marks are maintained in a common server through which COs evaluation is calculated and attainment is measured. The various assessment tools used to evaluate COs and the frequency with which the assessment processes are carried out are listed in Table 3.2.1.2

Table 3.2.1.2 Direct Assessment Tools

Description	Assessment Tools	Frequency
Theory Courses	Internal Assessment (IA) Test (1, 2 and 3)	Thrice in a semester
	Assignment/Quiz	Twice in a semester
	Semester End Examination	Once in a semester
Lab Courses	Continuous Internal Assessment (Conduction of Experiment, Lab observation and Record)	During every laboratory class
	Internal Tests (1 and 2)	Twice in a semester
	Semester End Lab Examination	Once in a semester
Internship	Continuous Internal Assessment (Review)	Twice in a semester
	Semester End Examination	Once in a semester
Project	Continuous Internal Assessment (Reviews)	Three reviews in respective semester
	Semester End Examination	Once in a semester

Assignments, quiz, continuous internal assessment test, Semester end examinations are conducted and evaluated. The distribution of marks for theory courses is given in table 3.2.1.3 below.

Table 3.2.1.3: Distribution of Marks for Direct Assessment Tools – CO Attainment

Course	Assessment Tool		Maximum Marks	Marks Scaled to	Weightage
THEORY	Internal Assessment -1		25	25	50%
	Internal Assessment -2		25		
	Internal Assessment -3		25		
	Assignments/ Quizzes/NPTEL		25	25	
	Semester End Examination		100	50	50%
LABORATORY	Continuous Assessment	1.Lab Conduction 2.Execution 3.Documenting (Observation/ Record)	30	25	50%
	Lab Internal Test		20		
	SEE		50	25	50%
MINI PROJECT	CIE	Review-1 & Review-2	50	25	50%
	SEE	Review	50	25	50%
INTERNSHIP	CIE	Review-1 & Review-2	50	50	50%
	SEE	Review	50	50	50%
PROJECT PHASE-I	CIE	Review-1 & Review-2	50	50	50%
	SEE	Review	50	50	50%
PROJECT PHASE-II	CIE	Review-1 & Review-2	100	100	50%
	SEE	Review	100	100	50%

3.2.1.2 Laboratory Course Assessment

The broad objectives of all laboratory classes are to reinforce concepts learned in lectures, provide hands-on experience in collecting data and operating engineering systems. Also helping the students to work as a team, and improve technical skills to become professional. CIE contributes 50% of the total marks of a lab courses. The weightage for the SEE is 50% of the total marks of a lab course.

Continuous Internal Assessment

- This assessment is carried out in the day to day evaluation of student performance in the laboratories with respect to conduction of experiments.
- The Students are grouped into batches and each batch is allocated a slot of 3 hours a week.
- As per the syllabus, Experiments are planned for each laboratory course and each experiment is mapped with any one of the defined COs.
- Two lab internals are conducted for all the lab courses and their averages are considered.
- The performance of students in laboratory is evaluated through appropriate rubrics for the attainment of COs.

Semester End Examination

- Final exam of 3 hours' duration is conducted for lab courses.
- This tool assesses the ability of a student to perform a given task by integrating the knowledge gained from related theory course and regular lab sessions.
- The exam is evaluated with appropriate rubrics that include conduction of experiments and viva voce of the experiment performed.

Table 3.2.1.4 Distribution of marks for laboratory courses evaluation

Examination	Components of evaluation	Marks	Marks Scaled to	Weightage
CIE	Lab daily Performance (Conduction, Execution, and Record writing, Result)	30	25	50%
	Lab Internal Test (Conduction, Results and Viva Voce)	20		
SEE	Procedure & write up	10	25	50%
	Conducting the practical's, results, Graph etc.	30		
	Viva Voce by External Examiner	10		

The assessment details for laboratory courses are given in below Table 3.2.1.4. Laboratory integrated courses are followed as per curriculum. These courses are combination of theory and lab integrated courses. The mark distributions of these courses are internal marks of 75 and external marks of 75.

3.2.1.3 Internship

- The student undergoes an internship for the duration of 4 to 6 weeks.
- Students are encouraged to carry out internship in reputed industries/ public sector to get the practical exposure from industries.
- Internship coordinators assigned by Head of the department will allot the mentors for students to guide them in internship guidance.
- Students shall report the progress of the internship to the mentor in regular intervals.
- CIE marks of 50 and SEE marks of 50 are allotted for internship.
- After successful completion of internship, internal and SEE reviews will be conducted as per the rubrics given in the Table 3.2.1.5

Table 3.2.1.5 Assessment Rubrics of Internship

Examination	Rubrics Parameter	Marks allotted	Rubrics	Total Marks	Reviewed by
CIE	Topic Selection	10	Outstanding [>70%] Average [40% - 70%] Inadequate [<40%]	50	Internal Examiner
	Presentation	15			
	Level of Understanding	15			
	Report	10			
SEE	Presentation	30	Outstanding [>70%] Average [40% - 70%] Inadequate [<40%]	50	Internal and External Examiner
	Evaluation of Report	10			
	Viva Voce	10			

3.2.1.4 Project

- Project batches are formed as per the instruction given by project Coordinators.
- Each faculty gives few topics in their domain for the students.
- Students can select the topics based on their interest and carry out the project under their guidance.
- Synopsis will be submitted to the project coordinator for scrutinizing.
- Each internal guide monitors the students on a weekly basis to observe the progress in their work.
- Project guide along with project Coordinator conducts three project reviews as per the guidelines, then submit the internal assessment to the Head of the Department.
- The Department also encourages the students to participate in project exhibition and also identifies the best 3 projects and the winners are awarded.
- The performance of students in project work is evaluated through appropriate rubrics for the attainment of COs and shown in Table 3.2.1.6 and 3.2.1.7

Table 3.2.1.6 Assessment rubrics of Project Phase-1

Review #	Rubric Parameter	Marks	Exceeds expectation (80-100% Marks)	Meets expectation (60-70% Marks)	Does not meet expectation (40-60% Marks)
REVIEW-1	Identification of Problem Domain and Detailed Analysis	5	Detailed and extensive explanation of the purpose and need of the project	Adequate explanation of the project's purpose and need	Minimal explanation of the purpose and need of the project
	Literature Review	10	Able to detail the scope and purpose of the study. Explain previous studies related with insightful pros and limitations.	Adequate explanation of purpose of study and not insightful pros and limitations.	Incomplete explanation of purpose of study and not insightful pros and limitations.
	Presentation Skills & Viva	5	Excellent body language use of additional means eg.whiteboard , Able to answer all questions, shows in depth knowledge	Confident body language and message delivery, Able to answer questions	Not confident, less eye contact or low body language , Unable to answer, shows lack of knowledge
REVIEW-2	Objectives of the Study.	5	All objectives of the proposed work are well defined.	Good justification to the objectives specified.	Incomplete justification to the objectives proposed.
	Methodology of the Proposed Work	10	Steps to be followed to solve the defined problem are clearly specified.	Methodology to be followed is specified but detailing is not done	Steps are mentioned but unclear; without justification to objectives.
	Paper Publication	10	Paper Communicated to journals, Done with conference and waiting for publication.	Paper Communicated, waiting for conference/Publication	Paper not communicated to Journals.
	Project Phase-1 Report	5	As per the Standard format , Excellent representation of the Architecture Diagrams, Methods, Results Adhere Plagiarism Standards	As per the Standard Format, Representation of the Architecture Diagrams, Methods, and Results can be improved. Adhere Plagiarism Standards	Not according to guidelines and Standard Formats, Adhere Plagiarism Standards

Table 3.2.1.7: Assessment Rubrics of Project Phase-2

Review #	Rubric Parameter	Marks	Exceeds expectation (80-100% Marks)	Meets expectation (60-70% Marks)	Does not meet expectation (40-60% Marks)
REVIEW-1	Design Methodology	20	Division of problem into modules and good selection of computing framework Appropriate design methodology and proper justification	Division of problem into modules but inappropriate selection of computing framework Design methodology not defined properly	Modular approach not adopted. Design methodology not defined
	50% Demonstration of the Project Work	20	Able to apply the specified computing framework and meet 50% of objectives defined.	Able to apply the specified computing framework but didn't meet 50% of objectives.	Not able to apply the specified Computing framework.
	Presentation Skills & Viva	10	Excellent body language use of additional means eg .whiteboard , Able to answer all questions, shows in depth knowledge	Confident body language and message delivery, Able to answer questions	Not confident, less eye contact or low body language , Unable to answer, shows lack of knowledge
REVIEW-2	100% Demonstration and presentation of the Project Work	30	Complete Demonstration of the all the objectives of the Project with suitable testing methods applicable for all the modules.	Met the objectives Implementation of the Project , All modules are not tested.	Not all objectives are met.
	Project Phase-2 Report	20	As per the Standard format , Excellent representation of the Architecture Diagrams, Methods, Results Adhere Plagiarism Standards	As per the Standard Format, Representation of the Architecture Diagrams, Methods, and Results can be improved. Adhere Plagiarism Standards	Not according to guidelines and Standard Formats, Adhere Plagiarism Standards

Process of Course Outcome Data Collection:

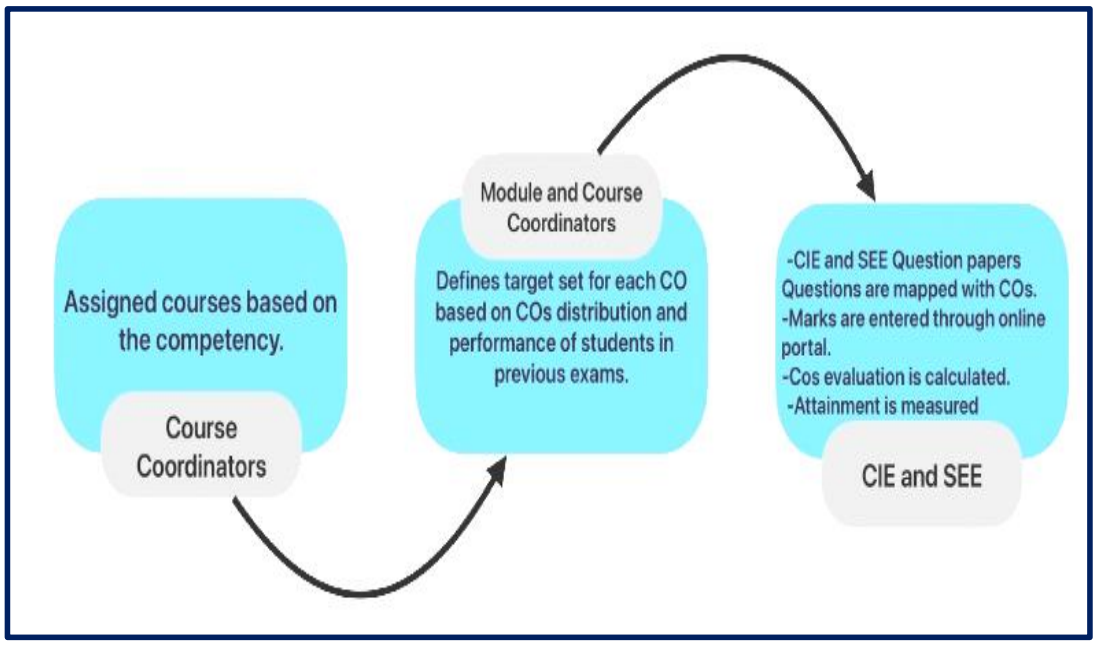


Figure 3.2.1.3: Process of CO Data Collection

Internal Test Question Papers are aligned with Revised Blooms Taxonomy Levels and COs'. There is a provision to map the questions with respective Revised Blooms Taxonomy and COs' in the online portal. Marks are entered into the online portal after the answer booklets have been evaluated. A Report is generated from the online portal with each students' marks mapped to COs'. Semester End Exam also follows a similar pattern of mapping Question Paper Questions with Revised Blooms Taxonomy Levels and COs' with online entry of Students' marks in the portal and Report generation. The process of CO data collection is shown in Figure 3.2.1.3

A Sample CIE Question Paper, SEE Question Paper are provided in the following section.

NEW HORIZON COLLEGE OF ENGINEERING

New Horizon Knowledge Park, Ring Road, Marathalli
Autonomous College Permanently Affiliated to VTU, Approved by AICTE & UGC
Accredited by NAAC with 'A' Grade, Accredited by NBA

DEPT: Electrical and Electronics Engineering
COURSE: Smart Grid Technologies
DATE: 18- 04-2022
CIE TEST: I

SEM: 08 – Section A/B
COURSE CODE: 20EEE812A
DURATION: 1 Hr.
MAX. MARKS: 25

NOTE: All questions are compulsory.

Q#	Question	RBT Level	COs	POs & PSOs	Marks
Q1	Describe and identify the barriers in implementation of Smart Grid.	L2	CO1	PO1 to PO12 PSO1,PSO2	5
	OR				
Q2	Describe concept of resilient and self-healing grid				5
Q3	List the Challenges on implementing the Smart Grid in India.	L2	CO1	PO1 to PO12 PSO1,PSO2	5
	OR				
Q4	List any five differences between conventional power grid and smart grid				5
Q5	Discuss Advanced Metering Infrastructure(AMI) and its integration with home automation	L2	CO2	PO1 to PO12 PSO1,PSO2	5
	OR				
Q6	Explain working principle of the Plug in Hybrid Electric Vehicles (PHEV)				5
Q7	Explore the concept of geographic information systems in smart grid.	L4	CO2	PO1 to PO12 PSO1,PSO2	5
	OR				
Q8	Examine the intelligent electronic devices used in Smart Grid				5
Q9	Draw a block diagram of a grid-connected micro-grid installed to a typical house contains a windmill and a solar PV. Assume the ratings for the windmill and solar PV. Explain all the power converter modules mentioned in your block diagram.	L3	CO3	PO1 to PO12 PSO1,PSO2	5
	OR				
Q10	Draw the block diagram for a power system that contains the smart grid infrastructure with distributed generation. Explain all the elements given in your block diagram.				5

NHCE/IQP/010

NEW HORIZON COLLEGE OF ENGINEERING

New Horizon Knowledge Park, Ring Road, Marathalli
Autonomous College Permanently Affiliated to VTU, Approved by AICTE & UGC
Accredited by NAAC with 'A' Grade, Accredited by NBA

DEPT: Electrical and Electronics Engineering
COURSE: Smart Grid Technologies/Smart Grid
DATE: 18-05-2022
CIE TEST: II

SEM: 8 - Section A/B/C
COURSE CODE: 20EE82A/EEE82A
DURATION: 1 Hr.
MAX. MARKS: 25

NOTE: All questions are compulsory.

Q=	Question	RBT Level	COs	POs & PSOs	Marks
Q1	Justify Wind energy and Solar energy contributes major contribution in Distributed generation.	L5	CO3	PO1 to PO12 PSO1,PSO2	10
	OR				
Q2	Prioritize the components of substation automation and justify with necessary diagrams				10
Q3	Discuss the issues related to power quality monitoring, power quality measurement issues in smart grid and power quality solutions available on the market today.	L2	CO4	PO1 to PO12 PSO1,PSO2	7
	OR				
Q4	Explain the process of power quality audit and its significance.				7
Q5	Justify following network architecture types in smart grid communication entities. (a) Local Area Network (b) Wide Area Network	L4	CO4	PO1 to PO12 PSO1,PSO2	8
	OR				
Q6	Interpret the usage of technologies like GPS, Wi-Fi, Wireless Mesh Network, Broad band over Power line (BPL) for AMI.				8

NHCE/IQP/010

NEW HORIZON COLLEGE OF ENGINEERING

New Horizon Knowledge Park, Ring Road, Marathalli
Autonomous College Permanently Affiliated to VTU, Approved by AICTE & UGC
Accredited by NAAC with 'A' Grade. Accredited by NBA

DEPT: Electrical and Electronics Engineering
COURSE: Smart Grid Technologies/Smart Grid
DATE: 17-06-2022
CIE TEST: III

SEM: 08 – Section A/B/C
COURSE CODE: 20EEE812A/EEE812A
DURATION: 1 Hr.
MAX. MARKS: 25

NOTE: All questions are compulsory.

Q#	Question	RBT Level	COs	POs & PSOs	Marks
Q1	Describe the roles and responsibilities of smart grid stake holders. OR	L5	CO5	PO1 to PO6 PO9, PO10 P12	10
Q2	Describe the concept of EV charging infrastructure in smart grid.			PSO1,PSO2	10
Q3	Discuss the case study of STUXNET. OR	L4	CO6	PO1 to PO6 PO9 to PO12 PSO1,PSO2	7
Q4	Discuss the EV charging infrastructure, power standards and communication standards.				7
Q5	Design a framework for stakeholders in smart grid for metropolitan city. OR	L4	CO6	PO1 to PO6 PO9 to PO12 PSO1,PSO2	8
Q6	Compose the charging infrastructure of EV in detail				8

NHCE/IQP/010

USN

20EEE812A

New Horizon College of Engineering, Bangalore

Autonomous College affiliated to VTU, Accredited by NAAC with 'A' Grade & NBA

Semester End Examinations July 2022

SMART GRID TECHNOLOGIES

Duration: 3 hrs Max. Marks: 100

Answer five full questions choosing one complete question from each module.

	Module 1			
1 a)	Discuss the opportunities and barriers in Smart Grid	10	L1	CO1
b)	Explain any two pilot projects of smart grid in India.	10	L2	CO1
	OR			
2 a)	Describe concept of resilient & self-healing grid and write the requirements of Self-Healing Grid.	10	L1	CO1
b)	Summarize in detail about the Architecture of the Smart Grid with neat diagrams.	10	L2	CO1
	Module 2			
3 a)	Describe the following i. Outage Management System (OMS) ii. Plug in Hybrid Electric Vehicles (PHEV)	10	L1	CO2
b)	Illustrate in detail about substation automation and feeder automation.	10	L3	CO3
	OR			
4 a)	Identify the protocols and benefits of Advanced Metering Infrastructure (AMI) and explain with a block diagram.	10	L1	CO2
b)	Categorize the energy storage systems utilized in Smart Grid and explain with neat diagrams.	10	L3	CO3
	Module 3			
5 a)	Draw a block diagram for a power system that contains the smart grid infrastructure with distributed generation and Explain all the elements given in your block diagram.	10	L2	CO3
b)	Illustrate the performance of fuel cell based distributed generation system.	10	L3	CO3
	OR			
6 a)	Draw and explain the working of variable speed wind generators and enumerate the significant role of synchronous generator with In-line frequency control	10	L2	CO3
b)	Classify protection and control techniques of micro grid system and explain with neat diagram.	10	L3	CO3
	Module 4			
7a)	Explain the concept of power quality in smart grid.	10	L2	CO4
b)	Examine the classification of the power quality compensator.	10	L4	CO4
	OR			
8 a)	Explain the issues about power quality monitoring and power quality measurement in smart grid.	10	L2	CO4
b)	Organize the flow chart of procedure for monitoring power quality and issues of power quality monitoring.	10	L4	CO4
	Module 5			
9 a)	Describe the roles and responsibilities of smart grid stake holders.	10	L1	CO5
b)	Characterize the technical challenges in SG Market operation.	10	L4	CO6
	OR			
10a)	Describe the concept of EV charging infrastructure in smart grid.	10	L1	CO5
b)	Examine the challenges associated with WG in detail.	10	L4	CO6

Page 1 of 1

Process on CO Attainment:

Attainment of CO is directly measured from the performance of students in Continuous Internal Evaluation (CIE) and Semester End Examination (SEE).

Final CO Attainment= 50% of CIE + 50% of SEE.

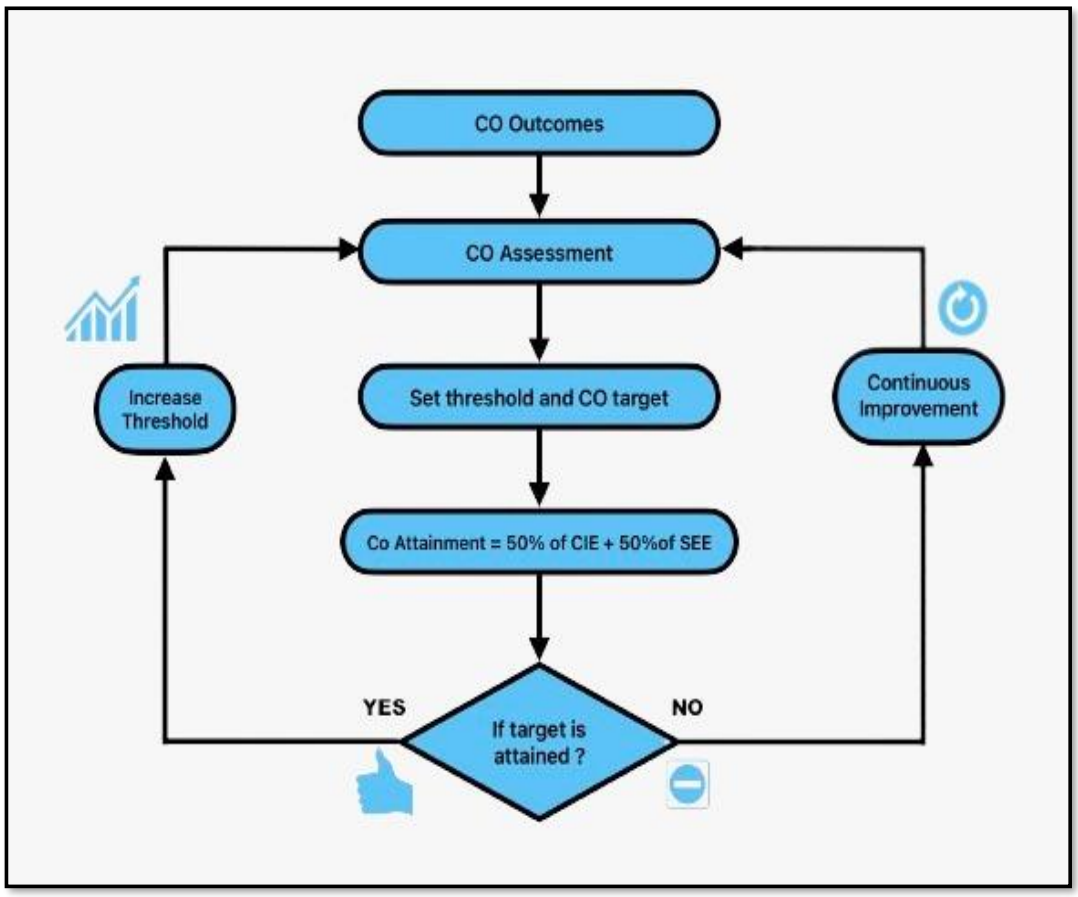


Figure 3.2.1.4 Process on CO Assessment

For assessing the attainment of COs in CIE and SEE, each CO of the course is mapped to individual questions and threshold is fixed for each CO. The process of CO assessment is shown in Figure 3.2.1.4. The individual COs of the courses is mapped with Correlation level and is being evaluated by prescribed assessment tools. Initially, Threshold and CO target is set for the courses. After the internal and external assessment, CO attainment is calculated. The attainment of COs is compared with the threshold. If it is met, threshold is revised for the subsequent years. If it is not met, course and module coordinator will plan for further actions to attain the COs. Action may include co-curricular activities and also tutorialclasses/extra classes for all students and remedial classes for slow learners.

3.2.2. Atttainment of Course Outcomes of all courses with respect to set attainment levels (65)

Attainment of COs is directly measured from the performance of students in Continuous Internal Evaluation (CIE) and Semester End Examination (SEE). For assessing the attainment of COs in CIE and SEE, the course outcomes are mapped to respective questions and target is set for each CO of the courses. The courses are grouped into several streams of Electrical and Electronics Engineering and are listed in Table 3.2.2.1

Table 3.2.2.1 Grouping of Courses

Course Category	Course Code
Basic Science and Humanity	18MAT11, 18CHE12, 18CSE13, 18MEE14, 18ECE15, 18HSS16, 18CHL17, 18CSL18, 18HSS172, 18MAT11, 18PHY12, 18MEE13, 18CIV14, 18EEL15, 18PHL16, 18EEL17, 18HSS171, 18MAT21, 18CHE22, 18CSE23, 18MEE24, 18ECE25, 18HSS26, 18CHL27, 18CSL28, 18HSS272, 18MAT21, 18PHY22, 18MEE23, 18CIV24, 18EEE25, 18PHL26, 18EEL27, 18HSS271,19EEE31, 19DMAT31, 19EEE41, 19DMAT41, HSS321/421, 19HSS322/422, 19HSS 323/423
Electrical & Electronics Circuits Based Courses	19EEE33, 19EEE35, 19EEL37
Theory courses	19EEE34, 19EEE35, 19EEE43, 19EEE44, 19EEE45, 19EEE46, 20EEE51, 20EEE52, 20EEE53, 20EEE54A, 20EEE55,20EEE61,20EEE62,20EEE63,20EEE71A,20EEE72A, 20EEE73A
Professional Electives	20EEE561,20EEE562, 20EEE563 ,20EEE564,20EEE641, 20EEE642,20EEE643,20EEE644,20EEE651,20EEE652,20EEE653,20EEE654, EEE731, EEE732, EEE733, EEE734, EEE741,EEE742, EEE743, EEE744, EEE811A EEE812A EEE813A EEE814A EEE821 EEE822 EEE823 EEE824
Open Electives	20NHOP01,20NHOP07,20NHOP14,20NHOP15,20NHOP02, NHOP10,20NHOP702,20NHOP704,20NHOP705,20NHOP707
Mini Project	20EEL68, 20EEL59, 19EEL49, 19EEL38
Internship	20EEE83A
Project Work	20EEE84A,20EEE78A
Lab Courses	19EEL36,19EEL37, 19EEL47, 19EEL48, 20EEL57, 20EEL66, 20EEL67, 20EEL77A

The process for calculating CO attainment through Continuous Internal Evaluation and Semester End Examination are described as below.

Step 1: CO distributions in assessment tools are identified.

Table 3.2.2.2 shows the CO distribution ofa course: Transmission and Distribution 20EEE51

Table 3.2.2.2 CO Distributions in Assessment Tools

Course Outcomes	Assessment Tools
CO1	Internal Tests, Assignments, Quiz es, SEE
CO2	Internal Tests, Assignments, Quiz es, SEE
CO3	Internal Tests, Assignments, Quiz es, SEE
CO4	Internal Tests, Assignments, Quiz es, SEE
CO5	Internal Tests, Assignments, Quiz es, SEE
CO6	Internal Tests, Assignments, Quiz es, SEE

Step 2: Setting of CO Target for the measurement of course outcomes is decided from the assessment tools. From the Table 3.2.2.2, CO1 and CO2 to be assessed in Internal Test 1 while CO2, CO3, and CO6 to be assessed in internal Test 2. Also CO4, CO5, CO6 to be assessed in Internal Test 3. The entire COs is uniformly distributed and assessed among SEE, Assignments and Quiz.

Step 3: CO target is defined based on the assessment tools shown and also the overall performance of that course in the previous years.

Step 4: Set the threshold for the course. Threshold is the minimum percentage of marks that needs to be obtained by the students. This threshold is considered as benchmark for calculating the attainment levels.

Step 5: After setting the benchmarks, percentage attainment is calculated by counting the number of students scoring above the benchmark divided by total number of students attempted for the COs. Table 3.2.2.3 and 3.2.2.4 shows CO attainment calculation.

$$Attainment\ Percentage\ = \frac{No.of\ students\ Scoring\ Above\ the\ Threshold\ alue}{Total\ No.of\ Students\ Appearing\ for\ that\ particular\ CO}$$

Step 6: The percentage of students in the class who scored more than threshold percentage of marks in the respective CO is the attainment.Based on the attainment percentage obtained, the attainment level for each of the CO is identified.

Attainment Levels:

- If 70% of students scoring more than 60% of marks, then it is considered as **LEVEL 3**
- If 60% of students scoring more than 60% of marks, then it is considered as **LEVEL 2**
- If 50% of students scoring more than 60% of marks, then it is considered as **LEVEL 1**

Step 7:

Final CO attainment is calculated as

CO Attainment =CIE *0.5+SEE *0.5

Table 3.2.2.3 CO Attainment Results

ATTAINMENT RESULTS FOR A COURSE COURSE: SMART GRID TECHNOLOGIES COURSE CODE:20EEE812A						
CO Attainment=50% of CIE+50% of SEE						
Continuous Internal Evaluation						
Course Outcomes	**Threshold Value (marks)**	**CO Target**	**Number of Students Scored Above Threshold value**	**Total number of Students appearing for that particular CO**	**Attainment Percentage**	**Attainment Level**
CO1	60%	70%	112	112	100	3
CO2		70%	97	111	87.39	3
CO3		70%	82	110	74.55	3
CO4		70%	100	112	89.29	3
CO5		70%	103	113	91.15	3
CO6		70%	103	113	91.15	3
Semester End Examination						
CO1	60%	70%	103	111	92.79	3
CO2		70%	103	112	91.96	3
CO3		70%	83	112	74.11	3
CO4		70%	81	111	72.97	3
CO5		70%	95	112	84.82	3
CO6		70%	71	104	68.27	2

Table 3.2.2.4 Sample CO Final attainment calculation

Course outcome Target (% of students)	CIE (Benchmarks: 60%)			SEE (Benchmarks: 60%)		
	Number of students scoring above benchmarks	Total number of students attempted	Attainment %	Number of students scoring above benchmarks	Total number of students attempted	Attainment %
CO1:70%	112	112	**(112/112) *100 =100% Level 3**	103	111	**(103/111) *100 =92.79% Level 3**
CO2: 70%	97	111	**(97/111) *100 =87.38% Level 3**	103	112	**(103/112) *100 =91.96% Level 3**
CO3: 70%	82	110	**(82/110) *100 =74.54% Level 3**	83	112	**(83/112) *100 =74.10% Level 3**
CO4: 70%	100	112	**(100/112) *100 =89.28% Level 3**	81	111	**(81/111) *100 =72.97% Level 3**
CO5: 70%	103	113	**(103/113) *100 =91.15% Level 3**	95	112	**(95/112) *100 =84.82% Level 3**
CO6: 70%	103	113	**(103/113) *100 =91.15% Level 3**	71	104	**(71/104) *100 =68.26% Level 2**

CO Attainment calculation:

For CO1_att= CIE attainment level* 0.5+ SEE attainment level*0.5= 3*0.5+3*0.5=3
For CO2_att= CIE attainment level* 0.5+ SEE attainment level*0.5= 3*0.5+3*0.5=3
For CO3_att= CIE attainment level* 0.5+ SEE attainment level*0.5= 3*0.5+3*0.5=3
For CO4_att= CIE attainment level* 0.5+ SEE attainment level*0.5= 3*0.5+3*0.5=3
For CO5_att= CIE attainment level* 0.5+ SEE attainment level*0.5= 3*0.5+3*0.5=3
For CO6_att= CIE attainment level* 0.5+ SEE attainment level*0.5= 3*0.5+2*0.5=2.5

Table 3.2.2.5.a to 3.2.2.5.b gives the details of target percentage Vs Attainment percentage in CIE and SEE for the batch 2018-2022

CO Attainment- (For 2018-2022 Batch)

Table 3.2.2.5.a Target and Attainment percentage of COs using CIE

Course Code	Continuous Internal Evaluation (CIE)											
	Targeted Percentage of COs						Attainment Percentage of COs					
	CO1	CO2	CO3	CO4	CO5	CO6	CO1	CO2	CO3	CO4	CO5	CO6
I Year												
18CHE12/22	65	65	65	65	65	-	95.75	97.88	99.23	99.23	99.81	-
18MAT11	65	65	65	65	65	65	98.98	99.83	99.91	99.91	99.91	99.8
18CSE13/23	65	65	65	65	65	65	98.64	98.45	93.99	92.98	98.64	98.8
18MEE14/24	60	60	60	60	60	60	93.37	96.28	89.88	96.28	96.28	87.7
18ECE15/25	50	50	50	50	50	50	72.2	86.49	99.42	99.61	99.21	97.1
18CSL18/28	65	65	65	65	65	65	98.45	99.22	99.03	99.03	99.18	99.0
18CHL17/27	70	70	70	70	70	-	95.53	95.53	95.53	95.53	95.53	-
18MAT21	65	65	65	65	65	65	98.98	99.83	99.91	99.91	99.91	99.8
18PHY12/22	65	65	65	65	65	-	99.54	99.85	99.85	99.85	100	-
18MEE13/23	60	60	60	60	60	60	98.02	100	100	100	100	99.8
18EEE15/25	70	70	70	70	70	-	97.34	97.41	99.66	99.66	99.66	-
18HSS16/26	54	54	54	54	-	-	99.61	99.61	99.61	99.61	-	-
18CIV14/24	64	64	64	64	-	-	97.87	99.54	98.92	98.92	-	-
18PHL16/26	70	70	70	70	70	-	99.23	99.23	99.23	99.23	99.23	-
18EEL17/27	60	60	60	60	60	-	99.08	99.08	99.08	99.08	99.08	-

III SEMESTER												
19ECE31/ 19EEE31	65	65	65	65	65	65	86.6	91.96	86.73	82.73	70.83	70.83
19EEE33	55	55	55	55	55	55	98.25	88.39	99.12	97.39	94.74	100
19EEE34	65	65	65	65	65	65	74.11	72.07	75	58.93	51.2	81.05
19EEE35	65	65	65	65	65	65	52.1	68.42	60.75	85.84	94.06	50.12
19HSS321	65	65	65	65	65	65	100	100	100	100	100	100
19HSS323/ 423	90	90	90	90	90	90	100	100	100	100	100	100
19EEL36	90	90	90	90	90	90	99.93	99.93	99.93	99.93	99.93	99.93
19EEL37	90	90	90	90	90	90	99.93	99.93	99.93	99.93	99.93	99.93
19EEL38	90	90	90	90	90	90	99.5	99.5	99.5	99.5	99.5	99.5
IV SEMESTER												
19ECE41/ 19EEE41	65	65	65	65	65	65	86.6	91.96	86.73	82.73	70.83	70.83
19EEE43	65	65	65	65	65	65	88.18	78.07	97.39	97.39	97.39	97.39
19EEE44	65	65	65	65	65	65	81.36	63.64	97.39	98.33	99.13	99.13
19EEE45	65	65	65	65	65	65	91.89	88.18	98.33	100	94.78	100
19EEE46	65	65	65	65	65	65	84.96	97.32	100	100	100	100
19EEL47	90	90	90	90	90	90	100	100	100	100	100	100
19EEL48	90	90	90	90	90	90	98.5	98.5	98.5	98.5	98.5	98.5
19EEL49	90	90	90	90	90	90	100	100	100	100	100	100
19HSS322/422	90	90	90	90	90	90	100	100	100	100	100	100
18HSS272	90	90	90	90	90	90	100	100	100	100	100	100

V SEMESTER												
20EEE51	70	70	70	70	70	70	100	100	93.91	73.64	73.47	100
20EEE52	70	70	70	70	70	70	99.13	100	75.25	95.24	82.61	70.25
20EEE53	70	70	70	70	70	70	100	100	91.89	80.39	76	93.86
20EEE54	70	70	70	70	70	70	98.26	100	51.2	70.93	50.62	52.1
20EEE55	70	70	70	70	70	70	100	65.77	62.3	98.23	98.11	98.21
20EEE561	70	70	70	70	70	70	92.04	100	100	63.95	50.78	81.42
20EEL57	90	90	90	90	90	90	99.25	99.25	99.25	99.25	99.25	99.25
20EEL58	90	90	90	90	90	90	100	100	100	100	100	100
20EEL59	90	90	90	90	90	90	100	100	100	100	100	100
VI SEMESTER												
20EEE61	70	70	70	70	70	70	96.4	100	100	100	100	95.1
20EEE62	70	70	70	70	70	70	99.12	100	100	100	100	95.54
20EEE63	70	70	70	70	70	70	100	100	99.12	100	74.47	98.31
20EEE641	70	70	70	70	70	70	100	100	77.78	57.8	99.06	100
20EE653	70	70	70	70	70	70	98.21	99.09	100	100	100	100
20EEL66	90	90	90	90	90	90	99.5	99.5	99.5	99.5	99.5	99.5
20EEL67	90	90	90	90	90	90	99.5	99.5	99.5	99.5	99.5	99.5
20EEL68	90	90	90	90	90	90	99.5	99.5	99.5	99.5	99.5	99.5
20NHOP07	90	90	90	90	90	90	100	100	100	100	100	100
20NHOP11	90	90	90	90	90	90	100	100	100	100	100	100
20NHOP13	90	90	90	90	90	90	100	100	100	100	100	100
20NHOP15	90	90	90	90	90	90	100	100	100	100	100	100
20NHOP01	90	90	90	90	90	90	100	100	100	100	100	100
20NHOP02	90	90	90	90	90	90	100	100	100	100	100	100
20NHOP09	90	90	90	90	90	90	98.21	98.21	98.21	98.21	98.21	98.21
20NHOP10	90	90	90	90	90	90	88.25	88.25	88.25	88.25	88.25	88.25

VII SEMESTER												
20EEE71A	70	70	70	70	70	70	72.3	75.45	96.46	50.98	100	97.35
20EEE72A	70	70	70	70	70	70	93.64	81.42	50.11	100	86.49	95.54
20EEE73A	70	70	70	70	70	70	92.04	93.75	72.3	100	100	100
20EEE744A	70	70	70	70	70	70	89.72	99.12	96.46	100	99.11	99.12
20EEE754A	70	70	70	70	70	70	93.81	94.59	92.59	98.13	100	100
20EEE78A	90	90	90	90	90	90	100	100	100	100	100	100
20EEL76A	90	90	90	90	90	90	99.25	99.25	99.25	99.25	99.25	99.25
20EEL77A	90	90	90	90	90	90	98.02	98.02	98.02	98.02	98.02	98.02
20NHOP701	90	90	90	90	90	90	100	100	100	100	100	100
20NHOP702	90	90	90	90	90	90	100	100	100	100	100	100
20NHOP704	90	90	90	90	90	90	100	100	100	100	100	100
20NHOP705	90	90	90	90	90	90	100	100	100	100	100	100
20NHOP707	90	90	90	90	90	90	100	100	100	100	100	100
20NHOP710	90	90	90	90	90	90	90	90	90	90	90	90
20NHOP711	90	90	90	90	90	90	100	100	100	100	100	100
20NHOP712	90	90	90	90	90	90	100	100	100	100	100	100
20NHOP713	90	90	90	90	90	90	93.5	93.5	93.5	93.5	93.5	93.5
20NHOP714	90	90	90	90	90	90	100	100	100	100	100	100
20NHOP715	90	90	90	90	90	90	100	100	100	100	100	100
VIII SEMESTER												
20EEE812A	70	70	70	70	70	70	100	87.39	74.55	89.29	91.15	91.15
20EEE821A	70	70	70	70	70	70	87.9	83.0	95.5	82.73	91.07	74.05
20EEE83A	90	90	90	90	90	90	98.5	98.5	98.5	98.5	98.5	98.5
20EEE84A	90	90	90	90	90	90	99.5	99.5	99.5	99.5	99.5	99.5

Table 3.2.2.5.b Target and Attainment percentage of COs using SEE

Course Code	Semester End Examination (SEE)											
	Targeted Percentage of COs						Attainment Percentage of COs					
	CO1	CO2	CO3	CO4	CO5	CO6	CO1	CO2	CO3	CO4	CO5	CO6
I Year												
18CHE12/22	65	65	65	65	65	-	65.29	65.38	81.49	66.67	65.99	-
18MAT11	65	65	65	65	65	65	95.34	90.37	78.67	72.01	82.72	84.2
18CSE13/23	65	65	65	65	65	65	78.4	73.97	62.69	60.84	57.08	56.2
18ECE15/25	50	50	50	50	50	50	92.01	54.85	46.97	48.76	45.33	61.2
18HSS16/26	54	54	54	54	-	-	83.93	85.1	90.59	90.85	-	-
18MEE14/24	60	60	60	60	60	50	74.25	74.25	74.25	74.25	74.25	52.6
18CSL18/28	65	65	65	65	65	65	85.94	85.94	85.94	85.94	85.94	70.6
18CHL17/27	70	70	70	70	70	-	89	89	89	89	89	-
18PHY12/22	65	65	65	65	65	-	87.91	84.84	82	86.34	80.83	-
18MAT21	65	65	65	65	65	65	95.34	90.37	78.67	72.01	82.72	84.2
18MEE13/23	60	60	60	60	60	60	89.11	82.61	63.47	60.14	81.02	78.4
18EEE15/25	70	70	70	70	70	-	90.55	72.96	77.74	72.18	62.65	-
18CIV14/24	64	64	64	64		-	90.7	85.96	79.94	74.45	-	-
18PHL16/26	70	70	70	70	70		89.91	89.91	89.91	89.91	89.91	--
18EEL17/27	60	60	60	60	60	-	91.88	91.88	91.88	91.88	91.88	

III SEMESTER												
19ECE31/ 19EEE31	65	65	65	65	65	65	93.69	77.48	74.77	67.29	51.1	50.3
19EEE33	65	65	65	65	65	65	76.52	56.86	75.93	65.79	60.78	51.2
19EEE34	65	65	65	65	65	65	82.73	77.36	59.63	54	61.95	45.98
19EEE35	65	65	65	65	65	65	58.56	45.05	52.73	50	41.28	69.81
19HSS321	90	90	90	90	90	90	100	100	100	100	100	100
19HSS323/ 423	90	90	90	90	90	90	100	100	100	100	100	100
19EEL36	90	90	90	90	90	90	99.12	99.12	99.12	99.12	99.12	99.12
19EEL37	90	90	90	90	90	90	99.12	99.12	99.12	99.12	99.12	99.12
19EEL38	90	90	90	90	90	90	98.23	98.23	98.23	98.23	98.23	98.23
IV SEMESTER												
19ECE41/19EEE41	65	65	65	65	65	65	86.6	91.96	86.73	82.73	70.83	70.83
19EEE43	65	65	65	65	65	65	88.18	78.07	97.39	97.39	97.39	97.39
19EEE44	65	65	65	65	65	65	81.36	63.64	97.39	98.33	99.13	99.13
19EEE45	65	65	65	65	65	65	91.89	88.18	98.33	100	94.78	100
19EEE46	65	65	65	65	65	65	84.96	97.32	100	100	100	100
19EEL47	90	90	90	90	90	90	100	100	100	100	100	100
19EEL48	90	90	90	90	90	90	97.3	97.3	97.3	97.3	97.3	97.3
19EEL49	90	90	90	90	90	90	100	100	100	100	100	100
19HSS322/ 422	90	90	90	90	90	90	100	100	100	100	100	100
18HSS272	90	90	90	90	90	90	100	100	100	100	100	100

V SEMESTER												
20EEE51	70	70	70	70	70	70	95.58	50.04	52.02	84.07	81.98	64.52
20EEE52	70	70	70	70	70	70	51.76	71.68	50.44	62.75	76.34	67.01
20EEE53	70	70	70	70	70	70	85.71	57.45	63.64	52.73	54.79	71.93
20EEE54	70	70	70	70	70	70	79.46	50.08	51.48	51.39	55.91	65.22
20EEE55	70	70	70	70	70	70	100	65.77	62.3	98.23	98.11	98.21
20EEE561	70	70	70	70	70	70	95.54	71.05	63.44	59.46	52.21	52.21
20EEL57	90	90	90	90	90	90	99.12	99.12	99.12	99.12	99.12	99.12
20EEL58	90	90	90	90	90	90	100	100	100	100	100	100
20EEL59	90	90	90	90	90	90	100	100	100	100	100	100
VI SEMESTER												
20EEE61	70	70	70	70	70	70	96.4	100	100	100	100	98.1
20EEE62	70	70	70	70	70	70	99.12	100	100	100	100	95.54
20EEE63	70	70	70	70	70	70	100	100	99.12	100	74.47	98.31
20EEE641	70	70	70	70	70	70	100	100	77.78	57.8	99.06	100
20EE653	70	70	70	70	70	70	98.21	99.09	100	100	100	100
20EEL66	90	90	90	90	90	90	99.12	99.12	99.12	99.12	99.12	99.12
20EEL67	90	90	90	90	90	90	99.12	99.12	99.12	99.12	99.12	99.12
20EEL68	90	90	90	90	90	90	99.12	99.12	99.12	99.12	99.12	99.12
20NHOP07	90	90	90	90	90	90	100	100	100	100	100	100
20NHOP11	90	90	90	90	90	90	100	100	100	100	100	100
20NHOP13	90	90	90	90	90	90	100	100	100	100	100	100
20NHOP15	90	90	90	90	90	90	100	100	100	100	100	100
20NHOP01	90	90	90	90	90	90	100	100	100	100	100	100
20NHOP02	90	90	90	90	90	90	100	100	100	100	100	100
20NHOP09	90	90	90	90	90	90	97.67	97.67	97.67	97.67	97.67	97.67
20NHOP10	90	90	90	90	90	90	87.5	87.5	87.5	87.5	87.5	87.5

VII SEMESTER												
20EEE71A	70	70	70	70	70	70	94.59	70.75	71.3	84.07	7522	72.1
20EEE72A	70	70	70	70	70	70	84.07	55.53	55.37	64.86	60.19	57.29
20EEE73A	70	70	70	70	70	70	82.3	61.95	63.2	78.76	62.1	55.1
20EEE744A	70	70	70	70	70	70	96.19	80.91	93.75	89.29	90	79.63
20EEE754A	70	70	70	70	70	70	97.35	95.5	79.61	97.32	55.32	76.15
20EEE78A	90	90	90	90	90	90	100	100	100	100	100	100
20EEL76A	90	90	90	90	90	90	99.12	99.12	99.12	99.12	99.12	99.12
20EEL77A	90	90	90	90	90	90	98.23	98.23	98.23	98.23	98.23	98.23
20NHOP701	90	90	90	90	90	90	100	100	100	100	100	100
20NHOP702	90	90	90	90	90	90	100	100	100	100	100	100
20NHOP704	90	90	90	90	90	90	100	100	100	100	100	100
20NHOP705	90	90	90	90	90	90	100	100	100	100	100	100
20NHOP707	90	90	90	90	90	90	100	100	100	100	100	100
20NHOP710	90	90	90	90	90	90	100	100	100	100	100	100
20NHOP711	90	90	90	90	90	90	100	100	100	100	100	100
20NHOP712	90	90	90	90	90	90	100	100	100	100	100	100
20NHOP713	90	90	90	90	90	90	92.86	92.86	92.86	92.86	92.86	92.86
20NHOP714	90	90	90	90	90	90	100	100	100	100	100	100
20NHOP715	90	90	90	90	90	90	100	100	100	100	100	100
VIII SEMESTER												
20EEE812A	70	70	70	70	70	70	100	87.4	74.55	89.29	91.15	91.1
20EEE821A	70	70	70	70	70	70	87.9	83.0	95.5	82.73	91.07	82.1
20EEE83A	90	90	90	90	90	90	98.23	98.23	98.23	98.23	98.23	98.23
20EEE84A	90	90	90	90	90	90	99.12	99.12	99.12	99.12	99.12	99.12

***Note: Due to COVID, Students are promoted directly to the next semester, Attainment percentage and Attainment level in SEE for IV & VI semesters remains the same as that of III &V semesters.**

Attainment levels Vs Targets for CIE and SEE

Attainment level 3: 65% of students scoring more than the Threshold
Attainment level 2: 55% of students scoring more than the Threshold
Attainment level 1: 45% of students scoring more than the Threshold

Based on subject category and performance of students, targets are set for each CO of a course. This provides considerable details which can lead to specific plans for improvement. Table 3.2.2.c toTable 3.2.2.d gives the details of target levels Vs Attainment Levels in CIE and SEE for the batch 2018-2022

Table 3.2.2.5.c Target and Attainment Levels of COs using CIE

Course Code	Continuous Internal Evaluation(CIE)											
	Targeted levels of COs						Attainment levels of COs					
	CO1	CO2	CO3	CO4	CO5	CO6	CO1	CO2	CO3	CO4	CO5	CO6
I SEMESTER												
18CHE13/23	65	65	65	65	65	-	3	3	3	3	3	-
18MAT11	65	65	65	65	65	65	3	3	3	3	3	3
18CSE13/23	65	65	65	65	65	65	3	3	3	3	3	3
18ECE15/25	60	60	60	60	60	50	3	3	3	3	3	3
18HSS16/26	50	50	50	50	50	50	3	3	3	3	3	3
18MEE14/24	54	54	54	54	-	-	3	3	3	3	-	-
18CSL18/28	65	65	65	65	65	65	3	3	3	3	3	3
18CHL17/27	70	70	70	70	70	-	3	3	3	3	3	-
18PHY12/22	65	65	65	65	65	-	3	3	3	3	3	-
18MAT21	65	65	65	65	65	65	3	3	3	3	3	3
18MEE13/23	60	60	60	60	60	60	3	3	3	3	3	3
18EEE15/25	70	70	70	70	70	-	3	3	3	3	2	-
18CIV14/24	64	64	64	64	-	-	3	3	3	3	-	-
18PHL16/26	70	70	70	70	70	-	3	3	3	3	3	-
18EEL17/27	60	60	60	60	60	-	3	3	3	3	3	-

III SEMESTER												
19ECE31/19EEE31	65	65	65	65	65	65	3	3	3	3	3	3
19EEE33	65	65	65	65	65	65	3	3	3	3	3	3
19EEE34	65	65	65	65	65	65	3	3	3	2	1	3
19EEE35	65	65	65	65	65	65	1	3	2	3	3	1
19HSS321	90	90	90	90	90	90	3	3	2	3	3	3
19HSS323/423	90	90	90	90	90	90	3	3	3	3	3	3
19EEL36	90	90	90	90	90	90	3	3	3	3	3	3
19EEL37	90	90	90	90	90	90	3	3	3	3	3	3
19EEL38	90	90	90	90	90	90	3	3	3	3	3	3
IV SEMESTER												
19ECE41/19EEE41	65	65	65	65	65	65	3	3	3	3	3	3
19EEE43	65	65	65	65	65	65	3	3	3	3	3	3
19EEE44	65	65	65	65	65	65	3	2	3	3	3	3
19EEE45	65	65	65	65	65	65	3	3	3	3	3	3
19EEE46	65	65	65	65	65	65	3	3	3	3	3	3
19EEL47	90	90	90	90	90	90	3	3	3	3	3	3
19EEL48	90	90	90	90	90	90	3	3	3	3	3	3
19EEL49	90	90	90	90	90	90	3	3	3	3	3	3
19HSS322/422	90	90	90	90	90	90	3	3	3	3	3	3
18HSS272	90	90	90	90	90	90	3	3	3	3	3	3

V SEMESTER												
20EEE51	70	70	70	70	70	70	3	3	3	3	3	3
20EEE52	70	70	70	70	70	70	3	3	3	3	3	2
20EEE53	70	70	70	70	70	70	3	3	3	3	3	3
20EEE54	70	70	70	70	70	70	3	3	1	3	1	1
20EEE55	70	70	70	70	70	70	3	2	2	3	3	3
20EEE561	70	70	70	70	70	70	3	3	3	2	1	3
20EEL57	90	90	90	90	90	90	3	3	3	3	3	3
20EEL58	90	90	90	90	90	90	3	3	3	3	3	3
20EEL59	90	90	90	90	90	90	3	3	3	3	3	3
VI SEMESTER												
20EEE61	70	70	70	70	70	70	3	3	3	3	3	3
20EEE62	70	70	70	70	70	70	3	3	3	3	3	3
20EEE63	70	70	70	70	70	70	3	3	3	3	3	3
20EEE641	70	70	70	70	70	70	3	3	3	1	3	3
20EE653	70	70	70	70	70	70	3	3	3	3	3	3
20EEL66	90	90	90	90	90	90	3	3	3	3	3	3
20EEL67	90	90	90	90	90	90	3	3	3	3	3	3
20EEL68	90	90	90	90	90	90	3	3	3	3	3	3
20NHOP07	90	90	90	90	90	90	3	3	3	3	3	3
20NHOP11	90	90	90	90	90	90	3	3	3	3	3	3
20NHOP13	90	90	90	90	90	90	3	3	3	3	3	3
20NHOP15	90	90	90	90	90	90	3	3	3	3	3	3
20NHOP01	90	90	90	90	90	90	3	3	3	3	3	3
20NHOP02	90	90	90	90	90	90	3	3	3	3	3	3
20NHOP09	90	90	90	90	90	90	3	3	3	3	3	3
20NHOP10	90	90	90	90	90	90	3	3	3	3	3	3

VII SEMESTER												
20EEE71A	70	70	70	70	70	70	3	3	3	1	3	3
20EEE72A	70	70	70	70	70	70	3	3	1	3	3	3
20EEE73A	70	70	70	70	70	70	3	3	2	3	3	3
20EEE744A	70	70	70	70	70	70	3	3	3	3	3	3
20EEE754A	70	70	70	70	70	70	3	3	3	3	3	3
20EEE78A	90	90	90	90	90	90	3	3	3	3	3	3
20EEL76A	90	90	90	90	90	90	3	3	3	3	3	3
20EEL77A	90	90	90	90	90	90	3	3	3	3	3	3
20NHOP701	90	90	90	90	90	90	3	3	3	3	3	3
20NHOP702	90	90	90	90	90	90	3	3	3	3	3	3
20NHOP704	90	90	90	90	90	90	3	3	3	3	3	3
20NHOP705	90	90	90	90	90	90	3	3	3	3	3	3
20NHOP707	90	90	90	90	90	90	3	3	3	3	3	3
20NHOP710	90	90	90	90	90	90	3	3	3	3	3	3
20NHOP711	90	90	90	90	90	90	3	3	3	3	3	3
20NHOP712	90	90	90	90	90	90	3	3	3	3	3	3
20NHOP713	90	90	90	90	90	90	3	3	3	3	3	3
20NHOP714	90	90	90	90	90	90	3	3	3	3	3	3
20NHOP715	90	90	90	90	90	90	3	3	3	3	3	3
VIII SEMESTER												
20EEE812A	70	70	70	70	70	70	3	3	3	3	3	3
20EEE821A	70	70	70	70	70	70	3	3	3	3	3	3
20EEE83A	90	90	90	90	90	90	3	3	3	3	3	3
20EEE84A	90	90	90	90	90	90	3	3	3	3	3	3

Table 3.2.2.5.d Target and Attainment Levels of COs using SEE

Course Code	Semester End Examination (SEE)											
	Targeted levels of COs						Attainment levels of COs					
	CO1	CO2	CO3	CO4	CO5	CO6	CO1	CO2	CO3	CO4	CO5	CO6
I SEMESTER												
18CHE13/23	65	65	65	65	65	-	3	3	3	3	3	-
18MAT11	65	65	65	65	65	65	3	3	3	3	3	3
18CSE13/23	65	65	65	65	65	65	3	3	2	2	2	2
18ECE15/25	60	60	60	60	60	50	3	3	2	2	2	3
18HSS16/26	50	50	50	50	50	50	3	3	3	3	3	3
18MEE14/24	65	65	65	65	65	65	3	3	3	3	3	3
18CSL18/28	65	65	65	65	65	65	3	3	3	3	3	3
18CHL17/27	70	70	70	70	70	-	3	3	3	3	3	-
18PHY12/22	65	65	65	65	65	-	3	3	3	3	3	-
18MAT21	65	65	65	65	65	65	3	3	3	3	3	3
18MEE13/23	60	60	60	60	60	60	3	3	3	3	3	3
18EEE15/25	70	70	70	70	70	-	3	3	3	3	2	-
18CIV14/24	64	64	64	64	-	-	3	3	3	3	-	-
18PHL16/26	70	70	70	70	70	-	3	3	3	3	3	-
18EEL17/27	60	60	60	60	60	-	3	3	3	3	3	-

III SEMESTER												
19ECE31/19EEE31	65	65	65	65	65	65	3	3	3	3	1	1
19EEE33	65	65	65	65	65	65	3	2	3	3	2	1
19EEE34	65	65	65	65	65	65	3	3	2	1	2	1
19EEE35	65	65	65	65	65	65	2	1	1	1	1	3
19HSS321	90	90	90	90	90	90	3	3	3	3	3	3
19HSS323/423	90	90	90	90	90	90	3	3	3	3	3	3
19EEL36	90	90	90	90	90	90	3	3	3	3	3	3
19EEL37	90	90	90	90	90	90	3	3	3	3	3	3
19EEL38	90	90	90	90	90	90	3	3	3	3	3	3
IV SEMESTER												
19ECE41/19EEE41	65	65	65	65	65	65	3	3	3	3	3	3
19EEE43	65	65	65	65	65	65	3	3	3	3	3	3
19EEE44	65	65	65	65	65	65	3	2	3	3	3	3
19EEE45	65	65	65	65	65	65	3	3	3	3	3	3
19EEE46	65	65	65	65	65	65	3	3	3	3	3	3
19EEL47	90	90	90	90	90	90	3	3	3	3	3	3
19EEL48	90	90	90	90	90	90	3	3	3	3	3	3
19EEL49	90	90	90	90	90	90	3	3	3	3	3	3
19HSS322/422	90	90	90	90	90	90	3	3	3	3	3	3
18HSS272	90	90	90	90	90	90	3	3	3	3	3	3

V SEMESTER												
20EEE51	70	70	70	70	70	70	3	1	1	3	3	2
20EEE52	70	70	70	70	70	70	1	3	1	2	3	2
20EEE53	70	70	70	70	70	70	3	1	2	1	1	3
20EEE54	70	70	70	70	70	70	3	1	1	1	1	2
20EEE55	70	70	70	70	70	70	3	2	2	3	3	3
20EEE561	70	70	70	70	70	70	3	3	2	1	1	1
20EEL57	90	90	90	90	90	90	3	3	3	3	3	3
20EEL58	90	90	90	90	90	90	3	3	3	3	3	3
20EEL59	90	90	90	90	90	90	3	3	3	3	3	3
VI SEMESTER												
20EEE61	70	70	70	70	70	70	3	3	3	3	3	3
20EEE62	70	70	70	70	70	70	3	3	3	3	3	3
20EEE63	70	70	70	70	70	70	3	3	3	3	3	3
20EEE641	70	70	70	70	70	70	3	3	3	1	3	3
20EE653	70	70	70	70	70	70	3	3	3	3	3	3
20EEL66	90	90	90	90	90	90	3	3	3	3	3	3
20EEL67	90	90	90	90	90	90	3	3	3	3	3	3
20EEL68	90	90	90	90	90	90	3	3	3	3	3	3
20NHOP07	90	90	90	90	90	90	3	3	3	3	3	3
20NHOP11	90	90	90	90	90	90	3	3	3	3	3	3
20NHOP13	90	90	90	90	90	90	3	3	3	3	3	3
20NHOP15	90	90	90	90	90	90	3	3	3	3	3	3
20NHOP01	90	90	90	90	90	90	3	3	3	3	3	3
20NHOP02	90	90	90	90	90	90	3	3	3	3	3	3
20NHOP09	90	90	90	90	90	90	3	3	3	3	3	3
20NHOP10	90	90	90	90	90	90	3	3	3	3	3	3

VII SEMESTER												
20EEE71A	70	70	70	70	70	70	3	3	3	3	3	3
20EEE72A	70	70	70	70	70	70	3	1	1	2	2	1
20EEE73A	70	70	70	70	70	70	3	2	2	3	2	1
20EEE744A	70	70	70	70	70	70	3	3	3	3	3	3
20EEE754A	70	70	70	70	70	70	3	3	3	3	1	3
20EEE78A	90	90	90	90	90	90	3	3	3	3	3	3
20EEL76A	90	90	90	90	90	90	3	3	3	3	3	3
20EEL77A	90	90	90	90	90	90	3	3	3	3	3	3
20NHOP701	90	90	90	90	90	90	3	3	3	3	3	3
20NHOP702	90	90	90	90	90	90	3	3	3	3	3	3
20NHOP704	90	90	90	90	90	90	3	3	3	3	3	3
20NHOP705	90	90	90	90	90	90	3	3	3	3	3	3
20NHOP707	90	90	90	90	90	90	3	3	3	3	3	3
20NHOP710	90	90	90	90	90	90	3	3	3	3	3	3
20NHOP711	90	90	90	90	90	90	3	3	3	3	3	3
20NHOP712	90	90	90	90	90	90	3	3	3	3	3	3
20NHOP713	90	90	90	90	90	90	3	3	3	3	3	3
20NHOP714	90	90	90	90	90	90	3	3	3	3	3	3
20NHOP715	90	90	90	90	90	90	3	3	3	3	3	3
VIII SEMESTER												
20EEE812A	70	70	70	70	70	70	3	3	3	3	3	2
20EEE821A	70	70	70	70	70	70	3	3	3	3	3	3
20EEE83A	90	90	90	90	90	90	3	3	3	3	3	3
20EEE84A	90	90	90	90	90	90	3	3	3	3	3	3

***Note: Due to COVID, Students are promoted directly to the next semester, Attainment percentage and Attainment level in SEE for IV & VI semesters remains the same as that of III &V semesters.**

Table 3.2.2.5.e shows Course Outcomes Attainment levels.
Final CO attainment is calculated as

CO Attainment =50% percentage of CIE+50% percentage of SEE

Table 3.2.2.5.e Course Outcomes Attainment Levels

Course Code	Course Name	Direct Attainment		Overall Direct Attainment
		CIE	SEE	
18CHE13/23	Engineering Chemistry	3.0	3.0	**3.0**
18MAT11	Applied Mathematics I	3.0	3.0	**3.0**
18CSE13/23	Introduction to Programming With C	3.0	2.3	**2.7**
18ECE15/25	Basic Electronics	3.0	2.5	**2.8**
18HSS16/26	Professional Communication	3.0	3.0	**3.0**
18MEE14/24	Computer aided Engineering Drawing	3.0	3.0	**3.0**
18CSL18/28	Programming with C Lab	3.0	3.0	**3.0**
18CHL17/27	Engineering Chemistry Lab	3.0	3.0	**3.0**
18PHY12/22	Engineering Physics	3.0	3.0	**3.0**
18MAT21	Applied Mathematics II	3.0	3.0	**3.0**
18MEE13/23	Elements of Mechanical Engineering	3.0	3.0	**3.0**
18EEE15/25	Basic Electrical Engineering	2.8	2.8	**2.8**
18CIV14/24	Elements of Civil Engineering	3.0	3.0	**3.0**
18PHL16/26	Engineering Physics Lab	3.0	3.0	**3.0**
18EEL17/27	Basic Electrical Engineering Lab	3.0	3.0	**3.0**
19DMAT31	Basic Applied Mathematics-I	3.0	2.3	**2.7**
19ECE31/ 19EEE31	Applied Mathematics - III	3.0	2.3	**2.7**
19EEE33	Electronic Devices and Circuits	2.5	2.0	**2.3**
19EEE34	Digital System Design	2.2	1.5	**1.8**
19EEE35	Electric Circuit Theory	2.8	3.0	**2.9**
19HSS321	Economics for Engineers	3.0	3.0	**3.0**
19HSS323/ 423	Environmental Science and Awareness	3.0	3.0	**3.0**
19EEL36	Analog and Digital Electronics Laboratory	3.0	3.0	**3.0**
19EEL37	Electric Circuit Theory Laboratory	3.0	3.0	**3.0**
19EEL38	Mini project I	3.0	3.0	**3.0**

19ECE41/ 19EEE41	Applied Mathematics – IV	3.0	3.0	**3.0**
19EEE43	Electromagnetic Theory	2.8	2.8	**2.8**
19EEE44	Microcontroller and Embedded Systems	3.0	3.0	**3.0**
19EEE45	DC Machines And Transformers	3.0	3.0	**3.0**
19EEE46	Linear Integrated Circuits	3.0	3.0	**3.0**
19EEL47	Microcontroller and Embedded System Laboratory	3.0	3.0	**3.0**
19EEL48	Dc Machines and Transformers Laboratory	3.0	3.0	**3.0**
19EEL49	Mini Project II	3.0	3.0	**3.0**
19DMAT41	Basic Applied Mathematics-II	3.0	3.0	**3.0**
19HSS322/ 422	Life Skills for Engineers	3.0	2.2	**2.6**
18HSS272	Constitution of India	2.8	2.0	**2.4**
20EEE51	Transmission and Distribution	3.0	1.8	**2.4**
20EEE52	Control Systems	2.0	1.5	**1.8**
20EEE53	Synchronous and Induction Machines	2.7	2.7	**2.7**
20EEE54	Signals and Systems	2.5	1.8	**2.2**
20EEE55	Industrial Automation	3.0	3.0	**3.0**
20EEE561	Data Structures and Algorithms	3.0	3.0	**3.0**
20EEL57	Control Systems Laboratory	3.0	3.0	**3.0**
20EEL58	Synchronous and Induction Machines Laboratory	3.0	3.0	**3.0**
20EEL59	Mini project III	3.0	3.0	**3.0**
20EEE61	Power System Analysis	3.0	3.0	**3.0**
20EEE62	Power Electronics	2.7	2.7	**2.7**
20EEE63	Power System Protection	3.0	3.0	**3.0**
20EEE641	Object Oriented Programming	3.0	3.0	**3.0**
20EE653	Advanced Industrial and Building Automation	3.0	3.0	**3.0**
20EEL66	Power System Analysis Laboratory	3.0	3.0	**3.0**
20EEL67	Power Electronics Laboratory	3.0	3.0	**3.0**
20EEL68	Mini project IV	3.0	3.0	**3.0**
20NHOP07	SAP	3.0	3.0	**3.0**
20NHOP11	Machine Learning	3.0	3.0	**3.0**

20NHOP13	Industrial IOT -Embedded System	3.0	3.0	**3.0**
20NHOP15	Product Lifecycle Management	3.0	3.0	**3.0**
20NHOP01	Big Data Analytics with HP Vertica 1	3.0	3.0	**3.0**
20NHOP02	VM Ware-Virtualization Essentials 1	3.0	3.0	**3.0**
20NHOP09	Cisco-Routing and Switching 1	2.7	3.0	**2.8**
20NHOP10	Data Analytics	2.7	1.4	**2.0**
20EEE71A	Special Electrical Machines	2.8	2.0	**2.4**
20EEE72A	Relay And High Voltage Engineering	3.0	3.0	**3.0**
20EEE73A	Electrical Drives And Vehicles	3.0	2.6	**2.8**
20EEE744A	Energy Auditing And Demand Side Management	3.0	3.0	**3.0**
20EEE754A	Neural Networks And Fuzzy Logic In Electrical Engineering	3.0	3.0	**3.0**
20EEE78A	Project Phase I	3.0	3.0	**3.0**
20EEL76A	Relay And High Voltage Engineering Laboratory	3.0	3.0	**3.0**
20EEL77A	Simulation Tools For Electrical Engineering Laboratory	3.0	3.0	**3.0**
20NHOP701	Big Data Analytics with Hp Vertica I	3.0	3.0	**3.0**
20NHOP702	VM Ware-Virtualization Essentials I	3.0	3.0	**3.0**
20NHOP704	Big Data Analytics With HP Vertica II	3.0	3.0	**3.0**
20NHOP705	VM Ware Virtualization Essentials II	3.0	3.0	**3.0**
20NHOP707	SAP	3.0	3.0	**3.0**
20NHOP710	Data Analytics	3.0	3.0	**3.0**
20NHOP711	Machine Learning	3.0	3.0	**3.0**
20NHOP712	Cisco-Routing And Switching 1	3.0	3.0	**3.0**
20NHOP713	IIOT Embedded System	3.0	3.0	**3.0**
20NHOP714	Block Chain	3.0	2.8	**2.9**
20NHOP715	Product Life Cycle Management	3.0	3.0	**3.0**
20EEE812A	Smart Grid Technologies	3.0	3.0	**3.0**
20EEE821A	Photo Voltaic Systems And Applications	3.0	3.0	**3.0**
20EEE83A	Internship	3.0	3.0	**3.0**
20EEE84A	Project Phase II	3.0	3.0	**3.0**
CO Attainment =50% percentage of CIE+50% percentage of SEE		**2.94**	**2.8**	**2.88**

3.3. Attainment of Program Outcomes and Program Specific Outcomes (75):

3.3.1. Describe assessment tools and processes used for measuring the attainment of each Program Outcome and Program Specific Outcomes (10)

Program Outcomes and Program Specific Outcome are assessed by giving 80%weightage to direct assessment and 20% weightage to indirect assessment. Direct assessment is to evaluate all POs in Continuous Internal Evaluation (CIE) and Semester End Examination, where 50% weightage is given for SEE exam and 50% weightage is given for CIE assessment. Indirect assessment is done through Graduate survey, Alumni survey and Employer Survey. Figure 3.3.1.1 represents the evaluation process of PO attainment through course outcome attainment.

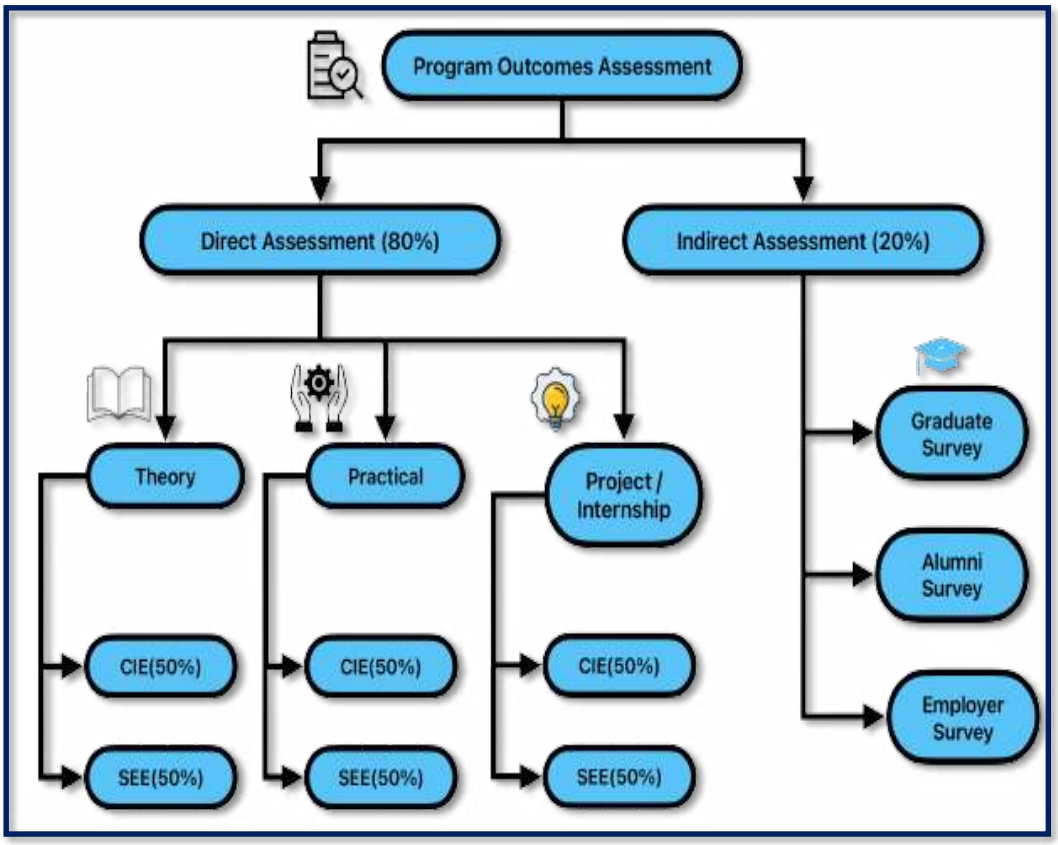


Figure 3.3.1.1 PO attainment process

3.3.1.1 PO and PSO Assessment Tools

At the end of program, the PO and PSO assessment is done from the CO attainment of all curriculum components. The various direct and indirect assessment tools used to evaluate POs & PSOs and frequency with which the assessment processes are carried out are listed in Table 3.3.1.1.1 and 3.3.1.1.2

Table 3.3.1.1.1 Details about Direct Assessment Tools

Direct Assessment Tools	Description	Evaluation of COs	Related POs/PSOs
Internal Assessment (IA) Test	Three internal assessment tests are conducted for all the courses and their averages are considered.	The questions in the test are mapped against COs of respective courses. All three IA test questions are framed in such a way to cover all CO's. Entered marks are taken for measuring the CO Attainment.	PO1 to PO12 PSO1, PSO2
Assignment	Two assignments per semester are given by Faculty in charge.	Assignment questions are mapped against COs and marks are taken for measuring the CO attainment.	PO1 to PO12 PSO1, PSO2
Quiz	Two Quizzes per semester are given by faculty in charge.	The questions are prepared for each of the courses and marks are considering for calculating CO attainment.	PO1 to PO12 PSO1, PSO2
Internal Lab Examination	During the semester, two laboratory test conduction and evaluation is done.	In every lab, record, observation and viva are assessed by the faculty in charge through continuous internal Assessment.Experiment wise CO is evaluated and attainment is measured.	PO1 to PO12 PSO1, PSO2
SEE	Conduction of both theory and practical/project examination as per the calendar of events announced.	Final marks are taken for assessing the CO attainment.	PO1 to PO12 PSO1, PSO2
Mini Project	Mini project Evaluation is done to test students' Coding, Presentation, documentation and debugging skills.	The Mini Project guide andMini project coordinator follows the rubrics whichis set by the department for evaluation and thensubmit to the Head of the Department.	PO1-PO12, PSO1-PSO2
Project Phase-1 and Phase-2	Project evaluation is done during 7th and 8th semesters to test the student's independent analysis and design skills. Two project reviews for each phase are conducted.	The project guide andproject coordinator follows the rubrics whichis set by the department for evaluation and thensubmit to the Head of the Department.	PO1-PO12, PSO1-PSO2
Internship	Internship evaluation isdone during 8th semester. To get the practicalexposure from industries, students are encouragedto carry out Internship in reputed industries/publicsectors.	The evaluation of the marks based on Presentation and Report of the Internship and the score for every student is calculated.	PO1-PO12, PSO1-PSO2

Table 3.3.1.1.2 Details about Indirect Assessment Tools

Indirect Assessment Tools	Description	Evaluation Process
Graduate Survey	This survey provides the information about program satisfaction and asks graduates to indicate the level of preparation provided by their graduate program. This type of survey highlights the areas in which the institution should invest more or less resources to enhance a student's learning and development experience.	This survey is conducted for the students who have passed out of the department for that year. The questionnaire consists of question which is relevant for assessing POs and PSOs. Each question is having 3 options namely, Good, Satisfactory, poor which is given the marks of 3, 2, 1 respectively.
Alumni Survey	This survey provides the information to identify which areas of our academic program that needs to be changed, improved or expanded.	Collect the information from alumni after two years of graduation. The questionnaire consists of question which is relevant for assessing POs and PSOs. Each question is having 3 options namely, Good, Satisfactory, poor which is given the marks of 3, 2, 1 respectively.
Employer Survey	This survey helps to determine graduate skills, capabilities and Opportunities.	Collect the information from employers who had given jobs to our graduates. The questionnaire consists of question which is relevant for assessing POs and PSOs. Each question is having 3 options namely, Good, Satisfactory, poor which is given the marks of 3, 2, 1 respectively.

The process for POs/PSOs attainment is described in the flowchart shown in Figure 3.3.1.1.1

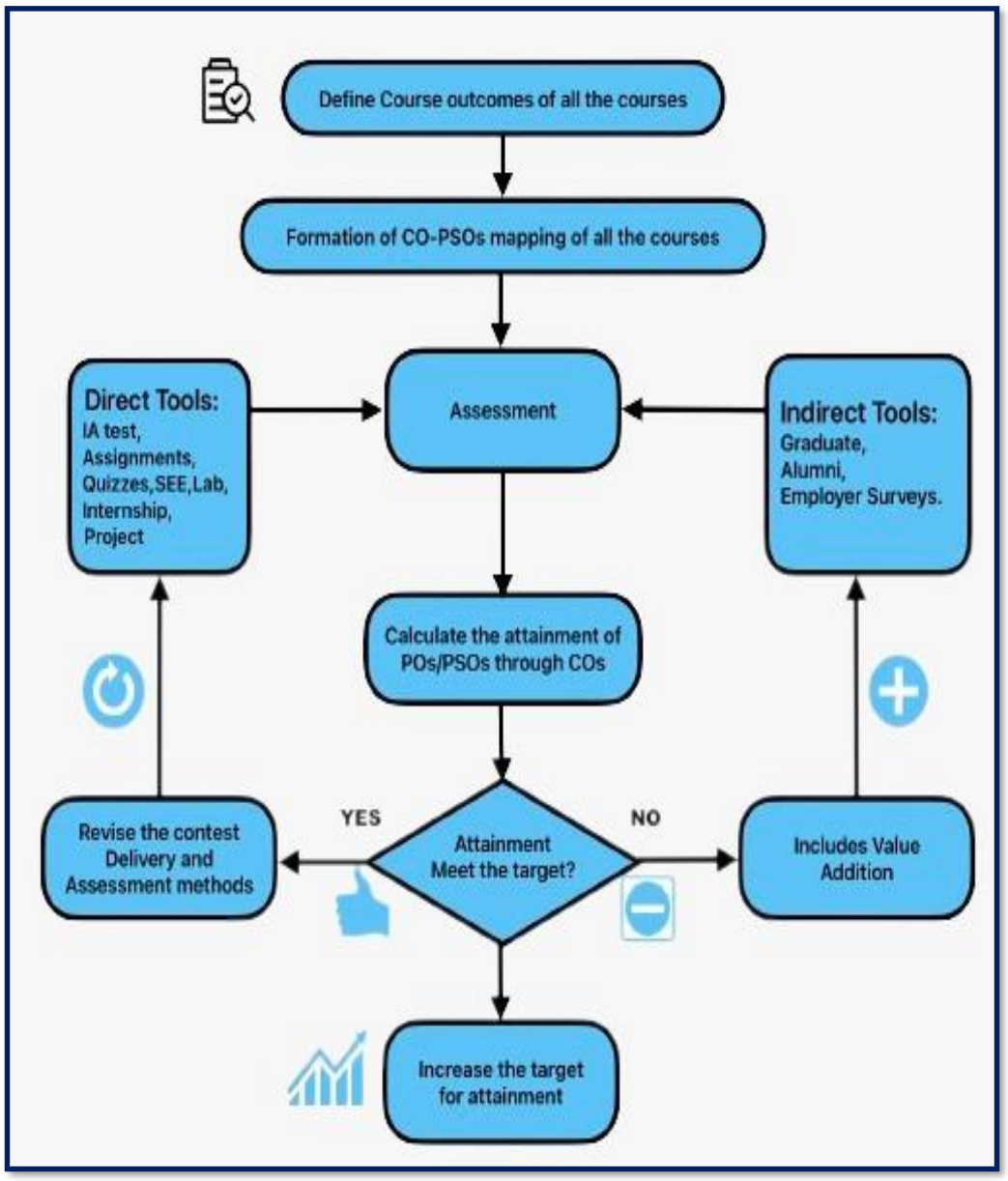


Figure 3.3.1.1.1 PO/PSO Assessment and Attainment Process

The steps involved in PO Assessment process are as follows:

Step 1. Course outcomes are assessed through Continuous Internal Evaluation and Semester End Examination. The analysis is done to find the level of attainments of COs.

Step 2. The attainment of POs is being calculated based on the COs attainment.

Attainment of POs/PSOs through a course is calculated as *Sum of product of CO attainment and CO PO mapping by sum of weight contributed in CO PO mapping.*

Attainment of POs through all the courses is calculated by taking the *Average across all Courses Addressing that POs/PSOs*

POs' and PSOs' are calculated as per the below formula:

$$POi = \sum_{j=1}^{n} COj * (COj \rightarrow POi)$$

$$PSOi = \sum_{j=1}^{n} COj * (COj \rightarrow PSOi)$$

Where POi varies from i=1 to 12 ,PSOi varies from i=1 to 2,
n is the number of Cos, $COj \rightarrow POi$ *is the mapping of co → po.*

Step 3. The PSOs attainment is calculated by the process similar to that used for POs attainment.

Step 4. For indirect assessments, survey questionnaire is circulated to students, alumni and employer. The surveys are assessed and evaluated to determine the strength of attainment level of POs.

Attainment of POs based on survey= *[(3*number of students gave option 3) + (2* number of students gave option 2) +(1* number of students gave option 1)]/ Total number of responses*

Step 5. Overall attainments of POs are calculated by taking 80% of direct attainment and 20% of indirect attainment.

PO attainment= Direct Attainment *0.8+ Indirect Attainment *0.2

Step 6. If the POs and PSOs attainment value is below the target, an essential remedial action has been taken.

Demonstration:

A course is taken as an example for the calculation of POs and PSOs attainment. And it is explained in Table 3.3.1.1.3 to Table 3.3.1.1.6

Table 3.3.1.1.3 CO-PO mapping of a course 20EEE812A Smart Grid Technologies

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3	2	1	1	-	2	-	-	-	-	-	1	**2**	**2**
CO2	3	2	2	1	-	3	-	-	-	-	-	2	**2**	**2**
CO3	2	2	1	2	-	2	-	-	-	-	-	2	**2**	**2**
CO4	2	3	2	2	-	2	-	-	-	1	-	3	**2**	**2**
CO5	3	3	3	3	1	2	-	-	2	1	-	3	**2**	**2**
CO6	3	3	2	1	1	1	-	-	2	2	1	2	**2**	**2**

Table 3.3.1.1.4 CO Attainment of a course- 20EEE812A- Smart Grid Technologies

COs	CIE	SEE	CO Attainment=0.5*CIE+0.5*SEE
CO1	3	3	3*0.5+3*0.5=3
CO2	3	3	3*0.5+3*0.5=3
CO3	3	3	3*0.5+3*0.5=3
CO4	3	3	3*0.5+3*0.5=3
CO5	3	3	3*0.5+3*0.5=3
CO6	3	2	3*0.5+3*0.5=2.5

Table 3.3.1.1.5 CO Attainment Vs CO PO mapping -20EEE812A- Smart Grid Technologies

COs	CO_ Att	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3	3	2	1	1	-	2	-	-	-	-	-	1	2	2
CO2	3	3	2	2	1	-	3	-	-	-	-	-	2	2	2
CO3	3	2	2	1	2	-	2	-	-	-	-	-	2	2	2
CO4	3	2	3	2	2	-	2	-	-	-	1	-	3	2	2
CO5	3	3	3	3	3	1	2	-	-	2	1	-	3	2	2
CO6	2.5	3	3	2	1	1	1	-	-	2	2	1	2	2	2

Hence, final contribution of CO attainment in PO attainment can be done using the below formula,

Attainment of POs/PSOs through a course is calculated as *Sum of product of CO attainment and CO PO mapping by sum of weight contributed in CO PO mapping.*

Calculation:

Po= ∑ *(CO attainment* CO PO mapping)/ ∑weight contributed in CO PO mapping*

$$PO1 = \frac{(3*3)+(3*3)+(3*2)+(3*2)+(3*3)+(2.5*3)}{(3+3+2+2+3+3)} = 2.9$$

$$PO2 = \frac{(3*2)+(3*2)+(3*2)+(3*3)+(3*3)+(2.5*3)}{(2+2+2+3+3+3)} = 2.9$$

$$PO5 = \frac{(3*1)+(2.5*1)}{(1+1)} = 2.75$$

$$PO6 = \frac{(3*2)+(3*3)+(3*2)+(3*2)+(3*2)+(2.5*1)}{(2+3+2+2+2+1)} = 2.95$$

$$PSO2 = \frac{(3*2)+(3*2)+3*2)+(3*2)+(3*2)+(2.5*2)}{(2+2+2+2+2+2)} = 2.91$$

Table 3.3.1.1.5.a PO Attainment of a Course -20EEE812A- Smart Grid Technologies

Course Code	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
20EEE812A	2.9	2.9	2.9	2.95	2.75	2.95	-	-	2.75	2.75	2.5	2.92	2.91	2.91

The process for POs/PSOs attainment is described in the in Figure 3.3.1.1.2

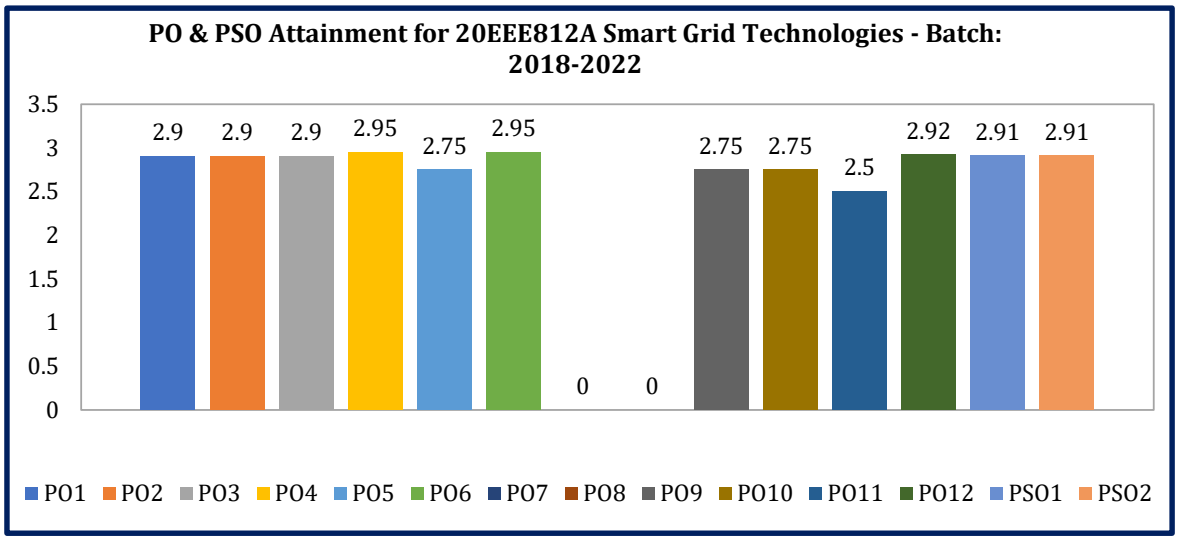


Figure 3.3.1.1.2 PO/PSO Attainment of 20EEE812A- Smart Grid Technologies

Similar way all POs are calculated using above formula.

For indirect attainment,Survey results from graduates, alumni, and employer are consolidated and the final PO values are calculated through 3 point scale (Good, Satisfactory, poor). After collection of survey forms, the marks for POs are calculated based on the following formula:

For each Survey = [(3*number of students gave option 3) + (2* number of students gave option 2) + (1* number of students gave option 1)]/Total number of responses

Questionnaire form in the graduate survey, Employer and Alumni Survey are given in Table 3.3.1.1.6. to Table 3.3.1.1.8. The above formula is used to calculate the marks for indirect attainment of POs and PSOs of the program at the end of the year.

Table 33.3.1.1.6 Questionnaire form in the Graduate survey

S. N	Program Outcomes(POS)	Good (3)	Satisfactory (2)	Poor (1)
1	**Engineering Knowledge:** Were you able to apply the knowledge of Mathematics, Science, engineering fundamentals, engineering specialization to the solution of complex engineering problems.			
2	**Problem analysis:** Were you comfortable in identifying, formulating reviewing, research literature and analyzing complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.			
3	**Design / Development of Solutions:** Were you able to design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety and the cultural, societal, and environmental considerations			
4	**Conduct investigations of complex problems:** Was it easy to use research - based knowledge and research methods, including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.			
5	**Modern tool usage:** Were you able to create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.			
6	**The engineer and society:** Did you apply reasoning informed by the contextual knowledge to assess societal, health, safety legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.			
7	**Environment and sustainability:** Did you understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.			
8	**Ethics:** Were you able to apply ethical principles and commit to professional ethics and responsibilities and norms of engineering practice.			
9	**Individual and team work:** Did you function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings			
10	**Communication:** Did you communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.			
11	**Project management and finance:** Did you demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multi-disciplinary environments.			
12	**Life - long learning:** How far you recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change			

Table 3.3.1.1.7 Questionnaire form in the Alumni survey

Name of the Alumni				
Degree	BE	M. Tech	MBA	MCA
Program		AUTO / BT/ CIVIL / CSE / EC / EEE/ IS / ME		
Year of Graduation				
Name of the organization where you are working				
Designation				

Please give your assessment of the Institute academics.

S. N	Program Outcomes(POs)	PO	Good (3)	Satisfactory (2)	Poor (1)
1	Rate the engineering knowledge obtained during course period.	PO1			
2	How do you find the program related to problem analysis?	PO2			
3	How do you rate this program for developing solutions for the problems in the field of Electrical and Electronics engineering?	PO3			
4	How you can rate the program helped for investigating the problems in the field of Electrical and Electronics engineering?	PO4			
5	How fit is this program helped in applying modern tool usage for your problems?	PO5			
6	How do you rate this program helped me in assessing society, health and safety issues?	PO6			
7	How can you rate this program helped you in getting knowledge related to environment and sustainability?	PO7			
8	How can you rate your professional ethics related to the program?	PO8			
9	What value you can express for individual working and team work?	PO9			
10	How can you rate your communication skills related to the program?	PO10			
11	Were you able to manage project and finance aspects effectively?	PO11			
12	How far this program helped for lifelong learning?	PO12			
13	Were you able to provide innovative solutions for challenges and problems in various domains of Electrical and Electronics engineering?	PSO1			
14	Were you able to solve complex Electrical and Electronics engineering problems using latest hardware and software tools along with analytical skills to contribute to useful, frugal and eco-friendly solutions?	PSO2			

Your suggestions

Relevance of curriculum in your job.

……

Need any change in curriculum and syllabi.

……

Improvement in Teaching Learning process .

……

Have you learned the basic concepts through your projects.

……

Any other suggestions / Comments.

……

Table 3.3.1.1.8 Questionnaire form in the Employer survey

Company Name:		
Mailing Address:		
City	State	Pin Code
Employment Details	Year	Email

S. N	Program Outcomes(POs)	PO	Good (3)	Satisfactory (2)	Poor (1)
1	Your views on Engineering knowledge of our graduates.	PO1			
2	How did you find our student in applying the knowledge of maths, science in the solution of complying engineering problems?	PO2			
3	How you found our student with respect to design and development of new products or methods?	PO3			
4	Your view on our students on investigating new problems in the industry.	PO4			
5	How fit is our graduates in applying modern tools for solving problems?	PO5			
6	How responsible is our graduates in contextual knowledge to assess societal, health, safety, legal and cultural issues?	PO6			
7	How responsible is our student in understanding the impact of the Electrical and Electronics engineering solutions in societal and environmental context?	PO7			
8	How can you rate our student with respect to their ethical and moral values?	PO8			
9	How can you rate our students with respect to work and team work?	PO9			
10	How can you rate our student with respect to being open to communicate effectively on complex Electrical and Electronics engineering activities?	PO10			
11	How do you find our graduates performance in understanding project management and financial principles of the company?	PO11			
12	How you rate our student with respect to willingness for lifelong learning?	PO12			
13	Were you happy with the support you received from the college during placement drive?	PSO1			
14	Are our graduates able to find innovative solutions for challenges and problems in various domains of Electrical and Electronics engineering?	PSO2			
15	How do you rate our student's ability to deal with complex engineering problems of Electrical and Electronics engineering?	-			

Your detailed comments on our graduate employee

……

3.3.2 Provide the results of evaluation of each PO and PSO (65):

Direct Assessment of PO-3

Program outcome 3:

Design/development of solutions: Design solutions for complex engineering problems and design system components or processes of Electrical and Electronics Engineering that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.

This outcome is assessed from courses like Electrical Machines, Electronic Devices, Electric Circuit theory, Digital System Design, Microcontroller and Embedded systems, Transmission and Distribution, Power Electronics, Control Systems, Power system Analysis,project work etc.

Direct PO attainment is calculated from CO attainment of the courses addressing PO-3. Average CO attainment level of all courses addressing this PO is calculated which is mentioned in following Table 3.3.2.a

Table 3.3.2.a Direct Assessment of PO3

Course Code	Course Name	PO3
18CHE13/23	Engineering Chemistry	-
18MAT11	Applied Mathematics I	3
18CSE13/23	Introduction to programming With C	2.75
18ECE15/25	Basic Electronics	2.8
18HSS16/26	Professional Communication	-
18MEE14/24	Computer Aided Engineering Drawing	2.5
18CSL18/28	Programming With C Lab	3
18CHL17/27	Engineering Chemistry Lab	-
18PHY12/22	Engineering Physics	3
18MAT21	Applied Mathematics 2	3
18MEE13/23	Elements of Mechanical Engineering	3
18EEE15/25	Basic Electrical Engineering	2.8
18CIV14/24	Elements of Civil Engineering	3
18PHL16/26	Engineering Physics Lab	3
18EEL17/27	Basic Electrical Engineering Lab	3
19ECE31/EEE31	Applied Mathematics – III	3
19EEE33	Electronic Devices And Circuits	3
19EEE34	Digital System Design	2.94
19EEE35	Electric Circuit Theory	2.25
19HSS321	Economics for Engineers	3
19HSS323	Environmental Science And Awareness	3
19EEL36	Analog and Digital Electronics Laboratory	3
19EEL37	Electric Circuit Theory Laboratory	3
19EEL38	Mini project I	3
19DMAT41	Basic Applied Mathematics-II	3

19ECE41/EEE41	Applied Mathematics – IV	3
19EEE43	Electromagnetic Theory	-
19EEE44	Microcontroller And Embedded Systems	3
19EEE45	DC Machines and Transformers	3
19EEE46	Linear Integrated Circuits	3
19EEL47	Microcontroller and Embedded System Laboratory	3
19EEL48	Dc Machines and Transformers Laboratory	3
19EEL49	Mini Project II	3
19HSS422	Life Skills for Engineers	-
18HSS272	Constitution of India	-
20EEE51	Transmission and Distribution	2.9
20EEE52	Control Systems	2.56
20EEE53	Synchronous and Induction Machines	2.42
20EEE54	Signals and Systems	2
220EEE55	Industrial Automation	2.2
20EEE561	Data Structures and Algorithms	2.5
20EEL57	Control Systems Laboratory	3
20EEL58	Synchronous and Induction Machines Laboratory	2
20EEL59	Mini project III	3
20EEE61	Power System Analysis	3
20EEE62	Power Electronics	3
20EEE63	Power System Protection	3
20EEE641	Object Oriented Programming	2.6
20EE653	Advanced Industrial And Building Automation	3
20EEL66	Power System Analysis Laboratory	3
20EEL67	Power Electronics Laboratory	3
20EEL68	Mini project IV	3
20NHOP07	SAP	3
20NHOP11	Machine Learning	3
20NHOP13	Industrial IOT -Embedded System	3
20NHOP15	Product Lifecycle Management	3
20NHOP01	Big Data Analytics with HP Vertica 1	3
20NHOP02	VM Ware-Virtualization Essentials 1	3
20NHOP09	Cisco-Routing and Switching 1	3
20NHOP10	Data Analytics	3
20EEE71A	Special Electrical Machines	2.83
20EEE72A	Relay And High Voltage Engineering	2.16
20EEE73A	Electrical Drives and Vehicles	2.2
20EEE744A	Energy Auditing and Demand Side Management	3
20EEE754A	Neural Networks and Fuzzy Logic in Electrical Engineering	2.8

20EEE78A	Project Phase 1	3
20EEL76A	Relay and High Voltage Engineering Laboratory	3
20EEL77A	Simulation Tools for Electrical Engineering Laboratory	3
20NHOP701	Big Data Analytics with Hp Vertica I	3
20NHOP702	VM Ware-Virtualization Essentials I	3
20NHOP704	Big Data Analytics With HP Vertica II	3
20NHOP705	VM Ware Virtualization Essentials II	3
20NHOP707	SAP	3
20NHOP710	Data Analytics	3
20NHOP711	Machine Learning	3
20NHOP712	Cisco-Routing And Switching 2	3
20NHOP713	IIOT Embedded System	3
20NHOP714	Block Chain	3
20NHOP715	Product Life Cycle Management	3
20EEE812A	Smart Grid Technologies	2.9
20EEE821A	Photo Voltaic Systems and Applications	3
20EEE83A	Internship	3
20EEE84A	Project Phase II	3
Average of all courses - PO3		**2.88**

Indirect Assessment of PO3:

Indirect PO assessment is done using assessment tools like graduate survey, alumni survey, and employer survey as described in following Table 3.3.2.b

Table 3.3.2.b Indirect Attainmnet of PO3

Survey	Attainment level
Graduate Survey	2.42
Alumni Survey	2.82
Employer Survey	2.64
Average Indirect Attainmnet	**2.63**

Average Attainment of PO3

Finally, the average of direct and indirect assessment is calculated which is the attainment level for that PO. Table 3.3.2.c shows overall Attainment calculation for PO3.

Table 3.3.2.c Final Attainment of PO3

Average Final Attainment PO3				
PO	**Assessment Tool**	**Attainment Level**		**Overall Attainment**
PO3	Direct Assessment Tool	2.88	80% of 2.88=2.3	**2.83**
PO3	Indirect Assessment Tool	2.63	20% of 2.63=0.53	

Final POs and PSOs Attainment CAY (2018-2022)

Final PO and PSO attainment level is 80% Direct attainment + 20% Indirect attainment. Table 3.3.2.d shows final POs and PSOs calculation for CAY (2018-2022 batch)

Table 3.3.2.d Final POs and PSOs Attainment CAY (2018-2022)

Survey	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
Direct Attainment	2.9	2.9	2.88	2.88	2.9	2.74	2.83	2.92	2.93	2.93	2.72	2.88	2.89	2.89
Indirect Attainment	2.58	2.67	2.63	2.43	2.49	1.85	2.5	2.58	2.68	2.64	1.74	2.46	2.51	2.46
80% Direct Attainment	2.32	2.32	2.304	2.304	2.32	2.192	2.264	2.336	2.344	2.344	2.176	2.304	2.312	2.312
20% Indirect Attainment	0.516	0.534	0.526	0.486	0.498	0.37	0.5	0.516	0.536	0.528	0.348	0.492	0.502	0.492
Final PO & PSO Attainment	**2.836**	**2.854**	**2.83**	**2.79**	**2.818**	**2.562**	**2.764**	**2.852**	**2.88**	**2.872**	**2.524**	**2.796**	**2.814**	**2.804**

Comparison of achieved values of POs/PSOs attainment with Target values:

Set the Target values for technical and non-technical POs and PSO and are listed in the Table 3.3.2.e . Obtained values of POs /PSOs attainment are compared with target values. If the set target is met, revise the target percentage of POs/PSOs for the subsequent batches. If the set target is not met, include some corrective action for the subsequent year. PO and PSO achievement matrix is given in Table 3.3.2.f

Table 3.3.2.e Set the Target values for technical and non-technical POs and PSOs

Particulars	Target Values	Associate POs/PSOs
Set target for Technical PO	85% (2.6)	PO1, PO2, PO3, PO4, PO5
Set target for Non –Technical PO	85% (2.6)	PO6, PO7, PO8, PO9, PO10, PO11, PO12
Set target for PSO	85% (2.6)	PSO1, PSO2

Table 3.3.2.f PO and PSO Achievement Matrix

PO/PSO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
Set Target Value	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6
Achieved PO Direct Attainment	**2.90**	**2.90**	**2.88**	**2.88**	**2.90**	**2.74**	**2.83**	**2.92**	**2.93**	**2.93**	**2.72**	**2.88**	**2.89**	**2.89**

Attainment of POs/PSOs is shown in Figure 3.3.2 with the help of column chart. These figures gives the summary of POs and PSOs levels attained for 2018-2022 batch of students as mentioned in the chart. It is observed that attained POs and PSOs levels are more when compared to set Target. It is concluded that by practicing OBE procedures, attainment levels can be increased for the subsequent batches.

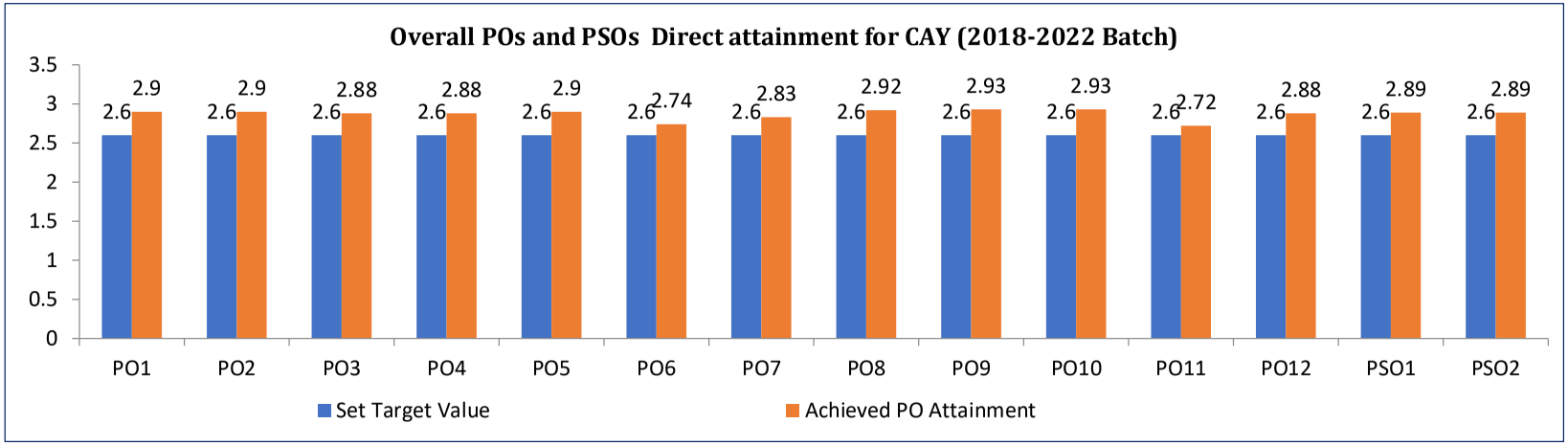


Figure 3.3.2 Overall POs and PSOs direct attainment for CAY (2018-2022 Batch)

3.3.2. Provide results of evaluation of each PO & PSO (65)

For each course defined in the curriculum POs and PSOs are calculated as defined in the previous section. Table 3.3.2.1 provides the evaluation of each PO/PSO for all the courses through Direct Assessment.

Table 3.3.2.1: POs/PSOs Attainment of 2018-2022 Batch

Course Code	Course Name	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
18CHE13/23	Engineering Chemistry	3	3	-	-	-	-	3	-	-	-	-	3	-	-
18MAT11	Applied Mathematics I	3	3	3	3	3	-	-	-	-	3	-	3	-	-
18CSE13/23	Introduction to programming With C	2.8	2.75	2.75	2.75	2.82	-	-	-	2.82	2.79	-	2.81	-	-
18ECE15/25	Basic Electronics	2.8	2.8	2.8	-	-	-	-	-	-	-	-	-	-	-
18HSS16/26	Professional Communication	-	-	-	-	-	-	-	3	3	3	-	3	-	-
18MEE14/24	Computer Aided Engineering Drawing	3	-	2.5	3	3	-	-	-	-	3	-	3	-	-
18CSL18/28	Programming With C Lab	3	3	3	3	3	-	-	-	3	-	-	3	-	-
18CHL17/27	Engineering Chemistry Lab	3	3	-	-	-	-	3	-	-	-	-	3	-	-
18PHY12/22	Engineering Physics	3	3	3	-	-	-	-	-	3	-	-	3	-	-

18MAT21	Applied Mathematics 2	3	3	3	3	3	-	-	-	3	3	-	3	-	-
18MEE13/23	Elements of Mechanical Engineering	3	3	3	-	3	0	3	-	-	3	-	3	-	-
18EEE15/25	Basic Electrical Engineering	2.8	2.8	2.8	2.8	2.8	-	-	2.7	-	-		2.7	-	-
18CIV14/24	Elements of Civil Engineering	3	3	3	3	-	-	-	-	-	-	-	3	-	-
18PHL16/26	Engineering Physics Lab	3	3	3	-	-	-	-	-	3	-	-	3	-	-
18EEL17/27	Basic Electrical Engineering Lab	3	3	3	3	3		3	3	-	-	-	3	-	-
19ECE31/EEE31	Applied Mathematics – III	3	3	3	3	3	-	-	-	3	3	-	3	3	3
19EEE33	Electronic Devices And Circuits	2.83	2.82	3	3	3	-	-	-	-	-	-	-	3	3
19EEE34	Digital System Design	2.33	2.33	2.94	2.35	2	-	-	-	-	-	-	-	2.33	2.31
19EEE35	Electric Circuit Theory	2.25	2.25	2.25	2.25	-	-	-	-	-	-	-	-	2.25	2.25
19HSS321	Economics for Engineers	3	3	3	-	3	-	3	3	3	3		3	-	-
19HSS323	Environmental Science And Awareness	3	3	3	3	3		3	3	3	3		3	-	3
19EEL36	Analog and Digital Electronics Laboratory	3	3	3	3	-	-	-	-	3	3	-	-	3	3
19EEL37	Electric Circuit Theory Laboratory	3	3	3	3	3	-	-	-	3	3	-	-	3	3
19EEL38	Mini project I	3	3	3	3	3	3	3	3	3	3	3	3	3	3

19DMAT41	Basic Applied Mathematics-II	3	3	3	3	3	-	-	-	3	3	-	3	3	3
19ECE41/EEE41	Applied Mathematics – IV	3	3	3	3	3	-	-	-	3	3	-	3	3	3
19EEE43	Electromagnetic Theory	3	3	3	3	-	-	-	-	-	-	-	-	3	3
19EEE44	Microcontroller And Embedded Systems	3	3	3	3	3	3	3	3	3	3	3	3	3	3
19EEE45	DC Machines and Transformers	3	3	3	3	3	3	3	3	3	3	3	3	3	3
19EEE46	Linear Integrated Circuits	3	3	3	3	3	3	3	-	3	3	3	3	3	3
19EEL47	Microcontroller and Embedded System Laboratory	3	3	3	3	3		3	3	3	3		3	3	3
19EEL48	Dc Machines and Transformers Laboratory	3	3	3	3	3		3	-	3	3		3	3	3
19EEL49	Mini Project II	3	3	3	3	3	3	3	3	3	3	3	3	3	3
19HSS422	Life Skills for Engineers	-	-	-	-	-		-	3	3	3	3		-	-
18HSS272	Constitution of India	-	-	-	-	-	3	-	3	3	-	-	3	-	-
20EEE51	Transmission and Distribution	2.9	2.9	2.9	2.9	2.9	3	3	-	-	-	-	-	-	2.9
20EEE52	Control Systems	2.58	2.58	2.56	2.56	-	-	-	-	2.58	-	-	-	-	2.59
20EEE53	Synchronous and Induction Machines	2.42	2.42	2.42	2.42	-	2.42	2.42	-	2.42	-	2.42	2.42	-	2.42

20EEE54	Signals and Systems	2	2	2	2	2	2	2	-	2	2	2	2	-	1.9
220EEE55	Industrial Automation	2.3	2.3	2.2	2.2	2.2	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3
20EEE561	Data Structures and Algorithms	2.6	2.5	2.5	2.5	2	-	0	-	-	-	-	0	2.6	2.75
20EEL57	Control Systems Laboratory	3	3	3	3	3	-	-	-	3	3	-	-	3	3
20EEL58	Synchronous and Induction Machines Laboratory	3	3	2	2	-		3	-	3	3		3	3	3
20EEL59	Mini project III	3	3	3	3	3	3	3	3	3	3	3	3	3	3
20EEE61	Power System Analysis	3	3	3	3	3	3	3	3	3	3	3	3	3	3
20EEE62	Power Electronics	3	3	3	3	3	-	3	-	3	-	-	-	3	3
20EEE63	Power System Protection	3	3	3	3	3	3	-	3	-	-	-	3	3	3
20EEE641	Object Oriented Programming	2.6	2.6	2.6	2.6	2.6	-	-	-	-	-	-	3	2.66	2.75
20EE653	Advanced Industrial And Building Automation	3	3	3	3	3	3	3	3	3	3	3	3	3	3
20EEL66	Power System Analysis Laboratory	3	3	3	3	3	3	3	-	3	3		3	3	3
20EEL67	Power Electronics Laboratory	3	3	3	3	3	3	3	-	3	-	-	-	3	3
20EEL68	Mini project IV	3	3	3	3	3	-	3	3	3	3		3	3	3
20NHOP07	SAP	3	3	3	3	3	3	3	3	3	3		3	3	3
20NHOP11	Machine Learning	3	3	3	3	3	3	-	-	3	3		3	3	3

20NHOP13	Industrial IOT -Embedded System	3	3	3	3	3	3	3	3	3	3		3	3	3
20NHOP15	Product Lifecycle Management	3	3	3	3	3	-	-	-	3	-		-	3	3
20NHOP01	Big Data Analytics with HP Vertica 1	3	3	3	3	3	-	-	-	3	3	-	3	3	3
20NHOP02	VM Ware-Virtualization Essentials 1	3	3	3	3	3	3	-	-	3	3		3	3	3
20NHOP09	Cisco-Routing and Switching 1	3	3	3	3	3	3	3	3	3	-		3	3	3
20NHOP10	Data Analytics	3	3	3	3	3	-	-	-	3	3	-	-	3	3
20EEE71A	Special Electrical Machines	2.83	2.83	2.83	2.83	2.83	2.83	2.83	2.83	2.83	2.83		2.83	-	2.83
20EEE72A	Relay And High Voltage Engineering	2.16	2.16	2.16	2.15	2.14	2.16	2.14	2.16	2.18	2.16	2.16	2.16	-	2.16
20EEE73A	Electrical Drives and Vehicles	2.41	2.2	2.2	2.41	2.27	2.41	2.55	2.46	2.56	2.41	2.41	2.41	-	2.41
20EEE744A	Energy Auditing and Demand Side Management	3	3	3	3	3	3	3	3	-	-	3	3	-	3
20EEE754A	Neural Networks and Fuzzy Logic in Electrical Engineering	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.7	2.7
20EEE78A	Project Phase 1	3	3	3	3	3		3	3	3	3		3	3	3
20EEL76A	Relay and High Voltage Engineering Laboratory	3	3	3	3	3	-	-	-	3	3		-	-	3
20EEL77A	Simulation Tools for Electrical Engineering Laboratory	3	3	3	3	3	-	-	-	3	3	-	-	3	3

20NHOP701	Big Data Analytics with Hp Vertica I	3	3	3	3	3	-	-	-	3	3	-	3	3	3
20NHOP702	VM Ware-Virtualization Essentials I	3	3	3	3	3		-	-	3	3		3	3	3
20NHOP704	Big Data Analytics With HP Vertica II	3	3	3	3	3	-	-	-	3	3	-	3	3	3
20NHOP705	VM Ware Virtualization Essentials II	3	3	3	3	3	-	-	-	3	3	-	3	3	3
20NHOP707	SAP	3	3	3	3	3		3	3	3	3		3	3	3
20NHOP710	Data Analytics	3	3	3	3	3	-	-	-	3	3	-	3	3	3
20NHOP711	Machine Learning	3	3	3	3	3	3	-	-	3	3		3	3	3
20NHOP712	Cisco-Routing And Switching 2	3	3	3	3	3	3	3	3	3	3	-	3	3	3
20NHOP713	IIOT Embedded System	3	3	3	3	3	3	3	3	3	3		3	3	3
20NHOP714	Block Chain	3	3	3	3	3	-	-	3	3	3		3	3	3
20NHOP715	Product Life Cycle Management	3	3	3	3	3	-	-	-	3	-		-	3	3
20EEE812A	Smart Grid Technologies	2.9	2.9	2.9	2.9	2.7	2.9	-	-	2.7	2.7	2.5	2.9	2.9	2.9
20EEE821A	Photo Voltaic Systems and Applications	3	3	3	3	3	-	3	-	3	-	3	3	3	3
20EEE83A	Internship	3	3	3	3	3		3	3	3	3		3	3	3
20EEE84A	Project Phase II	3	3	3	3	3		3	3	3	3		3	3	3
Average Direct Attainment		**2.90**	**2.90**	**2.88**	**2.88**	**2.90**	**2.74**	**2.83**	**2.92**	**2.93**	**2.93**	**2.72**	**2.88**	**2.89**	**2.89**

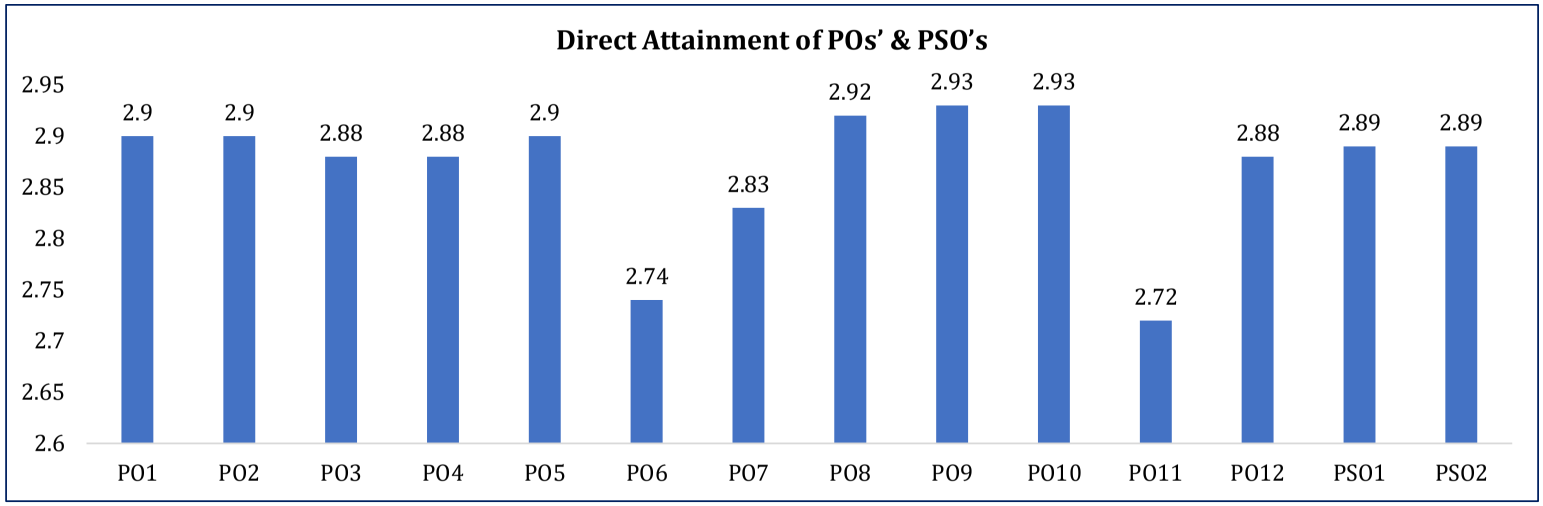


Figure 3.2.2.1 Direct Attainment Level of POs' & PSO's

The following **Table 3.3.2.2** summarizes the evaluation of each PO/PSO for all the courses through Indirect Assessment. Figure 3.3.2.2.a to 3.3.2.2.g describes various attainment levels.

Indirect PO & PSO Attainment of batch 2018-2022

Table-3.3.2.2 Indirect PO & PSO aattainment

Survey	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
Graduate	2.58	2.58	2.42	2.42	2.42	2.01	2.65	2.69	2.67	2.68	2.12	2.25	2.22	2.20
Alumni	2.54	2.76	2.82	2.46	2.52	2.02	2.4	2.48	2.52	2.46	1.68	2.4	2.62	2.54
Employer	2.62	2.68	2.64	2.4	2.52	1.52	2.44	2.56	2.86	2.78	1.42	2.74	2.68	2.64
Average IA	**2.58**	**2.67**	**2.63**	**2.43**	**2.49**	**1.85**	**2.50**	**2.58**	**2.68**	**2.64**	**1.74**	**2.46**	**2.51**	**2.46**

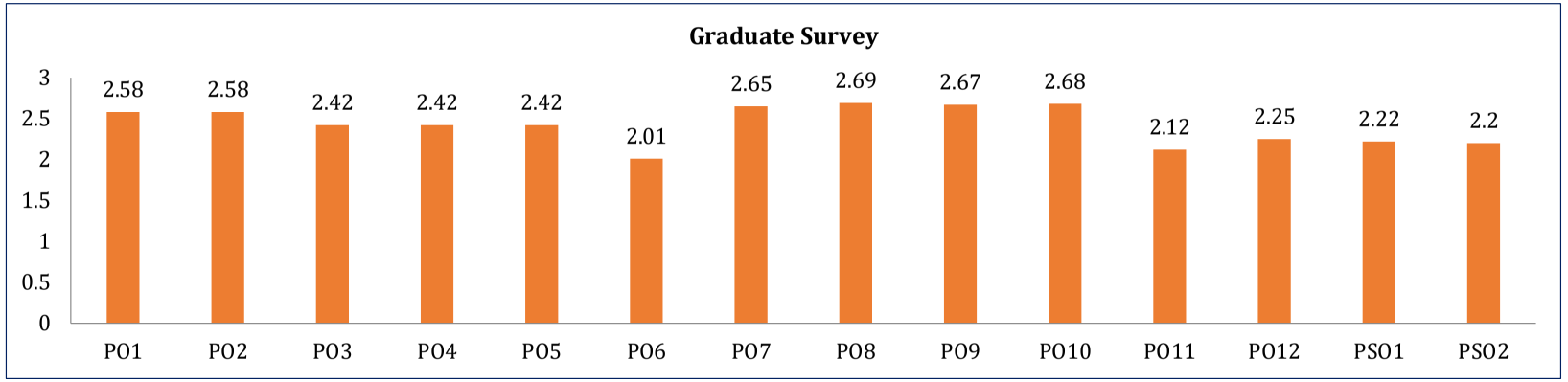


Figure 3.3.2.2.a. POs & PSOs Vs Indirect Attainment Level of Graduate

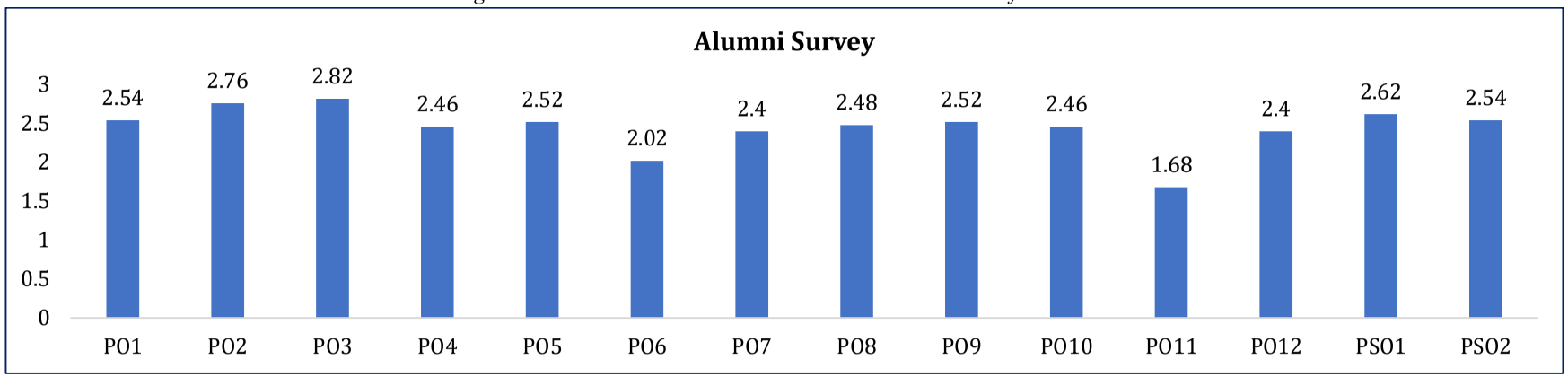


Figure 3.3.2.2.b. POs & PSOs Vs Indirect Attainment Level of Alumni

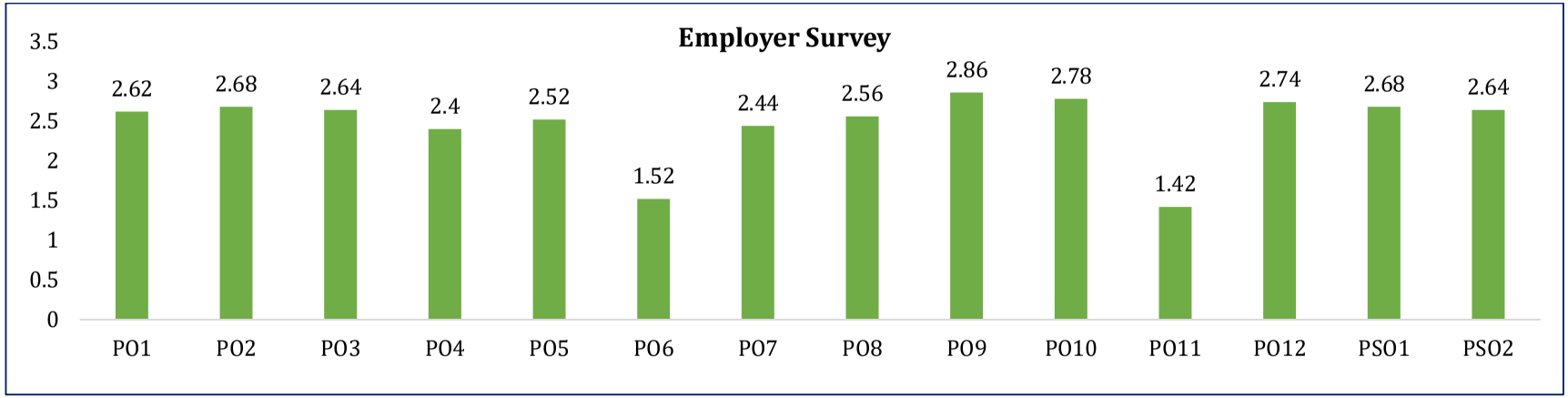


Figure 3.3.2.2.c. POs & PSOs Vs Indirect Attainment Level of Employer

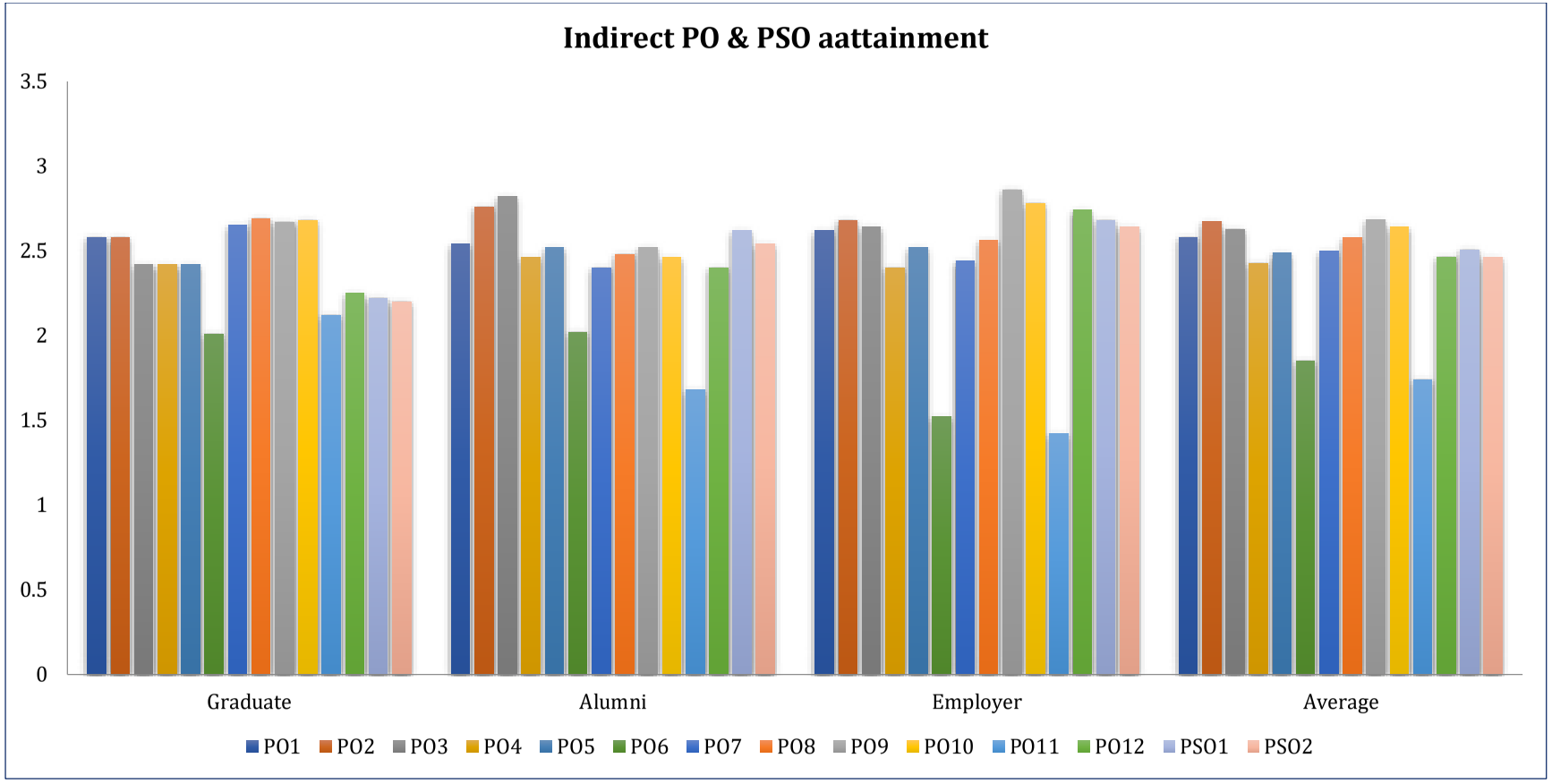


Figure 3.3.2.2.e. POs & PSOs Vs Indirect Attainment Level

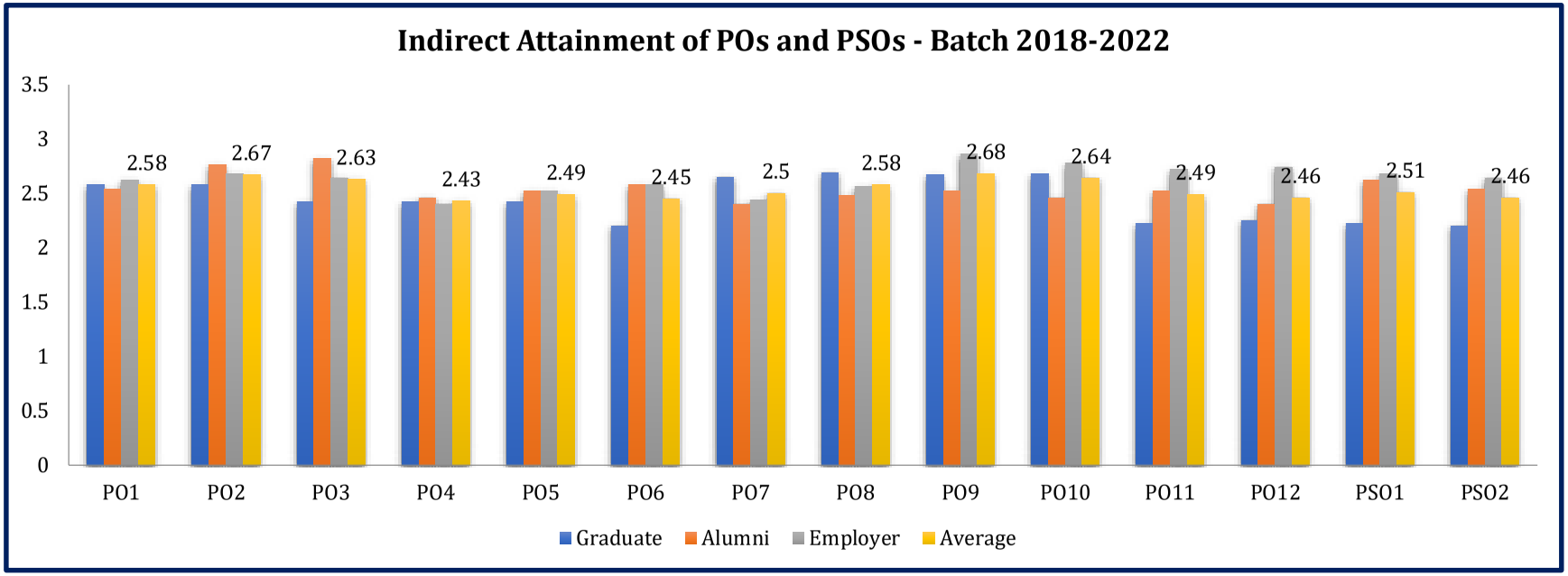


Figure 3.3.2.2.f. POs & PSOs Vs Indirect Attainment Level

From the direct assessment and the indirect assessment values, the overall attainment values are calculated by giving 80% weightage to direct assessment and 20% weightage to indirect assessment and final values are shown in Table 3.3.2.3

FINAL ATTAINMENT= 80% of DA + 20% of IA.

Table 3.3.2.3. Overall attainment

Parameter	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
Average- Direct Attainment(DA)	2.90	2.90	2.88	2.88	2.90	2.74	2.83	2.92	2.93	2.93	2.72	2.88	2.89	2.89
Average - Indirect Atainment(IA)	2.58	2.67	2.63	2.43	2.49	1.85	2.50	2.58	2.68	2.64	1.74	2.46	2.51	2.46
FINAL ATTAINMENT= 80% of DA + 20% of IA.	**2.836**	**2.854**	**2.83**	**2.79**	**2.818**	**2.562**	**2.764**	**2.852**	**2.88**	**2.872**	**2.524**	**2.796**	**2.814**	**2.804**

It is observed that attainment of POs and PSOs for 2018-2022 batch is achieved. It is concluded that by practicing OBE procedures, attainment levels can be increased for the subsequent batches.

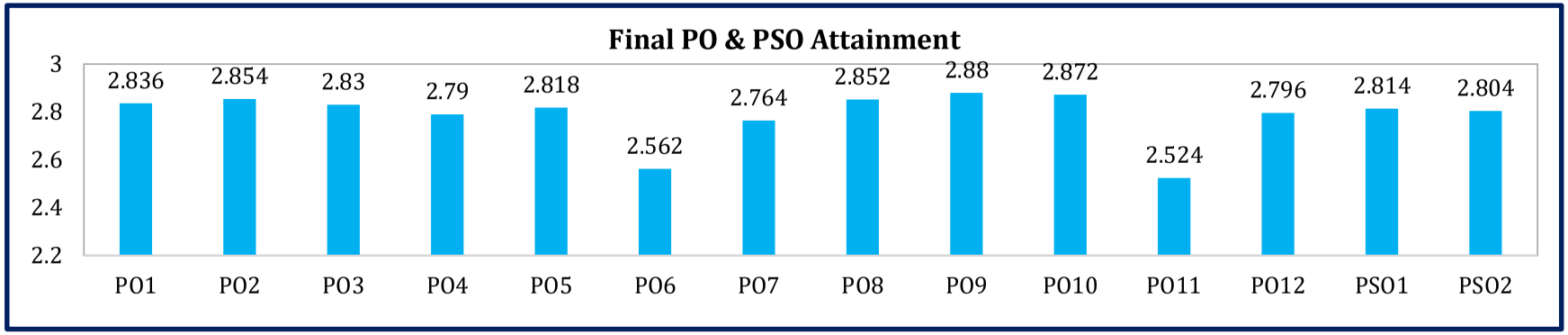


Figure 3.3.2.2.g. POs & PSOs Final Attainment Level (2018-2022)

Department of
Electrical and Electronics Engineering

Criterion - 4

STUDENTS' PERFORMANCE

CRITERION 4	STUDENTS' PERFORMANCE	175

Table 1: Sanctioned Intake and Admission Details

Item (Information to be provided cumulatively for all the shifts with explicit headings, wherever applicable)	CAY (2022-23)	CAYm1 (2021-22)	CAYm2 (2020-21)	CAYm3 (2019-20)	CAYm4 (2018-19)	CAYm5 (2017-18)	CAYm6 (2016-17)
Sanctioned intake of the program (N)	120	120	120	120	120	120	120
Total number of students admitted in first year minus number of students migrated to otherprograms/institutions, plus no. of students migrated to this program (N1)	120	91	104	94	104	112	102
Number of students admitted in 2nd year in the same batch via lateral entry (N2)	-	13	12	11	9	21	23
Separate division students, if applicable (N3)	-	-	-	-	-	-	-
Total number of students admitted in the Program (N1 + N2 + N3)	**120**	**104**	**116**	**105**	**113**	**133**	**125**

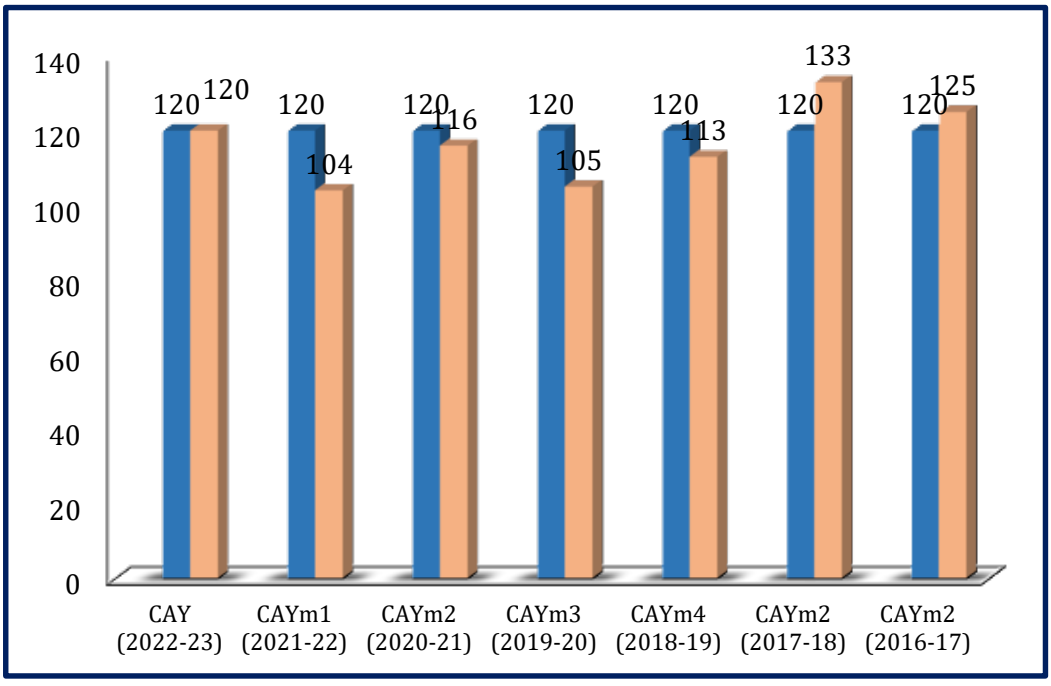


Table 2:Successfully Graduated Students Without Backlogs

Year of entry	*N*1 + *N*2 + N3 (Asdefined above)	Number of students who have successfully graduated without backlogs in anysemester/year of study (Without Backlog means no compartment or failures in any semester/year of study)			
		I Year	II Year	III Year	IV Year
CAY(2022-23)	120				
CAYm1 (2021-22)	104(91+13)	89			
CAYm2 (2020-21)	116(104+12)	72	80(73+7)		
CAYm3 (2019-20)	105(94+11)	88	53(46+7)	51(46+5)	
CAYm4 (LYG) (2018-19)	113(104+9)	104	93(84+9)	68(65+3)	68(65+3)
CAYm5 (LYGm1)(2017-18)	133(112+21)	89	76(69+7)	75(68+7)	75(68+7)
CAYm6 (LYGm2)(2016-17)	125(102+23)	86	82(69+13)	67(58+9)	66(57+9)

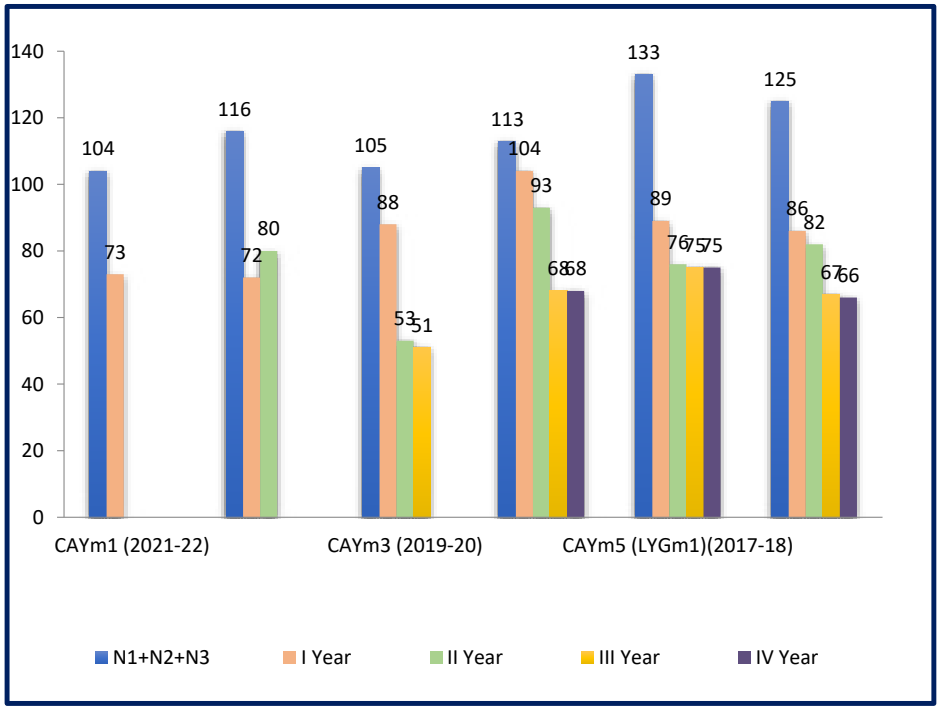
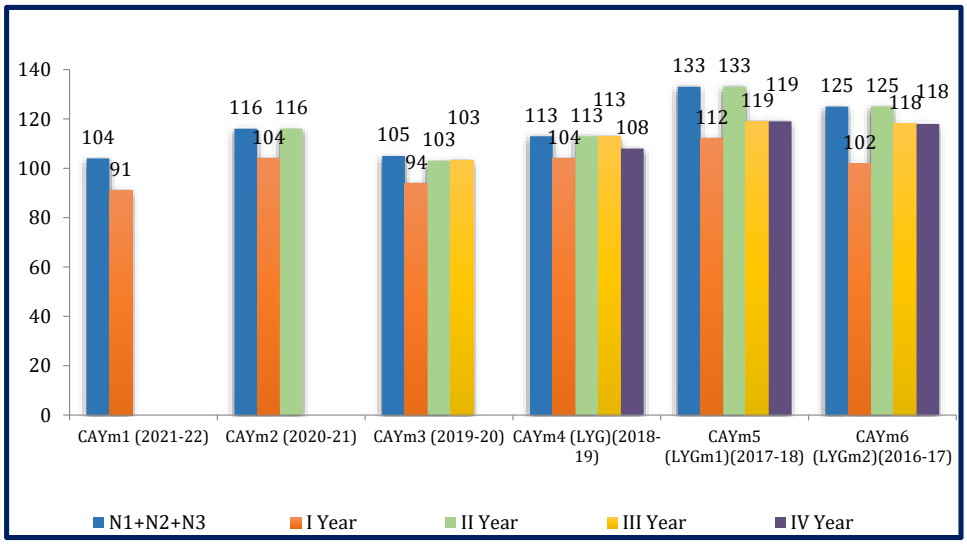


Table 3: Successfully Graduated Students with Backlogs

Year of entry	*N*1 + *N*2 + N3 (As defined above)	Number of students who have successfully graduated (Students with backlog in stipulated period of study)			
		I Year	II Year	III Year	IV Year
CAY(2022-23)	120				
CAYm1 (2021-22)	104(91+13)	91			
CAYm2 (2020-21)	116(104+12)	104	116(104+12)		
CAYm3 (2019-20)	105(94+11)	94	103(93+10)	103(93+10)	
CAYm4 (LYG)(2018-19)	113(104+9)	104	113(104+9)	113(104+9)	108 (100+8)
CAYm5 (LYGm1)(2017-18)	133(112+21)	112	133(112+21)	119(101+18)	119 (101+18)
CAYm6 (LYGm2)(2016-17)	125(102+23)	102	125(102+23)	118(96+22)	118 (96+22)

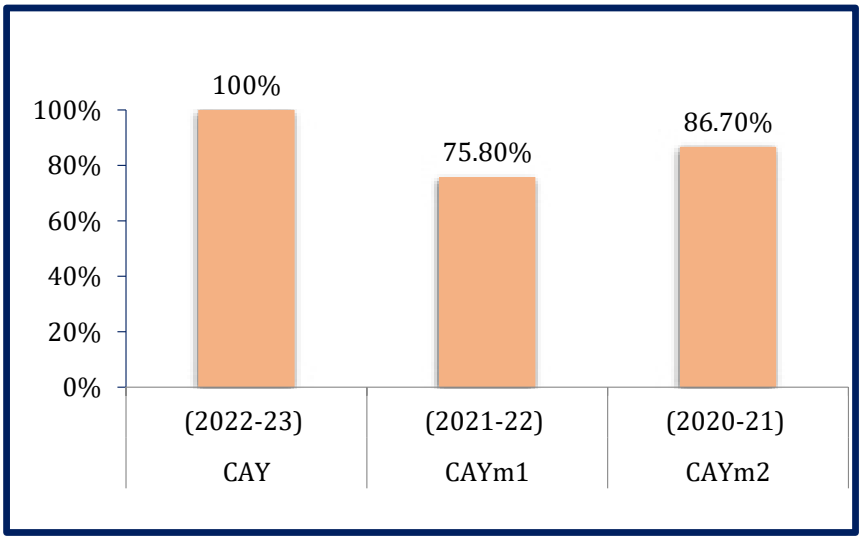


4.1 ENROLMENT RATIO (20)

Table 4.1.1: Enrolment Ratio

Year	Sanctioned intake of the program - N	Total number of students admitted in first year (Corresponding to sanctioned intake) - N1	Enrolment Ratio [(N1/N) *100]
2022-23 (CAY)	120	120	ER1= 100%
2021-22 (CAYm1)	120	91	ER2= 75.8%
2020-21 (CAYm2)	120	104	ER3=86.7%

* **Average [(ER1 + ER2 + ER3) / 3]:87.3%**
* **Assessment: 18**



4.2 SUCCESS RATE IN THE STIPULATED PERIOD OF THE PROGRAM (20)

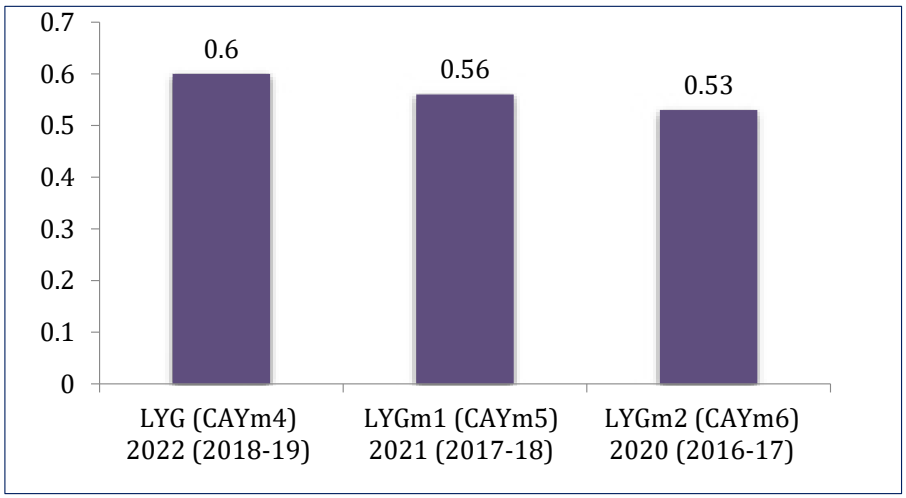
4.2.1 Success rate without backlogs in any semester/year of study(15)

- SI= (Number of students who have graduated from the program without backlog)/(Number of students admitted in the first year of that batch and actually admitted in 2nd year via lateral entry and separate division, if applicable)
- Average SI = Mean of Success Index (SI) for past three batches
- Success rate without backlogs in any semester/year of study = 15 × Average SI

Table 4.2.1: Success Rate Without Backlogs

Item	Last Year of Graduate, LYG (2018-19) CAYm4	Last Year of Graduate minus 1, LYGm1 (2017-18) CAYm5	Last Year of Graduate minus 2, LYGm2 (2016-17) CAYm6
Number of students admitted in the corresponding First Year + admitted in 2nd year via lateral entry and separate division, if applicable [X]	113	133	125
Number of students who have graduated without backlogs in the stipulated period [Y]	68	75	66
Success Index (SI= Y/X)	**0.60**	**0.56**	**0.53**

* **Average SI [(SI1 + SI2 + SI3) / 3]: 0.56**
* **Assessment [15 * Average SI]: 8.5**



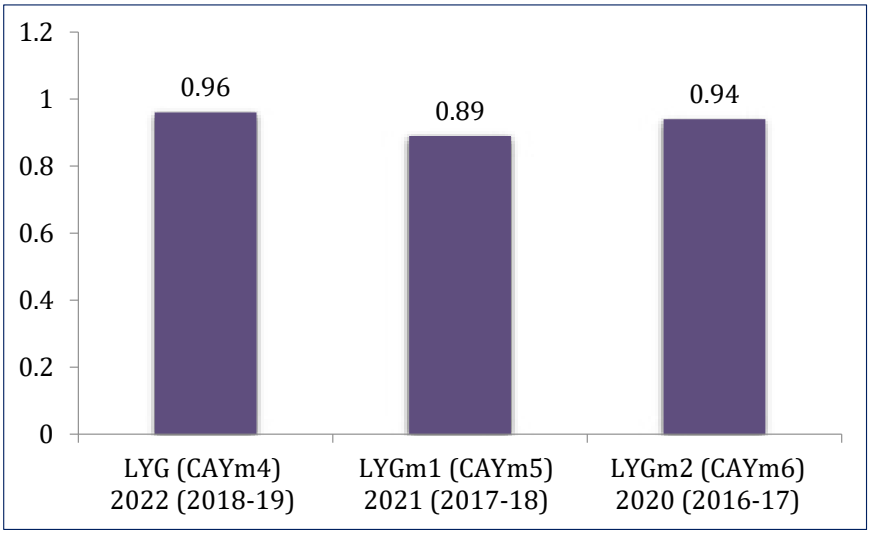
4.21 Success rate with backlog in stipulated period of study(5)

- SI= (Number of students who graduated from the program in the stipulated period of course duration)/ (Number of students admitted in the first year of that batch and actually admitted in 2nd year via lateral entry and separate division, if applicable)
- Average SI = mean of Success Index (SI) for past three batches Success rate

Table 4.2.2: Success Rate with Backlogs

Item	Last Year of Graduate, LYG (2018-19) CAYm4	Last Year of Graduate minus 1, LYGm1 (2017-18) CAYm5	Last Year of Graduate minus 2, LYGm2 (2016-17) CAYm6
Number of students admitted in the corresponding First Year + admitted in 2nd year via lateral entry and separate division, if applicable [X]	113	133	125
Number of students who have graduated withbacklogs in the stipulated period [Y]	108	119	118
Success Index (SI= Y/X)	**0.96**	**0.89**	**0.94**

* **Average SI [(SI1 + SI2 + SI3) / 3]: 0.93**
* **Assessment [15 * Average SI]: 4.7**



4.3 ACADEMIC PERFORMANCE IN SECOND YEAR (10)

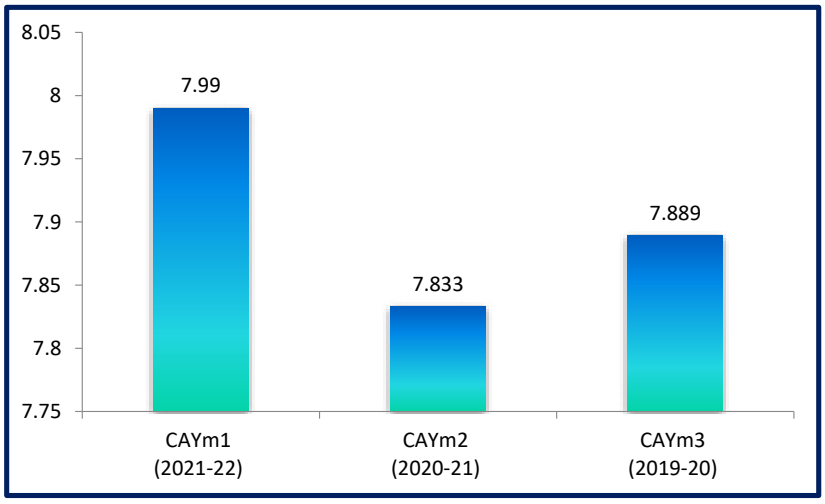
- Academic Performance = Average API (Academic Performance Index), where
- API = ((Mean of 2nd Year Grade Point Average of all successful Students on a 10-point scale) or (Mean of the percentage of marks of all successful students in Second Year/10)) X (number of successful students/number of students appeared in the examination)

Successful students are those who are permitted to proceed to the Third year.

Table 4.3: Academic Performance

Academic Performance	CAY*m1* (2021-22)	CAYm2 (2020-21)	CAYm3 (2019-20)
Mean of CGPA or Mean Percentage of all successful students (X)	7.99	7.91	7.889
Total no. of successful students (Y)	116	103	113
Total no. of students appeared in the examination (Z)	116	105	113
API = X* (Y/Z)	**7.99**	**7.833**	**7.889**

* **Average API [(AP1 + AP2 + AP3)/3]: 7.9**
* **Assessment [1.5 * AverageAPI]: 11.85**



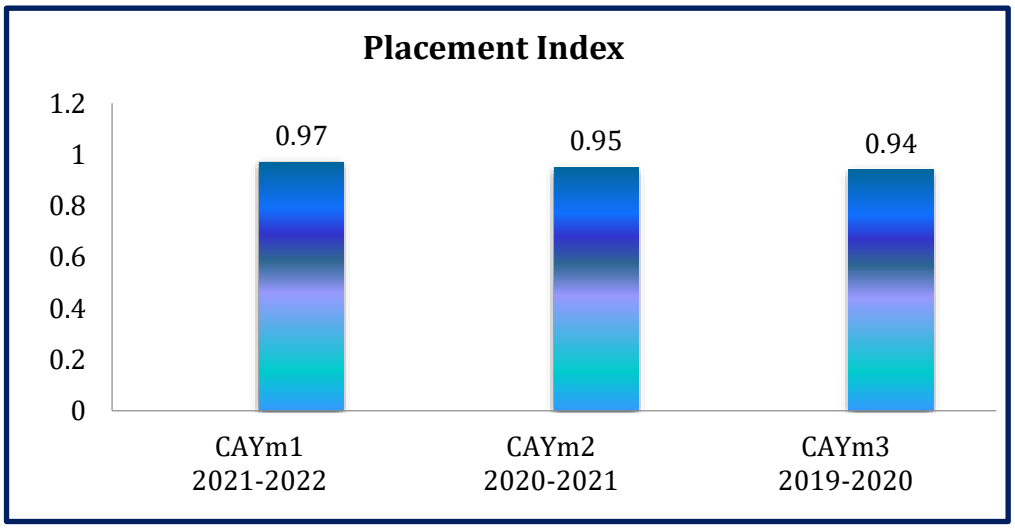
4.4 PLACEMENT, HIGHER STUDIES AND ENTREPRENEURSHIP (30)

Table 4.4.1: Placement, Higher Studies and Entrepreneurship Details

Item	CAYm1 2021-2022	CAYm2 2020-2021	CAYm3 2019-2020
	LYG (2018-22)	LYGm1 (2017-21)	LYGm2 (2016-20)
Total No. of Final Year Students (N)	113	119	118
No. of students placed in companies or Government Sector (x)	99	103	102
No. of students admitted to higher studies with valid qualifying scores (GATE or equivalent State or National Level Tests, GRE, GMAT etc.) (y)	7	7	6
No. of students turned entrepreneur in engineering/technology (z)	4	3	3
Placement Index: (x + y + z)/N	**0.97**	**0.95**	**0.94**

* **Average Placement [(P1 + P2 + P3)/3]: 0.963**

* **Assessment [30 * Average Placement]: 28.89**



Program Name: Electrical and Electronics Engineering

Assessment Year: 2021-22 (CAYm1)

Table 4.4.2: Assessment Year: 2021-22 (CAYm1)

Sl. No	USN	Name of the Student	Organization Placed in	Appointment Number /Reference Number
1	1NH18EE001	Abhishek kumar	Automation Anywhere	NH-EE-HR-AUW-22-001
2	1NH18EE002	Allen Harish	Automation Anywhere	NH-EE-HR-AUW-22-002
3	1NH18EE003	Anirudh K S	Cognizant	NH-EE-HR-CGT-22-001
4	1NH18EE004	Appaji	Automation Anywhere	NH-EE-HR-AUW-22-007
5	1NH18EE005	Ashu Anand	Capgemini	NH-EE-HR-CPG-22-019
6	1NH18EE006	Bharath B	Capgemini	NH-EE-HR-CPG-22-001
7	1NH18EE008	Bhoomika J Kumar	DXC Technology / Automation Anywhere	NH-EE-HR-DXC-22-001 / NH-EE-HR-AUW-22-006
8	1NH18EE009	C.Lakshmipathi Royal	Cognizant	NH-EE-HR-CGT-22-002
9	1NH18EE010	Chitra S	DXC Technology / Skyhigh Security	NH-EE-HR-DXC-22-002 / NH-EE-HR-SHS-22-001
10	1NH18EE011	Darshinimachamma M.S	Ernst & Young	NH-EE-HR-EAY-22-001
11	1NH18EE012	Divyashree N	DXC Technology	NH-EE-HR-DXC-22-004
12	1NH18EE013	Kavipriyaelangovan	Ernst & Young	NH-EE-HR-EAY-22-002
13	1NH18EE015	Gagana.C	CGI	NH-EE-HR-CGI-22-001
14	1NH18EE016	Gandlasivakumar	EXL Service	NH-EE-HR-EXL-22-002
15	1NH18EE017	Greeshmachennareddy	Capgemini	NH-EE-HR-CPG-22-002
16	1NH18EE020	Jaffer Sadiq	Capgemini	NH-EE-HR-CPG-22-020
17	1NH18EE023	K.V. Nandeesh	Capgemini	NH-EE-HR-CPG-22-003
18	1NH18EE025	Karthik N	CGI	NH-EE-HR-CGI-22-002
19	1NH18EE026	Kiran U	Cognizant	NH-EE-HR-CGT-22-003
20	1NH18EE027	Lingareddygarinirupavardhanreddy	Accenture	NH-EE-HR-ACR-22-001
21	1NH18EE028	Manojkumar M B	Wipro Ltd	NH-EE-HR-WPO-22-001
22	1NH18EE030	Mohammed Jilani Safi	Automation Anywhere	NH-EE-HR-AUW-22-003
23	1NH18EE032	Mohammed Tauqeerali	Comviva	NH-EE-HR-CMV-22-002
24	1NH18EE035	Naveen Kumar K R	Musigma	NH-EE-HR-MGA-22-001
25	1NH18EE036	Nayrah M A	Capgemini	NH-EE-HR-CPG-22-004
26	1NH18EE038	Niranjan Kumar	Musigma	NH-EE-HR-MGA-22-004
27	1NH18EE039	Nischaldinesh	Capgemini	NH-EE-HR-CPG-22-005
28	1NH18EE040	Ponnappa M M	Galaxe Solutions	NH-EE-HR-GXS-22-001
29	1NH18EE042	Prajwal	Happiest Minds Technologies Pvt. Ltd	NH-EE-HR-HMT-22-001
30	1NH18EE044	Rachana R	Capgemini	NH-EE-HR-CPG-22-006
31	1NH18EE046	Rohan. N	Capgemini / Hexaware Technologies	NH-EE-HR-CPG-22-007 / NH-EE-HR-HEX-22-001
32	1NH18EE048	Ruthiklaxmanbelekar	L&T Technology Limited	NH-EE-HR-LNT-22-002
33	1NH18EE049	Sagar Kulkarni	Capgemini	NH-EE-HR-CPG-22-008
34	1NH18EE050	Sahana B	Happiest Minds Technologies Pvt. Ltd	NH-EE-HR-HMT-22-002

35	1NH18EE052	Sanjay G	Cognizant	NH-EE-HR-CGT-22-004
36	1NH18EE053	Sarthak Das	KishuGiken Kogyo	NH-EE-HR-KGK-22-001
37	1NH18EE054	Shekar V	EXL Service	NH-EE-HR-EXL-22-003
38	1NH18EE055	Shiva R V	Capgemini	NH-EE-HR-CGM-22-009
39	1NH18EE056	Shreyshbabu	Capgemini	NH-EE-HR-CGM-22-010
40	1NH18EE057	Siddhartha Sunilsingh	Accenture	NH-EE-HR-ACR-22-002
41	1NH18EE061	Vikram S	Capgemini	NH-EE-HR-CGM-22-021
42	1NH18EE062	Vinayak S D	Capgemini	NH-EE-HR-CGM-22-022
43	1NH18EE063	Vishwa Deepakpandey	Wipro Ltd	NH-EE-HR-WPO-22-001
44	1NH18EE066	Tahooraimtiyaz	TheMathCompany	NH-EE-HR-TMC-22-001
45	1NH18EE067	Sayanthpv	IBM / DXC Technology	NH-EE-HR-IBM-22-001 / NH-EE-HR-DXC-22-012
46	1NH18EE068	Pavan R	Cerner corporation	NH-EE-HR-CRC-22-001
47	1NH18EE069	Vivek Ranjan	Tudip Technologies Pvt Ltd / CGI	NH-EE-HR-TTP-22-001 / NH-EE-HR-CGI-009
48	1NH18EE700	Abhimanyu Iyer	Capgemini	NH-EE-HR-CGM-22-011
49	1NH18EE701	Adithya Hegde	Capgemini	NH-EE-HR-CGM-22-012
50	1NH18EE702	Ananda M A	CGI	NH-EE-HR-CGI-22-007
51	1NH18EE704	Ateequrrahman	CGI / Hashedin by Deloitte	NH-EE-HR-CGI-22-003 / NH-EE-HR-HBD-22-001
52	1NH18EE705	B Saibharathreddy	Happiest Minds Technologies Pvt. Ltd	NH-EE-HR-HMT-22-003
53	1NH18EE706	Bellam Sreekanthreddy	Cognizant	NH-EE-HR-CGT-22-005
54	1NH18EE708	Bhavana Yc	Capgemini	NH-EE-HR-CGM-22-013
55	1NH18EE709	Bindhu V	DXC Technology	NH-EE-HR-DXC-22-005
56	1NH18EE710	C Bhavana Singh	DXC Technology	NH-EE-HR-DXC-22-006
57	1NH18EE711	Chandan N	L&T Technology Services	NH-EE-HR-LNT-22-003
58	1NH18EE712	Chandrashekhar V	Happiest Minds Technologies	NH-EE-HR-HMT-22-004
59	1NH18EE714	Daggupatisiva Prasad	Comviva	NH-EE-HR-CMV-22-003
60	1NH18EE715	Deepthi D	DXC Technology	NH-EE-HR-DXC-22-007
61	1NH18EE718	Joanna Alicia D	L&T Technology Services	NH-EE-HR-LNT-22-001
62	1NH18EE719	K Abhishek	Capgemini	NH-EE-HR-CGM-22-023
63	1NH18EE722	Kanteprasanna	Musigma	NH-EE-HR-MGA-22-002
64	1NH18EE723	Kiran P Gowda	DXC Technology	NH-EE-HR-DXC-22-008
65	1NH18EE724	Utkarsh Kulshrestha	DXC Technology / Automation Anywhere	NH-EE-HR-DXC-22-009 / NH-EE-HR-AUW-22-005
66	1NH18EE725	Ashwini B Lokare	Musigma	NH-EE-HR-MGA-22-003
67	1NH18EE727	Md Sagar Khan	EXL Service	NH-EE-HR-EXL-22-001
68	1NH18EE728	Mohammad Usman Khan	Sky Point	NH-EE-HR-SPT-22-001
69	1NH18EE731	Niranjan C	Accenture / TCS	NH-EE-HR-ACR-22-003 / NH-EE-HR-TCS-22-001
70	1NH18EE732	Niranjan K R	EXL Service	NH-EE-HR-EXL-22-005
71	1NH18EE733	Patanmohammadmut hahir Khan	Wipro Ltd	NH-EE-HR-WPO-22-002
72	1NH18EE735	Pranav R Naik	Capgemini	NH-EE-HR-CGM-22-014
73	1NH18EE736	Puneeth Renati	Wipro Ltd	NH-EE-HR-WPO-22-002

74	1NH18EE737	R supraja	Automation Anywhere	NH-EE-HR-AUW-22-004
75	1NH18EE739	Nahush.S	CGI	NH-EE-HR-CGI-22-004
76	1NH18EE740	Shawinkrishna.S	Cognizant / L&T Technology Services	NH-EE-HR-CGT-22-006 / NH-EE-HR-LNT-22-003
77	1NH18EE741	Sridharshinisaravanan	DXC Technology / Cognizant	NH-EE-HR-DXC-22-010 / NH-EE-HR-CGT-22-008
78	1NH18EE742	Sankeerthini.D	Capgemini	NH-EE-HR-EY-22-015
79	1NH18EE743	Saranya.S	Anora Semiconductor Labs Private Limited	NH-EE-HR-ASL-22-001
80	1NH18EE744	S V PavanKumar	Comviva	NH-EE-HR-CMV-22-005
81	1NH18EE745	Shaik Mahammadadil	CGI	NH-EE-HR-CGI-22-005
82	1NH18EE746	Shashidhar P H	DXC Technology	NH-EE-HR-DXC-22-011
83	1NH18EE747	Shiva Prasad L P	Cognizant	NH-EE-HR-CGT-22-007
84	1NH18EE748	Shivam	Comviva	NH-EE-HR-CMV-22-004
85	1NH18EE749	Shivangi Pandey	Ernst & Young	NH-EE-HR-EAY-22-003
86	1NH18EE750	Srinjanachoudhuri	MyCaptain	NH-EE-HR-MCT-22-001
87	1NH18EE751	T Harshavardhanreddy	EXL Service	NH-EE-HR-EXL-22-002
88	1NH18EE753	Varun Sham Kumar K S	Capgemini	NH-EE-HR-CGM-22-016
89	1NH18EE754	Venkan Gouda	L& T Technology Service /Comviva/Wipro	NH-EE-HR-LNT-22-004/NH-EE-HR-CMV-22-006/NH-EE-HR-WPO-22-003
90	1NH18EE755	Vishal Gupta	Automation Anywhere/TCS/IBM	NH-EE-HR-AUW-22-008/NH-EE-HR-TCS-22-002 NH-EE-HR-IBM-22-002
91	1NH18EE756	Vishal Suresh	Capgemini	NH-EE-HR-CGM-22-017
92	1NH18EE757	Vishnupriya G	IQVIA	NH-EE-HR-IQV-22-001
93	1NH18EE758	Vishwanath Patil	Capgemini	NH-EE-HR-CGM-22-018
94	1NH19EE400	Kiran K V	CGI	NH-EE-HR-CGI-22-006
95	1NH19EE402	Manjunath Ganapati Naik	Tudip Technologies Pvt Ltd	NH-EE-HR-TTP-22-002
96	1NH19EE403	Sushma M	Accenture	NH-EE-HR-ACR-22-004
97	1NH19EE404	Sushmitha T S	Tudip Technologies Pvt Ltd	NH-EE-HR-TTP-22-003
98	1NH19EE405	V Sharon	Comviva	NH-EE-HR-CMV-22-001
99	1NH19EE407	Ramesharajaursu K R	CGI	NH-EE-HR-CGI-22-008

Assessment Year: 2020-21 (CAYm2)

Table 4.4.3: Assessment Year: 2020-21 (CAYm2)

Sl. No.	USN	Name of the Student	Organization Placed in	Appointment Number /Reference Number
1	1NH17EE001	Aditya D Aparanji	Capgemini/TCS	NH-EE-HR-CGM-21-001/ NH-EE-HR-TCS-21-005
2	1NH17EE002	Anagha V	Tudip Technologies Pvt Ltd	NH-EE-HR-TTP-21-001
3	1NH17EE005	Ankitha H	Cognizant	NH-EE-HR-CGT-21-009
4	1NH17EE006	Ankur Yadav	NTT Data Services	NH-EE-HR-NDS-21-001
5	1NH17EE008	B V Nithish Kumar	NTT Data Services	NH-EE-HR-NDS-21-003
6	1NH17EE010	D Nikhil Kumar	NTT Data Services	NH-EE-HR-NDS-21-004
7	1NH17EE011	Deepa K M	BOSCH	NH-EE-HR-BSH-21-003
8	1NH17EE012	Dev Rawal	BOSCH	NH-EE-HR-BSH-21-004
9	1NH17EE013	Dushyanth Kumar U	Capgemini/BOSCH	NH-EE-HR-CGM-21-002/ NH-EE-HR-BSH-21-012
10	1NH17EE015	G Sampritha	BOSCH	NH-EE-HR-BSH-21-005
11	1NH17EE018	Hemanth I	Accenture	NH-EE-HR-ACR-21-005
12	1NH17EE019	Hitish G	Simply Vypar App Pvt Ltd	NH-EE-HR-SVA-21-002
13	1NH17EE021	Jayanth N	Tudip Technologies Limited	NH-EE-HR-TTP-21-008
14	1NH17EE022	Jaydeep Maity	Capgemini/BOSCH	NH-EE-HR-CGM-21-003/ NH-EE-HR-BSH-21-013
15	1NH17EE024	K Malsawmkima	Cognizant	NH-EE-HR-CGT-21-010
16	1NH17EE027	Sai Hemanth Reddy K	Cognizant	NH-EE-HR-CGT-21-001
17	1NH17EE028	Leticia Dishel Vas	CBRE	NH-EE-HR-CBE-21-001
18	1NH17EE029	Lohith V	Cognizant/BOSCH	NH-EE-HR-CO-21-002/NH-EE-HR-BSH-21-014
19	1NH17EE030	Sai Raghuram Amogh M	LOWE"S India	NH-EE-HR-LWE-21-001
20	1NH17EE031	Manasa G	Cognizant	NH-EE-HR-CGT-21-002
21	1NH17EE035	Nithya HV	Cognizant	NH-EE-HR-CGT-21-003
22	1NH17EE036	Nithya V	Cognizant/INFOSYS	NH-EE-HR-CGT-21-004/ NH-EE-HR-IFS-21-006
23	1NH17EE037	P Sridharan	BOSCH/ INFOSYS/Accenture	NH-EE-HR-BSH-21-001/ NH-EE-HR-IFS-21-006/NH-EE-HR-ACR-22-008
24	1NH17EE038	Pooja Kumarkage	Capgemini/BOSCH	NH-EE-HR-CGM-21-004/ NH-EE-HR-BSH-21-015
25	1NH17EE039	Pooja V	IQVIA	NH-EE-HR-IVA-21-001
26	1NH17EE041	Preksha Deshmukh	LOWE"S India	NH-EE-HR-LWE-21-002
27	1NH17EE042	Pritam Samanta	Capgemini	NH-EE-HR-CGM-21-005
28	1NH17EE043	RACHANA V	Accenture	NH-EE-HR-ACR-21-001
29	1NH17EE045	Rashmi Ramachandra	INFOSYS	NH-EE-HR-IFS-21-001
30	1NH17EE046	Richard Christopher C	Capgemini/BOSCH	NH-EE-HR-CGM-21-006/NH-EE-HR-BSH-21-016
31	1NH17EE051	Sanjay N S	IQVIA	NH-EE-HR-IVA-21-002
32	1NH17EE052	Shri Harsha S	Tudip Technologies Pvt Ltd	NH-EE-HR-TTP-21-009
33	1NH17EE053	Sindhu R	Tudip Technologies Pvt Ltd/NTT Data Services	NH-EE-HR-TTP-21-003/ NH-EE-HR-NDS-21-008
34	1NH17EE054	Sohan A Jingade	INFOSYS/ Ernst & Young	NH-EE-HR-IFS-21-002/ NH-EE-HR-EAY-21-005
35	1NH17EE055	Syeda Sarah Batool	Capgemini	NH-EE-HR-CGM-21-007

36	1NH17EE056	Tabassum .	Ernst & Young	NH-EE-HR-EAY-21-001
37	1NH17EE058	Thamim Ulla	Capgemini/BOSCH	NH-EE-HR-CGM-21-008/NH-EE-HR-BSH-017
38	1NH17EE059	Vanishreeparamashetti	Tudip Technologies Pvt Ltd	NH-EE-HR-TTP-21-002
39	1NH17EE060	Venkat Nishitkureti	Mindtree	NH-EE-HR-MDT-21-001
40	1NH17EE061	Vinay	ESKO	NH-EE-HR-EKO-21-002
41	1NH17EE063	Vybhav A	Eurofins IT Solutions India Pvt Ltd	NH-EE-HR-ERS-21-001
42	1NH17EE064	Yashwanth B S	INFOSYS	NH-EE-HR-IFS-21-003
43	1NH17EE065	Utkarsh Bhardwaj	Capgemini/ Accenture	NH-EE-HR-CGM-21-009/ NH-EE-HR-ACR-21-008
44	1NH17EE066	Mohammed Arbas	NTT Data Services	NH-EE-HR-NDS-21-005
45	1NH17EE700	Abdul Sukoor	BOSCH	NH-EE-HR-BSH-21-006
46	1NH17EE701	Abhilash Mithare.I	BOSCH/Cognizant/ INFOSYS	NH-EE-HR-BSH-21-002/ NH-EE-HR-CGT-21-012/ NH-EE-HR-IFS-21-005
47	1NH17EE702	Aby Mathew	Cognizant/TCS	NH-EE-HR-CGT-21-005/ NH-EE-HR-TCS-21-004
48	1NH17EE703	Amartya Thakur	Cognizant	NH-EE-HR-CGT-21-006
49	1NH17EE704	Anshuman Biswal	Capgemini	NH-EE-HR-CGT-21-007
50	1NH17EE706	Bharath Surya J	Capgemini/BOSCH	NH-EE-HR-CGM-21-011/ NH-EE-HR--BSH-21-011
51	1NH17EE709	ChitteArunsai	BOSCH	NH-EE-HR-BSH-21-007
52	1NH17EE710	Chittipareddy Gowtham Chandu	Accenture	NH-EE-HR-ACR-21-002
53	1NH17EE711	Darshan Gowda K	CBRE	NH-EE-HR-CBE-21-004
54	1NH17EE713	Divya S V	CBRE	NH-EE-HR-CBE-21-002
55	1NH17EE714	Fibin P Juswant Singh	Cognizant	NH-EE-HR-CGT-21-011
56	1NH17EE715	Himagani Mishra	Capgemini/ Accenture	NH-EE-HR-CGM-21-012/NH-EE-HR-ACR-21-007
57	1NH17EE716	Jyothi Patil	CBRE	NH-EE-HR-CBE-21-003
58	1NH17EE718	Kavita Sah	LOWE"S India	NH-EE-HR-LWE-21-003
59	1NH17EE719	Kishore Kumar S	Tudip Technologies Pvt Ltd	NH-EE-HR-TTP-21-003
60	1NH17EE720	Madhu M	Accenture	NH-EE-HR-ACR-21-003
61	1NH17EE721	Mahan H S	Tudip Technologies Pvt Ltd	NH-EE-HR-TTP-21-004
62	1NH17EE723	ManojkummarBiradar S	IQVIA	NH-EE-HR-IVA-21-003
63	1NH17EE724	Meghana I L	Automation Anywhere	NH-EE-HR-AUW-21-001
64	1NH17EE726	Nutakipruthveesh	IQVIA	NH-EE-HR-IVA-21-005
65	1NH17EE727	Nayana K	CBRE	NH-EE-HR-CBE-21-004
66	1NH17EE728	Neeraj Patil	Tudip Technologies Pvt Ltd/Accenture	NH-EE-HR-TTP-21-005/ NH-EE-HR-ACR-21-008
67	1NH17EE729	Neeraj R	TCS	NH-EE-HR-TCS-21-001
68	1NH17EE731	Oggu Gopi Krishna	TCS	NH-EE-HR-TCS-21-002
69	1NH17EE732	Prachi Anil Pandit	NTT Data Services	NH-EE-HR-NDS-21-002
70	1NH17EE733	Pragathi Prakash	Capgemini	NH-EE-HR-CGM-21-013
71	1NH17EE735	Priyanshu Ranjan	Tudip Technologies Pvt Ltd	NH-EE-HR-TTP-014
72	1NH17EE736	Puneeth S	Capgemini/Automation Anywhere	NH-EE-HR-CGM-21-014/NH-EE-HR-AUW-21-004

73	1NH17EE737	R Balaji	BOSCH	NH-EE-HR-BSH-21-010
74	1NH17EE740	Ramya Manur	Tudip Technologies Pvt Ltd	NH-EE-HR-TTP-21-006
75	1NH17EE741	Randhir Kumar Yadav	NTT DATA Services	NH-EE-HR-NDS-006
76	1NH17EE742	Rishabh Kumar Yadav	ESKO	NH-EE-HR-EKO-21-001
77	1NH17EE743	Rohan Ashish	Accenture	NH-EE-HR-21-ACR-006
78	1NH17EE745	Raksha S	Capgemini	NH-EE-HR-CGM-21-015
79	1NH17EE746	Sahil Ravikuamr	TCS	NH-EE-HR-TCS-21-003
80	1NH17EE747	Sanketkumarsingh	Cognizant	NH-EE-HR-CGT-21-007
81	1NH17EE749	Shreyas Y N	Tudip Technologies Pvt Ltd	NH-EE-HR-TTP-21-011
82	1NH17EE750	Srikuber Singh C	Simply Vyapar App Pvt Ltd	NH-EE-HR-SVA-21-001
83	NH17EE752	Suhas K Siddamal	CBRE	NH-EE-HR-CBE-005
84	1NH17EE753	Sumitbhawal	'Creators Match'Japanese /Tudip Technologies Pvt Ltd	NH-EE-HR-JIP-21-001/NH-EE-HR-TTP-21-007
85	1NH17EE754	Thomas Allwinanto	Capgemini/TCS	NH-EE-HR-CGM-21-016/NH-EE-HR-TCS-21-005
86	1NH17EE756	Vinith G A	Cognizant/BOSCH	NH-EE-HR-CGT-21-008/ NH-EE-HR--BSH-21-018
87	1NH17EE757	Vinod Choudhary S	Capgemini	NH-EE-HR-CGM-21-017
88	1NH18EE401	Dhanush H M	BOSCH	NH-EE-HR--BSH-21-008
89	1NH18EE402	Gnaneshnayak K V	Ernst & Young	NH-EE-HR-EAY-21-003
90	1NH18EE404	Sadashiv Ningappa Mantur	Cognizant	NH-EE-HR-CGT-21-012
91	1NH18EE405	Shankar Chavan	Automation Anywhere	NH-EE-HR-AUW-21-002
92	1NH18EE406	Sureshbabu B P	Ernst & Young	NH-EE-HR-EAY-21-002
93	1NH18EE408	Yashwanth Gowda S	WIPRO	NH-EE-HR-WPO-21-001
94	1NH18EE411	Abdul Razak	BOSCH	NH-EE-HR--BSH-21-009
95	1NH18EE412	Bheemanagouda Patil	Ernst & Young	NH-EE-HR-EAY-21-004
96	1NH18EE413	Chethan H E	NTT Data Services	NH-EE-HR-NDS-21-007
97	1NH18EE414	Hemanth K G	Accenture	NH-EE-HR-ACR-21-004
98	1NH18EE415	Jagadeesh	NTT Data Services	NH-EE-HR-NDS-21-008
99	1NH18EE416	B Jaya Kumar Reddy	LOWE"S India	NH-EE-HR-LWE-21-004
100	1NH18EE418	Rahul Rajkumar	INFOSYS	NH-EE-HR-IFS-21-004
101	1NH18EE419	Ravi ShivagondHanamannavar	Tudip Technologies Pvt Ltd	NH-EE-HR-TTP-21-012
102	1NH18EE420	Venkatesh M	Tudip Technologies Pvt Ltd	NH-EE-HR-TTP-21-013
103	1NH18EE421	Vikeshkumar	Automation Anywhere	NH-EE-HR-AUW-21-003

Assessment Year: 2019-20 (CAYm3)

Table 4.4.3: Assessment Year: 2019-20 (CAYm3)

Sl. No.	USN	Name of the Student	Organization Placed in	Appointment Number /Reference Number
1	1NH16EE001	Ajay Kumar Chama	Hexaware Technologies	NH-EE-HR-HEX-20-001
2	1NH16EE009	Ashwini M Poojari	Cognizant	NH-EE-HR-CGT-20-001
3	1NH16EE010	Atashi Panda	Cognizant	NH-EE-HR-CGT-20-002
4	1NH16EE015	Deepthi Iyer B	TCS	NH-EE-HR-TCS-20-001
5	1NH16EE016	Dipesh Mohanty	ITC Infotech Ltd	NH-EE-HR-ITC-20-001
6	1NH16EE018	Galam Sujith Yadav	Capgemini	NH-EE-HR-CGM-20-007
7	1NH16EE019	Girish N	Capagemini	NH-EE-HR-CGM-20-008
8	1NH16EE020	Gowrishankar Subramanian	EXL Service	NH-EE-HR-EXL-20-001
9	1NH16EE029	Mahesh M	L&T Technologies Services	NH-EE-HR-LTT-20-002
10	1NH16EE030	Manasa M	JMR Infotech	NH-EE-HR-JMR-20-001
11	1NH16EE031	Manish Gopal S	Ernst & Young	NH-EE-HR-EAY-20-003
12	1NH16EE032	Manjunath BhimappaBayannavar	Examly	NH-EE-HR-EXM-20-001
13	1NH16EE034	Monideepa Rana	Ernst & Young	NH-EE-HR-EAY-20-004
14	1NH16EE035	Monika	Hexaware Technologies	NH-EE-HR-HEX-20-007
15	1NH16EE036	Nataraj K	BYJU's	NH-EE-HR-BJU-20-001
16	1NH16EE038	Nithin John Christopher	Hexaware Technologies	NH-EE-HR-HEX-20-002
17	1NH16EE039	Nithish V	TCS	NH-EE-HR-TCS-20-004
18	1NH16EE040	Nuthan Prasad K	EXL Service	NH-EE-HR-EXL-20-007
19	1NH16EE041	Piyush Kumar	Capgemini	NH-EE-HR-CGM-20-001
20	1NH16EE042	Praveen Kumar Np	EXL Service	NH-EE-HR-EXL-20-002
21	1NH16EE043	Preethi Sinha	JMR Infotech	NH-EE-HR-JMR-20-004
22	1NH16EE044	Preethu Nath M	Hexaware Technologies	NH-EE-HR-HEX-20-003
23	1NH16EE045	Rajesh A C	IBM	NH-EE-HR-IBM-20-001
24	1NH16EE046	Rithesh R Prabhu	Capgemini / L&T Technology Services	NH-EE-HR-CGM-20-002 / NH-EE-HR-LTT-20-005
25	1NH16EE048	Sagar	Eurofins IT Solutions India Pvt Ltd	NH-EE-HR-EIS-20-002

26	1NH16EE049	Sagar T G	Coginzant	NH-EE-HR-CGT-20-003
27	1NH16EE050	Vaishnavi Salunke	Capgemini	NH-EE-HR-CGM-20-003
28	1NH16EE051	Shamanth G Bharadwaj	EPSILON	NH-EE-HR-ESN-20-001
29	1NH16EE053	Sindu N	Eurofins IT Solutions India Pvt Ltd	NH-EE-HR-EIS-20-001
30	1NH16EE060	Kruthiyerramsetty	Surya Software / TCS	NH-EE-HR-SRS-20-001 / NH-EE-HR-TCS-20-007
31	1NH16EE061	Yugesh Nandakumar	Cognizant	NH-EE-HR-CGT-20-004
32	1NH16EE064	Abin Karki	EXL Service	NH-EE-HR-EXL-20-008
33	1NH16EE066	Lisha S Reddy	JMR Infotech	NH-EE-HR-JMR-20-005
34	1NH16EE067	Vidhya M U	EPSILON	NH-EE-HR-ESN-20-002
35	1NH16EE701	Abhisek Mukhopadhyay	TCS	NH-EE-HR-TCS-20-002
36	1NH16EE702	Abhishek H R	Eurofins IT Solutions India Pvt Ltd	NH-EE-HR-EIS-20-003
37	1NH16EE703	Adarsh Kumar Mishra	EXL Service	NH-EE-HR-EXL-20-003
38	1NH16EE704	Aghil Babu C	Netradyne Technology Pvt Ltd	NH-EE-HR-NTP-20-001
39	1NH16EE705	Aishwaria Anand	Capgemini / Hexaware Technologies	NH-EE-HR-CGM-20-004 / NH-EE-HR-HEX-20-012
40	1NH16EE706	Anjali Kumar	Capagemini	NH-EE-CGM-20-009
41	1NH16EE707	Anoop L	Visionet System Inc	NH-EE-HR-VSI-20-001
42	1NH16EE708	Anu Jinny Jose	ITC Infotech Ltd	NH-EE-HR-ITC-20-002
43	1NH16EE709	Arpitha V	Capagemini	NH-EE-HR-CGM-20-010
44	1NH16EE710	Bharath T M	Altran	NH-EE-HR-ATR-20-001
45	1NH16EE711	Birender Pratap Singh	Hexaware Technolgies	NH-EE-HR-HEX-20-008
46	1NH16EE713	Darshan S	Hexaware Technologies	NH-EE-HR-HEX-20-004
47	1NH16EE714	Devinder Singh	EXL Service	NH-EE-HR-EXL-20-003
48	1NH16EE716	Diwansh Sharma	Hexaware Technologies	NH-EE-HR-HEX-20-005
49	1NH16EE718	Harsha B S	Hexaware Technologies	NH-EE-HR-HEX-20-009
50	1NH16EE719	Hemanth S	ExtraMarks	NH-EE-HR-EXM-20-002
51	1NH16EE721	Jasti Venkata Sathish	JMR Infotech	NH-EE-HR-JMR-20-006

52	1NH16EE722	Javeria Firdous K R	Cognizant	NH-EE-HR-CGT-20-005
53	1NH16EE724	Joushua Tom Jocob	Netradyne Technologies Pvt Ltd	NH-EE-HR-NTP-20-003
54	1NH16EE725	Khushi Sharma	Capgemini / IBM	NH-EE-HR-CGM-20-005 / NH-EE-HR-IBM-20-003
55	1NH16EE726	Lakshya Nagaraj	JMR Infotech	NH-EE-HR-JMR-20-002
56	1NH16EE727	Mohamed Saifuddin F	BYJU's	NH-EE-HR-BJU-20-002
57	1NH16EE728	Mohd Anas	EXL Service / ExtraMarks	NH-EE-HR-EXL-20-004 / NH-EE-HR-EXM-20-004
58	1NH16EE729	N G Hemanth Kumar	Hexaware Technologies	NH-EE-HR-HEX-20-006
59	1NH16EE730	Nethra T	EXL Service	NH-EE-HR-EXL-20-009
60	1NH16EE731	Patnam Veera Sai charan	Altran	NH-EE-HR-ATR-20-004
61	1NH16EE732	Pavan S	Eurofins IT Solutions Pvt Ltd	NH-EE-HR-EIS-20-004
62	1NH16EE733	Pavithra V	ITC infotech Ltd	NH-EE-HR-ITC-20-004
63	1NH16EE734	Pranjal Kumar Deep	JMR Infotech	NH-EE-HR-JMR-20-003
64	1NH16EE735	Priya	ITC Infotech Ltd	NH-EE-HR-ITC-20-003
65	1NH16EE736	Priyanka .	Altran	NH-EE-HR-ATR-20-002
66	1NH16EE737	Rahul C Pasar	TCS	NH-EE-HR-TCS-20-005
67	1NH16EE738	Raju Nath J	Visionet System Inc	NH-EE-HR-VSI-20-002
68	1NH16EE739	Raman Kumar	EXL Service	NH-EE-HR-EXL-20-005
69	1NH16EE740	Ranjith L	L& T Technologies Service	NH-EE-HR-LTT-20-003
70	1NH16EE741	Raunak Sen	Capgemini	NH-EE-HR-CGM-20-005
71	1NH16EE742	SanjithKumar M S	ITC infotech Limited	NH-EE-HR-ITC-20-005
72	1NH16EE743	Seeme Praveen Kumar	Ernst & Young	NH-EE-HR-EAY-20-005
73	1NH16EE744	K B Sharanya	Altran	NH-EE-HR-ATR-20-003
74	1NH16EE745	Sharath Babu M	Visionet System Inc	NH-EE-HR-VSI-20-003
75	1NH16EE746	Simran Sharma	TCS / IBM	NH-EE-HR-TCS-20-003 / NH-EE-HR-IBM-20-004
76	1NH16EE750	Swapna G	ITC Infotech Ltd	NH-EE-HR-ITC-20-004
77	1NH16EE751	Swaroop Kulkarni	Ernst & Young	NH-EE-HR-EAY-20-001

78	1NH16EE752	Thejus Prabhakaran	Ernst & Young	NH-EE-HR-EAY-20-002
79	1NH16EE753	Ujjwal Kumar	Capgemini	NH-EE-HR-CGM-20-006
80	1NH16EE757	Vijay Yadav A M	Wealth Clinic Ltd	NH-EE-HR-WCL-20-001
81	1NH16EE758	Vikram Hegde	L&T Technology Services	NH-EE-HR-LTT-20-001
82	1NH16EE759	Viswajeet Gupta	EXL Service	NH-EE-HR-EXL-20-006
83	1NH17EE400	Ajay Kumar H V	Netradyne Technologies Pvt Ltd	NH-EE-HR-NTP-20-002
84	1NH17EE401	Akshaya Mp	Capgemini	NH-EE-HR-CGM-20-011
85	1NH17EE402	AmoghNargund	Extramarks	NH-EE-HR-EXM-20-003
86	1NH17EE403	Anil Tikoti	Capgemini	NH-EE-HR-CGM-20-012
87	1NH17EE404	Basavaraj Yammi	Cognizant	NH-EE-HR-CGT-20-006
88	1NH17EE405	Bhanuchandra S	Cognizant	NH-EE-HR-CGT-20-007
89	1NH17EE406	Chandrakala G	Cognizant	NH-EE-HR-CGT-20-008
90	1NH17EE407	Gangadhar Malashetti	TCS	NH-EE-HR-TCS-20-006
91	1NH17EE409	Gowthama	EPSILON	NH-EE-HR-EPN-20-003
92	1NH17EE410	Manjunath R	EPSILON	NH-EE-HR-EPN-20-004
93	1NH17EE411	Manoj Kumar C	Hexaware Technologies	NH-EE-HR-HEX-20-010
94	1NH17EE412	Md Asif Hussain	Hexaware Technologies	NH-EE-HR-HEX-20-011
95	1NH17EE413	Nethravathi.V	L&T Technology Services	NH-EE-HR-LTT-20-004
96	1NH17EE415	Pradeep S	Cognizant	NH-EE-HR-CGT-20-009
97	1NH17EE416	Sachin	Cognizant	NH-EE-HR-CGT-20-010
98	1NH17EE417	Sanket	Capgemini	NH-EE-HR-CGM-20-013
99	1NH17EE418	Santhosh Kumar S	IBM India	NH-EE-HR-IBM-20-002
100	1NH17EE419	Shaktidharan.S	EPSILON	NH-EE-HR-ESN-20-003
101	1NH17EE420	Shivalingaswamy S	EPSILON	NH-EE-HR-ESN-20-004
102	1NH17EE421	Shubham Mishra	Capgemini	NH-EE-HR-CGM-20-014

4.5 PROFESSIONAL ACTIVITIES (20)

4.5.1. Professional Societies/Chapters and Organizing Engineering Events (5)

The Department of Electrical and Electronics Engineering, encourages team work and the spirit of self-reliance among the students. The Professional bodies like IEEE (PELS), IEEE (IES) and ISTE, are involved in grooming professionalism and technical competency by forming various student clubs.These professional societies have the following broad objectives:

- Forming societies/clubs to spread the knowledge of one person to the masses of the people who are ready to seek it.
- Exchange of information among its members and the technical community throughout the world there by fostering all round development to the student community.
- Plan &organize technical programs and activities, such as special lectures, workshops, Training, seminars, webinars, symposia, and exhibitions etc. for benefit of students on regular basis.
- Provide a platform to students to exchange ideas and information on the topics of their interest like curriculum, job market, higher studies, emerging technologies, contemporary issues related to mechanical engineering discipline etc.
- Augment various aspects relating to professional development of students.

Activities like Hands-on training, workshops, distinguished lectures, competitions helped the student community in designing and developing complex engineering problems as well as to attain problem solving skills for engineering systems. Students are benefited in terms of innovative, frugal and eco-friendly projects, Journal publications and further encouraged to filepatents of their own creative ideas.





Professional Society chapters	No of Engg Events Organized			
	2020-21	2021-22	2022-23	Total
IEEE-PELS	11	5	13	29
IEEE-IES	Started in the Year 2022-2023		12	12
IEEE-PES	Started in the Year 2022-2023		2	2
ISTE	4	4	3	11

List of Professional Societies/Chapters and Events Organised

IEEE Power Electronics Society NHCE Student Branch Chapter
(Geo-Code: SBC66131)

Table:4.List of Professional Societies/Chapters and Organizing Engineering Events2020-21

S.No	Name of the Event	Date	Resource Person	No. of Participants
1.	Webinar on "IEEE Awareness Talk"	06.05.2021 Thursday	**Dr. Rajesh M. Pindoriya** Project Engineer, Indian Institute of Technology, Mandi	**170**
2.	Webinar on "Power Electronics Converters for Smart Microgrid"	31.05.2021 Monday	**Dr. M. Kowsalya** Professor Department of Energy and Power Electronics School of Electrical Engineering Vellore Institute of Technology Vellore - 632014, Tamil Nadu, India	**185**
3.	International Webinar on "Controlling Megawatts with Power Electronics"	11.06.2021 Friday	**Dr. Tobias Geyer** ABB Medium - Voltage Drives, Switzerland	**185**
4.	Webinar on "Stress Management and Meditation"	05.06.2021 Saturday	**Ms. B.K.Chaya, Raj** Yoga Teacher, Brahma Kumaris, Bangalore	**19**
5.	IEEE PELS NHCE SBC Inaugural Ceremony	15.06.2021 Tuesday	**Mr. Vishal AnandA G** Chair, IEEE PELS Bangalore Chapter & Principal Engineer Bloom Energy (I) Pvt Ltd, Bengaluru, India	**99**
6.	Webinar on "Idea to product: A research Pathway"	19.06.2021 Saturday	**Mr. RamneekKalra** IEEE Impact Creator & Author at IEEE e-Books	**68**
7.	Webinar on "Students' Perception and Preference for Online Education in India During COVID -19 Pandemic"	26.06.2021 Saturday	**Dr. Muthuprasad T** Scientist-B (Forest Economics) Division of Forestry Statistics Directorate of Administration ICFRE (Head Quarters) Dehradun	**102**

8.	Webinar on "Real Time Implementation of Switch Mode DC Converter"	30.06.2021 Wednesday	**Dr. R. Saravanakumar** Professor Department of Control and Automation School of Electrical Engineering Vellore Institute of Technology Vellore - 632014	**163**
9.	Webinar on "Simulation Model for Prediction of Optimum fuel economy"	06.07.2021 Tuesday	**Dr. MariappanVallikan** Deputy Manager, Valeo India Pvt Ltd, Chennai	**102**
10.	Technical Event on "PRAUDYOGEEK"	09.07.2021. Friday	**NHCE**	**132**
11.	Webinar Series on "Smart Grid Integration & Energy Storage Systems"	10^{th} – 16^{th} July 2021	**Mr. Thiruvalum Marban** Manager Vi-Micro Systems, Chennai.	**180**

GLIMPSES OF SOME OF EVENTS ORGANIZED



Figure:4.5.3.1: Power Electronics Converters for Smart Micro grid



Figure: 4.5.3.2: "International Webinar on "Controlling Megawatts with Power Electronics



Figure: 4.5.3.3 IEEE awareness talk



Figure: 4.5.3.4 :Technical Event on "Praudyogeek 2.0

GLIMPSES OF SOME OF EVENTS ORGANIZED



Figure : 4.5.3.5: Expert Lecture on "Modern Trends in Power System Protection



Figure:4.3.3.6: One Cycle Control and its Application for Stablizing Power Grids with High Renewable Penetration



Figure: 4.3.3.7: National Workshop on Specific Orientation cum Q&A Session ON Patent Drafting and Filing procedures



Figure: 4.3.3.8:Study and Work in Germany

IEEE Power Electronics Society NHCE Student Branch Chapter
(Geo-Code: SBC66131)

Table: List of Professional Societies/Chapters and Organizing Engineering Events
2021-22

Sl. No	Name of the Event	Date	Resource Person	No. of Participants
1.	Distinguished Lecture on "Model predictive control in power electronics: a critical review and recent industrial products"	29.09. 2021. Wednesday	**Dr. Tobias Geyer** ABB Corporate Research, Switzerland, and Stellenbosch University, South Africa	**72**
2.	Distinguished Lecture on "Wide Bandgap (WBG) Power Electronics Systems for Heavy-Duty Vehicles"	23.10. 2021. Saturday	**Dr.Brij N. Singh** John Deere Inc., USA	**71**
3.	Distinguished Lecture on "Long-horizon finite control set model predictive control: theory, implementation and applications"	16.03.2022. Wednesday	**Dr. Tobias Geyer** ABB Corporate Research, Switzerland, and Stellenbosch University, South Africa	**144**
4.	Seminar on "Intellectual Property Rights (IPR): Protect Your Creativity With Patent'	25.03.2022. Wednesday	**Dr. V Agalya** Professor – EEE and Associate Head R&D, NHCE	**49**
5.	Faculty Development Programme on "Research Potential in Advanced Power Electronics & Renewable Energy"	23.05.2022 to 31.05. 2022, Monday - Tuesday	**Dr. B. VenkatesaPerumal,** Professor, Department of Electrical & Electronics Engineering, National Institute of Technology Karnataka, Surathkal **and Other Resource Persons**	**60**

GLIMPSES OF SOME OF EVENTS ORGANIZED



Figure:4.5.3:1: Research Writing for Students in U Create Club



Figure:4.5.3.2: Web in Hours by Esoft Club



Figure:4.5.3.3: Awareness at Jakkur Lake by Green Energy Club



Figure:4.5.3.4: Smart Drives used in mining Field

GLIMPSES OF SOME OF EVENTS ORGANIZED



Figure : 4.5.3.5 Five-day Workshop On Recent Trends In Energy Storage And Electric Vehicle Technology



Figure: 4.5.3.6.Electrolyzers and the future of Hydrogen Economy



Figure: 4.5.3.7: Study and Work In Germany – The Land Of Ideas



Figure: 4.5.3.8: Inverter Topologies for Drives and Grid Tied Applications

GLIMPSES OF SOME OF EVENTS ORGANIZED



Figure:4.5.3.9: Industrial Automation Using PLC



Figure:4.5.3.10: FDP on "Recent trends and research perspective on electrical drives, power electronics and power system



Figure:4.5.3.11:Webinar on Wearable electronics for Medical and Defence Application



Figure:4.5.3.12: Three days Hands-on Workshop on "Introduction to Data Entry/Analysis using Microsoft Excel & Introduction to Arduino Embedded System

IEEE Power Electronics Society NHCE Student Branch Chapter
(Geo-Code: SBC66131)

Table: List of Professional Societies/Chapters and Organizing Engineering Events 2022-23

Sl. No	Name of the Event	Date	Resource Person	No. of Participants
1.	Technical Event on "PRAUDYOGEEK.2.0"	08.11.2022 to 11.11.2022	Kaiga Nuclear Power Plant	**45**
2.	Mega Industrial Visit	19.10.2022 to 20.10.2022	**NHCE**	**45**
3.	Technical Event on "SIMULATE WITH US"	17.11.2022.	**NHCE**	**34**
4.	Training Excel to Excel the school teachers	05.01.2023	**NHCE**	**25**
5.	Tech Play	13.01.2023	**NHCE**	**29**
6.	WEBinHOUR	10.02.2023	**NHCE**	**30**
7.	Seminar on CAMPUS TO CORPORATE	10.02.2023	**NHCE**	**120**
8.	Alumni Talk on Navigating Life after graduation	28.03.2023	**MrArunanshuCharaborty,** Senior Software Engineer II Carelon Global Solution India, Bengaluru, Karnataka, India	**35**
9.	Meeting of IEEE PELS NHCE SBC	23.03.2023	**IEEE PELS Students and Office Bearers**	**51**
10.	Guest lecture on "Phasor estimation algorithms and applications in protective relaying"	11.04.2023	**Mr. MariselvanArumugam,** PMRF, EEE Dept. National Institute of Technology, Tiruchirappalli	**94**

IEEE Industrial Electronics Society NHCE Student Branch Chapter
(Geo-Code: SBC66131B)

Sl. No	Name of the Event	Date	Resource Person	No. of Participants
1.	IEEE IES NHCE SBC Inaugural Ceremony	11.03.2023 Saturday	**Mr. Vishal AnandA G** Chair, IEEE IES Bangalore Chapter & Senior Principal Engineer Bloom Energy (I) Pvt Ltd, Bengaluru, India	99
2.	National Workshop on Specific Orientation cum Q&A Session ON Patent Drafting and Filing procedures	11.03.2023 Saturday	**Dr. V Agalya** Professor – EEE and Associate Head R&D, NHCE	38
3.	National Workshop on "New paradigm in Renewable Energy - Microgrids, EV and Hydrogen"	11.03.2023 Saturday	**Dr. R. Saravanakumar** Professor, Department of Control and Automation School of Electrical Engineering,Vellore Institute of Technology Vellore - 632014, Tamil Nadu, India	99
4.	Alumni Talk on Navigating Life after graduation	28.03.2023 Tuesday	**MrArunanshuCharaborty,** Senior Software Engineer II, Carelon Global Solution India, Bengaluru, Karnataka, India	52
5.	National Workshop on Design Thinking and Innovation	25.03.2023 Saturday	**Bhuvaneswari M** Design Thinking Team, Skill and Career Development SNS Institutions, Coimbatore, Tamil Nadu, India	38
6.	Distinguished Lecture Programme on "Inverter topologies for drives and grid tied applications"	13.04.2023 Thursday	**Prof. K. Gopakumar,** Fellow, IEEE Distinguished Lecturer - IEEE Industrial Electronics Society & Professor, Department of Electronic Systems Engineering Indian Institute of Science (IISc) Bangalore 560012, Karnataka, India	146
7.	Meeting of IEEE IES NHCE SBC	30.03.2023 Thursday	**Students**	53
8.	National Level Seminar on "Study and Work in Germany - the land of ideas"	10.04.2023 Monday	**Nithin Matthew Sam** Researcher in Scientific Instrumentation Ernst Abbe Fachhochschule Jena, Germany	37
9.	"BUILDATHON" Students Technical Event	11.04.2023 Tuesday	**Students**	37

IEEE Industrial Electronics Society NHCE Student Branch Chapter
(Geo-Code: SBC66131B)

Institute of Electrical and Electronics Engineering (IEEE) PES 2022-23

Sl. No	Name of the Event	Date	Resource Person	No. of Participants
1.	Research Paper writing by students	21.04.2023	Dr.Arungalai Vendan Professor/ECE, Dayanandha Sagar university, Bengaluru	**50**

Table: 4.5.1.4:List of Professional Societies/Chapters and Organizing Engineering Events in Engineering Events (2022-23)

Sl. No	Event Type	Name of Professional Societies / Chapters	Organized Event and Title	Name of Co-ordinators	Resource Person	Organized date	No. of Participants/ Attendees
2022-23							
1	Workshop	Engineering Event	Recent Trends in Energy Storage and Electric Vehicles Technologies	Dr.R.Mohan Das Mr.VinodKumar.S	JeyKishnan Engineering Officer CPRI Bengaluru	20.03.2023 to 24.03.2023	50
2	Workshop	**Club Events**	Research Paper writing by students	Dr.R.Mohan Das	Dr.Arungalai Vendan Professor/ ECE, Dayanandha Sagar university Bengaluru	21.04.2023	50

Table 4.5.1.5: List of Professional Societies/Chapters and Organizing Engineering Events in (2020-21)

Sl. No	Name of Professional Socities / Chapters	Organized Event and Title	Name of Co-ordinators	Resource Person	Organized Date	No. of Participants/ Attendees
1.	Engineering Events	ONLINE HANDS-ON MATLAB & SIMULINK WORKSHOP	Dr.R.Mohan das Mr.Satishkumar.D Mr.Vinod.Kumar S	Dr.C.Bharathiraja, SRM University Dr.Rajan Singaravelan, NIT, Puducherry	01/09/2020 to 04/09/2020	100
2.	Engineering Events	FDP on "Research Challenges in Renewable Energy Technologies"	Dr.K.Vinoth Kumar	Experts from Various institution and Industries	14.09.2020 to 20.09.2020	50
3.	Engineering Events	AICTE Sponsored National Workshop on Research Challenges in Advanced Power Converters for Electrical Engineering Applications RCAPCEEA-2020	Dr.Vinoth Kumar	Experts from Various institution and Industries	27.10.2020 to 29.10.2020	50
4.	Engineering Events	Expert Lecture on Role of Synchronous Machines in Industry	Dr.Vinoth Kumar	Mr. V.K Arun Shankar, Testing Engineer, Danfoss Drives Segment – R&D (SW), Sriperumbudur	04.11.2020	60
5.	Engineering Events	Online Expert Lecture on "Introduction to Matlab and simulink"	Corell Technologies Mathworks	Mr.Mohan .B.S Ms.Roopa.c	07.11.2020	50
6.	Engineering Events	Two days Online hands-on National workshop on "Real-time Simulation Tool for Electrical Engineers-Typhoon	Typhoon HLL	Mr.Satish Kumar Dr.R.MohanDas	04.12.2020 to 05.12.2020	75
7.	Engineering Events	International Webinar Programme on "Low Earth Orbit Satellites"	Mr.Muniprakash.T	Dr. Rahul Sharma K, Attitude & Orbit Control Engineer, Spacecraft Design Group, Axelspace Corporation, Tokyo, Japan	08.12.2020	60
8.	Engineering Events	National Webinar on "RESEARCH METHODOLOGY"	Mr.D.Satish Kumar Ms.Rashmi	Mrs.Tapalina Bhattasali Assistant Professor Francis Xavier College	10.12.2020	45
9.	Engineering Events	AICTE Sponsored - 6 Days STTP “Smart Grid Technologies for Energy Efficiency and Active Demand Side Management” Phase I	Dr.Singaravelan	Experts from Various institution and Industries	07.12.2020 to 12.12.2020	50

10.	Engineering Events	Online Training program "Soft Vidya"	Ms.Deepa	Dr. Vinothkumar, Dr.Gunapriya, Dr.Singaravelan, Dr. Prabhakaran Ms.Anitha A and Ms.Deepa V B	11.11.2020 to 16.12.2020	30
11.	Engineering Events	AICTE Sponsored STTP-Phase 3 THE ROLE OF IoT IN RENEWABLE ENERGY SOURCES DRIVING ELECTRICAL POWER GRIDS	Dr.S.Sujitha	Experts from Academia and Industries	18-01-2021 to 23-01-2021	50
12.	Engineering Events	RESEARCH CONCLAVE ON POWER ELECTRONICS	Dr.Mohan Das	Dr.V.Arangarajan Dr.Kartikegayan NIT Calicut Dr.Bharatiraja SRM Universiy Chennai	25-01-2021 to 29-01-2021	100
13.	Engineering Events	Six days AICTE sponsored online STTP: Phase II The Role of Smart Grids on Loss Reduction and Rural Electrification.	Dr.Sujitha	Experts from Academia and Industries	04/01/2021 to 09/01/2021	50
14.	Engineering Events	Webinar on “Smart Health Care System with Special Focus on Covid-19 Pandemic	Dr.R.Mohan Das	Dr.S.Balamurugan Director AlberEinsten Industry Coimbatore	01.06.2021	150
15.	Engineering Events	Webinar on “Stress Management and Meditation”	Mr.D.Satishkumar	B.K.Chaya, Raj Yoga Teacher, Brahma Kumaris, Bangalore	05.06.2021	100
16.	Engineering Events	Guest lecture on 'Simulation model for prediction of optimum fuel economy'	Mr.D,Sathish Kumar Ms.Anitha.A	Mr.Mariappan.V Deputy Manager Valeo India Pvt Ltd Chennai	06.07.2021	75
17.	Engineering Events	ATAL-AICTE Sponsored 5 Days FacultyDevelopment Programme Implementation and Challenegs of Industry 4.0 and its Challenges	Dr.R.Mohan Das Mr.VinodKumar.S	Dr.B.Hariram ABB Bengaluru Mr.AnishSatyan Joint Director, Scientist-E, CDAC Trivandrum	05.07.2021 to 09.07.2021	129
18.	Engineering Events	Guest lecture on Evolving Technologies & Progressive Markets in Power Systems	Ms.Rashmi.N	Mr.Prasad Ranga Director and Chief Consultant Quick Tek Talk Technical Training and Product Development	27.07.2021	60

CLUB EVENTS

Academic Year	ESOFT	Green Energy	U-Create
2022-23	4	5	3
2021-22	4	5	3
2020-21	1	5	1

E-SOFT CLUB

Academic Year 2022-23

S.No	Name of the Event	Date	Resource Person	No. of Participants
1	Orcad Simulation	09/06/2023	Mr. Raghunandan	46
2	WEBinHOURS	10/02/2023	Mr. Rohit Kumar	60
3	Social Outreach Programe – Training To Excel The School Teachers In Ms Excel AndMs Word	05/01//2023	----	20
4	Simulate With Us	17/11/2022	Mr. Rohit Kumar	34

Academic Year 2021-22

S.No	Name of the Event	Date	Resource Person	No. of Participants
1	Quiz Code	13/07/2022	Mr. Swastik Shukla	30
2	Codopia	25/05/2022	----	93
3	Shock With Circuits	6/01/2022	Mr. Sudeep MK	45
4	Simulate-It	12/10/2021	Mr. MD Sagar Khan	45

Academic Year 2020-21

S.No	Name of the Event	Date	Resource Person	No. of Participants
1	SOFT VIDYA	11/11/2020-16/12/2020	Dr. Gunapriya B, Dr. Vinoth Kumar K, M, Mr. Joshua Daniel Raj, Dr. Prabhakaran, Ms. Anitha A, Dr. Singaravelan, Ms. Deepa V	75
	a) LABVIEW	11/11/2020	Dr. Vinoth Kumar K	43
	b) MATLAB Basics	20/11/2020	Dr. Vinoth Kumar	40
	c) Simulink Basics	25/11/2020	Dr. Vinoth Kumar	35
	d) Simulink Basics	27/11/2020	Ms. Anitha A	45
	e) Multisim	2/12/2020	Dr. Gunapriya B	43
	f) TINKERCAD, Proteus	4/12/2020	Dr. Singaravelan	43
	g) MP Lab, KEIL	9/12/2020	Dr. Prabhakaran N	45
	h) Xilinx	11/12/2020	Mr. Joshua Daniel Raj	45
	i) UnityPro	16/12/2020	Ms. Deepa V	43

U-Create Club

Academic year 2022-23

S.No	Name of the Event	Date	Resource Person	No. of Participants
1.	Research paper Writing for Students	21.04.2022	Dr.S.Arungalai Vendan Professor Department of Electronics and Communication Engineering Dayanda Sagar University	35
2.	Techno Frenzy Event	14.11.2022	NA	33
3.	Tech Play	13.01.2023	NA	50

Academic year 2021-22

S.No	Name of the Event	Date	Resource Person	No. of Participants
1.	"Think Like an Entrepreneur"	25.11.2021	---	--
2.	EMBEDAHEAD	14.01.2022	---	--
3.	"Intellectual Property Rights (IPR): Protect your creativity with patent"	11.05.2022	Dr.V.Agalya Professor and Associate Head R&D New Horizon College of Engineering	89

Green Energy Club

Academic Year 2022-23

S.No	Name of the Event	Date	Resource Person	No. of Participants
1.	Awareness Campaign at jakkur lake	28.11.2022	NA	35
2.	Energy Conservation campaign	02.12.2022	NA	33
3.	"Mattermind"	14.01.2023	NA	60
4.	"Empowering Nation Empowering Earth"	07.06.2023	NA	90
5.	Hands -on workshop "Industry 4.0 Revolution work shop"	10.06.2023	Dr. Manikandan P, Chief Technology Officer,CODENPLAY Robotics, Bengaluru	21

Academic Year 2021-22

S.No	Name of the Event	Date	Resource Person	No. of Participants
1.	Spare a watt ,save a lot	18.11.2021	NA	37
2.	clealiness drive	08.01.2022	NA	27
3.	Art-quartet	16.01.2022	NA	52
4.	Industrial Visit	08.01.2022	NA	47
5.	Guest talk on Smart drives in mines	18.11.2021	Mr Jaikumar Dgm R&D Dept,AndMr Ankith Kumar T, Engineer,Beml Ltd Mysore Complex	30

Academic Year 2020-21

S.No	Name of the Event	Date	Resource Person	No. of Participants
1.	"Hulti IDEAThon 1.0"	09.12.2020	--	40

4.5.2 PUBLICATION OF TECHNICAL MAGAZINES, NEWSLETTERS,etc… (5)

Department Newsletters

Currents –
Bi annual EEE Newsletter in the month of June

Currents –
Bi annual EEE Newsletter in the month of December

Department Technical Magazines

Spring Tronicals -
Bi Annual EEE Magazine in the month of May

Autumn Tronicals -
Bi Annual EEE Magazine in the month of November

Institute – NH Bytes

Monthly College Magazine















Table: 4.5.2:1: List of Departmental Technical Magazines, News Letter [2022-23]

Sl. No	Year	Name of thePublication of Technical Magazines/ Newsletters	Month of Publication	Name of the Chief Editor	Name of the Associate Editor	Student Editors
1	*2022-23*	Autumn Tronicles	Dec 2022	Dr. Sujitha.S	Mr.Vinod Kumar.S	Mr.Rahul.B Ms.AdvaithMadhavan Ms.Harshika
2	*2022-23*	Spring Tronicles	June 2023	Dr.Sujitha .S	Dr.Sujitha.S Mr.Vinod Kumar.S	Mr.Rahul.B Ms.AdvaithMadhavan Ms.Harshika

Table: 4.5.2:2: List of College Technical Magazines, News Letter [2022-23]

Sl. No	Year	Name of the Publication of Technical Magazines/ News letters	Month of publication
1.	2022-23	NH-Bytes - Volume –XX2- Issue 7 (Monthly College Magazine)	July 2022
2.	2022-23	NH-Bytes - Volume –XX2- Issue 8 (Monthly College Magazine)	August 2022
3.	2022-23	NH-Bytes - Volume –XX2- Issue 9(Monthly College Magazine)	Sepetember 2022
4.	2022-23	NH-Bytes - Volume –XX1- Issue 10(Monthly College Magazine)	October 2022
5.	2022-23	NH-Bytes - Volume –XX1- Issue 11(Monthly College Magazine)	November 2022
6.	2022-23	NH-Bytes - Volume –XX1- Issue 12(Monthly College Magazine)	December 2022
7.	2022-23	NH-Bytes - Volume –XX2- Issue 1(Monthly College Magazine)	January 2023
8.	2022-23	NH-Bytes - Volume –XX2- Issue 2(Monthly College Magazine)	Februray 2023
9.	2022-23	NH-Bytes - Volume –XX2- Issue 3(Monthly College Magazine)	March 2023
10.	2022-23	NH-Bytes - Volume –XX2- Issue 4(Monthly College Magazine)	April 2023
11.	2022-23	NH-Bytes - Volume –XX2- Issue 5(Monthly College Magazine)	May 2023
12.	2022-23	NH-Bytes - Volume –XX2- Issue 6(Monthly College Magazine)	June 2023

Table: 4.5.2:3: List of Departmental Technical Magazines,News Letter [2021-22]

Sl. No	Year	Name ofthePublicationof TechnicalMagazines/ Newsletters	Month of Publication	Name of the Chief Editor	Name of the Associate Editor	Student Editors
1	*2021-22*	Autumn Tronicles	Dec 2021	Dr.Mahesh.M	Dr.Sujitha.S Mr.VinodKumar.S	Mr.Manojkumar.H.V Ms.RachnaPalli Mr.MRohith Kumar Reddy Ms.Harshika
2	*2021-22*	Spring Tronicles	June 2022	Dr.Mahesh.M	Dr.Sujitha .S Mr. Vinod Kumar.S	Ms.JhansiPriya Ms.Harshitha Mr.Yashvantha.P Ms. Likitha.J

Table : 4.5.2:4 : List of College Technical Magazines, News Letter [2021-22]

Sl. No	Year	Name of the Publication of Technical Magazines/Newsletters	Month of publication
1.	2021-22	NH-Bytes - Volume –XX1- Issue 7(Monthly College Magazine)	July 2021
2.	2021-22	NH-Bytes - Volume –XX1- Issue 8(Monthly College Magazine)	August 2021
3.	2021-22	NH-Bytes - Volume –XX1- Issue 9(Monthly College Magazine)	Sepetember 2021
4.	2021-22	NH-Bytes - Volume –XX1- Issue 10(Monthly College Magazine)	October 2021
5.	2021-22	NH-Bytes - Volume –XX1- Issue 11(Monthly College Magazine)	November 2021
6.	2021-22	NH-Bytes - Volume –XX1- Issue 12(Monthly College Magazine)	December 2021
7.	2021-22	NH-Bytes - Volume –XX2- Issue 1(Monthly College Magazine)	January 2022
8.	2021-22	NH-Bytes - Volume –XX2- Issue 2(Monthly College Magazine)	Februray 2022
9.	2021-22	NH-Bytes - Volume –XX2- Issue 3(Monthly College Magazine)	March 2022
10.	2021-22	NH-Bytes - Volume –XX2- Issue 4(Monthly College Magazine)	April 2022
11.	2021-22	NH-Bytes - Volume –XX2- Issue 5(Monthly College Magazine)	May 2022
12.	2021-22	NH-Bytes - Volume –XX2- Issue 6(Monthly College Magazine)	June 2022

Table: 4.5.2:5: List of Departmental Technical Magazines, News Letter [2020-21]

Sl. No	Year	Name of the Publication of Technical Magazines /Newsletters	Month of Publication	Name of the Chief Editor	Name of the Associate Editor	Student Editors
1	*2020-21*	Autumn Tronicles	Dec 2021	Dr.Mahesh.M	Dr.Sujitha.S Mr. Vinod Kumar.S	Mr.Manojkumar.H.V Ms.RachnaPalli Mr.M.Rohith Kumar Reddy Ms.Harshika Ms.Harshitha.R Ms.JhansiPriya.W.Y Ms.Meghana
2	*2020-21*	Spring Tronicles	June 2021	Dr.Mahesh.M	Dr.Sujitha.S Mr.VinodKumar.S	Ms.JhansiPriya Ms.Harshitha Mr.Yashvantha.P Mr.Bharath Ms.InfanciaPragna Mr.DonySnehit Ms.Haritha Mr.Dheeresh Ms.Harshitha.K

Sl. No	Year	Name of the Publication of Technical Magazines /Newsletters	Month of Publication	Publications
1.	2021-22	International Conference on Recearch Perspectives: IotIn Hybrid Grid Integrated Renewable Energy Sources	March 2021	Conference Proceedings
2.	2021-22	Compendium of R&D PROJECTS	March 2021	NHCE Publications New Horizon Research Foundation Bengaluru

Table:4.5.2:6: College magazines [2020-21]

Sl. No	Year	Name ofthePublicationofTechnical Magazines/Newsletters	Month of publication
1.	2020-21	NH-Bytes - Volume –XX0- Issue 7 (Monthly College Magazine)	July 2020
2.	2020-21	NH-Bytes - Volume –XX0- Issue 8 (Monthly College Magazine)	August 2020
3.	2020-21	NH-Bytes - Volume –XX0- Issue 9 (Monthly College Magazine)	Sepetember 2020
4.	2020-21	NH-Bytes - Volume –XX0- Issue 10(Monthly College Magazine)	October 2020
5.	2020-21	NH-Bytes - Volume –XX0- Issue 11(Monthly College Magazine)	November 2020
6.	2020-21	NH-Bytes - Volume –XX0- Issue 12(Monthly College Magazine)	December 2020
7.	2020-21	NH-Bytes - Volume –XX1- Issue 1(Monthly College Magazine)	January 2021
8.	2020-21	NH-Bytes - Volume –XX1- Issue 2(Monthly College Magazine)	Februray 2021
9.	2020-21	NH-Bytes - Volume –XX1- Issue 3(Monthly College Magazine)	March 2021
10.	2020-21	NH-Bytes - Volume –XX1- Issue 4(Monthly College Magazine)	April 2021
11.	2020-21	NH-Bytes - Volume –XX1- Issue 5(Monthly College Magazine)	May 2021
12.	**2020-21**	**NH-Bytes - Volume –XX1- Issue 6(Monthly College Magazine)**	**June 2021**

Table 4.5.3.1: Summary of Students Participation in events

CAY(2020-21)		
Number of Students Participated in Inter-Institute Events	**Number of Students Within State**	**Number of Students Outside the State**
51	13	38
CAYm1(2021-22)		
Number of Students Participated in Inter-Institute Events	**Number of Students Within State**	**Number of Students Outside the State**
141	81	60
CAYm2(2022-23)		
Number Number of Students Participated in Inter-Institute Events	**Number of Students Within State**	**Number of Students Outside the State**
40	**39**	**01**

Table : 4.5.3.1 (A) Students for Participation With in State and awards 2020-21

Sl. No	USN	Name of theStudent	Institution/Organization	Event	Event Details	Date	Participants/ Prize Winners
1	1NH19EE403	Sushma M	Schneider Electric	Seminar	Building Controls	26/06/2021	Participated
2	1NH19EE403	Sushma M	Schneider Electric	Seminar	Energy Efficiency With Building Automation Systems	26/06/2021	Participated
3	1NH19EE403	Sushma M	Sri krishna Institute of Technology	Seminar	Career Pathway and overseas opportunities	18/06/2021	Participated
4	1NH19EE403	Sushma M	Skill Lync	Seminar	Foundation of Artifical Intelligence	06/04/2021	Participated
5	1NH19EE403	Sushma M	Cisco	Seminar	Introuction to Cyber Security	01/04/2021	Participated
6	1NH19EE405	Jibran Zaidi Husain C	Schneider Electric	Seminar	Boiler Types and opportunities for Energy Efficiency	15/01/2021	Participated
7	1NH19EE055	Kesamreddydeepthi	Great Learning	Seminar	Python Project ForBeginers	02/04/2020	Participated
8	1NH19EE072	Meghana N T	Sri krishna Institute of Technology	Workshop	Career Pathway and overseas opportunities	18/06/2021	Participated
9	1NH19EE121	Vandana R	Sri krishna Institute of Technology	Workshop	Career Pathway and overseas opportunities	18/06/2021	Participated
10	1NH19EE120	Umohammed Arshad	Sri krishna Institute of Technology	Workshop	Career Pathway and overseas opportunities	18/06/2021	Participated
11	1NH19EE120	Umohammed Arshad	GSSS institute of Engineering and Technology for Women Mysuru	Workshop	How to publish in A grade/SCI idexed journals	14/06/2021	Participated
12	1NH19EE120	Umohammed Arshad	GSSS institute of Engineering and Technology for Women Mysuru	Workshop	Evolutionary learning and its engineering applications	21/05/2021	Participated
13	1NH20EE007	Advaithmadhavan	Green Energy club	Workshop	Portraying your ideas to us	11/11/2020	Participated

4.5.3 PARTICIPATION IN INTER-INSTITUTE EVENTS BY STUDENTS OF THE PROGRAM OF STUDY (10)

Table : 4.5.3.1 (B) Students for Participation With in State and awards 2021-22

Sl. No	USN	Name of the Student	Institution/Organization	Event	Event Details	Date	Participants/ Prize Winners
1	1NH18EE706	BellamSreekanth Reddy	Skill Lync	Workshop	Analog IC Design Flow	25/10/2021	Participated
2	1NH21EE402	DheereshVijay Devadiga	GSSS Institute of Engineering and Technology For Women	Seminar	6th National Level IEEE Project Compentation	08/06/2022	Participated
3	1NH21EE402	Dheeresh Vijay Devadiga	NIE Mysore	seminar	National Level Project exhibion	27/04/2022	Participated
4	1NH21EE402	Dheeresh Vijay Devadiga	Vidyavardhaka College of Engineering Mysore	seminar	state Level Project exhibion	25/06/2022	Participated
5	1NH21EE402	Dheeresh Vijay Devadiga	Synergy	seminar	state Level Project exhibion	28/06/2022	Participated
6	1NH19EE042	Gautammee K K	Core Technologies	seminar	Filter design using Xilinx vitis high level Synthesis	29/10/2021	Participated
7	1NH20EE405	Mohan P	Great Learning	seminar	introduction to Data Science	17/03/2022	Participated
8	1NH20EE405	Mohan P	Great Learning	seminar	introduction to Management	21/03/2022	Participated
9	1NH18EE040	Ponnapa M.M	PES University	sports	Cricket	12/04/2021	Participated
10	1NH20EE401	Binay Kumar Yadav	Cisco	seminar	Machine Learning Image	11/06/2022	Participated
11	1NH20EE402	Suraj Raju Jadhav	BHEL	seminar	Idea Generation challenge	10/01/2022	Participated

12	1NH19EE072	MEGHANA N T	Skill Lync	seminar	An overview of embedded systems and application	19/12/2021	Participated
13	1NH19EE072	MEGHANA N T	Skill Lync	Workshop	Introduction of Electro magnetism	14/12/2021	Participated
14	1NH19EE071	Pravan R naik	CMRIT (VTU)	sports	Volley ball (Men)	29/11/2021	Participated
15	1NH20EE041	Hemanth BN	HKBK College of Engineering	sports	Kabaddi	14/12/2021	Third Place
16	1NH20EE041	Hemanth BN	Dr.T.Thimmaiah Institute of Technology	sports	Kabaddi	16/12/2021	Participated
17	1NH20EE117	Hemanth GN	Great Learning	seminar	introduction to Data Science	17/03/2022	Participated
18	1NH20EE403	Koushik P	Great Learning	seminar	introduction to Machine Learning	21/03/2022	Participated
19	1NH19EE126	Y Punith	Great Learning	seminar	introduction to Machine Learning	05/03/22	Participated
20	1NH19EE121	Vandana R	Sri Krishna Institute of Technology	webinar	Career Pathway and Overseas Opportunities	29/10/2021	Participated
21	1NH19EE121	Vandana R	Advanced	Seminar	Data Structure &Algrothims	29/10/2021	Participated
22	1NH19EE121	Vandana R	Core Technologies	Seminar	Filter design using Xilinx vitis high level Synthesis	29/10/2021	Participated
23	1NH19EE121	Vandana R	Advanced	seminar	Data Structure &Algrothims	18/10/2021	Participated
24	1NH19EE121	Vandana R	Sri Krishna Institute of Technology	Seminar	Career Pathway and Overseas Opportunities	25/11/2021	Third Place
25	1NH19EE121	Vandana R	Green Energy Club	seminar	smart drives used in	05/11/2021	Participated

					mining field		
26	1NH19EE121	Vandana R	Skill Lync	seminar	introduction toelectromagnestism	14/12/2021	Participated
27	1NH20EE080	Prajwal J Mustagi	Green Energy Club	Event	Spare of Watt Save a Lot	18/11/2021	Participated
28	1NH20EE007	AdvaithMadhavan	Green Energy Club	Event	Spare of Watt Save a Lot	18/11/2021	Participated
29	1NH20EE007	AdvaithMadhavan	Certificate of Achievement	seminar	Guide to Startup	15/02/2022	Participated
30	1NH20EE007	AdvaithMadhavan	Green Energy Club	Social Service	Spare of Watt Save a Lot	16/11/2021	Participated
31	1NH20EE007	AdvaithMadhavan	certificate of participation	seminar	Hybrid Electric Vehicles	01/06/2022	Participated
32	1NH20EE037	Harshitha K	Green Energy Club	Event	Spare of Watt Save a Lot	18/11/2021	Participated
33	1NH20EE049	Keerthi M	Green Energy Club	Event	Spare of Watt Save a Lot	18/11/2021	Participated
34	1NH20EE064	Meghana I K	Green Energy Club	Event	Spare of Watt Save a Lot	18/11/2021	Participated
35	1NH20EE403	Koushik P	U-create club	Seminar	Think Like An Entrepreneur	25/11/2021	Participated
36	1NH19EE099	Sharon V	Schneider Electric	seminar	Energy Audits	15/03/2022	Participated
37	1NH19EE099	Sharon V	Schneider Electric	seminar	Alternative Power Generation Technologies	15/03/2022	Participated
38	1NH19EE099	Sharon V	Schneider Electric	seminar	Battery Technology	15/03/2022	Participated
39	1NH19EE099	Sharon V	Schneider Electric	seminar	Efficient Motor Control with Power Drives Systems	15/03/2022	Participated
40	1NH19EE099	Sharon V	Schneider Electric	seminar	Caculating Total	15/03/2022	Participated

					Power Requirement		
41	1NH19EE81	Suddep MK	Skill UP	seminar	Introduction to IOT	11/01/2022	Participated
42	1NH19EE099	Sharon V	Schneider Electric	seminar	Commissioning For Energy Efficiency	15/03/2022	Participated
43	1NH19EE046	Harshitha R	Great Learning	seminar	introduction to Data Science	17/03/2022	Participated
44	1NH19EE046	Harshitha R	Great Learning	seminar	introduction to Management	21/03/2022	Participated
45	1NH19EE046	Harshitha R	Great Learning	seminar	introduction to Machine Learning	17/03/2022	Participated
46	1NH19EE050	Jayanth R	BBMP	Social Service	Bangalore City Promate Clean and Green Bangalore	10/08/2021	Participated
47	1NH19EE073	Meghana s	BHEL	seminar	Idea Generation Challenge	10/01/2022	Participated
48	1NH19EE073	Meghana s	Department of Agriculture and Formers wellfare	seminar	Quiz on Natural Farming	29/10/2021	Participated
49	1NH19EE073	Meghana s	Ministry of Women's and Child Development	seminar	Women's Day Quiz	29/10/2021	Runner
50	1NH19EE107	Sowmyashree	VTU	sports	Volley ball (women)	29/10/2021	Fourth Place
51	1NH19EE107	Sowmyashree	VTU	sports	Volley ball (women)	09/12/2021	Participated
52	1NH19EE107	Sowmyashree	Jeevarathni Foundation	Social Service	Donation to Children	13/10/2021	Gold Medal
53	1NH19EE066	Rohith Kumar Reddy	Bangalore District weightlifters Association	Sports	weight Lifting (Gold)	16/10/2021	Silver Medal
54	1NH19EE066	Rohith Kumar Reddy	Bangalore District weightlifters Association	Sports	weight Lifting (Silver)	16/10/2021	Winner
55	1NH19EE066	Rohith Kumar Reddy	VTU	Sports	Wrusting 65kg	16/12/2021	Winner
56	1NH19EE066	Rohith Kumar Reddy	VTU	Sports	Wrusting 47kg	16/12/2021	Runner
57	1NH19EE083	Sindhu P	VTU	Sports	Volley ball	29/11/2021	Fourth Place

					(woMen)		
58	1NH19EE083	Sindhu P	VTU	Sports	Volley ball (woMen)	9/12/2021	Fourth Place
59	1NH18EE710	Bhavana Singh C	VTU	Sports	Volley ball (woMen)	9/12/2021	Fourth Place
60	1NH18EE710	Bhavana Singh C	VTU	Sports	Volley ball (woMen)	29/10/2021	Runner
61	1NH20EE108	Siddanth Reddy K S	VMWare	Seminar	TechKriti	06/09/2022	Runner
62	1NH21EE040	Rajini K	Green Energy Club	Social Service	Conservation of lakes and reduction of water footprint	14/01/2023	Participated
63	1NH21EE040	Rajini K	Green Energy Club	Social Service	Energy conservation	2/12/2022	Participated
64	1NH21EE101	Samul W S	Certificate of Appreciation	Event	Neo codeathon	12/01/2023	Gold Medal
65	1NH20EE022	Bharath T	Certificate of Appreciation	Event	Guide to Startup	15/02/2022	Silver Medal
66	1NH20EE022	Bharath T	GSSS Institute of Engineering and Technology For Women	seminar	6th National Level IEEE Project Compentation	08/06/2022	Winner
67	1NH20EE023	udaykumar A	VTU	Event	winner chicken Dinner	09/06/2022	Participated
68	1NH20EE023	udaykumar A	Certificate of Appreciation	seminar	Singapore Global It academy private ltd	12/02/2022	Participated
69	1NH20EE025	Manoj Kumar P	VTU	sports	Kabaddi	14/12/2021	Third Place
70	1NH20EE025	Manoj Kumar P	VTU	sports	Kabaddi	16/12/2021	Participated
71	1NH20EE028	Neha	Certificate of Appreciation	Event	Guide to Startup	15/02/2022	Participated
72	1NH20EE029	Days A Dixen	Certificate of Appreciation	Event	Guide to Startup	15/02/2022	Participated
73	1NH20EE029	Days A Dixen	Green Energy Club	seminar	Drives used in mining field	11/05/2022	Participated
74	1NH19EE025	Deepak Kumar Sah	AICTE	Event	AICTE Ft challenge	20/06/2022	Participated
75	1NH19EE025	Deepak Kumar Sah	Jyothy Institute of Technology	sports	Weight lifting and	22/02/2022	Participated

					Best Physical		
76	1NH19EE120	U Mohammed Arshad	BHEL	Event	Idea Generation Challenge	10/01/2022	Participated
77	1NH19EE016	Ankit Kumar	AICTE	Social Service	Swachh Bharat Campaign	15/04/2022	Participated
78	1NH20EE015	Sonu S	Certificate of Appreciation	Workshop	Robotics and Automation Workshop	10/07/2022	Participated
79	1NH21EE016	HemanthGn	Cisco	seminar	introduction to IOT	25/06/2022	Participated
80	1NH21EE016	HemanthGn	Great Learning	seminar	Real Time Digital Signal Processing	26/05/2022	Participated
81	1NH21EE016	HemanthGn	NPTEL	Exam	introduction to industry 4.0 and industrial IOT	17/01/2022	Participated

Table : 4.5.3.1 (C) Students for Participation With in State and awards 2022-23

Sl. No	USN	Name of the Student	Institution/ Organization	Event	Event Details	Date	Participants/ Prize Winners
1	1NH21EE402	Dheeresh Vijay Devadiga	Jain Deemed to be university	fest	Infinity Techno Cultural Fest	06/08/2023	Participated
2	1NH21EE402	Dheeresh Vijay Devadiga	Evalanche Club	Social Service	Electrothon 2023	18/04/2023	Participated
3	1NH19EE066	Rohith Kumar Reddy	Jyothi institute of Technology	Sports	weight Lifting and best Physique (men)	22/02/2022	Participated
4	1NH19EE066	Rohith Kumar Reddy	VTU	Sports	wresting	03/07/2022	Participated
5	1NH18EE107	Yashwanth	Green Energy Club	Sports	3rd Place in Chess	16/01/2022	Third Place
6	1NH19EE072	Meghana NT	Sri Ramakrishna Engineering College	Seminar	Simulation of Electrical circuits using MATLAB	15/12/2022	Participated
7	1NH21EE100	SalankeAnni Rao	NPTEL	Exam	Introduction to Programming in C	05/01/2023	Participated
8	1NH21EE101	Samuel W S	NPTEL	Exam	Introduction To Programming In C	05/01/2023	Participated
9	1NH20EE117	T Haritha	Evalanche Club	Social Service	Electrothon 2023	18/04/2023	Participated
10	1NH20EE117	T Haritha	Jain Deemed to be university	fest	Infinity Techno Cultural Fest	06/08/2023	Participated
11	1NH21EE402	Dheeresh Vijay devadiga	Jain Deemed to be university	fest	Infinity Techno Cultural Fest	06/08/2023	Participated
12	1NH21EE402	Dheeresh Vijay devadiga	Jain Deemed to be university	Electrothon 2023	Infinity Techno Cultural Fest	18/06/2023	Participated
13	1NH21EE402	Dheeresh Vijay devadiga	Christ University	Fest	Intercollege Fest	06/03/2022	Participated
14	1NH20EE034	DonySnethi P	Jain Deemed to be university	fest	Infinity Techno Cultural Fest	06/08/2023	Third Place
15	1NH20EE034	DonySnethi P	Jain Deemed to be university	fest	Infinity Techno Cultural Fest	06/08/2023	Participated
16	1NH20EE034	DonySnethi P	Jain Deemed to be university	Electrothon 2023	Infinity Techno Cultural Fest	18/06//2023	Participated

18	1NH19EE038	Krishna Chaitanya	IBM	Seminar	getting started with enterprise Data Science	27/04//2023	Participated
19	1NH19EE038	Krishna Chaitanya	IBM	Seminar	Watson Machine Learning Essentials	05/07/2023	Participated
20	1NH20EE410	Vijay Meti	IBM	Seminar	getting started with enterprise Data Science	20/04/2023	Participated
21	1NH19EE038	Krishna Chaitanya	IBM	Seminar	Watson Machine Learning Essentials	27/04//2023	Third Place
22	1NH20EE406	Nandan D Salanke	IBM	Seminar	getting started with enterprise Data Science	21/04/2023	Participated
23	1NH20EE406	Nandan D Salanke	IBM	Seminar	Watson Machine Learning Essentials	27/04/2023	Participated
24	1NH19EE037	Hemanth GN	IBM	Seminar	getting started with enterprise Data Science	20/04/2023	Participated
25	1NH19EE037	Hemanth GN	IBM	Seminar	Watson Machine Learning Essentials	27/04/2023	Participated
26	1NH20EE407	Prajwal R M	IBM	Seminar	getting started with enterprise Data Science	21/04/2023	Participated
27	1NH20EE407	Prajwal R M	IBM	Seminar	Watson Machine Learning Essentials	08/05/2023	Participated
28	1NH20EE028	Darshan Suresh Shetty	VTU	Sports	Judo 60kg Runners	12/12/2022	Winner
29	1NH21EE118	Syeda Mehak Fathima	Jala Poshan	Social Service	Cleaning At Jakkur Lake	28/11/2022	Participated
30	1NH20EE083	Prathvi Gaonkar	IDSSC/TSC/CATC-2022-23	NCC	SW	17/05/2022	Participated
31	1NH20EE083	Prathvi Gaonkar	Christ University Kengeri	NCC	NCC	08/06/2022	Participated
32	1NH21EE035	Harish Kumar A N	Government Senior Primary School	Social service	Social welfare	05/11/2022	Participated
33	1NH21EE123	Vaishnavi D	I am Neo	Seminar	Neo codeathan	12/01/2023	Participated
34	1NH20EE026	D Shrenik	SEA College of Engineering And Technology Bangalore	Sports	Runners (Cricket)	03/03/2023	Runner

35	1NH20EE120	Vikash Rawat	SJC Institute of Technology	Sports	Long Jump (1st Place)	27/06/2022	1st Place
36	1NH21EE068	NS Meghana	Jala Poshan	Social Service	Cleaning At Jakkur Lake	28/11/2022	Participated
37	1NH20EE029	Dayas A Dixen	Christ Deemed University	Magnovite	OHM-Azing Buildathon (2nd Place)	02/03/2023	Participated
38	1NH21EE059	Meghana PV	Kruoanidhi Group of Institutions	Fest	National Level Cultural Fest	03/03/2023	Participated
39	1NH21EE051	Likhitha M	Verzeo	Seminar	Marketing Management	01/05/2022	Participated

Table : 4.5.3.1 (D) Students for Participation outside State and awards 2020-21

Sl. No	USN	Name of the Student	Institution/ Organization	Event	Event Details	Date	Participants/ Prize Winners
1	1NH19EE042	Gautammee K K	VIT Chennai	Seminar	Atechno-Management carnival	04/07/2020	Participated
2	1NH19EE403	Sushma M	Sengunthar Engineering College	Seminar	Cyber Security	27/05/2021	Participated
3	1NH19EE403	Sushma M	AWS	Seminar	AWS Machine Learning	27/05/2021	Participated
4	1NH19EE038	Gadhamsetti Krishna Chaitanya	VIT Chennai	Seminar	Online Laboratory Class Using open Source Software	04/09/2020	Participated
5	1NH20EE406	Nandan D Salanke	Sinhgad Institute of Technology Lonavala	Seminar	Electrical Measurement& instruments	04/02/2021	Participated
6	1NH20EE406	Nandan D Salanke	Sigma Institute of Engineering	Seminar	Ntional Level Quiz on Python Programming	05/04/2021	Participated
7	1NH19EE403	Sushma M	Pantech E learning	Seminar	AI based Obkect Detection	06/12/2021	Participated
8	1NH19EE042	Gautammee K K	VIT Chennai	Seminar	A Techno-Management Carnival	01/04/2021	Participated
9	1NH19EE055	Kesamreddy Deepthi	Bhumi	Seminar	Liestyle Eco warrior carrier campaign	27/05/2021	Participated
10	1NH19EE403	Sushma M	Mandsaur University	Seminar	Introduction To Natural Language Processing	23/04/2021	Participated
11	1NH19EE403	Sushma M	Pantech E learning	Seminar	Solar power Inverter	12/06/2021	Participated
12	1NH19EE055	KesamreddyDeepthi	VIT Chennai	Seminar	A Techno-Management Carnival	04/01/2021	Participated
13	1NH19EE403	Sushma M	Nehru Institute of Engineering and Technology	Seminar	STEM	04/05/2021	Participated
14	1NH19EE038	Gadhamsetti Krishna Chaitanya	VIT Chennai	Seminar	Online Laboratory Class Using open Source Software	04/09/2020	Participated
15	1NH19EE038	Gadhamsetti Krishna Chaitanya	International college (UK)	Seminar	Data science and Cyber security	01/08/2020	Participated
16	1NH19EE038	Gadhamsetti Krishna Chaitanya	BRISTOL International College	Seminar	Python Programming	01/08/2020	Participated
17	1NH20EE007	Advaith	Vishakapatnamindia	Event	Climate Action Project	4/11/2020	Participated

18	1NH21EE402	Dheeresh v Devadiga	VIT Chennai	Seminar	Electrical Mountain Board	8/06/2022	Participated
19	1NH19EE085	Mohammed Taugeer Ali	BCIC	webinar	Atmanirdhar Bharat	15/10/2020	Participated
20	1NH20EE406	Nandan D Salanke	Ninthsem	seminar	Onlinequiz	05/08/2021	Participated
21	1NH19EE403	Sushma M	Sengunthar Engineering College	Seminar	Cyber Security	27/05/2021	Participated
22	1NH19EE403	Sushma. M	AWS	Seminar	AWS Machine Learning	27/05/2021	Participated
23	1NH20EE406	Nandan D Salanke	Ninthsem	Seminar	Electrical Engineering Online Quiz	05/08/2021	Participated
24	1NH20EE406	Nandan D Salanke	Sigma Institute of Engineering	Seminar	Ntional Level Quiz on Python Programming	05/04/2021	Participated
25	1NH20EE406	Nandan D Salanke	WhiteHat	Seminar	Python Basics	05/04/2021	Participated
26	1NH19EE403	Sushma M	Pantech E learning	Seminar	AI based Obkect Detection	05/03/2021	Participated
27	1NH19EE042	Gautammee K K	Bhumi	Seminar	Liestyle Eco warrior carrier campaign	21/05/2021	Participated
28	1NH19EE055	KesamreddyDeepthi	Bhumi	Seminar	Liestyle Eco warrior carrier campaign	21/05/2021	Participated
29	1NH19EE403	Sushma M	Mandsaur University	Seminar	Introduction To Natural Language Processing	23/04/2021	Participated
30	1NH19EE403	Sushma M	Pantech E learning	Seminar	Solar power Inverter	04/03/2021	Participated
31	1NH20EE406	Nandan D Salanke	Sinhgad Institute of Technology Lonavala	Seminar	Electrical Measurement & Instruments	09/06/2020	Participated
32	1NH19EE038	Gadhamsetti Krishna Chaitanya	VIT Chennai	Seminar	Online Laboratory Class Using open Source Software	09/06/2020	Participated
33	1NH19EE038	Gadhamsetti Krishna Chaitanya	BRISTOL International College	Seminar	Cyber Security using Python Programming	01/08/2020	Participated
34	1NH19EE403	Sushma M	Pantech E learning	Seminar	Solar power Inverter	04/03/2021	Participated
35	1NH20EE406	Nandan D Salanke	Sinhgad Institute of Technology Lonavala	Seminar	Electrical Measurement & Instruments	09/06/2020	Participated
36	1NH19EE038	Gadhamsetti Krishna Chaitanya	BRISTOL International College	Seminar	Cyber Security using Python Programming	01/08/2020	Participated
37	1NH19EE038	Gadhamsetti Krishna Chaitanya	BRISTOL International College	Seminar	Python Programming	01/08/2020	Participated
38	1NH20EE007	AdvaithMadhavan	Vishakapatnam india	Event	Climate Action Project	4/11/2020	Participated

Table: 4.5.3.1 (E) Students for Participation outside State and awards 2021-22

Sl. no	USN	Name of the Student	Institution/ Organization	Event	Event Details	Date	Participants/ Prize Winners
1	1NH19EE028	Deekshith More B	Bharat institute of Engineering and Technology	Workshop	National Level Online Quiz	15/03/2022	Participated
2	1NH19EE072	Meghana N T	Mandsaur University	seminar	Importance and Relevance of Class mathematics and ohysics in engineering field	18/04/2022	Participated
3	1NH19EE072	Meghana N T	Advanced	Seminar	Data Structure &Algrothims	02/03/2022	Participated
4	1NH19EE072	Meghana N T	VIT Chennai	Seminar	Cyber security standards for Energy utilitity industry	17/12/2021	Participated
5	1NH19EE038	Krishna Chaitanya	Perfect Plan B ElearningPvt Ltd	seminar	Google Colab Machine Learning App	31/08/2021	Participated
6	1NH19EE038	Krishna Chaitanya	RINEX	Hackthon	Hackmarcon	31/01/2022	Participated
7	1NH19EE126	Y Punith	Proudhadevaraya institute of technology	Seminar	Electronics E-Qiuz	15/03/2022	Participated
8	1NH19EE126	Y Punith	Collcom	seminar	cyber crime Awareness	15/03/2022	Participated
9	1NH19EE121	Vandana R	VIT Chennai	Workshop	Cyber security standards for Energy utilitity industry	17/12/2021	Participated
10	1NH19EE121	Vandana R	VIT Chennai	seminar	Cyber security standards for Energy utilitity industry	17/12/2021	Participated
11	1NH19EE121	Vandana R	Green Energy Club	Industrial Visit	Mithradham Renewable Energy centre at Aluva Kerala	22/04/2022	Participated
12	1NH20EE406	Nandan D Salanke	College of Engineering Kashti	seminar	Electrical Substation	25/07/2021	Participated
13	1NH20EE007	AdvaithMadhavan	Green Energy Club	Industrial Visit	Mithradham Renewable Energy centre at Aluva Kerala	22/04/2022	Participated
14	1NH20EE403	Koushik P	Collcom	Seminar	cyber crime Awareness	10/12/2022	Participated

15	1NH19EE018	Anoopkumar HS	Bharat institute of Engineering and Technology	Seminar	National Level Online Quiz	15/03/2022	Participated
16	1NH19EE014	Vinay Kumar	BMST	Social Service	Donating Blood	11/10/2021	Participated
17	1NH19EE015	Ramesharajaursu K R	SCAD College Of Engineering and Technology	seminar	My story Motivation Session By Young Startup Founder	11/11/2021	Participated
18	1NH19EE015	Ramesharajaursu K R	SCAD College Of Engineering and Technology	seminar	Design Thinking Innovation	22/10/2021	Participated
19	1NH19EE015	Ramesharajaursu K R	LathaMathavan Engineering College	Seminar	Industry oriented energy auditing	03/12/2021	Participated
20	1NH19EE013	Anil Hedge H	J.P.Morgon	Seminar	Inverstment banking virtual Experience	14/07/2021	Participated
21	1NH19EE013	Anil Hedge H	Bharat institute of Engineering and Technology	Seminar	Online Quiz on Engineering Workshop	15/03/2022	Participated
22	1NH19EE050	Jayanth R	Ninthsem	seminar	Electrical Engineering Online Quiz	26/07/2021	Participated
23	1NH19EE050	Jayanth R	Proudhadevaraya institute of technology	seminar	Electronics E-Qiuz	26/07/2021	Participated
24	1NH19EE073	Meghana s	Jagograhakjago	seminar	Quiz on Consumer	15/03/2022	Participated
25	1NH19EE073	Meghana s	MOFPI	seminar	Anna Devo Bhava	15/03/2022	Participated
26	1NH19EE080	Sagar Kulkarni	Certificate of Appreciation	Hackthon	BIAL	15/03/2022	Participated
27	1NH20EE034	Disha M	BMST	Social Service	Donating Blood	10/11/2021	Participated
28	1NH20EE022	Bharath T	Green Energy Club	Industrial Visit	Mithradham Renewable Energy centre at Aluva Kerala	22/04/2022	Participated
29	1NH20EE029	Days A Dixen	Green Energy Club	Industrial Visit	Mithradham Renewable Energy centre at Aluva Kerala	22/04/2022	Participated
30	1NH18EE706	BellamSreekanth Reddy	DECIBELS	seminar	Electric Vehicle Motor Sizing Calculation using Microsoft Excel	25/10/2021	Participated
31	1NH21EE402	Dheeresh Vijay	Synergy	seminar	State level Project Exhibition	28/06/2022	Participated

		Devadiga					
32	1NH19EE042	Gautammee K K	saylor .org	seminar	opertating system	02/01/2022	Participated
33	1NH19EE028	Deekshith More B	Udemy	seminar	Python Introduction to Data science	14/07/2021	Participated
34	1NH19EE028	Deekshith More B	Udemy	Seminar	Front end Web Development	14/07/2021	Participated
35	1NH20EE401	Binay Kumar Yadav	LM	Seminar	Machine Learning Algorithms	20/11/2021	Participated
36	1NH20EE401	Binay Kumar Yadav	Pandeteens Youth Community	event	Kids Impart Creativity	05/12/2021	Participated
37	1NH20EE401	Binay Kumar Yadav	LM	seminar	Machine Learning Algorithms	20/11/2021	Participated
38	1NH20EE401	Binay Kumar Yadav	Lm	Seminar	Machine Learning Bootcamp For Beginner	20/11/2021	Participated
39	1NH19EE126	Y Punith	saylor .org	seminar	opertating system	02/01/2022	Participated
40	1NH19EE126	Y Punith	Certificate of Achievement	Club	Waste segregation	20/08/2021	Participated
41	1NH19EE042	Gautammee K K	Great Learning	seminar	introduction to Machine Learning	17/03/2022	Participated
42	1NH19EE042	Gautammee K K	saylor .org	seminar	opertating system	02/01/2022	Participated
43	1NH19EE042	Gautammee K K	Internshala	Club	Green Revolution Program	04/03/2022	Participated
44	1NH19EE041	Chairanthana M Reddy	Young Researcher Forum	seminar	Basic Of Digital Intergratedckt's	20/08/2022	Participated
45	1NH19EE121	Vandana R	XILINX	webinar	Filter design using Xilinx vitis high level Synthesis	29/10/2021	Participated
46	1NH19EE121	Vandana R	Skill Lync	Workshop	Introduction Of Electromagnetism	14/12/2021	Participated
47	1NH20EE080	Prajwal J Mustagi	Udemy	seminar	Front end Web Development	14/07/2021	Participated
48	1NH20EE080	Prajwal J Mustagi	Udemy	seminar	Python For Beginners	14/07/2021	Participated
49	1NH19EE019	Anusha	saylor .org	seminar	opertating system	02/01/2022	Participated
50	1NH19EE018	Anoopkumar HS	Udemy	Seminar	Python Introduction to Data science and ML	14/07/2021	Participated
51	1NH19EE065	M Gopal	Udemy	seminar	Front end Web Development	14/07/2021	Participated
52	1NH19EE065	M Gopal	Udemy	seminar	Python For Beginners	14/07/2021	Participated
53	1NH20EE410	Vijay Meti	Udemy	seminar	Front end Web Development	14/07/2021	Participated
54	1NH19EE065	M Gopal	Udemy	seminar	Front end Web Development	14/07/2021	Participated
55	1NH20EE410	Vijay Meti	Udemy	seminar	Python For Beginners	14/07/2021	Participated
56	1NH19EE013	Anil Hedge H	AWS training and Certification	Seminar	Aws Cloud Practitioner Essentials	03/10/2022	Participated
57	1NH19EE013	Anil Hedge H	Sigma Group	seminar	National Level Quiz on Python Programming	02/04/2022	Participated

58	1NH19EE025	SyedaMehakFathima	JalaPoshan	Social Service	Volunteering at Jakkur Lake	28/11/2022	Participated
59	1NH21EE016	HemanthGn	Institution innovation council	seminar	intellectual Property Rights Protect your creativity with Patent	14/05/2022	Participated
60	1NH19EE025	SyedaMehakFathima	JalaPoshan	Social	Volunteering at Jakkur Lake	28/11/2022	Participated

Table: 4.5.3.2 (E) Students for Participation outside State and awards 2022-23

Sl. no	USN	Name of the Student	Institution/ Organization	Event	Event Details	Date	Paticipation
1	1NH20EE034	Disha	NIPAM	Seminar	National Intellectual Property Awareness Mission	05/09/2023	Participated

4.5.4: Students Publications:

Table :4.5.4.1: Student Publications [2022-2023]

Sl No	USN	Student Name	Paper Title	Conference Name	DOI	Date of Publication	Indexed
1	1NH18EE031	Mohammed Omer Ali	A Review on Self Stabilizing Platform in Scope of Merchant Navy Applications	2022 First International Conference on Artificial Intelligence Trends and Pattern Recognition (ICAITPR)	10.1109/ICAITPR51569.2022.9844197	03/08/2022	Scopus
	1NH18EE057	Siddhartha Sunil Singh					
	1NH18EE066	TahooraImtiyaz					
	1NH18EE036	Nayrah M A					
2	1NH18EE031	Mohammed Omer Ali	PID Controller Based Self Stabilizing for Inertia Platform using Electrical Parallel Technology	2022 IEEE 2nd Mysore Sub Section International Conference (MysuruCon)	10.1109/MysuruCon55714.2022.9972439	13/12/2022	Scopus
	1NH18EE057	Siddhartha Sunil Singh					
	1NH18EE066	TahooraImtiyaz					
	1NH18EE036	Nayrah M A					
3	1NH18EE055	Shiva R V	ANFIS based Vibration Monitoring System for Agriculture Pumping System with Fuzzy Logic Inference	2022 3rd International Conference on Smart Electronics and Communication (ICOSEC)	10.1109/ICOSEC54921.2022.9952017	22/11/2022	Scopus
	1NH18EE049	Sagar Kulkarni					
	1NH18EE040	Lavin Ponnappa M M					
4	1NH18EE017	GreeshmaChennareddy	Modelling and Design of Solar-Powered DC Refrigerator for Vaccines Transportation in Remote Areas	2022 3rd International Conference on Smart Electronics and Communication (ICOSEC)	10.1109/ICOSEC54921.2022.9951953	22/11/2022	Scopus
	1NH18EE010	Chitra S					
	1NH18EE013	Kavipriya E					
	1NH18EE050	Sahana B					
5	1NH18EE758	VishwanathPatil	An Accident Identification and Alerting System by Using Raspberry Pi	2022 IEEE 2nd Mysore Sub Section International Conference (MysuruCon)	10.1109/MysuruCon55714.2022.9972676	13/12/2022	Scopus
	1NH18EE733	P.MD.Muthahir Khan					
	1NH18EE707	Bharateshshiradoni					
	1NH18EE754	Venkan gouda					
6	1NH18EE758	VishwanathPatil	Implementation of Smart Vehicle Accident Detection using Raspberry PI in Smart Cities	2022 4th International Conference on Inventive Research in Computing Applications (ICIRCA)	10.1109/ICIRCA54612.2022.9985762	29/12/2022	Scopus
	1NH18EE733	P.MD.Muthahir Khan					
	1NH18EE707	Bharateshshiradoni					
	1NH18EE754	Venkan gouda					

7	1NH18EE067	Sayanth PV	Analysis of Performance Enhancement for DC Distribution for Residential Distribution Network using hybrid AC DC Distribution Network	2022 International Conference on Edge Computing and Applications (ICECAA)	10.1109/ICECAA55415.2022.9936061	08/11/2022	Scopus
	1NH18EE756	Vishal Suresh					
	1NH18EE701	AdithyaHegde					
	1NH18EE739	Nahush S					
8	1NH18EE710	C Bhavana Singh	Data Analytics for Parameter Estimation of an Electric Bicycle using IoT	2022 7th International Conference on Communication and Electronics Systems (ICCES)	10.1109/ICCES54183.2022.9835883	29/07/2022	Scopus
	1NH18EE708	Bhavana YC					
	1NH18EE709	Bindhu V					
9	1NH19EE003	Abhishek	A review of remote health monitoring system for patients sing IoT	International Conferene on Automation, Computing and Renewable Systems (ICACRS-2022)	10.1109/ICACRS55517.2022.10028995	07/02/2023	Scopus
	1NH19EE013	ANIL HEGDE H					
	1NH19EE032	Dhruva S Srinivas					
	1NH19EE038	Krishna Chaitanya					
10	1NH19EE008	Aishwarya P	A Review of Theft Diagnosis from Smart Energy Meter Using IoT	2022 6th International Conference on Electronics, Communication and Aerospace Technology	10.1109/ICECA55336.2022.10009567	16/01/2023	Scopus
	1NH19EE023	Charishma A					
	1NH19EE042	Gautammee KK					
	1NH19EE055	KesamreddyDeepthi					
11	1NH19EE066	M Rohith Kumar	Design and fabrication of Quad Bike for physically Challenged person	International Conference on Smart Generation Computing, Communication and Networking	10.1109/SMARTGENCON56628.2022.10084305	06/04/2023	Scopus
	1NH19EE046	Harshitha R					
12	1NH19EE018	Anoopkumar H S	Herbs Ailment Diagnosis using AI Techniques for Sustainable Innovation in Agriculture	2023 4th International Conference on Innovative Trends in Information Technology (ICITIIT)	10.1109/ICITIIT57246.2023.10068575	20/03/2023	Scopus
	1NH19EE024	Chethan D R					
	1NH19EE028	Deekshith More B					
	1NH19EE062	KUSHAL A Y					
13	1NH19EE027	Dechamma V S	Study of Interfacing PLC With HMI for Industrial Applications	2023 Second International Conference on Electronics and Renewable Systems (ICEARS)	10.1109/ICEARS56392.2023.10084927	05/04/2023	Scopus
	1NH19EE047	J Likitha					
	1NH19EE050	Jayanth R					
	1NH20EE407	Prajwal R M					
14	1NH18EE014	Faraz Ahmed Mullah	A Review on Autopilot using Neuro Evaluation of Augmenting Topologies	2023 International Conference on Intelligent Data Communication Technologies and Internet of Things (IDCIoT)	10.1109/IDCIoT56793.2023.10053395	01/03/2023	Scopus
	1NH19EE037	Hemanth G N					
	1NH19EE048	J Prajwal					
	1NH19EE065	M Gopal					
15	1NH20EE408	Shiva Shankara M	A Review of Sequential Control & Monitoring of Distribution Lines in Substations	2022 International Conference on Automation, Computing and Renewable Systems (ICACRS)	10.1109/ICACRS55517.2022.10029006	07/02/2023	Scopus
	1NH20EE401	Binay Kumar Yadav					
	1NH19EE083	P. Sindhu					

16	1NH19EE085	Ravi Nandan	Artificial Intelligence based Self-Driving Car using Robotic Model	2023 Third International Conference on Artificial Intelligence and Smart Energy (ICAIS)	10.1109/ICAIS56108.2023.10073726	27/03/2023	Scopus
	1NH19EE127	Roopeshwar Reddy					
	1NH19EE123	Vinod Kumar R					
	1NH19EE125	W Y Jhansipriya					
17	1NH19EE069	Manojkumar H V	AI and IoT based detection of pesticide in organic fruits and vegetables	2023 International Conference on Intelligent and Innovative Technologies in Computing, Electrical and Electronics (IITCEE)	10.1109/IITCEE57236.2023.10091032	10/04/2023	Scopus
	1NH19EE070	Manojkumar P					
	1NH19EE080	Naveen R N					
	1NH19EE095	Sandeep Naik R					
18	1NH19EE071	Maruthi B	A review of dynamic wireless transfer system technology used in solar wireless electric vehicle charging station	2022 International Conference on Automation, Computing and Renewable Systems (ICACRS)	10.1109/ICACRS55517.2022.10029261	07/02/2023	Scopus
	1NH19EE092	Rahul					
	1NH19EE098	Santhosh Melvin D					
	1NH19EE101	Sathish					
19	1NH19EE072	Meghana N T	Solar Powered Multi-functional agricultural robot	International Conference on Knowledge Engineering and Communication Systems (ICKECS-2022)	10.1109/ICKECS56523.2022.10060837	17/02/2023	Scopus
	1NH19EE121	Vandana R					
	1NH19EE122	Vidya G R					
20	1NH19EE091	RachnaPalli	Study of Stepper motor control using programmabke logic controller (PLS) based on Industry 4.0	2022 International Conference on Smart Generation Computing, Communication and Networking (SMART GENCON)	10.1109/SMARTGENCON56628.2022.10083617	06/04/2023	Scopus
	1NH19EE107	Sowmya Shree					
	1NH18EE021	Jeshwanth V					
	1NH18EE060	Vernon Victor					
21	1NH19EE008	Aishwarya P	IoT detection based energy meter integrated with smart devices	2023 Second International Conference on Electronics and Renewable Systems (ICEARS)	10.1109/ICEARS56392.2023.10085200	05/04/2023	Scopus
	1NH19EE023	Charishma A					
	1NH19EE042	Gautammee KK					
	1NH19EE055	KesamreddyDeepthi					
22	1NH19EE010	Aisiri M Urs	Electric Quad Bike with hybrid charging mode for physically challenged	2023 7th International Conference on Computing Methodologies and Communication (ICCMC)	10.1109/ICCMC56507.2023.10084320	04/04/2023	Scopus
	1NH19EE046	Harshitha R					
	1NH19EE066	M Rohith Kumar					
	1NH20EE403	Koushik P					
23	1NH19EE072	Meghana N T	Solar Powered Autonomous Multipurpose Agricultural Robot Using Bluetooth	2023 Second International Conference on Electronics and Renewable Systems (ICEARS)	10.1109/ICEARS56392.2023.10085122	05/04/2023	Scopus
	1NH19EE121	Vandana R					
	1NH19EE122	Vidya G R					

24	1NH19EE004	Abhishek Bedant	Non-Invasive Method of Detecting Anemia using AI &IoT	2023 International Conference on Innovative Data Communication Technologies and Application (ICIDCA)	10.1109/ICIDCA56705.2023.10099915	20/04/2023	Scopus
	1NH19EE061	Kumar Abhishek					
	1NH19EE067	Madhav Reddy C					
	1NH19EE060	Kota Vikramaadhitya					
25	1NH19EE068	MANISH	Wild Animals Intrusion Detection for Safe Commuting in Forest Corridors using AI Techniques	2023 3rd International Conference on Innovative Practices in Technology and Management (ICIPTM)	10.1109/ICIPTM57143.2023.10117831	10/05/2023	Scopus
	1NH19EE100	SARTHAK GHORAI					
	1NH19EE105	SHARIQ AHMED					
	1NH19EE109	SUBHAJIT DAS					
26	1NH19EE073	Meghana S	A Novel EV Charging Using Stationary Bike	2023 3rd International Conference on Innovative Practices in Technology and Management (ICIPTM)	10.1109/ICIPTM57143.2023.10117886	10/05/2023	Scopus
	1NH19EE099	Santhosh kummi					
	1NH19EE110	Suraj Raju Jadhav					
	1NH19EE120	U Mohammed Arshad					
27	1NH19EE097	SanskritiAgarwalla	Silent Surveillance Autonomous Drone For Disaster Management And Military Security Using Artificial Intelligence	2023 3rd International Conference on Innovative Practices in Technology and Management (ICIPTM)	10.1109/ICIPTM57143.2023.10118136	10/05/2023	Scopus
	1NH19EE106	SharmiKanaujia					
	1NH19EE103	Sheikh Sameer					
	1NH19EE114	TabasumManzoor					
28	1NH19EE102	ShaifAlam	Study of Battery Management System using Watchdog Software	2023 3rd International Conference on Innovative Practices in Technology and Management (ICIPTM)	10.1109/ICIPTM57143.2023.10118136	10/05/2023	Scopus
	1NH19EE113	Swastik Shukla					
	1NH19EE129	Zahra goher sultana					
29	1NH19EE001	ABDUL SAMEDH	Automated Tumbler Cleaner	2023 3rd International Conference on Innovative Practices in Technology and Management (ICIPTM)	10.1109/ICIPTM57143.2023.10118176	10/05/2023	Scopus
	1NH19EE030	DARSHAN R					
	1NH19EE034	FAIZ UR Rahman					
30	1NH19EE009	AISHWARYA V H	Implementation of Accident Detection and Reporting System Using IOT	2023 3rd International Conference on Innovative Practices in Technology and Management (ICIPTM)	10.1109/ICIPTM57143.2023.10118329	10/05/2023	Scopus
	1NH19EE011	AKSHATHA SHREE					
	1NH19EE019	ANUSHA S					
	1NH19EE057	KHUSHI J VIBHUTHI					
31	1NH19EE090	R. Varun	Analysis Of Electrical Parameters For Formula Style Electric Vehicle	2023 3rd International Conference on Innovative Practices in Technology and Management (ICIPTM)	10.1109/ICIPTM57143.2023.10118279	10/05/2023	Scopus
	1NH19EE093	Ritikakapoor					
	1NH19EE116	Tejas V					
	1NH19EE104	SHAMBHAVI BHAGAT					

Table : 4.5.4.1: Student Publications [2021-2022]

Sl No	USN	Student Name	Paper Title	Conference Name	DOI	Date of Publication	Indexed
1	1NH18EE039	Nischal Dinesh	A review of solar powered electric Bi-hybrid vehicle compared with IC Engine Vehicles using graph analytics with AI	2022 4th International Conference on Smart Systems and Inventive Technology (ICSSIT)	10.1109/ICSSIT53264.2022.9716463	25/02/2022	Scopus
	1NH18EE042	Prajwal					
	1NH18EE053	Sarthak Das					
	1NH18EE005	AshuAnand					
2	1NH18EE039	Nischal Dinesh	Artificial Intelligence Based Solar Powered Electric Bi-hybrid Vehicle Compared with IC Engine Vehicles Using Graph Analytics	2022 International Conference for Advancement in Technology (ICONAT)	10.1109/ICONAT53423.2022.9725853	10/03/2022	Scopus
	1NH18EE042	Prajwal					
	1NH18EE053	Sarthak Das					
	1NH18EE005	Ashu Anand					
3	1NH18EE011	DarshiniMachamma M S	IoT Based Parameters Calculation of Electric Bicycle using OpenModelica Simulation Tool with Data Analytics Technology	2022 IEEE International Conference on Distributed Computing and Electrical Circuits and Electronics (ICDCECE)	10.1109/ICDCECE53908.2022.9792637	13/06/2022	Scopus
	1NH18EE004	APPAJI					
	1NH18EE032	MOHAMMED TAUQEER ALI					
	1NH18EE011	DarshiniMachamma M S					
4	1NH18EE011	Darshini Machamma M S	An IoT based Data Analytics for Electric Bicycle using OpenModelicaSimulation Tool	2022 International Conference for Advancement in Technology (ICONAT)	10.1109/ICONAT53423.2022.9725996	10/03/2022	Scopus
	1NH18EE004	Appaji					
	1NH18EE032	MOHAMMED TAUQEER ALI					
5	1NH18EE031	Mohammed Omer Ali	A Review on Triboelectric Nanogenerators (TENGs) using Internet of Things	2021 International Conference on Forensics, Analytics, Big Data, Security (FABS)	10.1109/FABS52071.2021.9702612	09/02/2022	Scopus
	1NH18EE057	Siddhartha Sunil Singh					
	1NH18EE066	TahooraImtiyaz					
	1NH18EE036	Nayrah M A					
6	1NH18EE055	Shiva R V	An implementation of soft computing approach of smart control for induction motor using ANFIS	2022 4th International Conference on Smart Systems and Inventive Technology (ICSSIT)	10.1109/ICSSIT53264.2022.9716455	25/02/2022	Scopus
	1NH18EE049	Sagar Kulkarni					
	1NH18EE040	Lavin Ponnappa M M					

7	1NH18EE017	GreeshmaChennareddy	Renewable energy based efficient portable DC refrigerator for rural electrification and convenience - An Overview	2022 Second International Conference on Artificial Intelligence and Smart Energy (ICAIS)	10.1109/ICAIS53314.2022.9742945	30/03/2022	Scopus
	1NH18EE010	Chitra S					
	1NH18EE013	Kavipriya E					
	1NH18EE050	Sahana B					
8	1NH18EE022	Jibran Zaidi	A review of Arduinobased hand gesture controlled robot using IoT	2022 Second International Conference on Artificial Intelligence and Smart Energy (ICAIS)	10.1109/ICAIS53314.2022.9741829	30/03/2022	Scopus
	1NH18EE061	Vikram					
	1NH18EE027	Nirupavardhan					
	1NH18EE020	Jaffer					
9	1NH18EE735	Pranav R Naik	A Review on Optimization Techniques of Charging the Battery in EV	2022 Second International Conference on Artificial Intelligence and Smart Energy (ICAIS)	10.1109/ICAIS53314.2022.9743126	30/03/2022	Scopus
	1NH18EE738	Rahul Vijay Lingadhal					
	1NH18EE736	R PUNEETH VENKAT SAI VARMA					
	1NH18EE737	R Supraja					
10	1NH18EE735	Pranav R Naik	A review on optimization techniques of battery charging in electric vehicles	2022 2nd International Conference on Artificial Intelligence and Signal Processing (AISP)	10.1109/AISP53593.2022.9760545	25/04/2022	Scopus
	1NH18EE738	Rahul Vijay Lingadhal					
	1NH18EE736	R PUNEETH VENKAT SAI VARMA					
	1NH18EE737	R Supraja					
11	1NH18EE710	C Bhavana Singh	Analysis of Parameter Estimation of an Electric Bicycle Using IoT with Data Analytics Technique	2022 4th International Conference on Smart Systems and Inventive Technology (ICSSIT)	10.1109/ICSSIT53264.2022.9716307	25/02/2022	Scopus
	1NH18EE708	Bhavana YC					
	1NH18EE709	Bindhu V					
12	1NH18EE718	Joanna Alicia D	A Survey on Detection of Power theft in Transmission and Distribution	2022 International Conference on Computer Communication and Informatics (ICCCI)	10.1109/ICCCI54379.2022.9740976	31/03/2022	Scopus
	1NH18EE715	Deepthi D					
	1NH18EE740	Shawin Krishna					
	1NH18EE706	BellamSreekanthreddy					
13	1NH18EE025	Karthik N	A survey on Smart Traffic Control System for Emerging vehicles	2022 International Conference on Computer Communication and Informatics (ICCCI)	10.1109/ICCCI54379.2022.9740998	31/03/2022	Scopus
	1NH18EE009	Lakshmipathi C					
	1NH18EE003	Anirudh					
	1NH18EE052	Sanjay G					

Table 4.5.4.4:Patents Filed by Students [2022-2023& 2021-2022, 2020-21]

S.No	Date	Names of the Student	Title of the Patent
1	Application Number: 202241039517 dated 09.07.2022	Dr.Prabhakaran N Dr.Vinoth Kumar K Dr.Singaravelan A Mr. MD Sagar Khan	**Design of underwater Li-Fi Communication System using Analog LDR Sensor** Application Number: 202241039517 dated 09.07.2022
2	Application Number: 202241040774 dated 16.07.2022	Dr.Vinoth Kumar K Ms. KavithaChenna Reddy Mr. Nischal Dinesh Mr. Sarthak Das Mr. Prajwal Mr. AshuAnand	**Design of two battery model for electric bicycle** Application Number: 202241040774 dated 16.07.2022
3	Application Number: 202241039518 dated 09.07.2022	Dr.Vinoth Kumar K Dr. Mahesh M Ms. Bhavana YC Ms. Bhavana Singh C Ms. Bindhu V	**Design of electric bicycle using split charging technology** Application Number: 202241039518 dated 09.07.2022
4	Application Number: 202241039511 dated 09.07.2022	Mr. Vinod Kumar S Dr.Vinoth Kumar K Dr. Mahesh M Mr. Shivashankara M Mr. Abdul Samed Mr. Darshan R	**Design of waste heat recovery in windmill using TEG** Application Number: 202241039511 dated 09.07.2022
5	Application Number: 202241040711 dated 16.07.2022	Dr.Prabhakaran N Dr.Vinoth Kumar K Mrs. Karthika M Mr. MD Sagar Khan	**Design of PV based Smart Energy Efficient Hybrid Model for Irrigation using Sensorless BLDC Motor** Application Number: 202241040711 dated 16.07.2022
6	Application Number:	Dr.Vinoth Kumar K	**Design and validation the battery performance in electric**

	202241040767 dated 16.07.2022	Mr. Muni Prakash T Mr. Pranav R Naik Mr. R PuneethVenkat Sai Varma Ms. R Supraja Mr. Rahul Vijay Lingadhal	**vehicle using optimization method** Application Number: 202241040767 dated 16.07.2022
7	Application Number: 202241040766 dated 16.07.2022	Dr.Vinoth Kumar K Mr. Satish Kumar D Dr. Mahesh M Mr. P. M. D. Muthathir Khan Mr. VishwanathPatil Mr. Venkan Gouda Mr. BharateshShiradoni	**Design of accident identification and alerting system by using Raspberry Pi** Application Number: 202241040766 dated 16.07.2022
8	Application Number: 202241047176 dated 19.08.2022	Dr.Vinoth Kumar K Mr. Vinod Kumar S Dr. Mahesh M Dr. Mohan Das R Mr. MekalaRohith Kumar Reddy Mr. Koushik P	**Design of therapeuticthreadmill and footrestfordifferentlyabledchildren** Application Number: 202241047176 dated 19.08.2022
9	Application Number: 202241047180 dated 19.08.2022	Dr.Manujunatha Dr. Mahesh M Dr.Vinoth Kumar K Mr. Satish Kumar D Mr. AdvaithMadhavan Mr. Khadim Hussain	**Design of Bluetooth based remote voltage monitoring system for off-grid battery** Application Number: 202241047180 dated 19.08.2022
10	Application Number: 202241039515 dated 09.07.2022	Mr. Vinod Kumar S Dr.Vinoth Kumar K Dr. Mahesh M Mr. Shivashankara M Mr. Abdul Samed	**Design of waste heat recovery in windmill using TEG** ***(Design Patent)*** Application Number: 202241039515 dated 09.07.2022

4.5.5 Extra Curricular Activities

Summary of achievement in sports activities (2022 – 23)

Sl.No	Name	USN	SEM	Event	Date	Tournament	No. Of Days	Achievements
1	Darshan Suresh Shetty	1NH20EE028	V	Weifht Lifting Hockey Wrestling & Judo	28th& 29th Oct 2022 9th& 10th Nov 2022 12th& 13th Dec 2022	Vtu(Gat) Vtu(Cmrit) Vtu(Vvce)	02 02 02	Participation Participation Silver Medal
2	Aneelkumar N M	1NH21EE015	III	Best Physique Taekwondo	28th& 29th Oct 2022 20th& 21st Dec 2022	Vtu(Gat) Vtu(Sit)	02 02	Participation Participation
3	Hemanth B N	1NH20EE041	V	Kabaddi Volleyball Tug Of War	19th To 21st Oct 2022 4th& 5th Nov 2022 9th& 10th Nov 2022 17th& 18th Nov 2022	Infini Vtu(Vit) Vtu Selections Vtu(Atria)	02 02 02 02 02	Participation Participation Participation Runners
4	Pramod G	1NH20EE081	V	Hockey	9th& 10th Nov 2022	Vtu(Cmrit)	02	Participation
5	Shrinik	1NH20EE026	V	Cricket	19th To 22nd Nov 2022	Pes	04	Participation
6	Yeshwanth S	1NH20EE127	V	Chess	1st& 2nd Dec 2022 5th To 7th Dec 2022	Vtu(Vit) Vtu(Nmamit)	02 03	8thPlaace Participation
7	Rakshan L	1NH21EE093	III	Basketball(M)	28th& 29th Nov 2022 3rd Dec 2022 14th To 17th Dec 2022	Vtu(Nhce) VtuSelectons Spardha	02 01 04	Participation Participation Participation
8	Simran	1NH20EE110	V	Basketball(W)	29th Nov 2022 5th& 6th Dec 2022 7th To 9th Dec 2022 14th To 17th Dec 2022	Voluenteer Vtu(Dr.Ait) Vtu(Atme) Spardha	01 02 03 04	Participation 4th Place Participation Participation
9	M Rohith Kumar Reddy	1NH19EE066	VII	Weifht Lifting	28th& 29th Oct 2022	Vtu(Gat)	02	Bronze Medal
10	Dechmma Vs	1NH19EE027	VII	Weifht Lifting	28th& 29th Oct 2022	Vtu(Gat)	02	Participation
11	Deepak Kumar Sah	1NH19EE029	VII	Best Physique	28th& 29th Oct 2022	Vtu(Gat)	02	Participation
12	Manoj Kumar P	1NH19EE070	VII	Kabaddi	19th To 21st Oct 2022 4th& 5th Nov 2022	Infini Vtu(Vit)	03 02	Participation Participation

Summary of achievement in sports activities (2021 – 22)

Sl.No	Name	USN	SEM	Event	Date	Tournament	No. Of Days	Achievements
1	Pranav R Naik	1NH18EE735	VII	Volleyball(M)	13th And 14th May 2022 2nd&3rd June 2022 24th June 2022 25th To 26th June 2022	Nmit Rvce Cit Iisc	02 02 01 02	Participation Participation Participation Participation
2	Kushal Naik K	1NH20EE056	III	Volleyball(M)	19th To 22nd April 2022 26th To 29th April 2022 28th To 30th April 2022	Chri-Spo Athlos Devadan Cup	04 04 03	Runners Participation Participation
3	Dhanush L	1NH18EE716	VIII	Baasketball(M)	26th To 29th April 2022 28th To 30th April 2022 10th&11th May 2022 1st& 2nd June 2022	Athlos Devadan Cup Nmit Momentum 22	04 03 02 02	Participation Participation Participation Participation
4	Simran Kanwar	1NH20EE110	IV	Basketball(W)	26th To 29th April 2022 1st& 2nd June 2022	Athlos Momentum 22	04 02	Participation
5	Manoj Kumar P	1NH19EE070	VI	Kabaddi	26th To 29th April 2022 13th&14th May 2022 26th May 2022	Athlos Nmit Abhiyantan 22	04 02 01	Participation Participation Runners
6	Hemanth B N	1NH20EE041	IV	Kabaddi Tug Of War Handball	26th To 29th April 2022 13th&14th May 2022 26th May 2022 6th& 7th June 2022 23rd June	Athlos Nmit Abhiyantan 22 Vtu(Bmsce) Voluenteer	04 02 01 02 01	Participation Participation Runners Winners Participation
7	R Puneeth	1NH18EE736	VIII	Football	26th To 29th April 2022 28th To 30th April 2022 1st& 2nd June 2022	Athlos Devadan Cup Momentum 22	04 03 02	Participation Participation Participation
8	Mohan P	1NH20EE405	VI	Handball	19th To 21st April 2022 28th To 30th April 2022 23rd June 2022 25th&26th June 2022	Chri-Spo Devadan Cup Vtu(Nhce) Vtu(IzMit)	03 03 01 02	Participation Participation Winners Participation
9	Ponnappa Mm	1NH18EE040	VIII	Cricket	18th To 25th April	Devadan Cup	08	Participation

					26th To 29th April 2022 26th To 30th May 2022 17th To 20th June 2022	Athlos Momentum 22 Seacet	04 05 04	Participation Participation Participation
10	Chandan N	1NH18EE711	VIII	Cricket	18th To 25th April 26th To 29th April 2022 26th To 30th May 2022 17th To 20th June 2022	Devadan Cup Athlos Momentum 22 Seacet	08 04 05 04	Participation Participation Participation Participation
11	D Shrenik	1NH20EE026	IV	Cricket	18th To 25th April 26th To 29th April 2022 26th To 30th May 2022 17th To 20th June 2022	Devadan Cup Athlos Momentum 22 Seacet	08 04 05 04	Participation Participation Participation Participation
12	M Rohith Kumar Reddy	1NH19EE066	VI	Wrestling	7th To 13th March 2022	Aiu	07	Participation
13	Sharath N	1NH20EE100	IV	Tug Of War	6th& 7th June 2022	Vtu(Bmsce)	02	Winners
14	Vijay Meti	1NH20EE410	VI	Tug Of War	6th& 7th June 2022	Vtu(Bmsce)	02	Winners
15	Varan Sham Kumar K S	1NH18EE753	VIII	Chess	22nd& 23rd June 2022	Vtu (Toce)	02	Participation
16	Yashwanth S	1NH20EE127	IV	Chess	22nd& 23rd June 2022	Vtu (Toce)	02	Participation
17	Darshan Suresh Shetty	1NH20EE028	IV	Kho-Kho Athletics	17th& 18th June 2022 27th To 30th June 2022	Vtu(Bmsce) Vtu(Sjcit)	02 04	Participation Participation
18	Vikash Rawat	1NH20EE120	IV	Athletics (Long Jump)	27th To 30th June 2022	Vtu(Sjcit)	04	**Gold Medal**

Summary of achievement in sports activities (2020– 21)

Sl.No	Name	USN	SEM	Event	Date	Tournament	No. of Days	Achievements
1	Dhanush L	1NH18EE716	IV	Basketball (M)	25th Jan To 3rd Feb 2020 10th To 15th Feb 2020 22nd To 24th Feb 2020 28th& 29th Feb 2020	Malleshwaram Cup Spiel Rvce Devadan Cup	10 06 03 02	Participation Participation Participation Winners
2	Monideepa Rana	1NH16EE034	VIII	Basketball (W)	25th Jan To 3rd Feb 2020 10th To 15th Feb 2020 22nd To 24thfeb 2020	Malleshwaram Cup Spiel Rvce	10 06 03	3rd Place Runners Winners
3	Himagani Mishra	1NH17EE715	VI	Basketball (W)	25th Jan To 3rd Feb 2020 10th To 15th Feb 2020 22nd To 24th Feb 2020	Malleshwaram Cup Spiel Rvce	10 06 03	3rd Place Runners Winners
4	Pranav R	1NH18EE735	IV	Volleyball (M)	1st And 2nd Feb 2020 23rd And 24th Feb 2020 28th And 28th Feb 2020 5th And 6th Mar 2020 9th And 1th Mar 2020	Umang Rvce Cufee Vtu (Bcz) Vtu (Iz)	02 02 02 02 02	Runners Runners Participation Runners Ii Runners
5	Rishabh Yadav	1NH17EE742	VI	Football	22nd To 24th Feb 2020 27th To 29th Feb 2020	Rvce Cufe	03 03	Participation Participation
6	Chandan N	1NH18EE711	IV	Cricket	14th, 15th20th 23rd Feb 2020 16th To19th Feb 2020 11th To 20th Mar 2020	Cufee Rvce Vtu	04 04 02	Participation Participation Participation
7	Ponnappa M M	1NH18EE040	IV	Cricket	14th, 15th20th 23rd Feb 2020 16th To19th Feb 2020 11th To 20th Mar 2020	Cufee Rvce Vtu	04 04 02	Participation Participation Participation

8	Md Omer Ali	1NH18EE031	IV	Cricket	14th, 15th20th 23rd Feb 2020 16th To19th Feb 2020 11th To 20th Mar 2020	Cufee Rvce Vtu	04 04 02	Participation Participation Participation
9	C Bhavana Singh	1NH18EE710	IV	Volleyball (W)	13th To 15th Mar 2020	Vtu(Bcz)	03	2nd Runner Up
10	Meghanaa I L (Played Nationals)	1NH17EE724	VI	Hockey (W)	16th To 23rd Jan 2020 23rd Jan To 2nd Feb 2020	Camp Hiswnc	08 11	Participation Participation
11	Girish N	1NH16EE019	VIII	Handball	24th& 25th Feb 2020 28th& 29th Feb 2020	Basavangudi Cufee	02 02	Participation Runners
12	Nithish V	1NH16EE039	VIII	Handball	24th& 25th Feb 2020 28th& 29th Feb 2020	Basavangudi Cufee	02 02	Participation Runners

Glimpses of Extra Curricular Activities



Figure: 4.5.3.4 Glimpses of Extra Curricular Activities

Mr. M Rohith Kumar Reddy with usn: 1NH19EE066 has won the Silver Medal in district level weightlifting. 66kg category held by Bengaluru district weightlifters association at barbell house, Mysore road

Department of
Electrical and Electronics Engineering

Criterion - 5

Faculty Information and Contributions

CRITERION 5	FACULTY INFORMATION AND CONTRIBUTIONS	200

CUMULATIVE FACULTY INFORMATION

ACADEMIC YEAR: 2022-2023

Table B.5 a) Cumulative Faculty Information for Academic Year 2022-2023

Name of the Faculty Member	Qualification			Association with the Institution	Designation	Date on which Designated as Professor/Associate Professor	Date of Joining the Institution	Department	Specialization	Academic Research			Currently Associated (Y/N)	Nature of Association
	Degree (highest degree)	University	Year of Attaining Higher Qualification							Research Paper	Ph.D. Guidance	Faculty Receiving Ph.D.		
Dr. M. Mahesh	Ph.D	National Institute of Technology, Rourkela	2016	Yes	Professor	-	23.07.2018	EEE	Power Electronics	4	-	-	Y	Regular
Dr. Arangarajan V	Ph.D	Deakin University, Australia	2017	Yes	Professor	-	25.01.2021	EEE	Power Electronics	2	-	-	Y	Regular
Dr. Agalya V	Ph.D	Anna University, Chennai	2017	Yes	Professor	-	02.03.2022	EEE	Electrical Engineering	2	-	-	Y	Regular
Dr. Sujitha S	Ph.D	Anna University, Chennai	2016	Yes	Associate Professor & Head	02.01.2017	25.07.2016	EEE	Electrical Engineering	13	-	-	Y	Regular
Dr. Joshua Daniel Raj	Ph.D	Visvesvaraya Technological University, Belagavi	2022	Yes	Associate Professor	01.01.2021	01.08.2016	EEE	VLSI & Embedded Systems	2	-	-	Y	Regular
Dr. Gunapriya B	Ph.D	Anna University, Chennai	2011	Yes	Associate Professor	-	17.07.2018	EEE	Power Electronics and Drives	4	-	-	Y	Regular

Dr. Vinoth Kumar K	Ph.D	Karunya Institute of Technology and Sciences, Coimbatore	2018	Yes	Associate Professor	-	24.08.2020	EEE	Power Electronics and Drives	17	-	-	Y	Regular
Dr. Mohan Das R	Ph.D	Anna University, Chennai	2018	Yes	Associate Professor	01.10.2020	17.07.2019	EEE	Power Electronics and Drives	5	-	-	Y	Regular
Ms. Karthika M	M.E	Anna University, Chennai	2018	Yes	Sr.Assistant Professor	15-01-2018	25.07.2012	EEE	Power Electronics and Drives	2	-	-	Y	Regular
Ms. Kavitha Chenna Reddy	M.E	JNTU, Kakinada	2013	Yes	Sr. Assistant Professor	17-07-2019	25.07.2012	EEE	High Voltage Engineering	1	-	-	Y	Regular
Ms. Deepa V. Bolanavar	M.Tech	Visvesvaraya Technological University, Belagavi	2018	Yes	Sr. Assistant Professor	-	25.7.2016	EEE	VLSI Design and Embedded Systems	-	-	-	Y	Regular
Mr. Vinod Kumar S	M.E	Anna University, Chennai	2015	Yes	Sr. Assistant Professor	-	23.01.2017	EEE	Power System Engineering	2	-	-	Y	Regular
Mr. Sunil S K	M.Tech	Visvesvaraya Technological University, Belagavi	2010	Yes	Sr.Assistant Professor	-	25.7.2016	EEE	Power System Engineering	1	-	-	Y	Regular
Mr. Ramakrishnan. S	M.E	Biju Patnaik University of Technology	2008	Yes	Sr. Assistant Professor	-	26-07-2017	EEE	Embedded System Technologies	1	-	-	Y	Regular
Dr. Prabhakaran N	Ph.D	Vellore Institute of Technology, Vellore	2019	Yes	Sr. Assistant Professor	-	24.08.2020	EEE	Automotive Electronics	-	-	-	Y	Regular
Mr. Lithesh J	M.Tech	Amrita Vishwa Vidyapeetham, Bengaluru	2012	Yes	Sr. Assistant Professor	-	25.7.2012	EEE	Power Electronics	-	-	-	Y	Regular
Dr. Prasanth Ram J	Ph.D	Vellore Institute of Technology, Vellore	2019	Yes	Sr. Assistant Professor	-	24.08.2020	EEE	Power Electronics	-	-	-	Y	Regular
Ms. Anitha A	M.E	Anna University, Chennai	2006	Yes	Sr. Assistant Professor	-	04.02.2015	EEE	Power Electronics & Drives	2	-	-	Y	Regular

Ms. Viji. U	M.E	Anna University, Chennai	2017	Yes	Sr. Assistant Professor	-	17.07.2019	EEE	Power System Engineering	-	-	-	Y	Regular
Ms. Suganya G	M.Tech	Visvesvaraya Technological University, Belagavi	2014	Yes	Assistant Professor	-	23.07.2018	EEE	Power System	-	-	-	Y	Regular
Ms. Rashmi N	M.Tech	Visvesvaraya Technological University, Belagavi	2010	Yes	Assistant Professor	-	21.07.2014	EEE	Computer Application In Industrial Drives	-	-	-	Y	Regular
Ms. Roopa. C	M.Tech	Visvesvaraya Technological University, Belagavi	2009	Yes	Assistant Professor	-	21-07-2014	EEE	Computer Applications in Industrial Drives	-	-	-	Y	Regular
Ms. Soumya K V	M.E	Anna University of Technology, Madurai	2013	Yes	Assistant Professor	-	05.07.2022	EEE	VLSI Design	1	-	-	Y	Regular
Ms. Sangeetha C N	M.Tech	JNTU, Hyderabad	2013	Yes	Assistant Professor	-	05.07.2022	EEE	Electrical Power System	1	-	-	Y	Regular
Ms. Pooja Jose	M.Tech	Calicut University, Calicut	2015	Yes	Assistant Professor	-	05.07.2022	EEE	Power Electronics	1	-	-	Y	Regular

ACADEMIC YEAR: 2021-2022

Table B.5 b) Cumulative Faculty Information for Academic Year 2021-2022

Name of the Faculty Member	Qualification			Association with the Institution	Designation	Date on which Designated as Professor/Associate Professor	Date of Joining the Institution	Department	Specialization	Academic Research			Currently Associated (Y/N)	Nature of Association
	Degree (highest degree)	University	Year of Attaining Higher Qualification							Research Paper	Ph.D. Guidance	Faculty Receiving Ph.D.		
Dr. M. Mahesh	Ph.D	National Institute of Technology, Rourkela	2016	Yes	Professor & Head	-	23.07.2018	EEE	Power Electronics	3	-	-	Y	Regular
Dr. Arangarajan V	Ph.D	Deakin University, Australia	2017	Yes	Professor	-	25.01.2021	EEE	Power Electronics	9	-	-	Y	Regular
Dr. Agalya V	Ph.D	Anna University, Chennai	2017	Yes	Professor	-	02.03.2022	EEE	Electrical Engineering	2	-	-	Y	Regular
Dr. Sujitha S	Ph.D	Anna University, Chennai	2016	Yes	Associate Professor	02.01.2017	25.07.2016	EEE	Electrical Engineering	5	-	-	Y	Regular
Dr. Joshua Daniel Raj	Ph.D	Visvesvaraya Technological University, Belagavi	2022	Yes	Associate Professor	01.01.2021	01.08.2016	EEE	VLSI & Embedded Systems	1	-	-	Y	Regular
Dr. Gunapriya B	Ph.D	Anna University, Chennai	2011	Yes	Associate Professor	-	17.07.2018	EEE	Power Electronics and Drives	10	-	-	Y	Regular
Dr. Vinoth Kumar K	Ph.D	Karunya Institute of Technology and Sciences, Coimbatore	2018	Yes	Associate Professor	-	24.08.2020	EEE	Power Electronics and Drives	25	-	-	Y	Regular

Dr. Mohan Das R	Ph.D	Anna University, Chennai	2018	Yes	Associate Professor	01.10.2020	17.07.2019	EEE	Power Electronics and Drives	6	-	-	Y	Regular
Dr. P. Palanivel	Ph.D	Anna University, Chennai	2018	Yes	Associate Professor		17.07.2019	EEE	Power Electronics and Drives	-	-	-	N	Regular
Ms. Karthika M	M.E	Anna University, Chennai	2018	Yes	Sr.Assistant Professor	-	25.07.2012	EEE	Power Electronics and Drives	1	-	-	Y	Regular
Ms. Kavitha Chenna Reddy	M.E	JNTU, Kakinada	2013	Yes	Sr. Assistant Professor	-	25.07.2012	EEE	High Voltage Engineering	2	-	-	Y	Regular
Ms. Deepa V. Bolanavar	M.Tech	Visvesvaraya Technological University, Belagavi	2018	Yes	Sr. Assistant Professor	-	25.7.2016	EEE	VLSI Design and Embedded Systems	-	-	-	Y	Regular
Mr. Vinod Kumar S	M.E	Anna University, Chennai	2015	Yes	Sr. Assistant Professor	-	23.01.2017	EEE	Power System Engineering	3	-	-	Y	Regular
Dr. Singaravelan. A	Ph.D	Vellore Institute of Technology, Vellore	2019	Yes	Sr. Assistant Professor	-	23.07.2018	EEE	Power System & Demand Side Management	5	-	-	N	Regular
Mr. Sunil S K	M.Tech	Visvesvaraya Technological University, Belagavi	2010	Yes	Sr.Assistant Professor	-	25.7.2016	EEE	Power System Engineering	-	-	-	Y	Regular
Dr. Prabhakaran N	Ph.D	Vellore Institute of Technology, Vellore	2019	Yes	Sr. Assistant Professor	-	24.08.2020	EEE	Automotive Electronics	4	-	-	Y	Regular

Dr. Prasanth Ram J	Ph.D	Vellore Institute of Technology, Vellore	2019	Yes	Sr. Assistant Professor	-	24.08.2020	EEE	Power Electronics	-	-	-	Y	Regular
Mr. Ramakrishnan. S	M.E	Biju Patnaik University of Technology	2008	Yes	Sr. Assistant Professor	-	26-07-2017	EEE	Embedded System Technologies	1	-	-	Y	Regular
Ms. Anitha A	M.E	Anna University, Chennai	2006	Yes	Sr. Assistant Professor	-	04.02.2015	EEE	Power Electronics & Drives	-	-	-	Y	Regular
Ms. Viji. U	M.E	Anna University, Chennai	2017	Yes	Sr. Assistant Professor	-	17.07.2019	EEE	Power System Engineering	-	-	-	Y	Regular
Mr. Lithesh J	M.Tech	Amrita Vishwa Vidyapeetham, Bengaluru	2012	Yes	Assistant Professor	-	25.7.2012	EEE	Power Electronics	-	-	-	Y	Regular
Ms. Roopa. C	M.Tech	Visvesvaraya Technological University, Belagavi	2009	Yes	Assistant Professor	-	21-07-2014	EEE	Computer Applications in Industrial Drives	-	-	-	Y	Regular
Ms. Suganya G	M.Tech	Visvesvaraya Technological University, Belagavi	2014	Yes	Assistant Professor	-	23.07.2018	EEE	Power System	-	-	-	Y	Regular
Ms. Rashmi N	M.Tech	Visvesvaraya Technological University, Belagavi	2010	Yes	Assistant Professor	-	21.07.2014	EEE	Computer Application In Industrial Drives	-	-	-	Y	Regular

ACADEMIC YEAR: 2020-2021

Table B.5 c) Cumulative Faculty Information for Academic Year 2020-2021

Name of the Faculty Member	Qualification			Association with the Institution	Designation	Date on which Designated as Professor/Associate Professor	Date of Joining the Institution	Department	Specialization	Academic Research			Currently Associated (Y/N)	Nature of Association
	Degree (highest degree)	University	Year of Attaining Higher Qualification							Research Paper	Ph.D. Guidance	Faculty Receiving Ph.D		
Dr. M. Mahesh	Ph.D	National Institute of Technology, Rourkela	2016	Yes	Professor & Head	-	23.07.2018	EEE	Power Electronics	4	-	-	Y	Regular
Dr. Arangarajan V	Ph.D	Deakin University, Australia	2017	Yes	Professor	-	25.01.2021	EEE	Power Electronics	2	-	-	Y	Regular
Dr. Birendra Kumar Singh	Ph.D	Manipal University, Manipal	2011	Yes	Professor	-	17.07.2019	EEE	Electrical Engineering	1	-	-	Y	Regular
Dr. Sujitha S	Ph.D	Anna University, Chennai	2016	Yes	Associate Professor	01.01.2021	25.07.2016	EEE	Electrical Engineering	-	-	-	Y	Regular
Dr. Joshua Daniel Raj	Ph.D	Visvesvaraya Technological University, Belagavi	2022	Yes	Associate Professor	01.01.2021	01.08.2016	EEE	VLSI & Embedded Systems	1	-	-	Y	Regular
Dr. Gunapriya B	Ph.D	Anna University, Chennai	2011	Yes	Associate Professor	-	17.07.2018	EEE	Power Electronics and Drives	17	-	-	Y	Regular
Dr. Vinoth Kumar K	Ph.D	Karunya Institute of Technology and Sciences, Coimbatore	2018	Yes	Associate Professor	-	24.08.2020	EEE	Power Electronics and Drives	7	-	-	Y	Regular

Dr. Mohan Das R	Ph.D	Anna University, Chennai	2018	Yes	Associate Professor	01.10.2020	17.07.2019	EEE	Power Electronics and Drives	-	-	-	Y	Regular
Dr. P. Palanivel	Ph.D	Anna University, Chennai	2018	Yes	Associate Professor		17.07.2019	EEE	Power Electronics and Drives	1	-	-	N	Regular
Ms. Karthika M	M.E	Anna University, Chennai	2018	Yes	Sr.Assistant Professor	-	25.07.2012	EEE	Power Electronics and Drives	1	-	-	Y	Regular
Ms. Kavitha Chenna Reddy	M.E	JNTU, Kakinada	2013	Yes	Sr. Assistant Professor	-	25.07.2012	EEE	High Voltage Engineering	-	-	-	Y	Regular
Ms. Deepa V. Bolanavar	M.Tech	Visvesvaraya Technological University, Belagavi	2018	Yes	Sr. Assistant Professor	-	25.7.2016	EEE	VLSI Design and Embedded Systems	-	-	-	N	Regular
Mr. Vinod Kumar S	M.E	Anna University, Chennai	2015	Yes	Sr. Assistant Professor	-	23.01.2017	EEE	Power System Engineering	-	-	-	Y	Regular
Ms. Viji. U	M.E	Anna University, Chennai	2017	Yes	Sr. Assistant Professor	-	17.07.2019	EEE	Power System Engineering	-	-	-	Y	Regular
Dr. Singaravelan. A	Ph.D	Vellore Institute of Technology, Vellore	2019	Yes	Sr. Assistant Professor	-	23.07.2018	EEE	Power System & Demand Side Management	6	-	-	N	Regular
Mr. Sunil S K	M.Tech	Visvesvaraya Technological University, Belagavi	2010	No	Sr.Assistant Professor	-	25.7.2016	EEE	Power System Engineering	2	-	-	Y	Regular

Mr. Ramakrishnan. S	M.E	Biju Patnaik University of Technology	2008	Yes	Sr. Assistant Professor	-	26-07-2017	EEE	Embedded System Technologies	1	-	-	Y	Regular
Dr. Prabhakaran N	Ph.D	Vellore Institute of Technology, Vellore	2019	Yes	Sr. Assistant Professor	-	24.08.2020	EEE	Automotive Electronics	-	-	-	Y	Regular
Dr. Prasanth Ram J	Ph.D	Vellore Institute of Technology, Vellore	2019	Yes	Sr. Assistant Professor	-	24.08.2020	EEE	Power Electronics	-	-	-	Y	Regular
Mr. Lithesh J	M.Tech	Amrita Vishwa Vidyapeetham, Bengaluru	2012	Yes	Assistant Professor	-	25.7.2012	EEE	Power Electronics	1	-	-	Y	Regular
Ms. Roopa. C	M.Tech	Visvesvaraya Technological University, Belagavi	2009	Yes	Assistant Professor	-	21-07-2014	EEE	Computer Applications in Industrial Drives	-	-	-	N	Regular
Ms. Anitha A	M.E	Anna University, Chennai	2006	Yes	Assistant Professor	-	04.02.2015	EEE	Power Electronics & Drives	1	-	-	Y	Regular
Ms. Suganya G	M.Tech	Visvesvaraya Technological University, Belagavi	2014	Yes	Assistant Professor	-	23.07.2018	EEE	Power System	1	-	-	Y	Regular
Ms. Rashmi N	M.Tech	Visvesvaraya Technological University, Belagavi	2010	Yes	Assistant Professor	-	21.07.2014	EEE	Computer Application In Industrial Drives	1	-	-	N	Regular

5.1 Student-Faculty Ratio (SFR) (20)

(To be calculated at Department Level)
No. of UG Programs in the Department (n) : 01
No. of PG Programs in the Department (m) : Nil
No. of Students in UG 2nd Year = u1
No. of Students in UG 3rd Year = u2
No. of Students in UG 4th Year = u3
No. of Students in PG 1st Year = p1
No. of Students in PG 2nd Year = p2
No. of Students = Sanctioned Intake + Actual admitted lateral entry students
(The above data to be provided considering all the UG and PG programs of the department)
S= Number of Students in the Department = UG1+UG2+UG3+PG1+PG2
F = Total Number of Faculty Members in the Department (excluding first year faculty)
Student Faculty Ratio (SFR) = S / F

Table B.5.1.1 Student Faculty Ratio

Year	CAY (2022-23)	CAYm1 (2021-22)	CAYm2 (2020-21)
u1	120+13	120+12	120+11
u2	120+12	120+11	120+9
u3	120+11	120+9	120+21
UG (B.E. EEE)	396	392	401
p1	-	-	-
p2	-	-	-
PG (M. Tech.)	-	-	-
Total No. of Students in the Department(S)	396	392	401
No. of Faculty inthe Department (F)	25	23	23
Student Faculty Ratio (SFR)	**SFR1 = 15.84**	**SFR2 = 17.04**	**SFR3 = 17.43**
Average SFR		**SFR = 16.77**	

Provide the information about the regular and contractual faculty as per the format mentionedbelow:

Table B.5.1.2 Regular & Contractual Faculty

Year	Total number of Regular faculty in the Department	Total number of Contractual faculty in the Department
CAY (2022-23)	25	-
CAYm1 (2021-22)	23	-
CAYm2 (2020-21)	**23**	-

5.2 Faculty Cadre Proportion (20)

The reference Faculty cadre proportion is 1(F1):2(F2):6(F3)

F1: Number of Professors required = 1/9 x Number of Faculty required to comply with 15:1 Student- Faculty ratio based on no. of students (N) as per 5.1.

F2: Number of Associate Professors required = 2/9 x Number of Faculty required to comply with 15:1 Student-Faculty ratio based on no. of students (N) as per 5.1.

F3: Number of Assistant Professors required = 6/9 x Number of Faculty required to comply with 15:1 Student-Faculty ratio based on no. of students (N) as per 5.1

Table B.5.2 Faculty Cadre Ratio

Year	Professors		Associate Professors		Assistant Professors	
	Required F1	Available	Required F2	Available	Required F3	Available
CAY (2022-23)	2	3	4	5	12	17
CAYm1 (2021-22)	2	2	4	6	12	15
CAYm2 (2020-21)	2	2	4	5	12	16
Average Numbers	**RF1=2**	**AF1= 2.33**	**RF2=4**	**AF2=5.33**	**RF3=12**	**AF3=16**

$$\text{Cadre Ratio} = \left(\left(\frac{AF1}{RF1} + \frac{AF2}{RF2} * 0.6 + \frac{AF3}{RF3} * 0.4\right)\right) * 10$$

Cadre Ratio Marks = **((2.33/2) +(5.33/4) *0.6+(16/12) *0.4) *10**

= **24.97 (limited to 20)**

If AF1 = AF2= 0 then zero marks

• Maximum marks to be limited if it exceeds 20

• Example: Intake = 60 (i.e. total no. of students= 180);

Required number of Faculty: 9; RF1= 1, RF2=2 and RF3=6

• Case 1: AF1/RF1= 1; AF2/RF2 = 1; AF3/RF3 = 1;

Cadre proportion marks = (1+0.6+0.4) x 10 =20

• Case 2: AF1/RF1= 1; AF2/RF2 = 3/2; AF3/RF3 = 5/6;

Cadre proportion marks = (1+0.9+0.3) x 10 = limited to 20

• Case 3: AF1/RF1=0; AF2/RF2=1/2; AF3/RF3=8/6;

Cadre proportion marks = (0+0.3+0.53) x 10=8.3

5.3 Faculty Qualification (20)

FQ = 2.0* [(10X +4Y)/F)]

Where, X is no. of regular faculty with Ph.D.,

Y is no. of regular faculty with M. Tech.,

F is no. of regular faculty required to comply 20:1 Faculty Student ratio

(No of faculty and no. of students required are to be calculated as per 5.1)

Table B.5.3 Faculty Qualification

	X	Y	F	FQ = 2.0 * [(10X +4Y)/F)]
CAY (2022-23)	10	15	19	16.84
CAYm1 (2021-22)	11	12	19	16.63
CAYm2 (2020-21)	11	12	20	15.80
Average Assessment				**16.42**

5.4 Faculty Retention (10)

Item (% of faculty retained during the period of assessment keeping CAYm2 as base year)	**Marks**
>= 90% of required Faculty members retained during the period of assessment keeping CAY*m2* as base year	10
>=75% of required Faculty members retained during the period of assessment keeping CAY*m2* as base year	08
>= 60% of required Faculty members retained during the period of assessment keeping CAY*m2* as base year	06
>= 50% of required Faculty members retained during the period of assessment keeping CAY*m2* as base year	04
< 50% of required Faculty members retained during the period of assessment keeping CAY*m2* as base year	0

Table B.5.4 Faculty Retention

Description	**CAYm1 (2021-22)**	**CAY (2022-23)**
No. of Faculty Retained	22	20
Total No.of Faculty Base Year CAYm2(2020-2021)	23	23
Percentage of Faculty retained	**87%**	**96%**
Average % of faculty retained	**91%**	

5.5 Faculty competencies in correlation to Program Specific Criteria (10)

(List the program specific criteria and the competencies (specialization, research publications, course developments etc.,) of faculty to correlate the program specific criteria andcompetencies.)

- The Department of Electrical and Electronics Engineering is a versatile department, the faculty members are specialized in domains like Power Electronics and Drives, Power & Energy and VLSI and Embedded System as shown in Figure B. 5.5.1.
- Faculty members articulate their domain specific knowledge to groom the students to excel in academics and encourage the students to participate in Conference, Project Exhibition, Patent Publication, MOOC Courses etc.
- Faculty members show consistent progress in their domain by publishing their research works in renowned Journals and actively contributing their services to the industries as
- consultancy works.
- The program specific criteria are correlated with competencies of faculty members through their specialization along with research publications, textbook / book chapter, reviewers / editorialship in refereed journals, correlation to the courses, Patents, Professional Bodies, MOOC Courses, paper presentation in conferences as specified from Table B. 5.5.1 - Table B. 5.5.8.

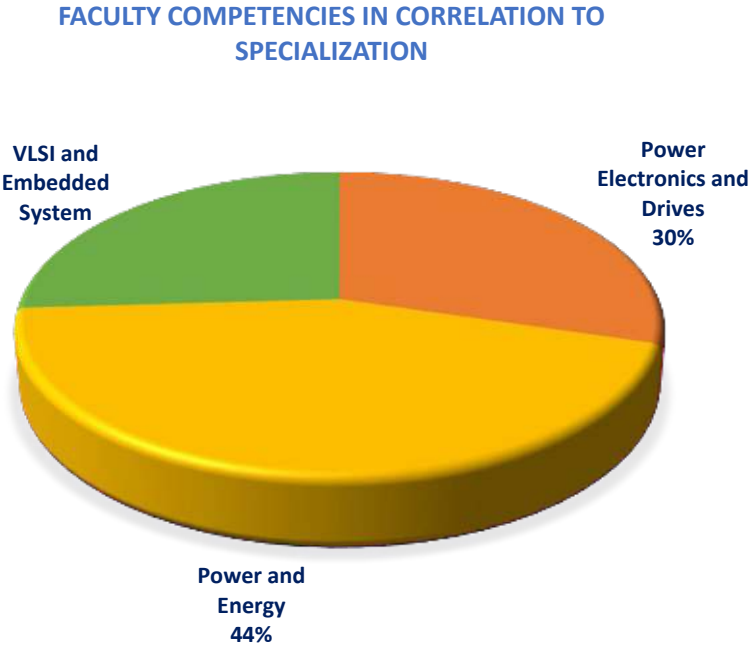


Figure B. 5.5.1Faculty competencies in correlation to Specialization

Table B.5.5.1 Faculty competencies in correlation to Curriculum

Engineering (Specialization Area)	Relevant Courses in the Curriculum	Competent Faculty
Power Electronics and Drives	• Power Electronics • Electrical Drives and vehicles • Simulation of Power Electronics • Biomedical Instrumentation • Applications of IOT in Electrical Engineering • Advanced Industrial and Building Automation • Advanced Control Systems	Dr. M. Mahesh Dr. Arangarajan V Dr. Agalya V Dr. Sujitha S Dr. Vinoth Kumar K Ms. Karthika M Ms. Kavitha Channa Reddy Ms. Pooja Jose
Power and Energy	• Electric circuit theory • DC machines and transformers • Synchronous and induction machines • Transmission and Distribution • Power System Analysis • Power System Protection • Special Electrical Machines • Relay and High voltage Engineering • FACTS and HVDC transmission • Testing and Commissioning of Electrical Equipment • Utilization of Electrical Energy • Energy Auditing and Demand side Management • Power System Operation and Control • Estimation and Costing of electrical systems • Smart Grid Technologies • Integration of distributed generation	Dr. Gunapriya B Dr. Mohan Das R Dr. Birendra Kumar Singh Mr. Sunil S K Mr. Ramakrishnan. S Dr. Prasanth Ram J Ms. Roopa. C Ms. Anitha A Ms. Rashmi N Ms. Suganya G Ms. Viji U Ms. Sangeetha C N
VLSI and Embedded Systems	• Control systems • Digital Signal Processing • Professional Ethics • Neural network and Fuzzy logic in Electrical Engineering • Object Oriented Programming • Modern Communication Systems • MEMS and Applications • Advanced Micro Controller and Applications • Data Structures and Algorithms using python • Robotics and Automation • Virtual Instrumentation	Dr. Joshua Daniel Raj Dr. Prabhakaran N Dr. P. Palanivel Mr. Lithesh J Ms. Deepa V Bolanavar Mr. Vinod Kumar S Ms. Soumya K

Table B.5.5.2 a. Faculty competencies in correlation to Publications for the CAY (2021-22)

Sl.No	Faculty Name	Paper Title	Month Year	Journal Title	Volume	Issue	Page start	Page end	Indexing	Publication Type
1	Dr. Vinoth Kumar K	A Novel Sensitive Photonic Crystal Fiber based Voltage Sensor Filled with Nematic Liquid Crystal	February 2022	IEEE Transactions on Nanotechnology	21	-	90	99	Scopus & SCI	Journal
2	Dr. Vinoth Kumar K	Weather Forecasting for Renewable Energy System: A Review	January 2022	Archives of Computational Methods in Engineering	29	5	2875	2891	Scopus & SCI	Journal
3	Dr. Gunapriya B Dr. Singaravelan A	AI and ML Powered IoT Applications for Energy Management in Electric Vehicles	June 2022	Wireless Personal Communications	-	-	1	17	Scopus & SCI	Journal
4	Dr. Arangarajan V	A KNN based random subspace ensemble classifier for detection and discrimination of high impedance fault in PV integrated power network	January 2022	Measurement: Journal of the International Measurement Confederation	187	1103 33	1	20	Scopus & SCI	Journal
5	Dr. Arangarajan V	A Voting Approach of Ensemble Classifier for Detection of Power Quality in Islanded PV Microgrid	June 2022	IETE Journal of Research	-	-	1	17	Scopus & SCI	Journal

6	Dr. Arangarajan V	Heterogeneous learning method of ensemble classifiers for identification and classification of power quality events and fault transients in wind power integrated microgrid	September 2022	Sustainable Energy, Grids and Networks	31	-	1	24	Scopus & SCI	Journal
7	Dr. Arangarajan V Dr. Mohan Das R	A random subspace ensemble classification model for discrimination of power quality events in solar PV microgrid power network	January 2022	Plos One	-	-	1	17	Scopus & SCI	Journal
8	Dr. Gunapriya B Dr. Singaravelan A	Performance analysis and enhancement of brain emotion-based intelligent controller and its impact on PMBLDC motor drive for electric vehicle applications	January 2022	Energy Sources, Part A: Recovery, Utilization and Environmental Effects	-	-	1	25	Scopus & SCI	Journal
9	Ms. Karthika M	A comparative analysis of torque ripple reduction techniques for sensor BLDC drive	March 2022	International Journal of Power Electronics and Drive Systems	13	1	122	131	Scopus & SCI	Journal
10	Dr. Mohan Das R Mr. Vinod Kumar S	Development of performance characterization in VSI-fed induction motor drives using random PWM	June 2022	International Journal of Power Electronics and Drive Systems	13	2	783	791	Scopus	Journal

11	Dr. Arangarajan V	Recurrent network-based power flow solution for voltage stability assessment and improvement with distributed energy sources	November 2021	Applied Energy	302	117524	1	21	Scopus & SCI	Journal
12	Dr. Arangarajan V	Detection and classification of multiple power quality disturbances in Microgrid network using probabilistic based intelligent classifier	October 2021	Sustainable Energy Technologies and Assessments	47	101470	1	13	Scopus & SCI	Journal
13	Dr. Arangarajan V	An ensemble approach of classification model for detection and classification of power quality disturbances in PV integrated microgrid network	July 2021	Applied Soft Computing	106	107294	1	16	Scopus & SCI	Journal
14	Dr. Agalya V	CPRO: Competitive Poor and Rich Optimizer-Enabled Deep Learning Model and Holoentropy Weighted-Power K-Means Clustering for Brain Tumor Classification Using MRI	April 2022	International Journal of Pattern Recognition and Artificial Intelligence	36	4	1	19	Scopus & SCI	Journal
15	Mr. Satish Kumar D	Coordinated power management and control of renewable energy sources based smart grid	April 2022	International Journal of Emerging Electric Power Systems	23	2	261	276	Scopus & SCI	Journal

16	Dr. Prabhakaran N	Analysis and design of fuzzy-based manoeuvring model for mid-vehicle collision avoidance system	August 2021	Journal of Ambient Intelligence and Humanized Computing	12	10	9909	9922	Scopus & SCI	Journal
17	Dr. Prabhakaran N	Novel Collision Detection and Avoidance System for Midvehicle Using Offset-Based Curvilinear Motion	October 2021	Wireless Personal Communications	119	3	1	22	Scopus & SCI	Journal
18	Dr. Mohan Das R	Design of a novel wireless power transfer technique for portable device	June 2022	Materials Today Proceedings	65	1	242	249	Scopus	Journal
19	Dr. Mohan Das R Mr. Vinod Kumar S	An improved random SVPWM for zero voltage switching three phase inverters	June 2022	Materials Today Proceedings	65	1	285	292	Scopus	Journal
20	Dr. Mohan Das R	A novel symmetrical three level boost DC-AC converter for electric vehicles with reduced switch counts	June 2022	Materials Today Proceedings	65	1	235	241	Scopus	Journal
21	Dr. Arangarajan Vinayagam	High Hybrid Power Converter Performance Using Modern Optimization Methods Based PWM Strategy	June 2022	Electronics (Switzerland)	11	13	1	16	Scopus & SCI	Journal

22	Dr. Arangarajan Vinayagam	Modern Optimal Controllers for Hybrid Active Power Filter to Minimize Harmonic Distortion	June 2022	Electronics (Switzerland)	11	9	1	17	Scopus & SCI	Journal
23	Dr. Sujitha S Dr. Vinoth Kumar K	An implementation of soft computing approach of smart control for induction motor using ANFIS	February 2022	2022 4th International Conference on Smart Systems and Inventive Technology (ICSSIT)	-	-	1	4	Scopus	Conference
24	Dr. Vinoth Kumar K	Analysis of parameter estimation of an electric bicycle using IoT with data analytics technique	February 2022	4th International Conference On Smart Systems and Inventive Technology ICSSIT 2022	-	-	1	5	Scopus	Conference
25	Dr. Vinoth Kumar K Dr. Gunapriya B	An IoT based data analytics for electric bicycle using OpenModelica simulation tool	March 2022	2022 International Conference for Advancement in Technology ICONAT 2022	-	-	1	5	Scopus	Conference
26	Dr. Vinoth Kumar K Dr. Gunapriya B	Renewable energy based efficient portable DC refrigerator for rural electrification and convenience - An Overview	March 2022	International Conference on Artificial Intelligence and Smart Systems ICAIS 2022	-	-	1	5	Scopus	Conference
27	Dr. Vinoth Kumar K Dr. Gunapriya B	A review of Arduino based hand gesture-controlled robot using IoT	March 2022	International Conference on Artificial Intelligence and Smart Systems ICAIS 2022	-	-	1	5	Scopus	Conference

28	Dr. Vinoth Kumar K Mr. Muniprakash T	A Review on Optimization Techniques of Charging the Battery in EV	March 2022	International Conference on Artificial Intelligence and Smart Systems	-	-	1	5	Scopus	Conference
29	Dr. Vinoth Kumar K Mr. Muniprakash T	A review on optimization techniques of battery charging in electric vehicles	April 2022	2022 2nd International Conference on Artificial Intelligence and Signal Processing, AISP 2022	-	-	1	5	Scopus	Conference
30	Dr Singaravelan A Dr. Gunapriya B	High-Performance ANFIS-Based Controller for BLDC Motor Drive	April 2022	International Conference on Ubiquitous Computing and Intelligent Information Systems - Smart Innovation, Systems and Technologies	243	-	435	449	Scopus	Conference
31	Ms. Kavitha Chenna Reddy Dr. Vinoth Kumar K	A review of solar powered electric Bi-hybrid vehicle compared with IC Engine Vehicles using graph analytics with AI	February 2022	4th International Conference on Smart Systems and Inventive Technology ICSSIT 2022	-	-	1	5	Scopus	Conference
32	Ms. Kavitha Chenna Reddy Dr. Vinoth Kumar K	Artificial Intelligence Based Solar Powered Electric Bi-hybrid Vehicle Compared with IC Engine Vehicles Using Graph Analytics	March 2022	2022 International Conference for Advancement in Technology ICONAT 2022	-	-	1	5	Scopus	Conference

33	Dr. Sujitha S Dr. Vinoth Kumar K	Experimental Setup of Smart E-Vehicle Charging Station using IOT Technology	December 2021	2021 IEEE International Conference on Mobile Networks and Wireless Communications, ICMNWC 2021	-	-	1	4	Scopus	Conference
34	Dr. Vinoth Kumar K Dr. Sujitha S	Execution of smart electric vehicle charging station driven by RE technology using soft computing approach	November 2021	IEEE International Conference on Innovations in Power and Advanced Computing Technologies	-	-	1	5	Scopus	Conference
35	Dr. Vinoth Kumar K	A Review on Triboelectric Nanogenerators (TENGs) using Internet of Things	December 2021	2021 International Conference on Forensics, Analytics, Big Data, Security (FABS)	-	-	1	5	Scopus	Conference
36	Dr. Vinoth Kumar K	Implementation of Smart Electric Vehicle Charging Station Driven Using Experimental Investigation	October 2021	2021 2nd Global Conference for Advancement in Technology, GCAT 2021	-	-	1	5	Scopus	Conference
37	Dr. Vinoth Kumar K Dr. Gunapriya B	Execution of smart electric vehicle charging station driven by RE technology	October 2021	2021 IEEE Mysore Sub Section International Conference, MysuruCon 2021	-	-	70	73	Scopus	Conference

38	Mr. Muni Prakash T	Controller Design for Detection of Various Power Thefts	November 2021	IEEE International Conference on Innovations in Power and Advanced Computing Technologies	-	-	1	6	Scopus	Conference
39	Dr. Prabhakaran N	A survey on smart traffic control system for emerging vehicles	January 2022	2022 International Conference on Computer Communication and Informatics ICCCI 2022	-	-	1	5	Scopus	Conference
40	Dr. Prabhakaran N	A survey on detection theft in transmission and distribution	January 2022	2022 International Conference on Computer Communication and Informatics ICCCI 2022	-	-	1	5	Scopus	Conference
41	Dr. Agalya V	Automated Monorail Integrated with Solar and Piezoelectric Power Generating System	April 2022	2022 8th International Conference on Smart Structures and Systems	-	-	1	7	Scopus	Conference
42	Dr. Vinoth Kumar K	IoT Based Parameters Calculation of Electric Bicycle using OpenModelica Simulation Tool with Data Analytics Technology	April 2022	2022 IEEE International Conference on Distributed Computing and Electrical Circuits and Electronics	-	-	1	4	Scopus	Conference
43	Dr. Vinoth Kumar K Dr. Sujitha S	Data Analytics for Parameter Estimation of an Electric Bicycle using IoT	June 2022	2022 7th International Conference on Communication and Electronics Systems	-	-	506	511	Scopus	Conference

44	Mr. Vinod Kumar S Dr. Mahesh M Dr. Vinoth Kumar K	A Review on Self Stabilizing Platform in Scope of Merchant Navy Applications	June 2022	2022 First International Conference on Artificial Intelligence Trends and Pattern Recognition	-	-	1	4	Scopus	Conference
45	Dr. Joshua Daniel Raj Mr. Ramakrishnan S Mr. Muniprakash T	Designing of Six Wheel Robotic Vehicle for Instant Disinfection and Sanitization	June 2022	2022 Trends in Electrical, Electronics, Computer Engineering Conference	-	-	18	24	Scopus	Conference
46	Dr. Mahesh M Dr. Vinoth Kumar K	Enabling Technologies for Smart Buildings High Power Density Power Electronic Converters	January 2022	Smart Buildings Digitalization IoT and Energy Efficient Smart Buildings Architecture and Applications	1	-	217	218	Scopus	Book Chapter
47	Dr. Gunapriya B Dr. Singaravelan A Dr. Mahesh M	An IoT-based approach for efficient home automation	June 2022	Artificial Intelligence and Internet of Things for Renewable Energy Systems	-	-	91	122	Scopus	Book Chapter
48	Dr. Vinoth Kumar K	Network intrusion detection system in latest DFA compression methods for deep packet scruting	July 2021	Design, Applications, and Maintenance of Cyber-Physical Systems	-	-	219	243	Scopus	Book Chapter

49	Dr. Vinoth Kumar K	Artificial Intelligence-Based Energy Management and Real-Time Optimization in Electric and Hybrid Electric Vehicles	December 2021	EAI/Springer Innovations in Communication and Computing	432	-	219	242	Scopus	Book Chapter
50	Dr Singaravelan A Dr. Gunapriya B	Sensorless Speed Control of BLDC Motor for EV Applications	January 2022	Lecture Notes on Data Engineering and Communications Technologies	93	-	359	370	Scopus	Book Chapter
51	Dr. Gunapriya B Dr. Sujitha S	Smart Home Technologies Toward SMART (Specific, Measurable, Achievable, Realistic, and Timely) Outlook	July 2022	Lecture Notes on Data Engineering and Communications Technologies	126	-	711	727	Scopus	Book Chapter
52	Dr. Vinoth Kumar K	Intelligent Systems in Latest DFA Compression Methods for DPC	July 2022	Handbook of Research on Evolving Designs and Innovation in ICT and Intelligent Systems for Real-World Applications	-	-	129	146	Scopus	Book Chapter

Table B.5.5.4 b. Faculty competencies in correlation to Publications for the CAYm2 (2020-21)

Sl No	Faculty Name	Paper Title	Month Year	Journal Title	Volume	Issue	Page start	Page end	Indexing	Publication Type
1	Dr. B. Gunapriya	A novel home automation distributed server management system using Internet of Things	June 2021	International Journal of Ambient Energy	Inpress	NA	1	7	Scopus & SCI	Journal
2	Dr. B. Gunapriya	An efficient LoRa-based smart agriculture management and monitoring system using wireless sensor networks	June 2021	International Journal of Ambient Energy	Inpress	NA	1	5	Scopus & SCI	Journal
3	Dr. Arangarajan Vinayagam	The Effect of Interfacial Zone Due toticle Surfactant Interaction on Dielectric Properties of Vegetable Oil Based Nanofluids	June 2021	IEEE Access	9	NA	107033	107045	Scopus & SCI	Journal
4	Dr. Arangarajan Vinayagam	LSTM Recurrent Neural Network Classifier for High Impedance Fault Detection in Solar PV Integrated Power System	February 2021	IEEE Access	9	NA	32672	32687	Scopus & SCI	Journal
5	Dr. Singaravelan A Dr. Gunapriya B	Application of Two-Phase Simplex Method (TPSM) for an Efficient Home Energy Management System to Reduce Peak Demand and Consumer Consumption Cost	April 2021	IEEE Access	9	NA	63591	63601	Scopus & SCI	Journal

6	Dr. Vinoth Kumar K	Three Ways Chip to Chip Communication via a Single Photonic Structure: A Future Paragon of 3D Photonics to Optical VLSI	April 2021	IETE Journal of Research	Inpress	NA	1	9	Scopus & SCI	Journal
7	Dr. Gunapriya B	Laser induced Breakdown Spectroscopy for new product development in mining industry	April 2021	Materials Today: Proceedings	45	9	8157	8161	Scopus & SCI	Conference
8	Dr. Gunapriya B	Current droop control of parallel inverters in an autonomous microgrid	May 2021	Materials Today: Proceedings	45	2	2034	2039	Scopus & SCI	Conference
9	Dr. Gunapriya B	Visualization of virtual environment through LabVIEW platform	May 2021	Materials Today: Proceedings	45	2	2306	2312	Scopus & SCI	Conference
10	Dr. Gunapriya B	Frequency control of PV-connected micro grid system using fuzzy logic controller	May 2021	Materials Today: Proceedings	45	2	2260	2264	Scopus & SCI	Conference
11	Dr. Vinoth Kumar K Dr. Gunapriya B	Performance based algorithm for DWT and DCL for ISL	May 2021	Materials Today: Proceedings	45	2	2317	2322	Scopus & SCI	Conference
12	Dr. Vinoth Kumar K	A 2 × 20 Gbps hybrid MDM-OFDM–based high-altitude platform-to-satellite FSO transmission system	August 2020	Journal of Optical Communications	In Press	-	1	10	Scopus & SCI	Journal
13	Dr. Vinoth Kumar K	ECG Cardiac arrhythmias Classification using DWT, ICA and MLP Neural Networks	April 2021	Journal of Physics Conference Series	1831	1	1	13	Scopus	Journal

14	Dr. Gunapriya B Dr. Palanivel P	Revolution of IoT in Energy Efficient Smart Building	March 2021	International Journal of Scientific Research in Science, Engineering and Technology	9	1	53	60	Refereed	Journal
15	Dr. Gunapriya B Ms. Suganya G	Stress -The Major Obstacle In Experiencing Euphoria	March 2021	International Journal of Scientific Research in Science, Engineering and Technology	9	1	191	196	Refereed	Journal
16	Dr.VinothKumar.K Dr. Mahesh M Dr. Birendra Kumar Singh	Implementation of smart E-vehicle charging station powered by renewable energy	March 2021	International Journal of Scientific Research in Science, Engineering and Technology	9	1	11	17	Refereed	Journal
17	Dr. Mohan Das R Mr. Vinod Kumar S	Fuzzy Elman-Jordan Neural Network Based Space Vector Modulation for VSI Fed Induction Motor Drive	March 2021	International Journal of Scientific Research in Science, Engineering and Technology	9	1	256	263	Refereed	Journal
18	Mr. Muni Prakash T Ms. Rashmi N	RFID Based Attendance System using PHP and MySQL	March 2021	International Journal of Scientific Research in Science, Engineering and Technology	9	1	112	117	Refereed	Journal

19	Ms. M Karthika	Real time safety monitoring system for COVID-19	March 2021	International Journal of Scientific Research in Science, Engineering and Technology	9	1	108	111	Refereed	Journal
20	Dr. Joshua Daniel Raj Mr. Ramakrishnan S	Airport Automation using GSM	March 2021	International Journal of Scientific Research in Science, Engineering and Technology	9	1	249	255	Refereed	Journal
21	Dr. Singaravelan A	Design and implementation of COBOTS to Assist with Healthcare Workers	March 2021	International Journal of Scientific Research in Science, Engineering and Technology	9	1	70	81	Refereed	Journal
22	Mr. Sunil S K	Distributed Generation impact on voltage profile improvement in agriculture feeder –a case study	March 2021	International Journal of Scientific Research in Science, Engineering and Technology	9	1	201	206	Refereed	Journal
23	Ms. Anitha A	Development of a Residential Microgrid using Home Energy Management Systems for effective energy conservation	March 2021	International Journal of Scientific Research in Science, Engineering and Technology	9	1	104	107	Refereed	Journal

24	Mr. Lithesh J	Design of Single Inductor and Two Output DC – DC Converter	December 2020	International Journal of Scientific Research in Science, Engineering and Technology	7	6	54	59	Refereed	Journal
25	Dr. Mahesh M Dr. Vinoth Kumar K	A review on enabling technologies for high power density power electronic applications	July 2021	Materials Today: Proceedings	46	9	3888	3892	Scopus	Conference
26	Dr. Vinoth Kumar K	The generalized non-linear fresnel transform and its applications to image encrption	December 2020	Materials Today: Proceedings	In Press	-	1	6	Scopus	Conference
27	Dr. Vinoth Kumar K Dr. M. Mahesh Dr. Gunapriya B	Execution of battery charging for electric vehicles using five level methods	March 2021	IEEE Xplorer Proceedings of the 7th International Conference on Electrical Energy Systems	NA	-	312	318	Scopus	Conference
28	Dr. Vinoth Kumar K	Implementation of five level battery charging scheme for Electric Vehicles	March 2021	IEEE Xplorer Proceedings of the International Conference on Power Instrumentation, Control and Computing	NA	-	1	5	Scopus	Conference

29	Dr. Singaravelan A Dr. M. Mahesh Dr. Gunapriya B	PLC-Based Fire Accident Prevention System	March 2021	Lecture Notes in Electrical Engineering	700	1	1005	1010	Scopus &WoS	Conference
30	Dr. Singaravelan A Dr. Gunapriya B	Design and Analysis of a Higher Order Process by Employing Pspice Modelling	March 2021	Lecture Notes in Electrical Engineering	700	1	3185	3196	Scopus &WoS	Conference
31	Dr. Gunapriya B Dr. Singaravelan A	BELBIC Study for PMBLDC Motor Drive System in Industrial Applications	March 2021	Lecture Notes in Electrical Engineering	700	1	2225	2232	Scopus &WoS	Conference
33	Dr. Singaravelan A Dr. Gunapriya B	An Overview and Advancement of Electricity Peak Load Saving Methods: A Review	March 2021	Lecture Notes in Electrical Engineering	700	1	945	958	Scopus &WoS	Conference
33	Dr. Singaravelan A	ANN-Based Controllers for Improved Performance of BLDC Motor Drives	July 2020	Lecture Notes in Electrical Engineering	665	1	73	87	Scopus &WoS	Conference

Table B 5.5.2. c. Faculty competencies in correlation to Publications for the CAYm3 (2019-20)

Sl No	Faculty Name	Paper Title	Month Year	Journal Title	Volume	Issue	Page start	Page end	Indexing	Publication Type
1	Dr. Gunapriya B	Interleaved Boost Converter Based Photovoltaic Array System Employing Fuzzy Based MPPT for the Rapid Change of Solar Irradiance	June 2020	Biosc.Biotech.Res.Comm.	13	4	278	284	WoS	Journal
2	Dr. Joshua Daniel Raj	Simplified Ciphertext Policy Attribute Based Encryption for Multimedia Applications	June 2020	Procedia Computer Science	171	NA	2713	2719	Scopus	Conference
3	Dr. Prasanth Ram J	Performance enhancement of solar PV systems applying P&O assisted Flower Pollination Algorithm (FPA)	March 2020	Solar Energy	199	-	214	229	Scopus & SCI	Journal
4	Dr. Ramkumar Subburam	Crowded plant height optimisation algorithm tuned maximum power point tracking for grid integrated solar power conditioning system	July 2019	IET Renewable Power Generation	13	12	1	13	Scopus & SCI	Journal
5	Dr. Sujitha S	Spanning trees of a triangle snake graph by BFS and DFS algorithms	July 2019	International Journal of Innovative Technology and Exploring Engineering	8	8	866	868	Scopus	Journal

6	Dr. Sujitha S	Design and performance of high frequency temperature compensated crystal oscillator	July 2019	Journal of Advanced Research in Dynamical and Control Systems,	11	7	552	561	Scopus	Journal
7	Dr. Sujitha S	Study on characteristics of a tadpole graph	July 2019	Journal of Advanced Research in Dynamical and Control Systems	11	6	857	860	Scopus	Journal
8	Dr. Gunapriya B	Anti-Windup PI Controller with Tracking for BLDC Motor Drive System: Modeling, Simulation and Implementation on Lab View Based FPGA	January 2020	International Journal of Recent Technology and Engineering	8	5	2064	2070	Scopus	Journal
9	Dr. Gunapriya B	E-metering and fault detection in smart water distribution systems using wireless network	July 2019	International Journal of Innovative Technology and Exploring Engineering	8	11	634	639	Scopus	Journal
10	Dr. Prasanth Ram J	An Accurate, Shade Detection-Based Hybrid Maximum Power Point Tracking Approach for PV Systems	November 2019	IEEE Transactions on Power Electronics	35	6	6594	6608	Scopus & SCI	Journal
11	Dr. Prasanth Ram J	Enhanced power production in PV arrays using a new skyscraper puzzle based one-time reconfiguration procedure under partial shade conditions (PSCs)	December 2019	Solar Energy	194	-	209	224	Scopus & SCI	Journal

12	Dr. Prasanth Ram J	Extended analysis on Line-Line and Line-Ground faults in PV arrays and a compatibility study on latest NEC protection standards	September 2019	Energy Conversion and Management	196	-	988	1001	Scopus & SCI	Journal
13	Dr. Gunapriya B	An Improved Intelligent Controller for Brushless DC Motor Drive Based Electric Vehicles	November 2020	Journal of Green Engineering	10	11	11943	11957	Scopus	Journal
14	Dr. Sujitha S	Electronic Dice	December 2019	International Journal of Scientific Research in Science, Engineering and Technology	6	1	1	6	Refereed	Journal
15	Dr. Sujitha S	Wireless RGB LED Light	October 2019	International Journal of Scientific Research in Computer Science, Engineering and Information Technology	4	8	163	168	Refereed	Journal
16	Dr. Sujitha S Ms. Deepa V B	Speed Control of single phase induction motor using AC chopper by Asymmetrical PWM	July 2019	Journal For Innovative Development in Pharmaceutical and Technical Science	2	7	5	10	Refereed	Journal

17	Dr. Gunapriya B Mr. Lithesh J	LabView FPGA Implementation of Pi Controller Based BLDC Motor Drives	October 2019	International Journal of Scientific Research in Computer Science, Engineering and Information Technology	4	9	161	166	Refereed	Journal
18	Mr. Vinod Kumar S Dr. Mohan Das R	Design and Development of Cleaning System for Cups Using PLC	March 2020	International Journal of Scientific Research in Science, Engineering and Technology	7	2	223	232	Refereed	Journal
19	Dr. Mohan Das R	An Improved performance characterization VSI fed induction motor drives using Random PWM	December 2019	Proceedings of International Conference on Innovative research in Engineering, Management and Sciences, 2019	-	-	1	6	Refereed	Journal
20	Mr. Lithesh J	Automation of Gas Tunnel KILN Using Relay Logics And Variable Frequency Drives	November 2019	Asian Journal of Mathematics and Computer Research	26	4	206	215	Refereed	Journal
21	Mr. Lithesh J	Design and Development of AC Windings Calculation using MATLAB Softwares	October 2019	International Journal of Innovative Science, Engineering & Technology	6	10	326	334	Refereed	Journal

22	Dr. Joshua Daniel Raj	Survey on Applications of Attribute Based Encryption in Various Networks	October 2019	International Journal of Scientific Research in Computer Science, Engineering and Information Technology	4	9	150	153	Refereed	Journal
23	Mr. Muni Prakash T Mr. Ramakrishnan S Mr. Vinod Kumar S	Optimal design of power system stabilizer based on flower pollination algorithm	October 2019	International Journal of Scientific Research in Computer Science, Engineering and Information Technology	4	9	154	160	Refereed	Journal
24	Ms. Deepa V B	Real Time Gesture Controlled Electrical Automation	July 2019	International Journal for Science and Advance Research in Technology	5	4	429	432	Refereed	Journal
25	Ms. Deepa V B	Solar Panel Monitoring and Maintenance System	October 2019	International Journal for Research in Computer Science, Engineering and Information Technology	6	3	536	542	Refereed	Journal

26	Dr. Singaravelan A Ms. U Viji	Augmented reality based smart glasses	October 2019	International Journal of Scientific Research in Computer Science, Engineering and Information Technology	4	9	167	172	Refereed	Journal
27	Mr. Ramakrishnan S	IoT Based Motion Detector using Node MCU and BLYNK APP	October 2019	Journal of Xidian University	14	5	3112	3116	Refereed	Journal
28	Ms. Roopa C	Research on Smart Shopping Cart	August 2019	International Journal of Scientific Research in Computer Science, Engineering and Information Technology	6	4	359	363	Refereed	Journal
29	Ms. Roopa C	Nominal Operating Cell Temperature (NOCT)	August 2019	Journal of Emerging Technologies and Innovative Research	6	5	178	184	Refereed	Journal
30	Ms. Rashmi N	Fault Detecting Robot for Underground Electrical Cables using Atmega Arduino	June 2020	International Journal of Scientific Research in Computer Science, Engineering and Information Technology	6	3	756	761	Refereed	Journal

31	Ms. Rashmi N	Nanotechnology based Polymerized Solar Cells and Screen-Printing Technique for Power Generation	June 2020	International Journal of Scientific Research in Computer Science, Engineering and Information Technology	6	4	118	124	Refereed	Journal
32	Mr. Lithesh J	Development of Matlab Software for Various Testing Parameters' Calculation of Static and Rotating Machines	November 2019	Asian Journal of Mathematics and Computer Research	26	4	206	215	Refereed	Journal
33	Ms. Karthika M	Review on Torque ripple reduction techniques of BLDC motor	June 2020	Fifth International Conference on Inventive Computation Technologies (ICICT-2020), IEEE Xplorer	-	-	1092	1096	Scopus	Conference
34	Mr. Muni Prakash T	Performance and Control Enhancement of Two Area Load Frequency Control Using Tandem Compound Turbine	January 2020	Innovations in Power and Advanced Computing Technologies (i-PACT), IEEE Xplorer	-	-	1	6	Scopus	Conference
35	Dr. Singaravelan A	Design of a Non-iterative First-Order Compensator for Type 1 Higher Order Systems	December 2019	Lecture Notes in Electrical Engineering	602	-	355	368	Scopus &WoS	Conference

36	Dr. Prasanth Ram J	Investigation of Bacterial Foraging Algorithm Applied for PV Parameter Estimation, Selective Harmonic Elimination in Inverters and Optimal Power Flow for Stability	January 2020	Lecture Notes in Electrical Engineering	665	-	135	167	Scopus &WoS	Conference
37	Dr. Prasanth Ram J	Flower Pollination Based Solar PV Parameter Extraction for Double Diode Model	December 2019	Lecture Notes in Electrical Engineering	607	-	303	312	Scopus &WoS	Conference
38	Dr. Prasanth Ram J	A New Array Reconfiguration Scheme for Solar PV Systems Under Partial Shading Conditions	December 2019	Lecture Notes in Electrical Engineering	607	-	387	396	Scopus &WoS	Conference

Table B. 5.5.2 Faculty competencies in correlation to Books/ Book Chapter Publications

Sl. No.	Name of the faculty	Title of the book	Title of the chapters published	Year of publication	ISBN/ISSN number of the proceeding	Name of the publisher
1	Ms. Anitha A	Advances in Cognitive Science and Communications	Bi-directional DC-DC Converters and Energy Storage Systems of DVR—An Analysis	2023	978-981-19-8086-2	Springer
2	Dr. Vinoth Kumar K	Handbook of Research on Evolving Designs and Innovation in ICT and Intelligent Systems for Real-World Applications	Intelligent Systems in Latest DFA Compression Methods for DPC	2022	9781799897958	IGI Global
3	Dr. Mahesh M Dr. Vinoth Kumar K	Smart Buildings Digitalization IoT and Energy Efficient Smart Buildings Architecture and Applications	Enabling Technologies for Smart Buildings High Power Density Power Electronic Converters	2022	9781003201069	CRC Press, Taylor and Francis
4	Dr. Gunapriya B Dr. Singaravelan A Dr. Mahesh M	Artificial Intelligence and Internet of Things for Renewable Energy Systems	An IoT-based approach for efficient home automation	2022	9783110714043	De Gruyter
5	Dr. Vinoth Kumar K	Design, Applications, and Maintenance of Cyber-Physical Systems	Network intrusion detection system in latest DFA compression methods for deep packet scruting	2021	9781799867210	IGI Global
6	Dr. Vinoth Kumar K	EAI/Springer Innovations in Communication and Computing	Artificial Intelligence-Based Energy Management and Real-Time Optimization in Electric and Hybrid Electric Vehicles	2022	978-3-030-85423-2	Springer

7	Dr Singaravelan A Dr. Gunapriya B	Lecture Notes on Data Engineering and Communications Technologies	Sensorless Speed Control of BLDC Motor for EV Applications	2022	978-981-16-6604-9	Springer
8	Dr. Gunapriya B Dr. Sujitha S	Lecture Notes on Data Engineering and Communications Technologies	Smart Home Technologies Toward SMART (Specific, Measurable, Achievable, Realistic, and Timely) Outlook	2022	978-981-19-2068-4	Springer
9	Dr. Vinoth Kumar K	Model Based Design of Power Electronics Multi-Paradigm Numerical Computing	-	2020	978-620-2-68039-4	LAMBERT Academic Publishing Mauritius
10	Dr. Vinoth Kumar K Dr. Mahesh M	Basic Electrical and Electronics Engineering	-	2022	978-9354643194	Wiley Publishers, New Delhi

Table B.5.5.3 Faculty competencies in correlation to other Institutions / reviewed and editorial ship of journals

Sl. No	Name of the Faculty	Competency	Reviewed Journals with respect to specialization
1.	Dr. Sujitha S	Power Electronics and Drives	Reviewer in IEEE 2023 International Conference for Advancement in Technology (ICONAT), Goa, India. Jan 24-26, 2023
			Board of Examiner member in NITTE Meenakshi Institute of Technology, Bengaluru
			Board of Studies member in Sengunthar Engineering College, Tiruchengode
2.	Dr. Gunapriya B	Power Electronics and Drives	Board of Examiner member in NITTE Meenakshi Institute of Technology, Bengaluru
3.	Dr. Vinoth Kumar K	Power Electronics and Drives, Neuro fuzzy Computing	Reviewer in IEEE Access Journal
			Execom Member in IEEE Power Electronics Society Bangalore Chapter
			Secretary to IEEE Industrial Electronics Society Bangalore Chapter
			International Advisory Board member in International Journal of Measurement Technologies and Instrumentation Engineering
			Technical Program Committee member in IEEE 6th International Conference on Inventive Computation Technologies ICICT 2023, 26-28, April 2023, Tribhuvan University, Nepal
			Reviewer in Measurement Journal, Elsevier
			Reviewer in Energy and Built Environment Journal, Elsevier
			Reviewer in Energy Journal, Elsevier
			Reviewer in Applied Energy Journal, Elsevier
			Reviewer in Engineering Reports Journal
			Reviewer in IEEE 2021 2nd Global Conference for Advancement in Technology (GCAT), Bangalore, India. Oct 1-3, 2021
			Reviewer in IEEE 2023 International Conference for Advancement in Technology (ICONAT), Goa, India. Jan 24-26, 2023
			Reviewer in Bulletin of Electrical Engineering and Informatics (BEEI)
4.	Dr. Agalya V	Power Electronics and Drives	Editorial Board Member of American Journal of Electrical and Computer Engineering
			Reviewer in IEEE 2023 International Conference for Advancement in Technology (ICONAT), Goa, India. Jan 24-26, 2023
5.	Dr. Mohan Das R	Power Electronics and Drives	Reviewer in International Journal of Power Electronics and Drive Systems
			Reviewer in Hindawi Portfolio of Journals
			Reviewer in IEEE 2022 International Conference for Advancement in Technology (ICONAT), Goa, India. Jan 21-22, 2022
6.	Dr. Joshua Daniel Raj	Electric Vehicles	Reviewer in IEEE Mysore Sub Section International Conference Jun 2021
			Reviewer in KSII Transactions on Internet and Information Systems
			Reviewer in IEEE International Conference on Data Science and Network Security (ICDSNS), May 2023

7.	Dr. Prabhakaran N	Automotive Electronics	Reviewer in Virtual International Conference on Futuristic Communication and Network Technologies (VICFCNT-2021)
8.	Mr. Satish Kumar D	Power Electronics and Drives	Reviewer in International Conference on Distributed Computing and Electrical Circuits and Electronics (IEEE Conference - ICDCECE-2022)
			Reviewer in International Conference on Electronics, Computing and Communication Technologies (IEEE CONNECT 2022)
			Reviewer in International Conference on Data Science and Information System (ICDSIS - 2022)
			Reviewer in International Journal of Recent Technology and Engineering (IJRTE-2022)
			Reviewer in International Conference on Current Development in Engineering and Technology (IEEE Conference - CCET-2022)
			Scientific Committee member at the International Conference on Frontiers in Engineering, Management and Science (ICFEMS-2022)
			Editorial member in International Journal of Advanced Engineering and Nano Technology (IJAENT: 2021-22)
			Reviewer in International Journal of Recent Technology and Engineering (IJEAT-2022)
			Reviewer for IEEE Region 10 Humanitarian Technology Conference (R10 HTC - 2021)
8.	Mr. Kodandapani D	Power Electronics and Drives	Board of Examiner member in MVJ College of Engineering, Bengaluru
9.	Mr. Kartheek Vankadara	Power Electronics and Drives	Program Committee Member and Reviewer in International Conference on Communication and Computational Technologies (ICCCT 2023), RIET Jaipur, 28-29, January 2023
			Program Committee Member and Reviewer in International Conference on Computational Intelligence (ICCI 2022), 29-30, December 2022
			Program Committee Member and Reviewer in International Conference on Communication and Intelligent Systems (ICCIS 2022), 19-20, December 2022
			Technical Program Committee Member and Reviewer in International Conference on Intelligent Vision and Computing (ICIVC 2022), 26-27, November 2022

Table B. 5.5.4 Faculty competencies in correlation to the courses

SI. No	Name of the Faculty	Competency	E- Content Web Links
1.	Mr. Vinod Kumar S	Industrial Automation	https://youtu.be/77MjwFIxOVM
2.	Ms. Karthika M	Basic Electrical Engineering	https://youtu.be/wwk26AZpZGE
3.	Dr. Singaravelan. A	Computer-Aided Power System Analysis	https://youtu.be/jzgs2nKd2HU
4.	Mr. Inbasakaran S	Power Electronics	https://youtu.be/loKqTFNgdUo
5.	Ms. Kavitha Chenna Reddy	Relay and High Voltage Engineering	https://youtu.be/l9Fd8JoTSwE
6.	Dr. Joshua Daniel Raj	Microcontroller and Embedded Systems	https://youtu.be/cgioHG4jiSo
7.	Mr. Mohan B S	DC Machines and Transformers	https://youtu.be/jQx_sbQEpMk
8.	Dr. Vinoth Kumar K	Electric Machines	https://youtu.be/OeNVW6yvz7E
9.	Ms. Deepa V B	Industrial Automation	http://202.62.95.70:8080/jspui/handle/123456789/12180
10.	Ms. Rashmi N	Signals and Systems	http://202.62.95.70:8080/jspui/handle/123456789/13372
11.	Mr. Mohan B S	Electric Circuit Theory	https://youtu.be/iXwLkX3fqH8
12.	Mr. Vinod Kumar S	Advanced Industrial and Building Automation	https://youtu.be/77MjwFIxOVM
13.	Ms. Karthika M	DC Machines and Transformers	https://youtu.be/yInLTGkYVrI
14.	Mr. Satish Kumar D	Industrial Automation	https://youtu.be/FTHN6PR8jo4
15.	Mr. Muni Prakash T	Control Systems	https://youtu.be/uA6YiXPfedo https://independent.academia.edu/munipr/Teaching-Documents
16.	Dr. Joshua Daniel Raj	Microcontroller and Embedded Systems	https://newhorizoncollegeofengineering.in/microcontroller-and-embedded-systems/
17.	Ms. M. Karthika	Basic Electrical Engineering LAB	https://newhorizoncollegeofengineering.in/basic-electrical-engineering-laboratory/
18.	Ms. Anitha A	DC machines and Transformers	https://newhorizoncollegeofengineering.in/dc-machines-and-transformers/
19.	Mr. Satish Kumar D	Industrial Automation	https://newhorizoncollegeofengineering.in/industrial-automation/
20.	Mr. Vinod Kumar S	Industrial Automation	https://newhorizoncollegeofengineering.in/industrial-automation/
21.	Ms. Kavitha Chenna Reddy	Relay and High voltage lab	https://newhorizoncollegeofengineering.in/relay-and-high-voltage-lab/
22.	Mr. Mohan B S	Electric Circuit Theory Lab	https://newhorizoncollegeofengineering.in/electric-circuit-theory-lab/

23.	Mr. Inbasakaran	Power Electronics lab	https://newhorizoncollegeofengineering.in/power-electronics-lab/
24.	Dr. A. Singaravelan	Power Electronics lab	https://newhorizoncollegeofengineering.in/power-electronics-lab/
25.	Mr. Muni Prakash T	Control Systems Lab	https://newhorizoncollegeofengineering.in/control-systems-lab/
26.	Dr. A. Singaravelan	Computer Aided Power System Analysis	https://newhorizoncollegeofengineering.in/computer_aided_power_system_analysis/
27.	Mr. Vinod Kumar S	Advanced Industrial & Building Automation Lab	https://newhorizoncollegeofengineering.in/advanced-industrial-building-automation/

Table B. 5.5.5 Faculty competencies in correlation to Research Patents

Sl. No	Title of Patent / Patent Application Number / Date	Patent Journal/ Published Date	Inventors' Name	Status
1.	A method for rainfall prediction using Artificial Neural Networks Application No. 202011056465 A Dt. 25/12/2020	India 01/2021 Dated 01/01/2021	Dr. B. Gunapriya	Published in AY 2020-21
2.	A smart agriculture monitoring system using Internet of Things Application No. 202011056466 A Dt. 25/12/2020	India 03/2021 Dated 15/01/2021	Dr. B. Gunapriya	Published in AY 2020-21
3.	Non-Isolated Bi-directional converters with Coupled Inductor (NBDCCI) for Hybrid Electric Vehicle (HEV) Applications. Application No. PCT/IN2019/050392 Dt. 16/05/2019	Europe WO/2020161728 13/08/2020	Dr. Vinoth Kumar K	Published in AY 2020-21
4.	An Efficient Air Conditioner with Self Sanitizing Techniques Application No. 2020102996 Dt. 24/10/2020	Australia AOJoP Vol. 34, No. 46, 19/11/2020	Dr. Vinoth Kumar K	Published &Granted in AY 2020-21
5.	Detection of Rotor Faults on Asynchronous Motor Using Motor Current Signature Analysis and Instantaneous Power Analysis Method. Indian Patent No. 43068/DEL/2020. Application No.202011043068 A Dt. 03/10/2020	India 43/2020 24/10/2020	Dr. Vinoth Kumar K Dr. B. Gunapriya	Published in AY 2020-21
6.	An Improved Brain Emotional Learning-Based Intelligent Controller (BELBIC) Controller for PMBLDC Motor Drives using Emotional Learning Techniques Application No.202041030788 Dt. 20/07/2020	India No. 32/2020 Dt 07/08/2020	Dr. B. Gunapriya	Published in AY 2020-21
7.	Solar Powered Electric Tricycle for Physically Challenged Persons Application No.202041049220 A Dt. 11/11/2020	India 47/2020 20/11/2020	Dr. B. Gunapriya	Published in AY 2020-21
8.	Railway Track Safety Monitoring and control system using IOT Application No. 202041048829 A Dt 09/11/2020	India 47/2020 Dt 20/11/2020	Dr. R. Mohan Das	Published in AY 2020-21

9.	System and Method of a hybrid control model for power quality improvement of wind energy conversion system with unified power quality controller Application No. 202041030781 A Dt 19/07/2020	India 31/2020 Dt 31/07/2020	Dr. R. Mohan Das	Published in AY 2020-21
10.	Battery Monitoring & Management System for Electric Vehicle Application No. 202041056563 A Dt 28/12/2020	India 53/2021 31/12/2021	Dr. Gunapriya B Dr. Vinoth Kumar K Dr. Mahesh. M Ms. Deepa V. Bolanavar Mr. Satish Kumar D Ms. Rashmi N	Published in AY 2021-22
11.	A Collaborative Robot to Serve Patients and to Collect Infectious Wastage at the Isolation Ward Application No. 202041056571 A Dt 28/12/2020	India 53/2021 31/12/2021	Dr. A. Singaravelan	Published in AY 2021-22
12.	Monitoring of Fault Diagnosis in Asynchronous Motor Using Transform Analysis Application No. 202141000144 A Dt 04/01/2021	India 53/2021 31/12/2021	Dr. Vinoth Kumar K Mr. Satish Kumar D Dr. Mahesh M Dr. Gunapriya B	Published in AY 2021-22
13.	Monitoring of Artificial Neural Network Based Fault Identification in a Three Phase Induction Motor Using aTmega-32(A) Application No. 202141000145 A Dt 04/01/2021	India 53/2021 31/12/2021	Dr. Vinoth Kumar K Dr. Mahesh M Dr. Gunapriya B	Published in AY 2021-22
14.	Security Aspects of Asynchronous Motor Using Mobile Communication Analysis Application No. 202141000146 A Dt 04/01/2021	India 53/2021 31/12/2021	Dr. Vinoth Kumar K Dr. Mahesh M	Published in AY 2021-22
15.	Testing Method of Asynchronous Motor Using Multiresolution Analysis Application No. 202141029340 A Dt 30/06/2021	India 53/2021 31/12/2021	Dr. Vinoth Kumar K Dr. Mahesh M Dr. Gunapriya B	Published in AY 2021-22
16.	Home Energy Management Device for Demand Response Program to Reduce Consumption Cost and Peak Demand Application No. 202141029341 A Dt 30/06/2021	India 53/2021 31/12/2021	Dr. A. Singaravelan Dr. M Mahesh	Published in AY 2021-22
17.	Real Time Monitoring of Bearing Faults in Wind Turbine Application No. 202141027654 A Dt 21/06/2021	India 53/2021 31/12/2021	Dr. Vinoth Kumar K Dr. Mahesh M Dr. Gunapriya B	Published in AY 2021-22
18.	Novel system, method of Intelligent agriculture field monitoring system based on IOT Technology Application No. 202141045106 A Dt 05/10/2021	India 50/2021 Dated 10/12/2021	Dr. Sujitha S	Published in AY 2021-22
19.	Novel system, method, design, development of military safety and surveillance robot Application No. 202141045107 A Dt 05/10/2021	India 50/2021 Dated 10/12/2021	Dr. Sujitha S	Published in AY 2021-22

20.	Wireless Energy Generation/Extraction from Rotating Drum Suitable for Low Power Applications Application No. 202141029338 A Dt 30/06/2021	India 50/2021 Dated 10/12/2021	Dr. Mahesh M	Published in AY 2021-22
21.	Micro Inverter for Grid-Connected Photovoltaic Generation Application No. 202141029339 A Dt 30/06/2021	India 50/2021 Dated 10/12/2021	Dr. Gunapriya B Dr. Vinoth Kumar K Dr. Mahesh M	Published in AY 2021-22
22.	Design of effective ventilation with self-cleaning expertise Application Number: 202241039507 A Dt 09/07/2022	India 39/2022 Dated 30/09/2022	Dr. Vinoth Kumar K Dr. Singaravelan A Dr. Prabhakaran N Dr. Gunapriya B Dr. Mahesh M	Published in AY 2022-23
23.	Design of waste heat recovery in windmill using TEG Application Number: 202241039511 A Dt 09/07/2022	India 39/2022 Dated 30/09/2022	Mr. Vinod Kumar S Dr. Vinoth Kumar K Dr. Mahesh M Mr. Shivashankara M Mr. Abdul Samed Mr. Darshan R	Published in AY 2022-23
24.	Design of underwater Li-Fi Communication System using Analog LDR Sensor Application Number: 202241039517 A Dt 09/07/2022	India 39/2022 Dated 30/09/2022	Dr. Prabhakaran N Dr. Vinoth Kumar K Dr. Singaravelan A Mr. MD Sagar Khan	Published in AY 2022-23
25.	Design of electric bicycle using split charging technology Application Number: 202241039518 A Dt 09/07/2022	India 39/2022 Dated 30/09/2022	Dr. Vinoth Kumar K Dr. Mahesh M Ms. Bhavana YC Ms. Bhavana Singh C Ms. Bindhu V	Published in AY 2022-23
26.	Design of the smart harvesting of horticultural crops Application Number: 202241040753 A Dt 16/07/2022	India 39/2022 Dated 30/09/2022	Dr. Singaravelan A Dr. Vinoth Kumar K Dr. Prabhakaran N Dr. Gunapriya B Dr. Mahesh M	Published in AY 2022-23
27.	Design of accident identification and alerting system by using Raspberry Pi Application Number: 202241040766 A Dt 16/07/2022	India 39/2022 Dated 30/09/2022	Dr. Vinoth Kumar K Mr. Satish Kumar D Dr. Mahesh M Mr. P. M. D. Muthathir Khan Mr. Vishwanath Patil Mr. Venkan Gouda Mr. BharateshShiradoni	Published in AY 2022-23
28.	Design and validation the battery performance in electric vehicle using optimization method Application Number: 202241040767 A Dt 16/07/2022	India 39/2022 Dated 30/09/2022	Dr. Vinoth Kumar K Mr. Muni Prakash T Mr. Pranav R Naik Mr. R Puneeth Venkat Sai Varma Ms. R Supraja Mr. Rahul Vijay Lingadhal	Published in AY 2022-23

29.	Design of Arduino based hand gesture controlled robot using IoT Application Number: 202241040769 A Dt 16/07/2022	India 39/2022 Dated 30/09/2022	Dr. Vinoth Kumar K Dr. Gunapriya B Mr. Jibran Zaidi Mr. Vikram Mr. Lingareddygari Nirupavardhan Reddy Mr. Jaffer	Published in AY 2022-23
30.	Design of PV based Smart Energy Efficient Hybrid Model for Irrigation using Sensorless BLDC Motor Application Number: 202241040711 A Dt 16/07/2022	India 39/2022 Dated 30/09/2022	Dr. Prabhakaran N Dr. Vinoth Kumar K Mrs. Karthika M Mr. MD Sagar Khan	Published in AY 2022-23
31.	Design of renewable energy based efficient portable DC refrigerator for rural electrification Application Number: 202241040772 A Dt 16/07/2022	India 39/2022 Dated 30/09/2022	Dr. Vinoth Kumar K Dr. Gunapriya B Dr. Singaravelan A Ms. Greeshma Chennareddy Ms. Chitra S Ms. Kavipriya E Ms. Sahana B	Published in AY 2022-23
32.	Design of two battery model for electric bicycle Application Number: 202241040774 A Dt 16/07/2022	India 39/2022 Dated 30/09/2022	Dr. Vinoth Kumar K Ms. Kavitha Chenna Reddy Mr. Nischal Dinesh Mr. Sarthak Das Mr. Prajwal Mr. Ashu Anand	Published in AY 2022-23
33.	Design of brain emotional learning based intelligent controller for BLDC motor Application Number: 202241040776 Dt 16/07/2022	India 39/2022 Dated 30/09/2022	Dr. Vinoth Kumar K Dr. Gunapriya B Dr. Sujitha S Dr. Mahesh M	Published in AY 2022-23
34.	Design of brain emotional learning based intelligent controller for induction motor Application Number: 202241046371 A Dt 16/07/2022	India 39/2022 Dated 30/09/2022	Dr. Vinoth Kumar K Dr. Gunapriya B Dr. Sujitha S Dr. Mahesh M	Published in AY 2022-23
35.	Design of therapeutic threadmill and footrest for differently abled children Application Number: 202241047176 A Dt 19/08/2022	India 39/2022 Dated 30/09/2022	Dr. Vinoth Kumar K Mr. Vinod Kumar S Dr. Mahesh M Dr. Mohan Das R Mr. Mekala Rohith Kumar Reddy Ms. Harshitha R Mr. Koushik P Ms. Aisiri M Urs	Published in AY 2022-23
36.	Design of Bluetooth based remote voltage monitoring system for off-grid battery Application Number: 202241047180 A Dt 19/08/2022	India 39/2022 Dated 30/09/2022	Dr. Manujunatha Dr. Mahesh M Dr. Vinoth Kumar K Mr. Satish Kumar D Mr. Advaith Madhavan Mr. Khadim Hussain	Published in AY 2022-23

			Mr. K Javed Ajmal Mr. M P Jawahar	
37.	Design of waste heat recovery in windmill using TEG Application Number: 202241039515 A Dt 09/07/2022	India 08/2023 Dated 24/02/2023	Mr. Vinod Kumar S Dr. Vinoth Kumar K Dr. Mahesh M Mr. Shivashankara M Mr. Abdul Samed Mr. Darshan R	Published in AY 2022-23
38.	Design of assistant robot for home appliances Application Number: 202341007549 A Dt 06/02/2023	India 08/2023 Dated 24/02/2023	Dr. Vinoth Kumar K Ms. Sangeetha C N Mr. Baba Fakharuddin	Published in AY 2022-23
39.	Design of driver drowsiness detection and alert system Application Number: 202341007572 A Dt 06/02/2023	India 08/2023 Dated 24/02/2023	Dr. Vinoth Kumar Ms. Sangeetha C N Mr. Kamalesh Badola Mr. Kushal Naik K Mr. Lava Kumar M N Mr. Mohammed Aman	Published in AY 2022-23
40.	Design of affordable social distance monitoring system using Raspberry PI Application Number: 202341007554 A Dt 06/02/2023	India 08/2023 Dated 24/02/2023	Ms. Surat Pyari Atti Dr. Vinoth Kumar K Ms. Sangeetha C N Mr. Mohammed Imad Mr. Sanjan R Mr. Shashank Joshi Ms. Sneha S A	Published in AY 2022-23
41.	Design of theft diagnosis from smart energy meter using IoT Application Number: 202341007559 A Dt 06/02/2023	India 08/2023 Dated 24/02/2023	Dr. Vinoth Kumar K Ms. Gautammee K K Ms. Aishwarya P Ms. Charishma A Ms. Kesamreddy Deepthi	Published in AY 2022-23
42.	Design of Lifi based text communication Application Number: 202341007560 A Dt 06/02/2023	India 08/2023 Dated 24/02/2023	Ms. Pooja Jose Dr. Vinoth Kumar K Ms. Aamna Nafiza Ms. Disha M Ms. Harshika Ms. Hemavathi V	Published in AY 2022-23
43.	Design of wind solar hybrid system Application Number: 202341007561 A Dt 06/02/2023	India 08/2023 Dated 24/02/2023	Ms. Kavitha Chenna Reddy Dr. Vinoth Kumar K Ms. Manasa G Reddy Ms. Neha R Ms. Tantapureddi Haritha Ms. Tejashree T	Published in AY 2022-23
44.	Design of numerical door lock using Arduino Application Number: 202341007566 A Dt 06/02/2023	India 08/2023 Dated 24/02/2023	Dr. Gunapriya B Dr. Vinoth Kumar K Dr. Sujitha S	Published in AY 2022-23
45.	Design of hybrid renewable energy systems-based dc micro grids and mini-grids for off-grid electrification in rural	India 08/2023 Dated	Dr. Gunapriya B Dr. Vinoth Kumar K	Published in AY 2022-23

	and smart city development Application Number: 202341007565 A Dt 06/02/2023	24/02/2023		
46.	Design of smart segregation bin Application Number: 202341007563 A Dt 06/02/2023	India 08/2023 Dated 24/02/2023	Mr. Kartheek Vankadara Mr. Bharath T Mr. Dayas A Dixen Mr. Dony Snehit P Ms. Infancia Pragna	Published in AY 2022-23
47.	Analysis of electrical parameters for formula style electric vehicle Application Number: 202341007562 A Dt 06/02/2023	India 08/2023 Dated 24/02/2023	Dr. Mohan Das R Mr. Vinod Kumar S Mr. Tejas Ms. Rithika Kapoor Mr. Varun R Ms. Shambavi Bhagat	Published in AY 2022-23
48.	Design of dynamic wireless power transfer system technology used in solar wireless electric vehicle charging stations Application Number: 202341020401 A Dt 23/03/2023	India 15/2023 Dated 14/04/2023	Dr. Vinoth Kumar K Mr. Maruthi B Mr. Rahul R Mr. Santhosh Melvin D Mr. Sathish S	Published in AY 2022-23
49.	Design of electric quad bike with hybrid charging mode for physically challenged Application Number: 202341020419 A Dt 23/03/2023	India 15/2023 Dated 14/04/2023	Dr. Sujitha S Mr. M Rohit Kumar Reddy Ms. Harshitha R Ms. Asiri M Urs Mr. Koushik P	Published in AY 2022-23
50.	A fully automated system for paralysis patient health management Application Number: 202341020423 A Dt 23/03/2023	India 15/2023 Dated 14/04/2023	Mr. Satish Kumar D Mr. Bisen Rochil Pradeep Ms. Sakshi Ms. Sanjana Ms. Shreya D Revankar	Published in AY 2022-23
51.	Design of wireless DC motor control Application Number: 202341020427 A Dt 23/03/2023	India 16/2023 Dated 21/04/2023	Ms. Manochitra G Ms. Harshitha K Ms. Deepika K Shetty Ms. Disha Ashok Nayak Ms. Harshitha V	Published in AY 2022-23
52.	Smart transport system for preventing animals attacks and accidents for village roads using AI techniques Application Number: 202341020431 A Dt 23/03/2023	India 16/2023 Dated 21/04/2023	Dr. J Joshua Daniel Raj Ms. Sangeetha C N Mr. Sarthak Ghorai Mr. Subajit Das Mr. Manish Mr. Shariq Ahmed	Published in AY 2022-23
53.	Ultrasonic radar sensor using Arduino Application Number: 202341020433 A Dt 23/03/2023	India 20/2023 Dated 19/04/2023	Ms. Sangeetha C N Dr. J Joshua Daniel Raj Mr. Yashwanth S Ms. Simran Kanwar Mr. Vikash Rawat Mr. Vinay Kumar	Published in AY 2022-23
54.	Design of smart blind stick Application Number: 202341020436 A Dt 23/03/2023	India 15/2023 Dated	Ms. Manochitra G Ms. Janhavi G Ms. Keerthi M	Published in AY 2022-23

		14/04/2023	Ms. Lavanya N Ms. Deepika	
55.	Design of food monitoring system using IoT Application Number: 202341020448 A Dt 23/03/2023	India 15/2023 Dated 14/04/2023	Ms. Soumya K V Dr. Sujitha S Ms. Jayanth CK Mr. Ramakant H Dolli Mr. Sharath Kumar M Mr. Vignesh M	Published in AY 2022-23
56.	Design of error detection using hamming codes Application Number: 202341020452 A Dt 23/03/2023	India 15/2023 Dated 14/04/2023	Ms. Soumya K V Dr. Sujitha S Mr. Manu K Mr. Ponde Sumanth Mr. Raghavendra Mr. Yeshwanth M	Published in AY 2022-23
57.	An intelligent system for plant disease diagnosis using convolution neural networks Application Number: 202341020454 A Dt 23/03/2023	India 15/2023 Dated 14/04/2023	Mr. Satish Kumar D Dr. Joshua Daniel Raj J Mr. Anoopkumar H S Mr. Chethan D R Mr. Deekshith More B Mr. Kushal A Y	Published in AY 2022-23
58.	Design and Implementation of solar fed flood alert system using Bolt Wi-Fi Module Application Number: 202341020457 A Dt 23/03/2023	India 15/2023 Dated 14/04/2023	Ms. Karthika M Dr. Sujitha S Mr. Ezra James D'cunha Mr. Abrar Altaf Dar Mr. Gaurav P Kumar Mr. Ankit Kumar	Published in AY 2022-23
59.	A foldable television remote Design Number: 33043-001 dated 13.02.2021	India Design Certificate Dated 17/01/2023	Dr. Gunapriya B	Published in AY 2022-23
60.	Self-energized bicycle with bullet alternator and GPS tracing system Application Number: 202241065377 A Dt 15/11/2022	India 47/2022 Dated 25/11/2022	Dr. Gunapriya B	Published in AY 2022-23
61.	Design of non-invasive method detecting Anemia Application Number: 202341021362 A Dt 25/03/2023	India 16/2023 Dated 21/04/2023	Ms. Anitha A Dr. Vinoth Kumar K Mr. Abhishek Bedant Mr. Madhav Reddy C Mr. Kumar Abhishek	Published in AY 2022-23
62.	Investigation of artificial intelligence and IoT based detection of pesticide in organic fruits and vegetables Application Number: 202341021366 A Dt 25/03/2023	India 16/2023 Dated 21/04/2023	Mr. Sunil S K Dr. Sujitha S Mr. Manoj Kumar V Mr. Naveen R N Mr. Sandeep Naik R Mr. Manoj Kumar P	Published in AY 2022-23
63.	Dual Axis Solar Tracker Application Number: 202341021366 A Dt 25/03/2023	TEMP/E-1/16618/2023-CHE	Mr. Vinod Kumar S Dr. Mohan Das R Ms. Meghana I K Ms. Prathvi Devanand Gaonkar Ms. Purvi Samanvitha S	Filled in AY 2022-23

			Mr. Rahul B Mr. Shivashankar A Mughali	
64.	Design of solar powered multifunctional agricultural robot Application Number: 202341021405 A Dt 25/03/2023	India 16/2023 Dated 21/04/2023	Dr. Sujitha S Ms. Meghana N T Ms. Vidya G Ms. Vandana R	Published in AY 2022-23
65.	Adjustable Antifall Multipurpose Table Application Number: 380114-001 Dt 25/03/2023	India Design Certificate Dated 21/04/2023	Dr. Agalya V	Published in AY 2022-23
66.	Automatic speed control of an electric vehicle using raspberry PI Application Number: 202241039501 A Dt 09/07/2022	India 39/2022 Dated 30/09/2022	Dr. Agalya V	Published in AY 2022-23
67.	A novel design of falling-edge phase frequency detector with delay cells for minimum dead zone Application Number: 202241039503 A Dt 09/07/2022	India 39/2022 Dated 30/09/2022	Dr. Agalya V	Published in AY 2022-23
68.	Design on blind navigation using ultrasonic sensor Application Number: 202241040754 A Dt 16/07/2022	India 39/2022 Dated 30/09/2022	Dr. Agalya V	Published in AY 2022-23
69.	Smart energy meter with earthquake identification and gas leakage detection device Application Number: 202241040761 A Dt 16/07/2022	India 39/2022 Dated 30/09/2022	Dr. Agalya V	Published in AY 2022-23
70.	Design and fabrication of multipurpose agriculture vehicle Application Number: 202241048505 A Dt 16/07/2022	India 39/2022 Dated 30/09/2022	Dr. Agalya V	Published in AY 2022-23

Table B. 5.5.6 Faculty competencies in correlation to the Professional Bodies

Sl.No	Name of the faculty	Name of Professional Bodies	Membership No.	Type of Membership
1	Dr. M. Mahesh	Institute of Electrical and Electronics Engineers	92273757	Member
2	Dr. Agalya V	Institute of Electrical and Electronics Engineers	91241054	Senior Member
3	Dr. Sujitha S	Indian Society for Technical Education	LM 56957	Life Member
		International Association of Engineers	212123	Member
4	Dr. Gunapriya B	Institute of Electrical and Electronics Engineers	97505907	Member
		Indian Society of Electrical & Electronics Engineers	SMISEEE 201701031004	Senior Member
		Indian Society for Technical Education	LM 66687	Life Member
		International Association of Engineers	217705	Member

5	Dr. Vinoth Kumar K	Institute of Electrical and Electronics Engineers	92339575	Senior Member
		Indian Society for Technical Education	LM 106299	Life Member
		International Association of Computer Science and Information Technology	80337638	Member
		International Association of Engineers	104446	Member
		Association for Computing Machinery	904878	Member
6	Ms. Karthika M	International Association of Engineers	212238	Member
		Institute of Electrical and Electronics Engineers	99247523	Member
7	Dr. Joshua Daniel Raj	International Association of Engineers	248148	Member
8	Ms. Deepa V	International Association of Engineers	201188	Member
		Institute of Electrical and Electronics Engineers	94151073	Member
9	Mr. Vinod Kumar S	Indian Society for Technical Education	LM 99129	Life Member
		International Association of Engineers	212160	Member
10	Mr. Satish Kumar D	Institute of Electrical and Electronics Engineers	93914638	Member
		Indian Society for Technical Education	LM 81696	Life Member
		International Association of Engineers	119074	Member
		Institute for Engineering Research and Publication	PMIN64015792	Member
		Institution of Engineers	M-1706440	Member
		Institution of Scholars	InSc2021CA0F	Member
11	Dr. Singaravelan A	Institute of Electrical and Electronics Engineers	96085504	Member
12	Ms. Kavitha Channa Reddy	International Association of Engineers	212016	Member
13	Mr. Sunil S K	Society of Automotive Engineers in India	7150510495	Member
14	Mr. Lithesh J	International Association of Engineers	197718	Member
15	Ms. Roopa C	International Association of Engineers	212126	Member
16	Ms. Anitha A	Institute of Electrical and Electronics Engineers	93603278	Member
		Indian Society for Technical Education	LM 86432	Life Member
17	Ms. Rashmi N	Indian Society for Technical Education	LM 78002	Life Member
		Institute of Electrical and Electronics Engineers	97506513	Member
18	Ms. Surat Pyari Atti	Institute of Electrical and Electronics Engineers	99042351	Member
19	Ms. Pooja Jose	Institute of Electrical and Electronics Engineers	99190344	Member
20	Mr. Kodandapani D	Indian Society for Technical Education	LM 102935	Life Member
21	Mr. Kartheek Vankadara	Institute of Electrical and Electronics Engineers	95449028	Member
22	Ms. Sangeetha C N	Institute of Electrical and Electronics Engineers	99082346	Member
		Indian Society for Technical Education	LM 112103	Life Member

Table B. 5.5.7 Faculty competencies in correlation to the MOOC Courses

Sl.No	Name of the Faculty	Name of the Course	Platform	Academic Year
1	Mr. Kodandapani D	Design of Power Electronic Converters	NPTEL	2022-23
2	Mr. Satish Kumar D	Python for Data Science	NPTEL	2022-23
3	Mr. Kodandapani D	Electric Vehicles – Part 1	NPTEL	2022-23
4	Ms. Rajeswari K	Soft Skill Development	NPTEL	2022-23
5	Dr. Gunapriya B	Accreditation and Outcome Based Learning	NPTEL	2022-23
6	Dr. Joshua Daniel Raj	Python for Data Science	NPTEL	2022-23
7	Mr. Rajesh B K	Enhancing Soft Skills and Personality	NPTEL	2022-23
8	Dr. Prabhakaran N	Microprocessors and Microcontrollers	NPTEL	2022-23
9	Mr. Venkatesha	Enhancing Soft Skills and Personality	NPTEL	2022-23
10	Mr. Naraimha Murthy PS	Enhancing Soft Skills and Personality	NPTEL	2022-23
11	Mr. Kodandapani D	Design, Technology and Innovation	NPTEL	2022-23
12	Mr. Kartheek Vankadara	Understanding Research Methods	Coursera	2022-23
13	Mr. Kartheek Vankadara	Academic Information Seeking	Coursera	2022-23
14	Mr. Kartheek Vankadara	Basic Information Literacy	Coursera	2022-23
15	Mr. Kartheek Vankadara	Framework for Data Collection and Analysis	Coursera	2022-23
16	Mr. Kartheek Vankadara	Introduction to Statistical Analysis: Hypothesis Testing	Coursera	2022-23
17	Mr. Kartheek Vankadara	Research Methodologies	Coursera	2022-23
18	Mr. Kartheek Vankadara	Data Collection: Online, Telephone and Face-to-face	Coursera	2022-23
19	Mr. Kartheek Vankadara	Bayesian Statistics: From Concept to Data Analysis	Coursera	2022-23
20	Mr. Kartheek Vankadara	How to write and publish a scientific Paper	Coursera	2022-23
21	Mr. Kodandapani D	Innovation and Start-up Policy	IILM Institute for Higher Education	2021-22
22	Mr. Kodandapani D	High Power Multilevel Converters – Analysis, Design and Operational Issues	NPTEL	2021-22
23	Mr. Kodandapani D	Academic Writing	NPTEL	2021-22
24	Dr. Joshua Daniel Raj	Programming in Java	NPTEL	2021-22
25	Dr. Joshua Daniel Raj	Programming in Java	NPTEL	2021-22
26	Mr. Vinod Kumar S	Schneider PLC Tutorial for Begineers with Ladder and SFC	Udemy	2021-22
27	Mr. Muni Prakash T	MATLAB Onramp	MathWorks	2021-22
28	Dr. Vinoth Kumar K	Alternative Power Generation Technologies	Schneider Electric	2021-22
29	Dr. Vinoth Kumar K	Battery safety and environmental concerns	Schneider Electric	2021-22
30	Ms. Kavitha Chenna Reddy	Introduction to Research	NPTEL	2020-21
31	Mr. Kodandapani D	Fundamentals of Electric Vehicles: Technology & Economics	NPTEL	2020-21
32	Ms. Karthika M	Introduction to Smart Grid	NPTEL	2020-21
33	Mr. Sunil S K	Introduction to Smart Grid	NPTEL	2020-21
34	Dr. Prabhakaran N	Advances in UHV Transmission and Distribution	NPTEL	2020-21
35	Mr. Muni Prakash T	DC Microgrid and Control System	NPTEL	2020-21

36	Mr. Muni Prakash T	Introduction to Smart Grid	NPTEL	2020-21
37	Ms. Anitha A	Introduction to Smart Grid	NPTEL	2020-21
38	Dr. Gunapriya B	Motors and Motor Control Circuits	Coursera	2020-21
39	Dr. Vinoth Kumar K	Plastic Electronics	Coursera	2020-21
40	Dr. Vinoth Kumar K	Electrodynamics: Electric and Magnetic Fields	Coursera	2020-21
41	Dr. Vinoth Kumar K	Introduction to Solar Cells	Coursera	2020-21
42	Dr. Vinoth Kumar K	Motors and Motor Control Circuits	Coursera	2020-21
43	Dr. Vinoth Kumar K	Solar Energy Basics	Coursera	2020-21
44	Dr. Gunapriya B	Solar Energy Systems Overview	Coursera	2020-21
45	Mr. Kartheek Vankadara	Python for Everybody	Coursera	2020-21
46	Mr. Kartheek Vankadara	Introduction to CSS_3	Coursera	2020-21
47	Mr. Kartheek Vankadara	Introduction to $HTML_5$	Coursera	2020-21
48	Dr. Vinoth Kumar K	High-Density Medium-Voltage SiC-based Modular Power Converters for Naval Applications — Challenges and Solutions	IEEE - CE	2020-21
49	Dr. Vinoth Kumar K	Reliability of Modern Power Electronic based Power Systems	IEEE - CE	2020-21
50	Dr. Vinoth Kumar K	Is the electrical distribution ready for a revolution?	IEEE - CE	2020-21
51	Dr. Vinoth Kumar K	A Holistic Approach to Battery Modeling and State Estimation	IEEE - CE	2020-21
52	Dr. Vinoth Kumar K	Advanced Modeling Approach for Magnetic Material and Components	IEEE - CE	2020-21
53	Ms. Roopa C	Smart Grid Technology	IEEE - CE	2020-21
54	Ms. Kavitha Chenna Reddy	Smart Grid Technology	IEEE - CE	2020-21
55	Mr. Vinod Kumar S	Geospatial Inputs for Enabling Master Plan Formulation	IIRS	2020-21
56	Ms. Kavitha Chenna Reddy	Energy Economics and Policy	NPTEL	2019-20
57	Dr. Gunapriya B	Enhancing Soft Skills and Personality	NPTEL	2019-20
58	Dr. Gunapriya B	Electric vehicles - Part 1	NPTEL	2019-20
59	Mr. Kodandapani D	Intellectual Property	NPTEL	2019-20
60	Mr. Kodandapani D	Patent Drafting for Begineers	NPTEL	2019-20
61	Dr. Gunapriya B	Advance Power Electronics and Control	NPTEL	2019-20
62	Dr. Gunapriya B	Developing Soft skills and Personality	NPTEL	2019-20
63	Dr. Gunapriya B	Transacting on the Blockchain	Coursera	2019-20
64	Dr. Vinoth Kumar K	Renewable Energy and Green Building Entrepreneurship	Coursera	2019-20
65	Mr. Vinod Kumar S	Deep Learning Onramp	MathWorks	2019-20
66	Mr. Vinod Kumar S	Machine Learning Onramp	MathWorks	2019-20
67	Dr. Prabhakaran N	LabVIEW Core 2	NI	2019-20
68	Dr. Prabhakaran N	LabVIEW Core 1	NI	2019-20
69	Dr. Gunapriya B	Transformer	Tata Steel	2019-20
70	Dr. Gunapriya B	Induction Motor	Tata Steel	2019-20
71	Dr. Gunapriya B	Industry 4.0	Tata Steel	2019-20
72	Dr. Gunapriya B	Power System Earthing	Tata Steel	2019-20

Table B. 5.5.8 Faculty competencies in correlation to the Research Papers Presentation in Conference

Sl. No	Academic Year	Name of the Faculty	Conference Activities	Dates	Organisation
1	2021-22	Dr. Mohan Das R	International Conference on Communication Systems (ICOCS-2022)	29.04.2022 to 30.04.2022	Institute for Engineering Research and Publication, Coimbatore
2	2021-22	Mr. Vinod Kumar S	International Conference on Communication Systems (ICOCS-2022)	29.04.2022 to 30.04.2022	Institute for Engineering Research and Publication, Coimbatore
3	2021-22	Ms. Anitha A	International Conference on Communication and Cyber-Physical Engineering	29.04.2022 to 30.04.2022	CMR Engineering, Hyderabad
4	2021-22	Mr. Mohan B S	International Conference on Communication Systems (ICOCS-2022)	29.04.2022 to 30.04.2022	Institute for Engineering Research and Publication, Coimbatore
5	2021-22	Dr. Sujitha S	International Conference on Communication Systems (ICOCS-2022)	29.04.2022 to 30.04.2022	Institute for Engineering Research and Publication, Coimbatore
6	2021-22	Dr. Vinoth Kumar K	2022 Second International Conference on Artificial Intelligence and Smart Energy (ICAIS)	23.02.2022 to 25.02.2022	JCT College of Engineering and Technology, Coimbatore
7	2021-22	Dr. Vinoth Kumar K	2022 Second International Conference on Artificial Intelligence and Smart Energy (ICAIS)	23.02.2022 to 25.02.2022	JCT College of Engineering and Technology, Coimbatore
8	2021-22	Dr. Gunapriya B	2022 Second International Conference on Artificial Intelligence and Smart Energy (ICAIS)	23.02.2022 to 25.02.2022	JCT College of Engineering and Technology, Coimbatore
9	2021-22	Dr. Vinoth Kumar K	2022 Second International Conference on Artificial Intelligence and Smart Energy (ICAIS)	23.02.2022 to 25.02.2022	JCT College of Engineering and Technology, Coimbatore
10	2021-22	Mr. Muni Prakash T	2022 Second International Conference on Artificial Intelligence and Smart Energy (ICAIS)	23.02.2022 to 25.02.2022	JCT College of Engineering and Technology, Coimbatore
11	2021-22	Dr. Gunapriya B	2022 Second International Conference on Artificial Intelligence and Smart Energy (ICAIS)	23.02.2022 to 25.02.2022	JCT College of Engineering and Technology, Coimbatore

12	2021-22	Dr. Vinoth Kumar K	2022 2nd International Conference on Artificial Intelligence and Signal Processing (AISP)	12.02.2022 to 14.02.2022	VIT AP University, Amaravati
13	2021-22	Mr. Muni Prakash T	2022 2nd International Conference on Artificial Intelligence and Signal Processing (AISP)	12.02.2022 to 14.02.2022	VIT AP University, Amaravati
14	2021-22	Dr. Vinoth Kumar K	2022 International Conference for Advancement in Technology (ICONAT2022)	21.01.2022 to 22.01.2022	Rajarambapu Institute of technology (RIT), Sangli
15	2021-22	Dr. Vinoth Kumar K	2022 International Conference for Advancement in Technology (ICONAT2022)	21.01.2022 to 22.01.2022	Rajarambapu Institute of technology (RIT), Sangli
16	2021-22	Dr. Gunapriya B	2022 International Conference for Advancement in Technology (ICONAT2022)	21.01.2022 to 22.01.2022	Rajarambapu Institute of technology (RIT), Sangli
17	2021-22	Ms. Kavitha C h	2022 International Conference for Advancement in Technology (ICONAT2022)	21.01.2022 to 22.01.2022	Rajarambapu Institute of technology (RIT), Sangli
18	2021-22	Dr. Vinoth Kumar K	2022 4th IEEE International Conference on Smart Systems and Inventive Technology (ICSSIT 2022)	20.01.2022 to 22.01.2022	Francis Xavier Engineering College, Tirunelveli
19	2021-22	Dr. Vinoth Kumar K	2022 4th IEEE International Conference on Smart Systems and Inventive Technology (ICSSIT 2022)	20.01.2022 to 22.01.2022	Francis Xavier Engineering College, Tirunelveli
20	2021-22	Dr. Vinoth Kumar K	2022 4th IEEE International Conference on Smart Systems and Inventive Technology (ICSSIT 2022)	20.01.2022 to 22.01.2022	Francis Xavier Engineering College, Tirunelveli
21	2021-22	Dr. Vinoth Kumar K	2022 4th IEEE International Conference on Smart Systems and Inventive Technology (ICSSIT 2022)	20.01.2022 to 22.01.2022	Francis Xavier Engineering College, Tirunelveli
22	2021-22	Dr. Sujitha S	2022 4th IEEE International Conference on Smart Systems and Inventive Technology (ICSSIT 2022)	20.01.2022 to 22.01.2022	Francis Xavier Engineering College, Tirunelveli
23	2021-22	Ms. Kavitha C h	2022 4th IEEE International Conference on Smart Systems and Inventive Technology (ICSSIT 2022)	20.01.2022 to 22.01.2022	Francis Xavier Engineering College, Tirunelveli
24	2021-22	Dr. Vinoth Kumar K	2021 International Conference on Forensics, Analytics, Big Data, Security (FABS)	21.12.2021 to 22.12.2021	BMS Institute of Technology and Management, Bengaluru

25	2021-22	Dr. Sujitha S	International Conference on Advances in Computational Science and Engineering 2021	20.12.2021 to 22.12.2021	Live4Research, Tirupur
26	2021-22	Mr. Sunil S K	International Conference on Advances in Computational Science and Engineering 2021	20.12.2021 to 22.12.2021	Live4Research, Tirupur
27	2021-22	Dr. Sujitha S	International Conference on Advances in Computational Science and Engineering 2021	20.12.2021 to 22.12.2021	Live4Research, Tirupur
28	2021-22	Dr. Sujitha S	International Conference on Advances in Computational Science and Engineering 2021	20.12.2021 to 22.12.2021	Live4Research, Tirupur
29	2021-22	Mr. Lithesh J	International Conference on Advances in Computational Science and Engineering 2021	20.12.2021 to 22.12.2021	Live4Research, Tirupur
30	2021-22	Ms. Karthika M	International Conference on Advances in Computational Science and Engineering 2021	20.12.2021 to 22.12.2021	Live4Research, Tirupur
31	2021-22	Dr. Mohan Das R	International Conference on Advances in Computational Science and Engineering 2021	20.12.2021 to 22.12.2021	Live4Research, Tirupur
32	2021-22	Dr. Sujitha S	International Conference on Advances in Computational Science and Engineering 2021	20.12.2021 to 22.12.2021	Live4Research, Tirupur
33	2021-22	Dr. Sujitha S	International Conference on Advances in Computational Science and Engineering 2021	20.12.2021 to 22.12.2021	Live4Research, Tirupur
34	2021-22	Mr. Roopa C	International Conference on Advances in Computational Science and Engineering 2021	20.12.2021 to 22.12.2021	Live4Research, Tirupur
35	2021-22	Dr. Singaravelan A	IEEE International E-Conference on Emerging Technologies and Applications for a Smart and Sustainable World	16.12.2021 to 18.12.2021	National Engineering College, Kovilpatti
36	2021-22	Dr. Gunapriya B	International Conference on Emerging trends in Materials, Computing and Communication Technologies	09.12.2021 to 10.12.2021	Annai Velankanni College of Engineering, Pottalkulam
37	2021-22	Dr. Vinoth Kumar K	2021 IEEE International Conference on Mobile Networks and Wireless Communications (ICMNWC)	03.12.2021 to 04.12.2021	Sri Siddhartha Institute of Technology, Tumkur

38	2021-22	Dr. Sujitha S	2021 IEEE International Conference on Mobile Networks and Wireless Communications (ICMNWC)	03.12.2021 to 04.12.2021	Sri Siddhartha Institute of Technology, Tumkur
39	2021-22	Dr. Vinoth Kumar K	2021 Innovations in Power and Advanced Computing Technologies (i-PACT)	27.11.2021 to 29.11.2021	Vellore Institute of Technology, Vellore
40	2021-22	Mr. Muni Prakash T	2021 Innovations in Power and Advanced Computing Technologies (i-PACT)	27.11.2021 to 29.11.2021	Vellore Institute of Technology, Vellore
41	2021-22	Dr. Sujitha S	Northeast Green Summit 2021	16.11.2021 to 18.11.2021	National Institute of Technology Silchar
42	2021-22	Dr. Vinoth Kumar K	Northeast Green Summit 2021	16.11.2021 to 18.11.2021	National Institute of Technology Silchar
43	2021-22	Dr. Gunapriya B	Northeast Green Summit 2021	16.11.2021 to 18.11.2021	National Institute of Technology Silchar
44	2021-22	Ms. Karthika M	Northeast Green Summit 2021	16.11.2021 to 18.11.2021	National Institute of Technology Silchar
45	2021-22	Dr. Joshua Daniel Raj	Northeast Green Summit 2021	16.11.2021 to 18.11.2021	National Institute of Technology Silchar
46	2021-22	Mr. Mohan Bangalore Somasekar	Northeast Green Summit 2021	16.11.2021 to 18.11.2021	National Institute of Technology Silchar
47	2021-22	Dr. Singaravelan. A	Northeast Green Summit 2021	16.11.2021 to 18.11.2021	National Institute of Technology Silchar
48	2021-22	Ms. Anitha A	Northeast Green Summit 2021	16.11.2021 to 18.11.2021	National Institute of Technology Silchar
49	2021-22	Ms. Roopa. C	Northeast Green Summit 2021	16.11.2021 to 18.11.2021	National Institute of Technology Silchar
50	2021-22	Mr. Sunil S K	Northeast Green Summit 2021	16.11.2021 to 18.11.2021	National Institute of Technology Silchar

51	2021-22	Ms. Deepa V B	Northeast Green Summit 2021	16.11.2021 to 18.11.2021	National Institute of Technology Silchar
52	2021-22	Ms. Kavitha Channa Reddy	Northeast Green Summit 2021	16.11.2021 to 18.11.2021	National Institute of Technology Silchar
53	2021-22	Dr. Vinoth Kumar K	2021 IEEE Mysore Sub Section International Conference (MysuruCon)	24.10.2021 to 25.10.2021	Navkis College of Engineering, Hasan
54	2021-22	Dr. Vinoth Kumar K	2nd Global Conference for Advancement in Technology	01.10.2021 to 03.10.2021	Nagarjuna College of Engineering and Technology, Bengaluru
55	2021-22	Dr. Vinoth Kumar K	International Conference title: 7th Annual Conference of the ACSE, ACSE 2021	21.08.2021	Asian Council of Science Editors held at Dubai
56	2020-2021	Dr. Vinoth Kumar K	International Conference on Research Perspectives IOT in Hybrid Grid Integrated Renewable Energy Sources –	24.03.2021 To 26.03.2021	New Horizon College of Engineering, Bengaluru
57	2020-2021	Dr. Gunapriya B	International Conference on Research Perspectives IOT in Hybrid Grid Integrated Renewable Energy Sources –	24.03.2021 To 26.03.2021	New Horizon College of Engineering, Bengaluru
58	2020-2021	Ms. Karthika M	International Conference on Research Perspectives IOT in Hybrid Grid Integrated Renewable Energy Sources –	24.03.2021 To 26.03.2021	New Horizon College of Engineering, Bengaluru
59	2020-2021	Mr. Sunil S K	International Conference on Research Perspectives IOT in Hybrid Grid Integrated Renewable Energy Sources –	24.03.2021 To 26.03.2021	New Horizon College of Engineering, Bengaluru
60	2020-2021	Dr. Prabhakaran N	International Conference on Research Perspectives IOT in Hybrid Grid Integrated Renewable Energy Sources –	24.03.2021 To 26.03.2021	New Horizon College of Engineering, Bengaluru

61	2020-2021	Dr. Singaravelan A	International Conference on Research Perspectives IOT in Hybrid Grid Integrated Renewable Energy Sources –	24.03.2021 To 26.03.2021	New Horizon College of Engineering, Bengaluru
62	2020-2021	Dr. Mahesh M	International Conference on Research Perspectives IOT in Hybrid Grid Integrated Renewable Energy Sources –	24.03.2021 To 26.03.2021	New Horizon College of Engineering, Bengaluru
63	2020-2021	Dr. Vinoth Kumar K	International Conference on Power Instrumentation, Control and Computing (PICC 2020)	17.12.2020 to 19.12.2020	Government Engineering College, Thrissur
64	2020-2021	Dr. Vinoth Kumar K	Virtual Global Summit Conference title: Artificial Intelligence: Responsible AI for Social Empowerment	05.10.2020 to 09.10.2020	Ministry of Electronics and Information Technology, Government of India
65	2020-2021	Dr. Vinoth Kumar K	International Conference on Robotics and Artificial Intelligence 2020 (RoAI 2020)	28.12.2020 to 29.12.2020	Indian Institute of Technology, Madras
66	2020-2021	Dr. Vinoth Kumar K	International Conference on Electrical Energy Systems	11.02.2021 to 12.02.2021	Sri Sivasubramaniya Nadar College of Engineering, Chennai
67	2019-20	Dr. Gunapriya B	International Conference on Research Perspectives: IOT in Hybrid Grid Integrated Renewable Energy Sources	19.12.2019 to 21.12.2019	New Horizon College of Engineering, Bangalore
68	2019-20	Ms. Karthika M	2020 International Conference on Inventive Computation Technologies (ICICT)	26.02.2020 to 28.02.2020	Hotel Arcadia, Coimbatore
69	2019-20	Dr. Joshua Daniel Raj	International Conference on Research Perspectives: IOT in Hybrid Grid Integrated Renewable Energy Sources	19.12.2019 to 21.12.2019	New Horizon College of Engineering, Bangalore
70	2019-20	Dr. Ramkumar S	International Conference on Research Perspectives: IOT in Hybrid Grid Integrated Renewable Energy Sources	19.12.2019 to 21.12.2019	New Horizon College of Engineering, Bangalore
71	2019-20	Dr. Singaravelan A	International Conference on Research Perspectives: IOT in Hybrid Grid Integrated Renewable Energy Sources	19.12.2019 to 21.12.2019	New Horizon College of Engineering, Bangalore
72	2019-20	Dr. Ganesh C	International Conference on Research Perspectives: IOT in Hybrid Grid Integrated Renewable Energy Sources	19.12.2019 to 21.12.2019	New Horizon College of Engineering, Bangalore
73	2019-20	Mr. Muni Prakash T	International Conference on Research Perspectives: IOT in Hybrid Grid Integrated Renewable Energy Sources	19.12.2019 to 21.12.2019	New Horizon College of Engineering, Bangalore

74	2019-20	Mr. Ramakrishnan S	International Conference on Research Perspectives: IOT in Hybrid Grid Integrated Renewable Energy Sources	19.12.2019 to 21.12.2019	New Horizon College of Engineering, Bangalore
75	2019-20	Mr. Vinod Kumar S	International Conference on Research Perspectives: IOT in Hybrid Grid Integrated Renewable Energy Sources	19.12.2019 to 21.12.2019	New Horizon College of Engineering, Bangalore
76	2019-20	Mr. Lithesh J	International Conference on Research Perspectives: IOT in Hybrid Grid Integrated Renewable Energy Sources	19.12.2019 to 21.12.2019	New Horizon College of Engineering, Bangalore
77	2019-20	Ms. Karthika M	International Conference on Research Perspectives: IOT in Hybrid Grid Integrated Renewable Energy Sources	19.12.2019 to 21.12.2019	New Horizon College of Engineering, Bangalore
78	2019-20	Dr. Mohan Das R	International Conference on Research Perspectives: IOT in Hybrid Grid Integrated Renewable Energy Sources	19.12.2019 to 21.12.2019	New Horizon College of Engineering, Bangalore
79	2019-20	Ms.Viji U	International Conference on Research Perspectives: IOT in Hybrid Grid Integrated Renewable Energy Sources	19.12.2019 to 21.12.2019	New Horizon College of Engineering, Bangalore

5.6 Innovations by faculty in teaching and learning (10)

Innovations by the Faculty in teaching and learning shall be summarized as per the following description. Contributions to teaching and learning are activities that contribute to the improvement of student learning. These activities may include innovations not limited to, use of ICT, instruction delivery, instructional methods, assessment, evaluation and inclusive class rooms that lead to effective, efficient and engaging instruction. Any contributions to teaching and learning should satisfy the following criteria:

- The work must be made available on Institute website
- The work must be available for peer review and critique
- The work must be reproducible and developed further by other scholars

The department/institution may set up appropriate processes for making the contributions available to the public, getting them reviewed and for rewarding. These may typically include statement of clear goals, adequate preparation, use of appropriate methods, significance of results, effective presentation and reflective critique

Teaching Effectiveness and innovation can be achieved by practicing best way to create, delineate and transfer the knowledge from Faculty members to the students. These activities may include innovations not limited to, use of ICT, course delivery methods, assessment, evaluation, inclusive class rooms and Industry sponsored Laboratories that lead to effective, efficient and engaging Teaching learning process. Innovation by faculty in teaching and learning are expected to satisfy the following criteria:

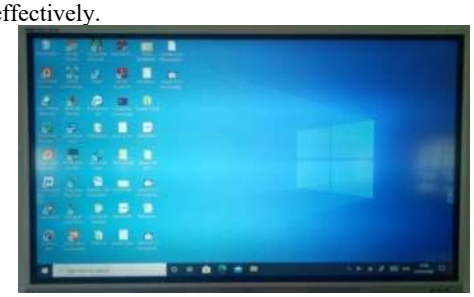
- Availability of course related resources on Institute website
- Availability of course related resources for peer review and critique
- Availability of course related resources to be reproducible and developed further by other scholars

The goal or objective of Innovative teaching:

1) To increase the interest of students
2) For involving the students actively in educational work
3) To develop the creativity of the students
4) Experimenting new methods and strategies by which we can ensure improvement of student engagement, motivation and attainment of course outcomes.

Teaching Effectiveness and innovation can be achieved by practicing best way to create, delineate and transfer the knowledge from Faculty members to the student and activities include innovations use of ICT, various pedagogical methods, course delivery methods, assessment, evaluation, inclusive class rooms and Industry sponsored Laboratories that lead to effective, efficient and engaging Teaching learning processes. The facilities for effective innovations by faculty in teaching and learning is shown in Table B. 5.6.1 and Innovative Practices by Faculty is shown in Table B. 5.6.1.a

Table B. 5.6.1 Facilities for effective innovations by faculty in teaching and learning

Sl.No	Facilities	Remark
1.	Smart Classroom	The department class rooms are equipped with interactive smart boards. Smart boards make learning more dynamic since it facilitates different form of presenting information. In Smart classes all interactive modules like videos and presentations are used. This visually attractive method of teaching becomes appealing to students. In fact, smart classes help students to easily relate the concepts with the animated visuals. Here the audio-visual senses of students are targeted and it helps the students to grab the information effectively.  **Fig. 5.6.1 Smart Board**  **Fig.5.6.2 Sample image of classroom with smart board**
2.	Theory cum laboratory courses	Demonstration method when combined with a well-directed discussion is a successful teaching technique. The Department curriculum is framed in such a way that the courses include both theory and laboratory components. Theory cum laboratory courses ensures students understanding the concepts effectively through theory classes and laboratory sessions.
3.	Online courses	Faculty members and students undergo online courses from the sources like Coursera, Edx, NPTEL, Spoken tutorial, etc. in their area of interest. This helps them to enrich their knowledge on current trends and also to equip themselves with inter-domain expertise. They are certified by the National and International universities and are motivated towards lifelong learning. Online courses also provide forum for discussion among the experts and students worldwide.
4.	Google classroom	Google Classroom is an application designed to enhance the learning experience which is incorporated in our teaching learning process. It helps to interact with students 24 X 7, by posting technical contents, notes, and assignments and also facilitates to conduct and evaluate online quizzes. The

		tools offer opportunities for collaboration in real time and the ability to work remotely.
5.	Innovative assignments and Real-time problems	Assignments are given based on the real-time engineering problems, to help students to understand and come out with the solutions. Group assignments are also given to improve the self-learning and team work of students.
6.	Technical presentation	Students are encouraged to give presentation on any technical topic in their area of interest which will serve for knowledge transfer and to overcome stage fear. It will also improve their communication skills which is significant in their career growth.
7.	Weekend Activities	Co-curricular and extracurricular activities are conducted every weekend to motivate the students and to improve problem solving capabilities, leadership abilities in multidisciplinary, co-operation in team work, consciousness in professional ethics and administering critical situations. These activities include Webinar, Aptitude Training, Social Welfare Camp, Problem solving, Entrepreneurship Development Programs, Critical Thinking, Group Discussion, etc.
8.	Industrial Visit / Trainings	Industrial visits and trainings are organized for students to bridge the gap between theoretical learning and practical training in a real-life environment. Students understand the industrial practices and organizational hierarchy during industrial visits. Industrial visits provide opportunities for active/interactive learning experiences outside classroom environment in addition to usual classroom learning.
9.	Student's club	Students are motivated to present a topic of their own interest for 5 minutes during class hours for improving communication skills and to overcome stage fear.
10.	Project Based Learning	The Department frames its curriculum in such a way that students acquire the skills to design and create complex problems through various activities including projects. Such projects often force students to use multiple learning techniques to succeed, which includes research, logical deduction, and iterative learning (trial and error). Since these projects are usually too large and complex for one student to do alone, project-based learning also tends to encourage teamwork. Project exhibitions are conducted in the department every year to enrich the project developing skills of the students.
11.	Value Added Courses	Certification courses are conducted by department to give key knowledge to students in a specific field. It improves the employability skills and promote professional and life-oriented skills of the students.
12.	Industry Sponsored Lab – Centre of Excellence	• Schneider Electric Indo-French Centre of Excellence in Electricity, Automation and Energy • Capegemini for 5G, Industry 4.0, VLSI, PLM • Automation anywhere • Cisco Networking Academy • aws academy • VMware IT Academy • HPE Vertica CoE • Eurofins • Juniper networks • Intel • SAP Next Gen Lab • ALTAIR • IBM Open Power • Fanuc • Siemens

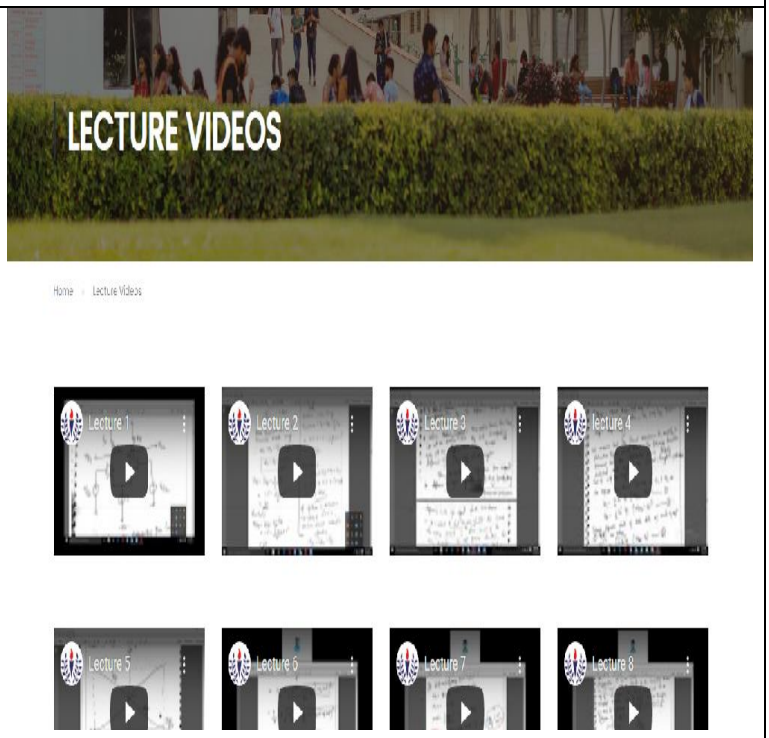
13.	Nodal centre for E-Learning	IIRS Outreach Programme, MHRD-IIC
14.	Lecture Videos	 **Fig. 5.6.3 Sample screen shot of the Lecture Videos in the website**
15.	Digital Library	 **Fig 5.6.4 A sample screen shot of the Digital Library link**

Table B. 5.6.1.a Innovative Practices by Faculty

Sl.No	Name of the Faculty	Course Code	Course Name	Innovative Teaching Methods
1.	Dr. S. Sujitha	20EEE754	Neural Network and fuzzy logic in Electrical Engineering	Group Learning Approach
2.	Dr. Vinoth Kumar K	20EEE62	Power Electronics	Experiential Learning
3.	Ms. Anitha A	20EEE62	Power Electronics	
4.	Ms. Anitha A	20EEL67	Power Electronics Lab	
5.	Ms. Deepa V Bolanavar	NHOP608	Schneider Industrial Automation	
6.	Ms. Kavitha Chenna Reddy	20EEE72A	Relay and High Voltage Engineering	
7.	Ms. Anitha A	20EEE73A	Electrical drives and Vehicles	
8.	Dr. Vinoth Kumar K	20EEE53	Synchronous and Induction Machines	
9.	Dr. R Mohan Das	20EEE71A	Special electrical Machines	Flipped class room Approach
10.	Mr. Vinod Kumar S	20EEE653	Advanced Industrial and Building Automation	Team Based Learning Approach
11.	Ms. Soumya KV	20EEE54	Signals and Systems	
12.	Ms. Kavitha Chenna Reddy	20EEE63	Power System Protection	
13.	Ms. Pooja Jose	20EEE54	Signals and Systems	
14.	Dr. A Singaravelan	20EEE652A	CMOS VLSI Design	Activity Based Learning Approach
15.	Mr. Sunil S K	20EEE61	Power System Analysis	Case Study Based Learning Approach
16.	Mr. Vinod Kumar S	20EEE653	Advanced Industrial and Building Automation	
17.	Dr. N. Prabhakaran	19EEE44	Microcontroller and Embedded System	
18.	Mr. Sunil. S. K	20EEE61	Power System Analysis	
19.	Dr. J Joshua Daniel Raj	20EEE641A	Data Structures and Algorithms Using Python	Innovative Approach
20.	Ms. M Karthika	20EEE821A	Photo Voltaic Systems and Application	Outcome of Discussion Approach
21.	Ms. M Karthika	20EEE821A	Photo Voltaic Systems and Application	Simulation Approach
22.	Ms. Anitha A	20EEE62	Power Electronics	
23.	Dr. M Mahesh	20EEE821A	Photo Voltaic Systems and Application	
24.	Mr. Sunil S K	20EEE742A	Facts and HVDC Transmission	
25.	Mr. Ramakrishnan S	19EEE46	Linear Integrated Circuits	Problem Solving Approach
26.	Dr. J Joshua Daniel Raj	20EEE641A	Data Structures and Algorithms Using Python	
27.	Ms. Kavitha Chenna	20EEL76A	Relay and High	

	Reddy		Voltage Laboratory	
28.	Ms. Manochitra G	20EEE52	Control System	
29.	Ms. Kavitha Chenna Reddy	20EEE63	Power System Protection	Lecturing and Discussing Approach
30.	Ms. Sangeetha C N	20EEE51	Transmission and Distribution	Mind Mapping Approach

5.7. Faculty as participants in Faculty development/training activities/ STTPs (15)

- A Faculty scores maximum five points forparticipation
- Participation in 2 to 5 days Faculty/ Faculty development program:3Points
- Participation >5 days Faculty/ Faculty development program:5points

Table B 5.7.1 Faculty as participants in Faculty development/training activities/STTPs

Sl. No	Name of the Faculty	Max 5 per Faculty		
		CAY m1 (21-22)	CAY m2 (20-21)	CAY m3 (19-20)
1.	Dr. M Mahesh	5	5	5
2.	Dr. Arangarajan V	5	5	NA
3.	Dr. Agalya V	0	NA	NA
4.	Dr. Sujitha S	5	5	5
5.	Dr. Joshua Daniel Raj	5	0	-
6.	Dr. Gunapriya B	5	5	5
7.	Dr. Mohan Das R	5	5	5
8.	Dr. Vinoth Kumar K	5	5	NA
9.	Dr. P Palanivel	NA	3	0
10.	Ms. Karthika M	3	3	0
11.	Ms. Kavitha Chenna Reddy	5	3	3
12.	Ms. Deepa V Bolanavar	3	5	5
13.	Mr. Vinod Kumar S	5	5	5
14.	Dr. Singaravelan A	3	5	5
15.	Mr. Sunil S K	3	3	3
16.	Mr. Ramakrishnan S	3	5	3
17.	Dr. Prabhakaran N	5	3	NA
18.	Mr. Lithesh J	3	3	5
19.	Dr. Prasanth Ram J	0	5	5
20.	Ms. Roopa C	3	5	5
21.	Ms. Anitha A	5	5	5
22.	Ms. Rashmi N	3	3	3
23.	Ms. Viji. U	3	3	0
24.	Ms. Soumya K V	NA	NA	NA
25.	Ms. Sangeetha C N	NA	NA	NA
26.	Ms. Pooja Jose	NA	NA	NA
27.	Ms. Suganya G	0	0	0
28.	Dr. Birendra Kumar Singh	NA	5	3
	SUM	79	94	70
RF= Number of Faculty required to comply with 20:1 student faculty ratio 20:1		19	19	20
Assessment=3X(SUM/0.5RF) (Marks limited to 20)		24.95	29.68	21
Average assessment over three years (Marks limited to 20)		**15**		

Table B 5.7.2 Consolidated count of Faculty participations

S. No	Details	CAY m1 (2021-2022)	CAY m2 (2020-2021)	CAY m3 (2019-2020)	Total
1	Workshop	3	7	22	32
2	FDP/Seminar/STTPs	73	206	174	453
3	Conference	55	11	12	78
Total Attendees		**131**	**224**	**208**	**563**

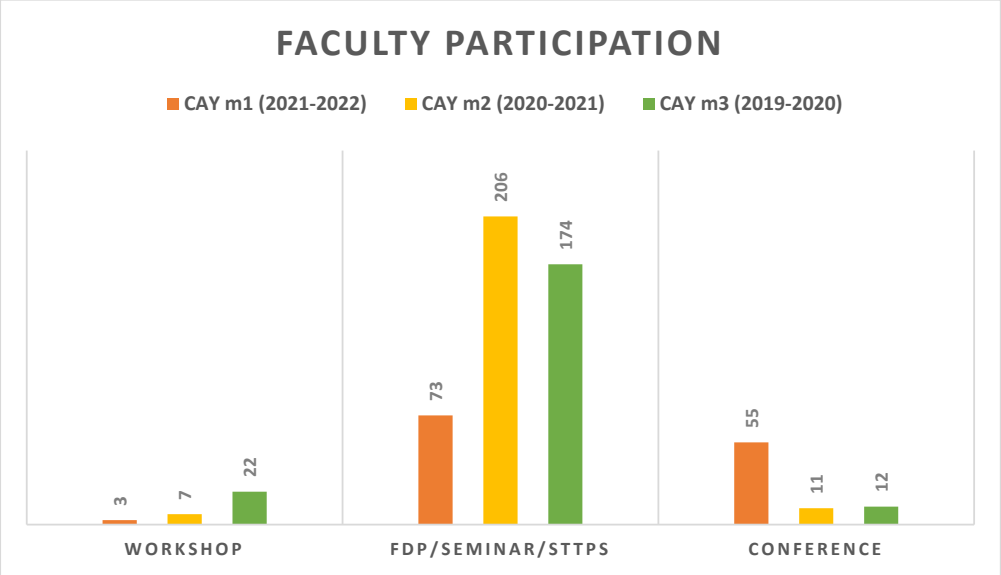


Figure B.5.7.1 Consolidated Count of Faculty Participations

5.8 Research andDevelopment:

5.8.1 Academic Research(20)

Academic research includes research paper publications, Ph.D. guidance, and faculty receiving Ph.D. during the assessment period.

- Number of quality publications in refereed/SCI Journals, citations, Books/Book Chaptersetc. (15)
- Ph.D. guided /Ph.D. awarded during the assessment period while working in the institute(5)
- All relevant details shall be mentioned.

Department of Electrical and Electronics Engineering encourages research and development through faculties in Power Electronics and Drives, Power and Energy, VLSI and Embedded Systems domains in accordance to the recent trends in emerging areas like electric vehicles, IoT, artificial intelligence, machine learning, deep learning etc. The list of quality publications in refereed/SCI Journals, Books/Book Chapters are shown in Table B. 5.8.1 a to Table B. 5.8.1 c.

Ph.D. guided /Ph.D. awarded during the assessment period is shown in Table B 5.8.1.f. and Table B 5.8.1. g.

The Web of Science Researcher ID and Google Scholar ID with Citations and h-Index is shown in Table B 5.8.1. j. and ORCID ID Details is shown in Table B 5.8.1. k.

Table B.5.8.1. a. Consolidated List of Faculty Publications

Assessment period	Quality publications in refereed/SCI Journals, citations, Books/Book Chapters
CAYm1 (2021-22)	52
CAYm2 (2020-21)	33
CAYm3 (2019-20)	38
Total	123

Table B 5.8.1. b. Publications for CAYm1 (2021-2022)

Sl.No	Faculty Name	Paper Title	Month Year	Journal Title	Volume	Issue	Page start	Page end	Indexing	Publication Type	DOI
1	Dr. Vinoth Kumar K	A Novel Sensitive Photonic Crystal Fiber based Voltage Sensor Filled with Nematic Liquid Crystal	February 2022	IEEE Transactions on Nanotechnology	21	-	90	99	Scopus & SCI	Journal	https://doi.org/10.1109/TNANO.2022.3149511
2	Dr. Vinoth Kumar K	Weather Forecasting for Renewable Energy System: A Review	January 2022	Archives of Computational Methods in Engineering	29	5	2875	2891	Scopus & SCI	Journal	https://doi.org/10.1007/s11831-021-09695-3
3	Dr. Gunapriya B Dr. Singaravelan A	AI and ML Powered IoT Applications for Energy Management in Electric Vehicles	June 2022	Wireless Personal Communications	-	-	1	17	Scopus & SCI	Journal	https://doi.org/10.1007/s11277-022-09789-6
4	Dr. Arangarajan V	A KNN based random subspace ensemble classifier for detection and discrimination of high impedance fault in PV integrated power network	January 2022	Measurement: Journal of the International Measurement Confederation	187	110333	1	20	Scopus & SCI	Journal	https://doi.org/10.1016/j.measurement.2021.110333

5	Dr. Arangarajan V	A Voting Approach of Ensemble Classifier for Detection of Power Quality in Islanded PV Microgrid	June 2022	IETE Journal of Research	-	-	1	17	Scopus & SCI	Journal	https://doi.org/10.1080/03772063.2022.2083706
6	Dr. Arangarajan V	Heterogeneous learning method of ensemble classifiers for identification and classification of power quality events and fault transients in wind power integrated microgrid	September 2022	Sustainable Energy, Grids and Networks	31	-	1	24	Scopus & SCI	Journal	https://doi.org/10.1016/j.segan.2022.100752
7	Dr. Arangarajan V Dr. Mohan Das R	A random subspace ensemble classification model for discrimination of power quality events in solar PV microgrid power network	January 2022	Plos One	-	-	1	17	Scopus & SCI	Journal	https://doi.org/10.1371/journal.pone.0262570
8	Dr. Gunapriya B Dr. Singaravelan A	Performance analysis and enhancement of brain emotion-based intelligent controller and its impact on PMBLDC motor drive for electric vehicle applications	January 2022	Energy Sources, Part A: Recovery, Utilization and Environmental Effects	-	-	1	25	Scopus & SCI	Journal	https://doi.org/10.1080/15567036.2022.2027578

9	Ms. Karthika M	A comparative analysis of torque ripple reduction techniques for sensor BLDC drive	March 2022	International Journal of Power Electronics and Drive Systems	13	1	122	131	Scopus & SCI	Journal	http://doi.org/10.11591/ijpeds.v13.i1.pp122-131
10	Dr. Mohan Das R Mr. Vinod Kumar S	Development of performance characterization in VSI-fed induction motor drives using random PWM	June 2022	International Journal of Power Electronics and Drive Systems	13	2	783	791	Scopus	Journal	http://doi.org/10.11591/ijpeds.v13.i2.pp783-791
11	Dr. Arangarajan V	Recurrent network-based power flow solution for voltage stability assessment and improvement with distributed energy sources	November 2021	Applied Energy	302	117524	1	21	Scopus & SCI	Journal	https://doi.org/10.1016/j.apenergy.2021.117524
12	Dr. Arangarajan V	Detection and classification of multiple power quality disturbances in Microgrid network using probabilistic based intelligent classifier	October 2021	Sustainable Energy Technologies and Assessments	47	101470	1	13	Scopus & SCI	Journal	https://doi.org/10.1016/j.seta.2021.101470
13	Dr. Arangarajan V	An ensemble approach of classification model for detection and classification of power quality disturbances in PV	July 2021	Applied Soft Computing	106	107294	1	16	Scopus & SCI	Journal	https://doi.org/10.1016/j.asoc.2021.107294

		integrated microgrid network									
14	Dr. Agalya V	CPRO: Competitive Poor and Rich Optimizer-Enabled Deep Learning Model and Holoentropy Weighted-Power K-Means Clustering for Brain Tumor Classification Using MRI	April 2022	International Journal of Pattern Recognition and Artificial Intelligence	36	4	1	19	Scopus & SCI	Journal	https://doi.org/10.1142/S0218001422520085
15	Mr. Satish Kumar D	Coordinated power management and control of renewable energy sources based smart grid	April 2022	International Journal of Emerging Electric Power Systems	23	2	261	276	Scopus & SCI	Journal	https://doi.org/10.1515/ijeeps-2021-0113
16	Dr. Prabhakaran N	Analysis and design of fuzzy-based manoeuvring model for mid-vehicle collision avoidance system	August 2021	Journal of Ambient Intelligence and Humanized Computing	12	10	9909	9922	Scopus & SCI	Journal	https://doi.org/10.1007/s12652-020-02737-x
17	Dr. Prabhakaran N	Novel Collision Detection and Avoidance System for Midvehicle Using Offset-Based Curvilinear Motion	October 2021	Wireless Personal Communications	119	3	1	22	Scopus & SCI	Journal	https://doi.org/10.1007/s11277-021-08333-2

18	Dr. Mohan Das R	Design of a novel wireless power transfer technique for portable device	June 2022	Materials Today Proceedings	65	1	242	249	Scopus	Journal	https://doi.org/10.1016/j.matpr.2022.06.126
19	Dr. Mohan Das R Mr. Vinod Kumar S	An improved random SVPWM for zero voltage switching three phase inverters	June 2022	Materials Today Proceedings	65	1	285	292	Scopus	Journal	https://doi.org/10.1016/j.matpr.2022.06.169
20	Dr. Mohan Das R	A novel symmetrical three level boost DC-AC converter for electric vehicles with reduced switch counts	June 2022	Materials Today Proceedings	65	1	235	241	Scopus	Journal	https://doi.org/10.1016/j.matpr.2022.06.125
21	Dr. Arangarajan Vinayagam	High Hybrid Power Converter Performance Using Modern-Optimization-Methods-Based PWM Strategy	June 2022	Electronics (Switzerland)	11	13	1	16	Scopus & WOS	Journal	https://doi.org/10.3390/electronics11132019
22	Dr. Arangarajan Vinayagam	Modern Optimal Controllers for Hybrid Active Power Filter to Minimize Harmonic Distortion	June 2022	Electronics (Switzerland)	11	9	1	17	Scopus & WOS	Journal	https://doi.org/10.3390/electronics11091453
23	Dr. Sujitha S Dr. Vinoth Kumar K	An implementation of soft computing approach of smart control for induction motor using ANFIS	February 2022	2022 4th International Conference on Smart Systems and Inventive Technology	-	-	1	4	Scopus	Conference	https://doi.org/10.1109/ICSSIT53264.2022.9716455

				(ICSSIT)							
24	Dr. Vinoth Kumar K	Analysis of parameter estimation of an electric bicycle using IoT with data analytics technique	February 2022	4th International Conference On Smart Systems and Inventive Technology ICSSIT 2022	-	-	1	5	Scopus	Conference	https://doi.org/10.1109/ICSSIT53264.2022.9716307
25	Dr. Vinoth Kumar K Dr. Gunapriya B	An IoT based data analytics for electric bicycle using OpenModelica simulation tool	March 2022	2022 International Conference for Advancement in Technology ICONAT 2022	-	-	1	5	Scopus	Conference	https://doi.org/10.1109/ICONAT53423.2022.9725996
26	Dr. Vinoth Kumar K Dr. Gunapriya B	Renewable energy based efficient portable DC refrigerator for rural electrification and convenience - An Overview	March 2022	International Conference on Artificial Intelligence and Smart Systems ICAIS 2022	-	-	1	5	Scopus	Conference	https://doi.org/10.1109/ICAIS53314.2022.9742945
27	Dr. Vinoth Kumar K Dr. Gunapriya B	A review of Arduino based hand gesture-controlled robot using IoT	March 2022	International Conference on Artificial Intelligence and Smart Systems ICAIS 2022	-	-	1	5	Scopus	Conference	https://doi.org/10.1109/ICAIS53314.2022.9741829

28	Dr. Vinoth Kumar K Mr. Muniprakash T	A Review on Optimization Techniques of Charging the Battery in EV	March 2022	International Conference on Artificial Intelligence and Smart Systems	-	-	1	5	Scopus	Conference	https://doi.org/10.1109/ICAIS53314.2022.9743126
29	Dr. Vinoth Kumar K Mr. Muniprakash T	A review on optimization techniques of battery charging in electric vehicles	April 2022	2022 2nd International Conference on Artificial Intelligence and Signal Processing, AISP 2022	-	-	1	5	Scopus	Conference	https://doi.org/10.1109/AISP53593.2022.9760545
30	Dr Singaravelan A Dr. Gunapriya B	High-Performance ANFIS-Based Controller for BLDC Motor Drive	April 2022	International Conference on Ubiquitous Computing and Intelligent Information Systems - Smart Innovation, Systems and Technologies	243	-	435	449	Scopus	Conference	https://doi.org/10.1007/978-981-16-3675-2_33
31	Ms. Kavitha Chenna Reddy Dr. Vinoth Kumar K	A review of solar powered electric Bi-hybrid vehicle compared with IC Engine Vehicles using graph analytics with AI	February 2022	4th International Conference on Smart Systems and Inventive Technology ICSSIT 2022	-	-	1	5	Scopus	Conference	https://doi.org/10.1109/ICSSIT53264.2022.9716463

32	Ms. Kavitha Chenna Reddy Dr. Vinoth Kumar K	Artificial Intelligence Based Solar Powered Electric Bi-hybrid Vehicle Compared with IC Engine Vehicles Using Graph Analytics	March 2022	2022 International Conference for Advancement in Technology ICONAT 2022	-	-	1	5	Scopus	Conference	https://doi.org/10.1109/ICONAT53423.2022.9725853
33	Dr. Sujitha S Dr. Vinoth Kumar K	Experimental Setup of Smart E-Vehicle Charging Station using IOT Technology	December 2021	2021 IEEE International Conference on Mobile Networks and Wireless Communications, ICMNWC 2021	-	-	1	4	Scopus	Conference	https://doi.org/10.1109/ICMNWC52512.2021.9688523
34	Dr. Vinoth Kumar K Dr. Sujitha S	Execution of smart electric vehicle charging station driven by RE technology using soft computing approach	November 2021	IEEE International Conference on Innovations in Power and Advanced Computing Technologies	-	-	1	5	Scopus	Conference	https://doi.org/10.1109/i-PACT52855.2021.9696545
35	Dr. Vinoth Kumar K	A Review on Triboelectric Nanogenerators (TENGs) using Internet of Things	December 2021	2021 International Conference on Forensics, Analytics, Big Data, Security (FABS)	-	-	1	5	Scopus	Conference	https://doi.org/10.1109/FABS52071.2021.9702612

36	Dr. Vinoth Kumar K	Implementation of Smart Electric Vehicle Charging Station Driven Using Experimental Investigation	October 2021	2021 2nd Global Conference for Advancement in Technology	-	-	1	5	Scopus	Conference	https://doi.org/10.1109/GCAT52182.2021.9587788
37	Dr. Vinoth Kumar K Dr. Gunapriya B	Execution of smart electric vehicle charging station driven by RE technology	October 2021	2021 IEEE Mysore Sub Section International Conference, MysuruCon 2021	-	-	70	73	Scopus	Conference	https://doi.org/10.1109/i-PACT52855.2021.9696545
38	Mr. Muni Prakash T	Controller Design for Detection of Various Power Thefts	November 2021	IEEE International Conference on Innovations in Power and Advanced Computing Technologies	-	-	1	6	Scopus	Conference	https://doi.org/10.1109/i-PACT52855.2021.9696752
39	Dr. Prabhakaran N	A survey on smart traffic control system for emerging vehicles	January 2022	2022 International Conference on Computer Communication and Informatics ICCCI 2022	-	-	1	5	Scopus	Conference	https://doi.org/10.1109/ICCCI54379.2022.9740998
40	Dr. Prabhakaran N	A survey on detection theft in transmission and distribution	January 2022	2022 Intl Conference on Computer Communication and Informatics ICCCI 2022	-	-	1	5	Scopus	Conference	https://doi.org/10.1109/ICCCI54379.2022.9740976

41	Dr. Agalya V	Automated Monorail Integrated with Solar and Piezoelectric Power Generating System	April 2022	2022 8th International Conference on Smart Structures and Systems	-	-	1	7	Scopus	Conference	https://doi.org/10.1109/ICSSS54381.2022.9782285
42	Dr. Vinoth Kumar K	IoT Based Parameters Calculation of Electric Bicycle using OpenModelica Simulation Tool with Data Analytics Technology	April 2022	2022 IEEE International Conference on Distributed Computing and Electrical Circuits and Electronics	-	-	1	4	Scopus	Conference	https://doi.org/10.1109/ICDCECE53908.2022.9792637
43	Dr. Vinoth Kumar K Dr. Sujitha S	Data Analytics for Parameter Estimation of an Electric Bicycle using IoT	June 2022	2022 7th International Conference on Communication and Electronics Systems	-	-	506	511	Scopus	Conference	https://doi.org/10.1109/ICCES54183.2022.9835883
44	Mr. Vinod Kumar S Dr. Mahesh M Dr. Vinoth Kumar K	A Review on Self Stabilizing Platform in Scope of Merchant Navy Applications	August 2022	2022 First International Conference on Artificial Intelligence Trends and Pattern Recognition	-	-	1	4	Scopus	Conference	https://doi.org/10.1109/ICAITPR51569.2022.9844197
45	Dr. Joshua Daniel Raj Mr. Ramakrishnan S Mr. Muniprakash T	Designing of Six Wheel Robotic Vehicle for Instant Disinfection and Sanitization	August 2022	2022 Trends in Electrical, Electronics, Computer Engineering Conference	-	-	18	24	Scopus	Conference	https://doi.org/10.1109/TEECCON54414.2022.9854819

46	Dr. Mahesh M Dr. Vinoth Kumar K	Enabling Technologies for Smart Buildings High Power Density Power Electronic Converters	January 2022	Smart Buildings Digitalization IoT and Energy Efficient Smart Buildings Architecture and Applications	1	-	217	218	Scopus	Book Chapter	https://doi.org/10.1201/9781003201069
47	Dr. Gunapriya B Dr. Singaravelan A Dr. Mahesh M	An IoT-based approach for efficient home automation	June 2022	Artificial Intelligence and Internet of Things for Renewable Energy Systems	-	-	91	122	Scopus	Book Chapter	https://doi.org/10.1515/9783110714043-003
48	Dr. Vinoth Kumar K	Network intrusion detection system in latest DFA compression methods for deep packet scruting	July 2021	Design, Applications, and Maintenance of Cyber-Physical Systems	-	-	219	243	Scopus	Book Chapter	https://doi.org/10.4018/978-1-7998-6721-0.ch010
49	Dr. Vinoth Kumar K	Artificial Intelligence-Based Energy Management and Real-Time Optimization in Electric and Hybrid Electric Vehicles	December 2021	EAI/Springer Innovations in Communication and Computing	432	-	219	242	Scopus	Book Chapter	https://doi.org/10.1007/978-3-030-85424-9_12
50	Dr Singaravelan A Dr. Gunapriya B	Sensorless Speed Control of BLDC Motor for EV Applications	January 2022	Lecture Notes on Data Engineering and Communications Technologies	93	-	359	370	Scopus	Book Chapter	https://doi.org/10.1007/978-981-16-6605-6_26

51	Dr. Gunapriya B Dr. Sujitha S	Smart Home Technologies Toward SMART (Specific, Measurable, Achievable, Realistic, and Timely) Outlook	July 2022	Lecture Notes on Data Engineering and Communications Technologies	126	-	711	727	Scopus	Book Chapter	https://doi.org/10.1007/978-981-19-2069-1_49
52	Dr. Vinoth Kumar K	Intelligent Systems in Latest DFA Compression Methods for DPC	July 2022	Handbook of Research on Evolving Designs and Innovation in ICT Systems for Real-World	-	-	129	146	Scopus	Book Chapter	https://doi.org/10.4018/978-1-7998-9795-8.ch009

Table B 5.8.1. c. Publications for CAYm2 (2020-2021)

Sl.No	Faculty Name	Paper Title	Month Year	Journal Title	Volume	Issue	Page start	Page end	Indexing	Publication Type	DOI
1	Dr. B. Gunapriya	A novel home automation distributed server management system using Internet of Things	June 2021	International Journal of Ambient Energy	Inpress	NA	1	7	Scopus & SCI	Journal	https://doi.org/10.1080/01430750.2021.1953590
2	Dr. B. Gunapriya	An efficient LoRa-based smart agriculture management and monitoring system using wireless sensor networks	June 2021	International Journal of Ambient Energy	Inpress	NA	1	5	Scopus & SCI	Journal	https://doi.org/10.1080/01430750.2021.1953591
3	Dr. Arangarajan Vinayagam	The Effect of Interfacial Zone Due toticle Surfactant Interaction on Dielectric Properties of Vegetable Oil Based Nanofluids	June 2021	IEEE Access	9	NA	107033	107045	Scopus & SCI	Journal	https://doi.org/10.1109/ACCESS.2021.3098758
4	Dr. Arangarajan Vinayagam	LSTM Recurrent Neural Network Classifier for High Impedance Fault Detection in Solar PV Integrated Power Sys	February 2021	IEEE Access	9	NA	32672	32687	Scopus & SCI	Journal	https://doi.org/10.1109/ACCESS.2021.3060800

5	Dr. Singaravelan A Dr. Gunapriya B	Application of Two-Phase Simplex Method (TPSM) for an Efficient Home Energy Management System to Reduce Peak Demand and Consumer Consumption Cost	April 2021	IEEE Access	9	NA	63591	63601	Scopus & SCI	Journal	https://doi.org/10.1109/ACCESS.2021.3072683
6	Dr. Vinoth Kumar K	Three Ways Chip to Chip Communication via a Single Photonic Structure: A Future Paragon of 3D Photonics to Optical VLSI	April 2021	IETE Journal of Research	Inpress	NA	1	9	Scopus & SCI	Journal	https://doi.org/10.1080/03772063.2021.1908179
7	Dr. Gunapriya B	Laser induced Breakdown Spectroscopy for new product development in mining industry	April 2021	Materials Today: Proceedings	45	9	8157	8161	Scopus & SCI	Conference	https://doi.org/10.1016/j.matpr.2021.02.459
8	Dr. Gunapriya B	Current droop control of parallel inverters in an autonomous microgrid	May 2021	Materials Today: Proceedings	45	2	2034	2039	Scopus & SCI	Conference	https://doi.org/10.1016/j.matpr.2020.09.496
9	Dr. Gunapriya B	Visualization of virtual environment through LabVIEW platform	May 2021	Materials Today: Proceedings	45	2	2306	2312	Scopus & SCI	Conference	https://doi.org/10.1016/j.matpr.2020.10.559

10	Dr. Gunapriya B	Frequency control of PV-connected micro grid system using fuzzy logic controller	May 2021	Materials Today: Proceedings	45	2	2260	2264	Scopus & SCI	Conference	https://doi.org/10.1016/j.matpr.2020.10.255
11	Dr. Vinoth Kumar K Dr. Gunapriya B	Performance based algorithm for DWT and DCL for ISL	May 2021	Materials Today: Proceedings	45	2	2317	2322	Scopus & SCI	Conference	https://doi.org/10.1016/j.matpr.2020.10.639
12	Dr. Vinoth Kumar K	A 2 × 20 Gbps hybrid MDM-OFDM–based high-altitude platform-to-satellite FSO transmission system	August 2020	Journal of Optical Communications	In Press	-	1	10	Scopus & SCI	Journal	https://doi.org/10.1515/joc-2020-0075
13	Dr. Vinoth Kumar K	ECG Cardiac arrhythmias Classification using DWT, ICA and MLP Neural Networks	April 2021	Journal of Physics Conference Series	1831	1	1	13	Scopus	Journal	https://doi.org/10.1088/1742-6596/1831/1/012015
14	Dr. Gunapriya B Dr. Palanivel P	Revolution of IoT in Energy Efficient Smart Building	March 2021	International Journal of Scientific Research in Science, Engineering and Technology	9	1	53	60	Refereed	Journal	https://ijsrset.com/paper/6971.pdf
15	Dr. Gunapriya B Ms. Suganya G	Stress -The Major Obstacle In Experiencing Euphoria	March 2021	International Journal of Scientific Research in Science, Engg and Tech	9	1	191	196	Refereed	Journal	https://ijsrset.com/paper/6995.pdf

16	Dr.VinothKumar.K Dr. Mahesh M Dr. Birendra Kumar Singh	Implementation of smart E-vehicle charging station powered by renewable energy	March 2021	International Journal of Scientific Research in Science, Engineering and Technology	9	1	11	17	Refereed	Journal	https://ijsrset.com/paper/6964.pdf
17	Dr. Mohan Das R Mr. Vinod Kumar S	Fuzzy Elman-Jordan Neural Network Based Space Vector Modulation for VSI Fed Induction Motor Drive	March 2021	International Journal of Scientific Research in Science, Engineering and Technology	9	1	256	263	Refereed	Journal	https://ijsrset.com/paper/7020.pdf
18	Mr. Muni Prakash T Ms. Rashmi N	RFID Based Attendance System using PHP and MySQL	March 2021	International Journal of Scientific Research in Science, Engineering and Technology	9	1	112	117	Refereed	Journal	https://ijsrset.com/paper/6980.pdf
19	Ms. M Karthika	Real time safety monitoring system for COVID-19	March 2021	International Journal of Scientific Research in Science, Engineering and Technology	9	1	108	111	Refereed	Journal	https://ijsrset.com/paper/6979.pdf
20	Dr. Joshua Daniel Raj Mr. Ramakrishnan S	Airport Automation using GSM	March 2021	International Journal of Scientific Research in Science, Engg and Tech	9	1	249	255	Refereed	Journal	https://ijsrset.com/paper/7019.pdf

21	Dr. Singaravelan A	Design and implementation of COBOTS to Assist with Healthcare Workers	March 2021	International Journal of Scientific Research in Science, Engineering and Technology	9	1	70	81	Refereed	Journal	https://ijsrset.com/paper/6973.pdf
22	Mr. Sunil S K	Distributed Generation impact on voltage profile improvement in agriculture feeder –a case study	March 2021	International Journal of Scientific Research in Science, Engineering and Technology	9	1	201	206	Refereed	Journal	https://ijsrset.com/paper/7011.pdf
23	Ms. Anitha A	Development of a Residential Microgrid using Home Energy Management Systems for effective energy conservation	March 2021	International Journal of Scientific Research in Science, Engineering and Technology	9	1	104	107	Refereed	Journal	https://ijsrset.com/paper/6978.pdf
24	Mr. Lithesh J	Design of Single Inductor and Two Output DC – DC Converter	December 2020	International Journal of Scientific Research in Science, Engineering and Technology	7	6	54	59	Refereed	Journal	https://ijsrset.com/paper/6802.pdf

25	Dr. Mahesh M Dr. Vinoth Kumar K	A review on enabling technologies for high power density power electronic applications	July 2021	Materials Today: Proceedings	46	9	3888	3892	Scopus	Conference	https://doi.org/10.1016/j.matpr.2021.02.340
26	Dr. Vinoth Kumar K	The generalized non-linear fresnel transform and its applications to image encrption	December 2020	Materials Today: Proceedings	In Press	-	1	6	Scopus	Conference	https://doi.org/10.1016/j.matpr.2020.10.783
27	Dr. Vinoth Kumar K Dr. Mahesh M Dr. Gunapriya B	Execution of battery charging for electric vehicles using five level methods	March 2021	IEEE Xplorer Proceedings of the 7th International Conference on Electrical Energy Systems	NA	-	312	318	Scopus	Conference	https://doi.org/10.1109/ICEES51510.2021.9383677
28	Dr. Vinoth Kumar K	Implementation of five level battery charging scheme for Electric Vehicles	March 2021	IEEE Xplorer Proceedings of the International Conference on Power Instrumentation, Control and Computing	NA	-	1	5	Scopus	Conference	https://doi.org/10.1109/PICC51425.2020.9362438
29	Dr. Singaravelan A Dr. Mahesh M Dr. Gunapriya B	PLC-Based Fire Accident Prevention System	March 2021	Lecture Notes in Electrical Engineering	700	1	1005	1010	Scopus &WoS	Conference	https://doi.org/10.1007/978-981-15-8221-9_94

30	Dr. Singaravelan A Dr. Gunapriya B	Design and Analysis of a Higher Order Process by Employing Pspice Modelling	March 2021	Lecture Notes in Electrical Engineering	700	1	3185	3196	Scopus &WoS	Conference	https://doi.org/10.1007/978-981-15-8221-9_297
31	Dr. Gunapriya B Dr. Singaravelan A	BELBIC Study for PMBLDC Motor Drive System in Industrial Applications	March 2021	Lecture Notes in Electrical Engineering	700	1	2225	2232	Scopus &WoS	Conference	https://doi.org/10.1007/978-981-15-8221-9_207
32	Dr. Singaravelan A Dr. Gunapriya B	An Overview and Advancement of Electricity Peak Load Saving Methods: A Review	March 2021	Lecture Notes in Electrical Engineering	700	1	945	958	Scopus &WoS	Conference	https://doi.org/10.1007/978-981-15-8221-9_88
33	Dr. Singaravelan A	ANN-Based Controllers for Improved Performance of BLDC Motor Drives	July 2020	Lecture Notes in Electrical Engineering	665	1	73	87	Scopus &WoS	Conference	https://doi.org/10.1007/978-981-15-5262-5_6

Table B 5.8.1. d. Publications for CAYm3 (2019-2020)

Sl.No	Faculty Name	Paper Title	Month Year	Journal Title	Volume	Issue	Page start	Page end	Indexing	Publication Type	DOI
1	Dr. Gunapriya B	Interleaved Boost Converter Based Photovoltaic Array System Employing Fuzzy Based MPPT for the Rapid Change of Solar Irradiance	June 2020	Biosc.Biotech.Res.Comm.	13	4	278	284	WoS	Journal	https://www.researchgate.net/publication/349573110_An_Improved_Intelligent_Controller_for_Brushless_DC_Motor_Drive_Based_Electric_Vehicles
2	Dr. Joshua Daniel Raj	Simplified Ciphertext Policy Attribute Based Encryption for Multimedia Applications	June 2020	Procedia Computer Science	171	NA	2713	2719	Scopus	Conference	https://doi.org/10.1016/j.procs.2020.04.294
3	Dr. Prasanth Ram J	Performance enhancement of solar PV systems applying P&O assisted Flower Pollination Algorithm (FPA)	March 2020	Solar Energy	199	-	214	229	Scopus & SCI	Journal	https://doi.org/10.1016/j.solener.2020.02.019
4	Dr. Ramkumar Subburam	Crowded plant height optimisation algorithm tuned maximum power point tracking for grid integrated solar power	July 2019	IET Renewable Power Generation	13	12	1	13	Scopus & SCI	Journal	https://doi.org/10.1049/ietrpg.2018.5053

5	Dr. Sujitha S	Spanning trees of a triangle snake graph by BFS and DFS algorithms	July 2019	International Journal of Innovative Technology and Exploring Engineering	8	8	866	868	Scopus	Journal	https://www.ijitee.org/portfolioitem/G5353058719/
6	Dr. Sujitha S	Design and performance of high frequency temperature compensated crystal oscillator	July 2019	Journal of Advanced Research in Dynamical and Control Systems,	11	7	552	561	Scopus	Journal	http://mail.jardcs.org/abstract.php?id=1811#
7	Dr. Sujitha S	Study on characteristics of a tadpole graph	July 2019	Journal of Advanced Research in Dynamical and Control Systems	11	6	857	860	Scopus	Journal	https://www.jardcs.org/abstract.php?id=1378
8	Dr. Gunapriya B	Anti-Windup PI Controller with Tracking for BLDC Motor Drive System: Modeling, Simulation and Implementation on Lab View Based FPGA	January 2020	International Journal of Recent Technology and Engineering	8	5	2064	2070	Scopus	Journal	https://www.ijrte.org/wpcontent/uploads/papers/v8i5/D9510118419.pdf
9	Dr. Gunapriya B	E-metering and fault detection in smart water distribution systems using wireless network	July 2019	International Journal of Innovative Technology and Exploring Engineering	8	11	634	639	Scopus	Journal	https://www.ijitee.org/portfolioitem/K16040981119/

10	Dr. Prasanth Ram J	An Accurate, Shade Detection-Based Hybrid Maximum Power Point Tracking Approach for PV Systems	November 2019	IEEE Transactions on Power Electronics	35	6	6594	6608	Scopus & SCI	Journal	https://doi.org/10.1109/TPEL.2019.2953242
11	Dr. Prasanth Ram J	Enhanced power production in PV arrays using a new skyscraper puzzle based one-time reconfiguration procedure under partial shade conditions (PSCs)	December 2019	Solar Energy	194	-	209	224	Scopus & SCI	Journal	https://doi.org/10.1016/j.solener.2019.10.020
12	Dr. Prasanth Ram J	Extended analysis on Line-Line and Line-Ground faults in PV arrays and a compatibility study on latest NEC protection standards	September 2019	Energy Conversion and Management	196	-	988	1001	Scopus & SCI	Journal	https://doi.org/10.1016/j.enconman.2019.06.042
13	Dr. Gunapriya B	An Improved Intelligent Controller for Brushless DC Motor Drive Based Electric Vehicles	November 2020	Journal of Green Engineering	10	11	11943	11957	Scopus	Journal	http://www.jgenng.com/wpcontent/uploads/2020/13/volume10-issue11-131.pdf
14	Dr. Sujitha S	Electronic Dice	December 2019	International Journal of Scientific Research in Science, Engg and Tech	6	1	1	6	Refereed	Journal	http://ijsrset.com/IJSRSET19663

15	Dr. Sujitha S	Wireless RGB LED Light	October 2019	International Journal of Scientific Research in Computer Science, Engineering and Information Technology	4	8	163	168	Refereed	Journal	https://ijsrcseit.com/CSEIT19562
16	Dr. Sujitha S Ms. Deepa V B	Speed Control of single phase induction motor using AC chopper by Asymmetrical PWM	July 2019	Journal For Innovative Development in Pharmaceutical and Technical Science	2	7	5	10	Refereed	Journal	https://jidps.com/wp-content/uploads/2019/07/Speed-Control-of-Single-Phase-Induction-Motor-Using-ACChopper-by-Asymmetrical-PWM-.pdf
17	Dr. Gunapriya B Mr. Lithesh J	LabView FPGA Implementation of Pi Controller Based BLDC Motor Drives	October 2019	International Journal of Scientific Research in Computer Science, Engineering and Information Technology	4	9	161	166	Refereed	Journal	https://ijsrcseit.com/paper/CSEIT1949134.pdf
18	Mr. Vinod Kumar S Dr. Mohan Das R	Design and Development of Cleaning System for Cups Using PLC	March 2020	International Journal of Scientific Research in Science, Engineering and Technology	7	2	223	232	Refereed	Journal	https://doi.org/10.32628/IJSRSET207241

19	Dr. Mohan Das R	An Improved performance characterization VSI fed induction motor drives using Random PWM	December 2019	Proceedings of International Conference on Innovative research in Engineering, Management and Sciences, 2019	-	-	1	6	Refereed	Journal	https://newhorizonindia.edu /nhengineering/internationalconference-innovativeresearch-engineeringmanagement-sciencesicirems-
20	Mr. Lithesh J	Automation of Gas Tunnel KILN Using Relay Logics And Variable Frequency Drives	November 2019	Asian Journal of Mathematics and Computer Research	26	4	206	215	Refereed	Journal	https://ikprress.org /index.php/AJOCR/article/view/5235
21	Mr. Lithesh J	Design and Development of AC Windings Calculation using MATLAB Softwares	October 2019	International Journal of Innovative Science, Engineering & Technology	6	10	326	334	Refereed	Journal	http://ijiset.com/vol6/v6s10/IJISET_V6_I10_30.pdf
22	Dr. Joshua Daniel Raj	Survey on Applications of Attribute Based Encryption in Various Networks	October 2019	International Journal of Scientific Research in Computer Science, Engineering and Information Technology	4	9	150	153	Refereed	Journal	https://ijsrcseit.com/paper/CSEIT1949192.pdf

23	Mr. Muni Prakash T Mr. Ramakrishnan S Mr. Vinod Kumar S	Optimal design of power system stabilizer based on flower pollination algorithm	October 2019	International Journal of Scientific Research in Computer Science, Engineering and Information Technology	4	9	154	160	Refereed	Journal	https://ijsrcseit.com/paper/CSEIT1949193.pdf
24	Ms. Deepa V B	Real Time Gesture Controlled Electrical Automation	July 2019	International Journal for Science and Advance Research in Technology	5	4	429	432	Refereed	Journal	http://ijsart.com /Home/IssueDetail/30097
25	Ms. Deepa V B	Solar Panel Monitoring and Maintenance System	October 2019	International Journal for Research in Computer Science, Engineering and Information Technology	6	3	536	542	Refereed	Journal	http://ijsrcseit.com /CSEIT2063133
26	Dr. Singaravelan A Ms. U Viji	Augmented reality based smart glasses	October 2019	International Journal of Scientific Research in Computer Science, Engineering and Information Technology	4	9	167	172	Refereed	Journal	https://ijsrcseit.com/paper /CSEIT1949194.pdf

27	Mr. Ramakrishnan S	IoT Based Motion Detector using Node MCU and BLYNK APP	October 2019	Journal of Xidian University	14	5	3112	3116	Refereed	Journal	https://vemanait.edu.in/pdf/cse/19-20-Paper/Mrs.SSuma-IoT-Based-Motion-Detector-using-Node-MCUBLYNK-App.pdf
28	Ms. Roopa C	Research on Smart Shopping Cart	August 2019	International Journal of Scientific Research in Computer Science, Engineering and Information Technology	6	4	359	363	Refereed	Journal	https://doi.org/10.32628/CSEIT206468
29	Ms. Roopa C	Nominal Operating Cell Temperature (NOCT)	August 2019	Journal of Emerging Technologies and Innovative Research	6	5	178	184	Refereed	Journal	http://www.jetir.org/view?paper=JETIRCD06031
30	Ms. Rashmi N	Fault Detecting Robot for Underground Electrical Cables using Atmega Arduino	June 2020	International Journal of Scientific Research in Computer Science, Engineering and Information Technology	6	3	756	761	Refereed	Journal	https://doi.org/10.32628/CSEIT2063193

31	Ms. Rashmi N	Nanotechnology based Polymerized Solar Cells and Screen-Printing Technique for Power Generation	June 2020	International Journal of Scientific Research in Computer Science, Engineering and Information Technology	6	4	118	124	Refereed	Journal	https://doi.org/10.32628/CSEIT206428
32	Mr. Lithesh J	Development of Matlab Software for Various Testing Parameters' Calculation of Static and Rotating Machines	November 2019	Asian Journal of Mathematics and Computer Research	26	4	206	215	Refereed	Journal	https://www.ikprress.org/index.php/AJOMCOR/article/view/4781
33	Ms. Karthika M	Review on Torque ripple reduction techniques of BLDC motor	June 2020	Fifth International Conference on Inventive Computation Technologies (ICICT-2020), IEEE Xplorer	-	-	1092	1096	Scopus	Conference	https://doi.org/10.1109/ICICT48043.2020.9112523
34	Mr. Muni Prakash T	Performance and Control Enhancement of Two Area Load Frequency Control Using Tandem Compound Turbine	January 2020	Innovations in Power and Advanced Computing Technologies (i-PACT), IEEE Xplorer	-	-	1	6	Scopus	Conference	https://doi.org/10.1109/i-PACT44901.2019.8960185

35	Dr. Singaravelan A	Design of a Non-iterative First-Order Compensator for Type 1 Higher Order Systems	December 2019	Lecture Notes in Electrical Engineering	602	-	355	368	Scopus &WoS	Conference	https://doi.org/10.1007/978-981-15-0829-5_35
36	Dr. Prasanth Ram J	Investigation of Bacterial Foraging Algorithm Applied for PV Parameter Estimation, Selective Harmonic Elimination in Inverters and Optimal Power Flow for Stability	January 2020	Lecture Notes in Electrical Engineering	665	-	135	167	Scopus &WoS	Conference	https://doi.org/10.1007/978-3-030-26458-1_9
37	Dr. Prasanth Ram J	Flower Pollination Based Solar PV Parameter Extraction for Double Diode Model	December 2019	Lecture Notes in Electrical Engineering	607	-	303	312	Scopus &WoS	Conference	https://doi.org/10.1007/978-981-15-0214-9_34
38	Dr. Prasanth Ram J	A New Array Reconfiguration Scheme for Solar PV Systems Under Partial Shading Conditions	December 2019	Lecture Notes in Electrical Engineering	607	-	387	396	Scopus &WoS	Conference	https://doi.org/10.1007/978-981-15-0214-9_43

Table B 5.8.1. e. Book/Book Chapter Publications for the Assessment Periods

Sl.No	Name of the faculty	Title of the book	Title of the chapters published	Year of publication	ISBN	Name of the publisher	Weblink
1	Ms. Anitha A	Advances in Cognitive Science and Communications	Bi-directional DC-DC Converters and Energy Storage Systems of DVR—An Analysis	2023	978-981-19-8086-2	Springer	https://doi.org/10.1007/978-981-19-8086-2_46
2	Dr. Vinoth Kumar K	Handbook of Research on Evolving Designs and Innovation in ICT and Intelligent Systems for Real-World Applications	Intelligent Systems in Latest DFA Compression Methods for DPC	2022	9781799897958	IGI Global	https://doi.org/10.4018/978-1-7998-9795-8.ch009
3	Dr. Mahesh M Dr. Vinoth Kumar K	Smart Buildings Digitalization IoT and Energy Efficient Smart Buildings Architecture and Applications	Enabling Technologies for Smart Buildings High Power Density Power Electronic Converters	2022	9781003201069	CRC Press, Taylor and Francis	https://doi.org/10.1201/9781003201069
4	Dr. Gunapriya B Dr. Singaravelan A Dr. Mahesh M	Artificial Intelligence and Internet of Things for Renewable Energy Systems	An IoT-based approach for efficient home automation	2022	9783110714043	De Gruyter	https://doi.org/10.1515/9783110714043-003
5	Dr. Vinoth Kumar K	Design, Applications, and Maintenance of Cyber-Physical Systems	Network intrusion detection system in latest DFA compression methods for deep packet scruting	2021	9781799867210	IGI Global	https://doi.org/10.4018/978-1-7998-6721-0.ch010
6	Dr. Vinoth Kumar K	EAI/Springer Innovations in Communication and Computing	AI-Based Energy Management and Real-Time Optimization in Electric and Hybrid EV	2022	978-3-030-85423-2	Springer	https://doi.org/10.1007/978-3-030-85424-9_12

7	Dr Singaravelan A Dr. Gunapriya B	Lecture Notes on Data Engineering and Communications Technologies	Sensorless Speed Control of BLDC Motor for EV Applications	2022	978-981-16-6604-9	Springer	https://doi.org/10.1007/978-981-16-6605-6_26
8	Dr. Gunapriya B Dr. Sujitha S	Lecture Notes on Data Engineering and Communications Technologies	Smart Home Technologies Toward SMART (Specific, Measurable, Achievable, Realistic, and Timely) Outlook	2022	978-981-19-2068-4	Springer	https://doi.org/10.1007/978-981-19-2069-1_49
9	Dr. Vinoth Kumar K	Model Based Design of Power Electronics Multi-Paradigm Numerical Computing	-	2020	978-620-2-68039-4	LAMBERT Academic Publishing Mauritius	https://www.lappublishing.com/catalog/details/store/tr/book/978-620-2-68039-4/model-based-design-ofpower-electronics
10	Dr. Vinoth Kumar K Dr. Mahesh M	Basic Electrical and Electronics Engineering	-	2022	978-9354643194	Wiley Publishers, New Delhi	https://www.wileyindia.com/electrical-electronicsinstrumentationengineering/basicelectrical-and-electronicsengineering-2ed.html

Table B 5.8.1. f. Ph.D. Supervisorship during the assessment Period

S. No.	Name of the Faculty	Qualification	Area of Specialization	Designation	Name of the University in which supervisorship is recognised
1	Dr. M. Mahesh	Ph.D	Power Electronics	Professor	Visvesvaraya Technological University, Belgavi
2	Dr. Agalya V	Ph.D	Power Electronics	Professor	Visvesvaraya Technological University, Belgavi
3	Dr. Sujitha S	Ph.D	Electrical Engineering	Associate Professor	Visvesvaraya Technological University, Belgavi
4	Dr. Gunapriya B	Ph.D	Power Electronics and Drives	Associate Professor	Visvesvaraya Technological University, Belgavi
5	Dr. Vinoth Kumar K	Ph.D	Power Electronics and Drives	Associate Professor	Visvesvaraya Technological University, Belgavi
6	Dr. Mohan Das R	Ph.D	Power Electronics	Associate Professor	Visvesvaraya Technological University, Belgavi
7	Dr. Prabhakaran N	Ph.D	Automotive Electronics	Sr. Assistant Professor	Visvesvaraya Technological University, Belgavi
8	Dr. Singaravelan A	Ph.D	Power Electronics	Sr. Assistant Professor	Visvesvaraya Technological University, Belgavi

Table B 5.8.1. g. Ph.D. awarded during the assessment Period

S.No	Faculty Name	Guide Name	Research Area	Research Title	Year of Registration	University Name	Year of Completion
1.	Dr. Joshua Daniel Raj	Dr Karthik P, Professor, Department of ECE, K S School of Engineering and Management, Bengaluru	Network Security	Implementation of Polymorphic attribute-based encryption for big date	2014	Visvesvaraya Technological University, Belagavi	2020
2.	Dr. Mohan Das R	Dr.E.Chandirasekaran Professor, Department of EEE, Coimbatore Institute of Technology, Coimbatore	Power Electronics	Improved Random space vector pulse width modulation for performance enhancement in voltage source inverter	2011	Anna University, Chennai	2021

Table B 5.8.1. h. Faculty Achievements during the assessment Period

Sl.No	Academic Year	Name of the Faculty	Nature of Achievement (Awards / Recognition / Appreciation)	Achievement	Date	Organization with details
1.	2022-23	Dr. Vinoth Kumar K	Certificate of Appreciation	Shri P K Das Memorial Best Faculty Award 2022	15.12.2022	Nehru Group of Institutions, Coimbatore
2.	2022-23	Dr. Gunapriya B	Certificate of Appreciation	Session Chair in IEEE 2022 International Conference for Communication, Computing and Industry 4.0 (C2I4)	15.12.2022 to 16.12.2022	CMR Institute of Technology, Bengaluru
3.	2022-23	Dr. Gunapriya B	Certificate of Appreciation	Session Chair in IEEE 2022 International Conference for Communication, Computing and Industry 4.0 (C2I4)	24.01.2023 to 26.01.2023	Rajarambapu Institute of Technology, Maharashtra
4.	2022-23	Dr. Vinoth Kumar K	Certificate of Appreciation	Voluntary Contribution to chapter as Execom member for the year 2022	11.02.2023	IEEE Power Electronics Society, Bangalore Chapter
5.	2022-23	Dr. S. Sujitha	Certificate of Appreciation	Session Chair in IEEE 2023 International Conference for Advancement in Technology (ICONAT)	24.01.2023 to 26.01.2023	Rajarambapu Institute of Technology, Maharashtra
6.	2022-23	Dr. Vinoth Kumar K	Certificate of Appreciation	Session Chair in IEEE 2023International Conference for Advancement in Technology (ICONAT)	24.01.2023 to 26.01.2023	Rajarambapu Institute of Technology, Maharashtra
7.	2022-23	Dr. Agalya V	Certificate of Appreciation	Session Chair in IEEE 2023 International Conference for Advancement in Technology (ICONAT)	24.01.2023 to 26.01.2023	Rajarambapu Institute of Technology, Maharashtra
8.	2022-23	Dr. Vinoth Kumar K	Certificate of Appreciation	Resource Person for National level seminar on art of journal search for publication	17.12.2022	SNS College of Engineering, Coimbatore
9.	2022-23	Dr. Vinoth Kumar K	Certificate of Appreciation	Volunteered as proctor to guide	22.10.2022	IEEE Xtreme 16.0 programming

				and oversee competing teams for IEEE Xtreme 16.0 programming competition		competition, USA
10.	2022-23	Dr. Agalya V	Certificate of Appreciation	Orientation Session on Institutional's Innovation Council framework	12.08.2022	T. John College, Bengaluru
11.	2022-23	Mr. Kodandapani D	Certificate of Appreciation	Resource Person in 5 days skill development program on IPR, Copyrights & Patents filing and Pathway for Entrepreneurship	21.11.2022 to 25.11.2022	M. Kumarsamy College of Engineering, Karur
12.	2022-23	Dr. Agalya V	Certificate of Appreciation	Resource Person in FDP on Patent Drafting and Filing	25.11.2022 to 26.11.2022	Annapoorna Engineering College, Salem
13.	2022-23	Dr. Vinoth Kumar K	Reviewer Recognition	International Conference on Innovations in robotics, Intelligent automation and Control	14.10.2022	Sri Krishna College of Engineering and Technology, Coimbatore
14.	2021-22	Dr. Vinoth Kumar K	Best Project of the Year	Best Project Award	12.08.2021	Karnataka State Council for Science and Technology, Bengaluru
15.	2021-22	Dr. S. Sujitha	Outstanding Young Engineer Award	Best Performing Professor	15.09.2021	Indian Technology Congress Association
16.	2021-22	Dr. Vinoth Kumar K	Certificate of Appreciation	Session Chair in IEEE 2021 2nd Global Conference for Advancement in Technology (GCAT)	01.10.2021 to 03.10.2021	Nagarjuna College of Engineering and Technology, Bengaluru
17.	2021-22	Dr. Vinoth Kumar K	Certificate of Appreciation	Resource Person for FDP	31.05.2022	NHCE Bengaluru
18.	2021-22	Dr. Vinoth Kumar K	Certificate of Appreciation	Session Chair in IEEE 2022 International Conference for Advancement in Technology (ICONAT)	21.01.2022 to 22.01.2022	Rajarambapu Institute of Technology, Maharashtra
19.	2021-22	Dr. Vinoth Kumar K	Certificate of Reviewer Recognition	IEEE Access Journal	24.12.2021	IEEE Access, USA
20.	2021-22	Dr. Vinoth Kumar K	Certificate of Appreciation	Resource Person for Intellectual Property Rights Webinar	29.04.2022	Siddartha Institute of Engineering and Technology, Puttur

21.	2021-22	Dr. Vinoth Kumar K	Certificate of Appreciation	Resource Person for Seminar on How to Publish an Academic Book	02.06.2022	Gates Institute of Technology, Gooty
22.	2021-22	Mr. Satish Kumar S	Certificate of Appreciation	Reviewer for International Conference on Electronics, Computing and Communication Technologies	08.07.2022 to 10.07.2022	IEEE Bangalore Section
23.	2021-22	Mr. Satish Kumar S	Certificate of Appreciation	Volunteer	04.12.2021	IEEE Power and Energy Society Young Professionals
24.	2021-22	Mr. Satish Kumar S	Certificate of Appreciation	Reviewer in the IEEE International Conference on Distributed Computing and Electrical Circuits and Electronics (ICDCECE-2022)	23.04.2022 to 24.04.2022	Ballari Institute of Technology and Management, Ballari
25.	2021-22	Mr. Satish Kumar S	Certificate of Appreciation	Scientific Committee Member at the International Conference on Frontiers in Engineering, Management and Science (ICFEMS 2022)	27.04.2022 to 28.04.2022	A P S College of Engineering, Karnataka
26.	2021-22	Dr. Prabhakaran N	Certificate of Appreciation	Reviewer in Virtual International Conference on Futuristic Communication and Network Technologies (VICFCNT-2021)	10.12.2021 to 11.12.2021	Vellore Institute of Technology, Chennai
27.	2021-22	Dr. Mohan Das R	Certificate of Appreciation	Resource Person to Webinar on Industrial Automation and Industry 4.0	02.08.2021	Dhanalakshmi College of Engineering, Chennai
28.	2021-22	Mr. Vinod Kumar S	Certificate of Appreciation	Resource Person to Webinar on Industrial Automation and Industry 4.0	02.08.2021	Dhanalakshmi College of Engineering, Chennai
29.	2021-22	Dr. Joshua Daniel Raj	Certificate of Appreciation	Resource Person in Guest Lecture on Innovative Practices in VLSI Design	29.06.2022	Mahendra Institute of Technology, Tiruchengode
30.	2021-22	Dr. Mohan Das R	Certificate of Appreciation	Resource Person to National Level Seminar on Industrial Automation and Industry 4.0	08.04.2022	Hindustan College of Engineering and Technology, Coimbatore

31.	2021-22	Dr. Agalya V	Certificate of Appreciation	Session Chair in International Conference on Emerging Trends in Engineering, Management and Technology	22.06.2022	Raja Rajeswari College of Engineering, Bengaluru
32.	2021-22	Dr. Agalya V	Certificate of Appreciation	Resource Person in National Workshop on Entrepreneurship and Patents	28.05.2022 & 04.06.2022	Assam Don Bosco University
33.	2021-22	Dr. Agalya V	Certificate of Appreciation	Chairperson for Impact series on IPR and IP Management for Start-up	26.06.2022	NPR College of Engineering and Technology, Dindigul
34.	2021-22	Dr. Agalya V	Certificate of Appreciation	Resource Person in Guest Lecture on How to plan for startup and legal and ethical steps	02.04.2022	Bhilai Institute of Technology, Durg
35.	2021-22	Dr. Agalya V	Certificate of Appreciation	Resource Person in Webinar on Intellectual Property Rights and IP Management for Startup	19.05.2022	Sriram Engineering College, Chennai
36.	2021-22	Dr. Agalya V	Certificate of Appreciation	Resource Person on Motivational Talk	24.06.2022	NMAM Institute of Technology, Udupi
37.	2021-22	Dr. Agalya V	Certificate of Appreciation	Resource Person in Workshop on Intellectual Property Rights and IP management for startups	21.04.2022	Mahendra College of Engineering, Salem
38.	2021-22	Dr. Vinoth Kumar K	Certificate of Appreciation	Reviewer in Bulletin of Electrical Engineering and Informatics (BEEI)	07.02.2022	Institute of Advanced Engineering and Science, Indoensia
39.	2021-22	Dr. Vinoth Kumar K	Certificate of Appreciation	Reviewer in Engineering Reports Journals	25.02.2022	Wiley
40.	2020-21	Dr. Vinoth Kumar K	Elsevier Reviewer Recognition	Measurement Journal, Elsevier	26.09.2020	Elsevier
41.	2021-22	Dr. Agalya V	Certificate of Appreciation	National Level Workshop on Accelerators / Incubation - Opportunities for students &faculties - Early Stage Entrepreneurs	30.07.2022	Malla Reddy Engineering College, Secundrabad

42.	2020-21	Dr. Vinoth Kumar K	Certificate for Grant	Patent	13.01.2021	Australian Patent Office
43.	2020-21	Dr. Vinoth Kumar K	Certificate of Reviewer Recognition	IEEE Access Journal	01.11.2020	IEEE Access, USA
44.	2020-21	Dr. S. Sujitha	Certificate of Award	Best Faculty Member	06.04.2021	UNISEC India
45.	2020-21	Dr. Vinoth Kumar K	Certificate of Recognition	IEEE Senior Member Grade	23.11.2020	IEEE USA
46.	2020-21	Dr. Vinoth Kumar K	Certificate of Appreciation	AICTE Sponsored International Conference on "Research Perspectives of IOT in Hybrid Grid Integrated Renewable Energy Sources ICRPHGIRES – 2021"	26.03.2021	New Horizon College of Engineering, Bengaluru
47.	2020-21	Dr. Singaravelan A	Certificate of Appreciation	Resource Person for ATAL Sponsored FDP on Instrumentation in Telemedicine	21.09.2020 to 25.09.2020	Sri Krishna Colege of Technology, Coimbatore
48.	2020-21	Dr. Singaravelan A	Certificate of Appreciation	Session Chair on International Conference on Automation, Signal Processing, Instrumentation and Control	27.02.2020 to 28.02.2020	Vellore Institute of Technology, Velore
49.	2020-21	Dr. Mahesh M	Certificate of Appreciation	Resource Person for AICTE Sponsored FDP on Renewable Energy Forecasting India Scenario and Future Prospects	10.12.2020	Sir M. Visvesvaraya Institute of Technology, Bengaluru
50.	2020-21	Dr. Prabhakaran N	Certificate of Appreciation	Session Chair on IEEE International Conference on Computer Communication and Informatics 2021	27.01.2021 to 29.01.2021	Sri Shakthi Institute of Engineering and Technology, Coimbatore
51.	2020-21	Dr. Joshua Daniel Raj	Certificate of Appreciation	Resource Person for Workshop on Hassle- Free Research Article writing on Latex	12.06.2021	Sambhram Institute of Technology, Bengaluru
52.	2020-21	Dr. Vinoth Kumar K	Certificate of Appreciation	Reviewer in Bulletin of Electrical Engineering and Informatics (BEEI)	03.06.2021	Institute of Advanced Engineering and Science, Indoensia
53.	2020-21	Dr. Vinoth Kumar K	Certificate of Appreciation	Resource Person in National Level Seminar	26.09.2020	Nehru Institute of Engineering and Technology, Coimbatore

54.	2020-21	Mr. Satish Kumar S	Certificate of Appreciation	Resource Person in FDP on Advanced Power Electronic Applications in Power Systems	19.10.2020 to 31.10.2020	Sasi Institute of Technology and Engineering, AP
55.	2020-21	Dr. Vinoth Kumar K	Certificate of Appreciation	Resource Person in Webinar Series	16.07.2021	Sri Ramakrishna Engineering College, Coimbatore
56.	2019-20	Dr. S. Sujitha	Certificate of Award	International Webinar Participation	22.06.2020 to 26.06.2020	WCRC, ITCA, BRICS FEO, UNISEC Global, TSC, MIIC, NDRF, GS, SpaceWay - CSPD, Serbia
57.	2019-20	Dr. Joshua Daniel Raj	Certificate of Appreciation	Resource Person in Guest Lecture on Verification of Digital Circuits using System Verilog	18.11.2019	K.S Institute of Technology Bengaluru
58.	2019-20	Mr. Satish Kumar S	Certificate of Appreciation	Resource Person for Guest Lecture on Control System	13.08.2020	Panimalar Institute of Technology, Chennai

Table B 5.8.1. i. Faculty Publications, Citations and h-Index in Scopus

S. No.	Name of the Faculty	Scopus ID	Total Documents	Citations	h-Index
1.	Dr. M Mahesh	27267900400	27	130	7
2.	Dr. Arangarajan V	57191867936	27	301	10
3.	Dr. Agalya V	56049301000	16	10	2
4.	Dr. Sujitha S	57210587639	22	48	4
5.	Dr. Gunapriya B	55315143400	33	178	9
6.	Dr. Vinoth Kumar K	7402675817	103	849	14
7.	Dr. Mohan Das R	57432205400	11	5	1
8.	Dr. Joshua Daniel Raj	57217177254	5	5	1
9.	Ms. Karthika M	57465473400	4	10	2
10.	Dr. Singaravelan A	55810671600	19	121	7
11.	Dr. Prabhakaran N	56565250000	8	43	3
12.	Dr. Prasanth Ram J	57211584241	34	1915	17
13.	Mr. Satish Kumar D	57226679312	7	5	1
14.	Ms. Kavitha Chenna Reddy	57556726800	3	0	0
15.	Mr. Muniprakash T	57215018715	5	6	1
16.	Mr. Vinod Kumar S	57698943400	4	1	1
17.	Mr. Ramakrishnan S	57890654200	1	1	1
18.	Mr. Sunil S K	58220479700	1	0	0
19.	Ms. Anitha A	58139656500	2	1	1
20.	Mr. Kodandapani D	57210732049	13	7	2
21.	Mr. Kartheek Vankadara	57210265952	3	2	1
22.	Ms. Surat Pyari Atti	58194365700	2	0	0
23.	Ms. Soumya K V	58285456300	1	0	0
24.	Ms. Sangeetha C N	58285293800	1	0	0
25.	Ms. Pooja Jose	58285216700	1	0	0
26.	Ms. Manochitra G	57973323100	2	0	0

Table B 5.8.1. j. Faculty Web of Science Researcher ID and Google Scholar ID with Citations and h-Index

S. No.	Name of the Faculty	Web of Science Researcher ID	Google Scholar ID	Citations	h Index	i10 Index
1	Dr. M Mahesh	ABB-3356-2020	xy0KK6UAAAAJ	235	9	9
2	Dr. Arangarajan V	AFS-9415-2022	epKpbgsAAAAJ	475	13	15
3	Dr. Agalya V	AAU-5376-2020	G7Ry3BEAAAAJ	29	3	0
4	Dr. Sujitha S	S-9181-2017	3e9xQ0QAAAAJ	26	3	0
5	Dr. Joshua Daniel Raj	ABH-6195-2020	BEHIl0gAAAAJ	3	1	0
6	Dr. Gunapriya B	ABC-4746-2020	4fxtOIcAAAAJ	232	9	9
7	Dr. Mohan Das R	ABB-6048-	rKWa-fIAAAAJ	44	2	1

		2020				
8	Dr. Vinoth Kumar K	C-6599-2018	wJKKjWQAAAAJ	1396	19	32
9	Ms. Karthika M	L-8844-2014	Sx3tf4kAAAAJ	9	1	0
10	Mr. Satish Kumar D	ABB-9490-2021	Egu7y_kAAAAJ	4	2	1
11	Ms. Deepa V Bolanavar	ACR-7315-2022	hZC9KGcAAAAJ	2	1	0
12	Ms. Kavitha Chenna Reddy	ABB-2624-2022	uQDG6HsAAAAJ	2	1	0
13	Mr. Vinod Kumar S	AEA-4541-2022	dmfX4EsAAAAJ	1	1	0
14	Dr. Singaravelan A	U-8548-2018	KLm9z3gAAAAJ	129	7	4
15	Mr. Sunil S K	ABH-6190-2020	4Dlpx5EAAAAJ	1	1	0
16	Mr. Ramakrishnan S	ABH-6194-2020	WYkn7P4AAAAJ	1	1	0
17	Dr. Prabhakaran N	A-4575-2016	HS7hBo0AAAAJ	25	3	1
18	Mr. Muniprakash T	ABC-7591-2020	W4DjQ2gAAAAJ	3	2	2
19	Dr. Prasanth Ram J	ABB-4050-2020	2TXnuUkAAAAJ	2304	18	21
20	Ms. Viji U	ADX-8506-2022	8JJLQFAAAAAJ	1	1	0
21	Ms. Anitha A	ACJ-9092-2022	3cbytQgAAAAJ	1	1	0
22	Mr. Lithesh J	AFR-0867-2022	vUSD__cAAAAJ	1	1	0
23	Ms. Roopa C	HRD-3466-2023	qYunhwEAAAAJ	1	1	0
24	Ms. Rashmi N	ABH-6191-2020	rSruSXAAAAAJ	1	1	0
25	MrKodandapani D	AGV-4213-2022	D_Y5cicAAAAJ	5	1	0
26	Mr. Kartheek Vankadara	ACX-4547-2022	WYdBkI8AAAAJ	2	1	0
27	Ms Surat Pyari Atti	IQT-9185-2023	MrJ1tloAAAAJ	2	1	0
28	Ms. Soumya K V	IQT-8138-2023	KM4DDAgAAAAJ	2	1	0
29	Ms. Sangeetha C N	IQT-8077-2023	4hEZ6kAAAAJ	2	1	0
30	Ms. Pooja Jose	IQT-8130-2023	V1O0X6gAAAAJ	2	1	0
31	Ms. Manochitra G	IQT-7826-2023	UagM5RsAAAAJ	2	1	0

Table B 5.8.1. k. Faculty ORCID ID Details

S. No.	Name of the Faculty	ORCID ID
1.	Dr. M Mahesh	0000-0002-4365-6443
2.	Dr. Arangarajan V	0000-0003-2247-1893
3.	Dr. Agalya V	0000-0003-3829-0376
4.	Dr. Sujitha S	0000-0002-4305-3108
5.	Dr. Gunapriya B	0000-0002-8176-9932
6.	Dr. Vinoth Kumar K	0000-0002-3009-1658
7.	Dr. Mohan Das R	0000-0003-2768-8442
8.	Dr. Joshua Daniel Raj	0000-0001-9279-0190
9.	Ms. Karthika M	0000-0002-2832-1426
10.	Mr. Satish Kumar D	0000-0002-5385-5315
11.	Ms. Deepa V Bolanavar	0000-0002-7379-5786
12.	Ms. Kavitha Chenna Reddy	0000-0001-6673-2990
13.	Mr. Vinod Kumar S	0000-0003-3125-6044
14.	Dr. Singaravelan A	0000-0001-9599-4893
15.	Mr. Sunil S K	0000-0003-2518-1533
16.	Mr. Muniprakash T	0000-0001-6469-3414
17.	Mr. Ramakrishnan S	0000-0001-7904-103X
18.	Dr. Prabhakaran N	0000-0003-3802-8239
19.	Dr. Prasanth Ram J	0000-0003-2882-6018
20.	Ms. Viji U	0000-0001-8964-9460
21.	Ms. Anitha A	0000-0001-6970-4311
22.	Mr. Lithesh J	0000-0002-3542-1230
23.	Ms. Roopa C	0000-0003-1784-283X
24.	Ms. Rashmi N	0000-0001-5151-9505
25.	MrKodandapani D	0000-0001-9494-1239
26.	Mr. Kartheek Vankadara	0000-0002-7388-0032
27.	Ms Surat Pyari Atti	0009-0006-7832-1789
28.	Ms. Soumya K V	0009-0005-0541-4418
29.	Ms. Sangeetha C N	0009-0006-4320-8292
30.	Ms. Pooja Jose	0009-0008-6705-0789
31.	Ms. Manochitra G	0000-0002-0912-4996

5.8.2 Sponsored Research (20)

Funded research from outside:
(Provide a list with Project Title, Funding Agency, Amount and Duration)
Funding Amount (Cumulative during CAYm1, CAYm2 and CAYm3):
Amount > 50 Lakh – 20 Marks,
Amount > 40 and < 50 Lakh – 15 Marks,
Amount > 30 and < 40 Lakh – 10 Marks,
Amount > 15 and <30 Lakh – 5 Marks,
Amount < 15 Lakh – 0 Marks -NIL

Table B. 5.8.2.1 Sponsored research projects

Year	Amount
2021-22	Rs. 15,86,967
2020-21	Rs. 13,71,573
2019-20	Rs. 42,41,162
TOTAL AMOUNT	**Rs. 71,99,702**

Table B. 5.8.2.3 Sponsored research projects for the CAYm2 (2021-22)

Sl.No	Name of the Principal Investigator	Project Title	Duration	Funding Agency	Amount (in Rupees)
1.	Dr. Sujitha S Mr. Lithesh J	Artificial Intelligence and IoT based traction motor drive condition motoring in hybrid electric vehicles	6 Months	Karnataka State Council of Science and Technology, Bengaluru	Rs. 8000
2.	Dr. Vinoth Kumar K Mr. Muni Prakash T	Optimization of Battery Performance in Electric Vehicle	6 Months	Karnataka State Council of Science and Technology, Bengaluru	Rs. 7000
3.	Dr. Vinoth Kumar K	Implementation of parameter estimation of an electric bicycle using IoT for village / rural/disabled community	6 Months	Karnataka State Council of Science and Technology, Bengaluru	Rs. 7000
4.	Dr. Vinoth Kumar K Dr.Gunapriya B	Solar Driven Vaccine Refrigerator using environment-friendly refrigerants for Off-Grid locations	6 Months	Karnataka State Council of Science and Technology, Bengaluru	Rs. 8000
5.	Dr. Singaravelan A	Implementation and design of cobots in floriculture	6 Months	Karnataka State Council of Science and Technology, Bengaluru	Rs. 7000
6.	Ms. Karthika M Dr. Mohan Das R	Solar based energy efficient hybrid SLBLDC motor for agriculture	6 Months	Karnataka State Council of Science and Technology, Bengaluru	Rs. 7000
7.	Dr. Sujitha S Ms. Rashmi N	LORA based smart cities and home automation using IoT	6 Months	Karnataka State Council of Science and Technology, Bengaluru	Rs. 7000
8.	Dr. Vinoth Kumar K	Insights, Projection and findings on the evolving publishing industry	6 Months	Science Alert, Dubai	Rs. 8500
9.	Dr. Vinoth Kumar K Dr. Sujitha S	Electric Quad Bike with Hybrid Charging Mode for Physically Challenged	1 Year	IEEE, USA	Rs. 59,835
10.	Dr. Sujitha S	High Voltage Engg - Removal of Obsolescence	1 Year	AICTE, New Delhi	Rs. 2,67,632
11.	Dr. Sujitha S	Development of SDR for UNITYsat and LoRa Interface, OBC and Subsystems with Firmware; Testing and Qualifications for Launch to LEO	2 Years	TSC Technologies	Rs. 12,00,000
Total Amount (X) in Rs					15,86,967.00

Table B. 5.8.2.3 Sponsored research projects for the CAYm2 (2020-21)

Sl.No	Name of the Principal Investigator	Project Title	Duration	Funding Agency	Amount (in Rupees)
1.	Dr. Sujitha S	IOT in Renewable Energy Resources Integration to Electricity Grid	1 Year	AICTE, New Delhi	Rs. 2,50,000
2.	Dr. Sujitha S	Development of SDR for UNITYsat and LoRa Interface, OBC and Subsystems with Firmware; Testing and Qualifications for Launch to LEO – Phase 2	2 Years	TSC Technologies	Rs. 1,00,000
3.	Dr. Sujitha S	IC - Research Perspectives: IOT in Hybrid Grid Integrated Renewable Energy Sources	1 Year	AICTE, New Delhi	Rs. 5,00,000
4.	Dr. Ramkumar S Dr. M. Mahesh	Smart Grid Technologies for Energy Efficiency and Active Demand Side Management	1 Year	AICTE, New Delhi	Rs. 3,48,333
5.	Dr. Vinoth Kumar K	Solar Refrigerator for Portable Refrigerator	6 Months	Karnataka State Council of Science and Technology, Bengaluru	Rs. 5500
6.	Dr. Vinoth Kumar K	Implementation of Smart E-Vehicle Charging Station powered by Renewable Energy	6 Months	Karnataka State Council of Science and Technology, Bengaluru	Rs. 5000
7.	Dr. Singaravelan A	A collaborative robot to serve patients and to collect infectious wastage at the isolation ward	6 Months	Karnataka State Council of Science and Technology, Bengaluru	Rs. 4000
8.	Ms. Roopa C	A Novel fault tolerant solution for underground transmission system monitoring by GSM	6 Months	Karnataka State Council of Science and Technology, Bengaluru	Rs. 2000
9.	Dr.Gunapriya	AI based Smart	6 Months	Karnataka	Rs. 5000

	B Mr. Vinod Kumar S	Mirror using Raspberry PI		State Council of Science and Technology, Bengaluru	
10.	Dr.Gunapriya B	Recycled UVC Steilizer	6 Months	Karnataka State Council of Science and Technology, Bengaluru	Rs. 4500
11.	Dr. Vinoth Kumar K	Artificial Intelligence Based Solar Powered Electric Bi-hybrid Vehicle Compared with IC Engine Vehicles Using Graph Analytics	1 Year	IEEE, USA	Rs. 36,740
12.	Dr. Vinoth Kumar K	Insights, Projection and findings on the evolving publishing industry	6 Months	Science Alert, Dubai	Rs. 7500
13.	Dr. Mohandas R Mr. Vinod Kumar S	Implementation of Industry 4.0 and its Challenges	1 Year	AICTE, New Delhi	Rs. 93,000
14.	Dr. S. Sujitha Mr. Vinod Kumar S	Military Safety and Surveillance robot	6 Months	Visvesvaraya Technological University, Belagavi	Rs. 5000
15.	Ms. Karthika M	Real Time Safety monitoring systems for Covid-19	6 Months	Visvesvaraya Technological University, Belagavi	Rs. 5000
Total Amount (Y) in Rs					**13,71,573.00**

Table B. 5.8.2.4 Sponsored research projects for the CAYm3 (2019-20)

Sl.No	Name of the Principal Investigator	Project Title	Duration	Funding Agency	Amount (in Rupees)
1.	Dr. Mahesh K	Green energy-hybrid renewable power generation (solar-wind) for irrigation	2 Years	Vision Group of Science and Technology, Government of Karnataka	Rs. 5,00,000
2.	Dr. Elumalai R Dr. Sujitha S	Modernization of high voltage engineering lab	2 Years	AICTE, New Delhi	Rs. 13,38,162
3.	Dr. Sujitha S	Research Perspectives: IOT in Hybrid Grid Integrated Renewable Energy Sources	1 Year	AICTE, New Delhi	Rs. 5,00,000
4.	Dr. Sujitha S	Research Perspectives on Power Converters, Controls and Hybrid Grid Integration of Renewable Energy Sources	1 Year	AICTE, New Delhi	Rs. 2,50,000
5.	Dr. Sujitha S	The Role of IOT in Renewable Energy Resources Integration to Electricity Grid	1 Year	AICTE, New Delhi	Rs. 1,50,000
6.	Dr. Sujitha S	Design and Development of Variable Frequency Ultrasonic Pest Repeller	6 Months	Karnataka State Council of Science and Technology, Bengaluru	Rs. 3000
7.	Dr. Sujitha S	Electrical Power Supply (EPS) System for UNITYsat-SlimSatellite (0.35U)-Phase 1	2 Years	TSC Technologies	Rs. 15,00,000
Total Amount (Z) in Rs					42,41,162.00

Cumulative Amount (X + Y + Z) = Rs. 71,99,702.00

5.8.3 Development activities (15)

Provide details:

- **Product Development**
- **Research laboratories**
- **Instructional materials**
- **Working models/charts/monograms etc.**

i) Product Development:

The department fosters the culture of innovation through the faculties and students. The training on modern technologies is given through the various centre of excellences. The suitable forums are also provided through institute innovation council and entrepreneurship and development cell. The list of innovative projects is shown in Table B 5.8.3 i) a - Table B 5.8.3 i) e.

Table B 5.8.3 i) a. Innovative Projects for the academic year 2022-2023

SI. No.	Title of the Project	Name of the Student	Guide Name
1	Design and fabrication of Quad Bike for physically Challenged	1NH19EE010 Aisiri M Urs 1NH19EE046 Harshitha R 1NH19EE066 M Rohit Kumar Reddy 1NH19EE403 Koushik P	Dr. Sujitha S
2	Artificial Intelligence based SRLF-Driving car using Robotic Model	1NH19EE125W Y Jhansipriya 1NH19EE123 Vinod Kumar R 1NH19EE085 P Ravi Nandan 1NH19EE127 YannamRoopeswar Reddy	Ms. Surat Pyari Atti Dr. Sujitha S
3	Design and Implementation of solar fed food alert system using Bolt Wi-Fi Module	1NH19EE005 Abrar Altaf Dar 1NH19EE016 Ankit Kumar 1NH19EE033 Ezra James D'Cunha 1NH19EE040 Gaurav P Kumar	Ms. Karthika M Dr. Mohan Das R
4	Silent surveillance autonomous drone for disaster management and military security using artificial intelligence	1NH19EE106 Sharmi Kanaujia 1NH19EE097 Sanskriti Agarwalla 1NH19EE103 Shaik Sameer 1NH19EE114 Tabasum Manzoor	Dr. Sujitha S Ms. Soumya K V
5	Prepaid Energy Meter with Theft detection using IoT	1NH19EE008 Aishwarya P 1NH19EE023 Charishma A 1NH19EE042 Gautammee K K 1NH19EE055 Kesamreddy Deepthi	Dr. Vinoth Kumar K

Table B 5.8.3 i) b. Innovative Projects for the academic year 2021-2022

Sl. No.	Title of the Project	Name of the Student	Guide Name
1	Artificial Intelligence and IoT based traction motor drive condition motoring in hybrid electric vehicles	1NH18EE026 Kiran U 1NH18EE035 Naveen Kumar K R 1NH18EE046 Rohan N 1NH18EE056 Shreysh Babu	Dr. Sujitha S Mr. Lithesh J
2	Optimization of Battery Performance in Electric Vehicle	1NH18EE736 R Puneeth Venkat Sai Varma 1NH18EE735 Pranav R Naik 1NH18EE738 Rahul Vijay Lingadhal 1NH18EE737 R Supraja	Dr. Vinoth Kumar K Mr. Muni Prakash T
3	Implementation of parameter estimation of an electric bicycle using IoT for village / rural/disabled community	1NH18EE708 Bhavana YC 1NH18EE709 Bindhu V 1NH18EE710 C Bhavana Singh	Dr. Vinoth Kumar K
4	Solar Driven Vaccine Refrigerator using environment-friendly refrigerants for Off-Grid locations	1NH18EE017 Greeshma Chennareddy 1NH18EE010 Chitra S 1NH18EE013 Kavipriya E 1NH18EE050 Sahana B	Dr. Vinoth Kumar K Dr. Gunapriya B
5	Implementation and design of cobots in floriculture	1NH18EE731 Niranjan C 1NH19EE407 Ramesharaja Ursu K R 1NH18EE700 Abhimanyu Iyer 1NH18EE716 Dhanush L	Dr. Singaravelan A
6	Solar based energy efficient hybrid SLBLDC motor for agriculture	1NH18EE727 Md Sagar Khan 1NH18EE725 L Ashwini B 1NH18EE724 K Utkarsh Alok 1NH18EE069 Vivek Ranjan	Ms. Karthika M Dr. Mohan Das R
7	LORA based smart cities and home automation using IoT	1NH18EE722 K Prasanna 1NH18EE702 Ananda M A 1NH18EE723 Kiran P Gowda 1NH18EE734 Prajwal Raikar	Dr. Sujitha S Mrs. Rashmi N

Table B 5.8.3 i) c. Innovative Projects for the academic year 2020-2021

SI. No.	Title of the Project	Name of the Student	Guide Name
1	Solar Refrigerator for Portable Refrigerator	1NH17EE025 K Shriya Reddy 1NH17EE027 K Sai Hemanth Reddy 1NH17EE030 M Sai Raghuram Amough 1NH17EE058 Thamimulla	Dr. Vinoth Kumar K
2	Implementation of Smart E-Vehicle Charging Station powered by Renewable Energy	1NH17EE756 Vinith G A 1NH17EE733 Pragathi Prakash 1NH17EE724 Meghana I L 1NH17EE713 Divya S V	Dr. Vinoth Kumar K
3	A collaborative Robot to serve patients and to collect infectious wastage at the isolation ward	1NH17EE037 Sridaran P 1NH17EE039 Pooja V 1NH17EE048 Sriram SP 1NH17EE049 Sarika M	Dr. Singaravelan A
4	A Novel fault tolerant solution for underground transmission system monitoring by GSM	1NH17EE755 Vandita Manohar 1NH17EE725 Muahmmad Maaz	Ms. Roopa C
5	AI based Smart Mirror using Raspberry PI	1NH17EE706 Bharath Surya 1NH17EE718 Kavitha SAH 1NH17EE745 Raksha S 1NH17EE748 Shaun Philipose John	Dr. Gunapriya B Mr. Vinod Kumar S
6	Recycled UVC Steilizer	1NH17EE701 Abhilash Mithare 1NH17EE754 Thomas Allwin Anto	Dr. Gunapriya B

Table B 5.8.3 i) d. Patent Published Details

Year	Patents Published
2022-23	49
2021-22	12
2020-21	9
TOTAL NO OF PATENTS	70

Table B 5.8.3 i) e. Product Development

SI. No.	Title of the Product	Name of the faculty involved	Product Developed
1	**Lumbar Support Quad Bike**	Dr. Agalya V Professor Dr. Sujitha S Associate Professor	
2	**Rear Camera Fixture for Military Purpose**	Mr. D Kodandapani Assistant Professor Mr. Kartheek Vankadara Assistant Professor Mr. Sathish Kumar D Sr. Assistant Professor	

3	**Adjustable Antifall Multipurpose Table** Design Number: 380114-001 Date of Registration: 25/02/2023 Design Patent The Patent Office Journal No. 16/2023 Dated 21/04/2023	Dr. Agalya V Professor	
4	**A foldable television remote** Design Number: 33043-001 Date of Registration: 13.02.2021 Design Patent The Patent Office Journal No. 03/2023 Dated 20/01/2023	Dr. Gunapriya B Associate Professor	

ii) Research and Development Laboratory:

The Electrical and Electronics Engineering sector is a key player in the research and one of the most needed globalized industries. The demand for Electrical and Electronics Engineering hardware development and commercialization of the product is expected to reach its peak in the year 2020. In order to progressively increase the value addition in electrical product development, a sustained R&D programme in the Electrical and Electronics Engineering sector is essential for the use of the faculty members and student community.

In order to promote a vibrant and sustainable environment for R&D laboratory, domains are identified as the respective divisions under this Group listed below.

Divisions under R&D:

- Power Electronics and Drives
- Power and Energy
- Embedded System

Table B 5.8.3 ii) a. Software Facilities Research and Development Laboratory

Name of Software	Description	Licensed
Mi Power	Version - 6	Licensed
Pspice	Version - 9.1/17.2 lite	Open Source
Arduino	Version - 2.0.3	Open Source
Keil	Version - 4.3	Open Source
Unity Pro	Version - 1.1	Licensed
Vijeo Designer	Version - 6.2	Licensed
Python	Version - 3.11.1	Open Source
Building Expert (Building Automation)	Version - 2020	Licensed
SCADA (VijeoSciTect)	Version - 7.50	Licensed
FX-Net (Fire Alarm)	Version - 7.4	Licensed
DNS (CCTV)	Version - 2017	Licensed
C-BUS (Home Automation)	Version - 1.15.5	Licensed
MATLAB	Version - 2007	Licensed
Tinkercad	-	Online Platform
Dev C++	Version - 5.50	Open Source
Blue JAVA	Version - 5.1.0	Open Source
Intel Quartus	Version - 22.1	Open Source

Table B 5.8.3 ii) b. Hardware Facilities Research and Development Laboratory

Sl. No	Name of the Equipment
1.	50 kV, 50 mA Testing Transformer, 70 kV, 175 kV Rectifier 70 kV high voltage filter 70 kV high voltage resistance divider with control panel with safety interlock to conduct AC/DC test, 60 kV oil test kit with all accessories
2.	Motor Protection study unit with LG relay
3.	Microprocessor based over current relay
4.	Static under voltage relay
5.	Micro controller-based relay negative sequence relay
6.	Microprocessor based under Voltage relay
7.	Generator Protection simulation unit P-SU-GP
8.	Numerical % Differential relay test kit
9.	PLC & HMI Training Kit
10.	Surface Treatment Operative Part
11.	M 340 Surface Treatment Operative Part
12.	PLC Small Term License
13.	Addressable Fire Security Bench
14.	Access Control, CCTV and Public Address Systems Bench
15.	Home Automation Bench and SCADA Training Kit
16.	Integrated Building and energy Management solution Bench

iii) Instructional materials:

The faculty members have prepared video lectures and manual for the laboratory course and uploaded in college website is shown in Table B. 5.8.3 iii).

Table B 5.8.3 iii) Instructional Materials by faculty members

S.No	Name of the Faculty	Instructional Materials	Weblink
1.	Dr. Joshua Daniel Raj	Microcontroller and Embedded Systems	https://newhorizoncollegeofengineering.in/microcontroller-and-embedded-systems/
2.	Ms. Karthika M	Basic Electrical Engineering LAB	https://newhorizoncollegeofengineering.in/basic-electrical-engineering-laboratory/
3.	Ms. Anitha A	DC machines and Transformers	https://newhorizoncollegeofengineering.in/dc-machines-and-transformers/
4.	Mr. Satish Kumar D	Industrial Automation	https://newhorizoncollegeofengineering.in/industrial-automation/
5.	Mr. Vinod Kumar S	Industrial Automation	https://newhorizoncollegeofengineering.in/industrial-automation/
6.	Ms. Kavitha Chenna Reddy	Relay and High voltage lab	https://newhorizoncollegeofengineering.in/relay-and-high-voltage-lab/
7.	Mr. Mohan B S	Electric Circuit Theory Lab	https://newhorizoncollegeofengineering.in/electric-circuit-theory-lab/
8.	Mr. Inbasakaran	Power Electronics lab	https://newhorizoncollegeofengineering.in/power-electronics-lab/
9.	Dr. Singaravelan A	Power Electronics lab	https://newhorizoncollegeofengineering.in/power-electronics-lab/
10.	Mr. Muni Prakash T	Control Systems Lab	https://newhorizoncollegeofengineering.in/control-systems-lab/
11.	Dr. A. Singaravelan	Computer Aided Power System Analysis	https://newhorizoncollegeofengineering.in/computer_aided_power_system_analysis/
12.	Mr. Vinod Kumar. S	Advanced Industrial & Building Automation Lab	https://newhorizoncollegeofengineering.in/advanced-industrial-building-automation/

- NHCE Library is a resource center for teaching, learning & research.
- Ground Floor section of the library is open 24 hours a day for utilization. Library has spread over two floors with 605 seating capacity, state of art digital library, E-Learning Center, Video Conference Room, ID Card center, Online Class Room with recording facility, Students Discussion rooms, Faculty discussion rooms, and Books & Stationary shop are available in the Ground Floor and Book Stack Area, Library office, Reference Section, Circulation Counter, OPAC Search, Photocopier Room and Reading area, Journals/Magazines and Newspapers Section are made available in Lower Level of the library building.
- Library holds a hybrid collection of printed as well as electronic resources which include Books, Journals, General Reference Materials, Technical Magazines, Conference Proceedings Newspapers, Bound Volumes and databases, audio-visuals, CDs/DVDs, e-books, e-journals, e-case studies, e-conference proceedings, course materials, previous year's question papers and Project Reports.

- All the e-journals & e-books access is IP based and remote access through (Mapmyaccess), the stakeholders can take benefit of this facility from anywhere in the campus at any time is shown in Table B 5.8.3.

Table B 5.8.3 E-Resources details

Digital Library is provided in the Central Library where students can access all kinds of e-journals	**E-Journals Links** Elsevier - https://www.sciencedirect.com/ Taylor & Francis - http://www.tandfonline.com/ Springer Nature - http://link.springer.com/ Emerald - https://www.emeraldinsight.com/ ProQuest - https://www.proquest.com/165290 E-Conference Proceedings- IEEE https://ieeexplore.ieee.org/Xplore/home.jsp E-Case Studies – Emerald https://www.emerald.com/insight/content/case-studies **E-Books Links** Elsevier - https://www.sciencedirect.com/ Taylor & Francis - https://www.taylorfrancis.com/ Springer Nature -http://link.springer.com/ Mint Books - https://nhce.mintbook.in/ New Age Publishers– https://digital-elib4u-com.vtuconsortium.mapmyaccess.com/ Packt - https://videeya-in.nhce.mapmyaccess.com/ McGraw Hill Education - https://www-expresslibrary-mheducation-com.vtuconsortium.mapmyaccess.com/

- Currently the library holds over 47836 books, 40 print journals, 7476 e-journals, 27439 e-books, 1585 E-conference proceedings, 1000 E-case studies, 4258 Non-Book Materials, 9 Newspapers, 11 General Magazines, 15 Technical Magazines, and 171 Conference Proceedings.
- The class notes and resource material is also kept in the Digital Repository.
- Digital Library comprises of 53 computers with Internet facility. Wi-Fi accessibility also available.
- Reprography and printing facility is available in the college premises.
- Books are arranged subject wise and department wise and personal attention is given for fulfilling their library related needs.
- Open access facility is available. Library staff motivate the students for open access to aware them about the latest arrivals.
- In addition to the central library, each department has its own Departmental Library to facilitate easy access to the faculty, students and research scholars.

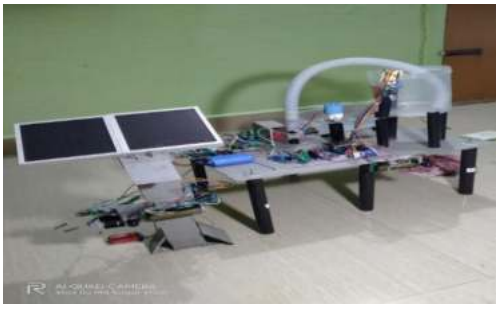
Library Services

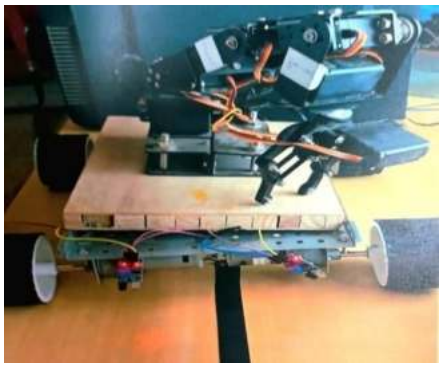
- Institutional Repository
- Electronic Resources
- E-Portals
- Online Course (E-shikshana)
- Remote Access of e-resources (Mapmy Access)
- NDLI Club Activities
- Online Reservation
- Circulation Service
- Reference Service
- Reprographic Service
- Document Scanning
- Document Printing
- OPAC (Online Public Access Catalog)
- NPTEL
- Overnight Circulation
- E-mail Reminder
- Online Q & A
- Grammar Tool – Lanquill
- Online Lecture
- Organising Book Exhibition
- News Paper Clippings
- Similarity or Plagiarism Checking Service (Drillbit)
- Orientation Program
- Awareness of Reference Manager Tool – "Mendeley Desktop".
- Social Media alert service

iv) Working models /charts /monograms etc.

Working models are available in all labs to understand the basic concepts in Engineering. Lab Instruction Charts, Equipment's part charts and conversion factor charts are available in all labs to understand the working principle of each equipment.

A gist of Sample working Models developed by our students is exhibited at various competitions held inside and outside college premises.

Implementation of Smart E-Vehicle Charging Station powered by Renewable Energ 	Solar Refrigerator for Portable Refrigerator 
Optimization of Battery Performance in Electric Vehicle 	Implementation of parameter estimation of an electric bicycle using IoT for village / rural/disabled community 
Solar Driven Vaccine Refrigerator using environment-friendly refrigerants for Off-Grid locations 	Solar based energy efficient hybrid SLBLDC motor for agriculture 

Artificial Intelligence based SRLF-Driving car using Robotic Model 	Design and Implementation of solar fed food alert system using Bolt Wi-Fi Module 
Implementation and design of cobots in floriculture 	Silent surveillance autonomous drone for disaster management and military security using artificial intelligence 
Electrical mountain Board 	Therapeutic treadmill 

CHARTS / DISPLAYS IN LABORATORIES

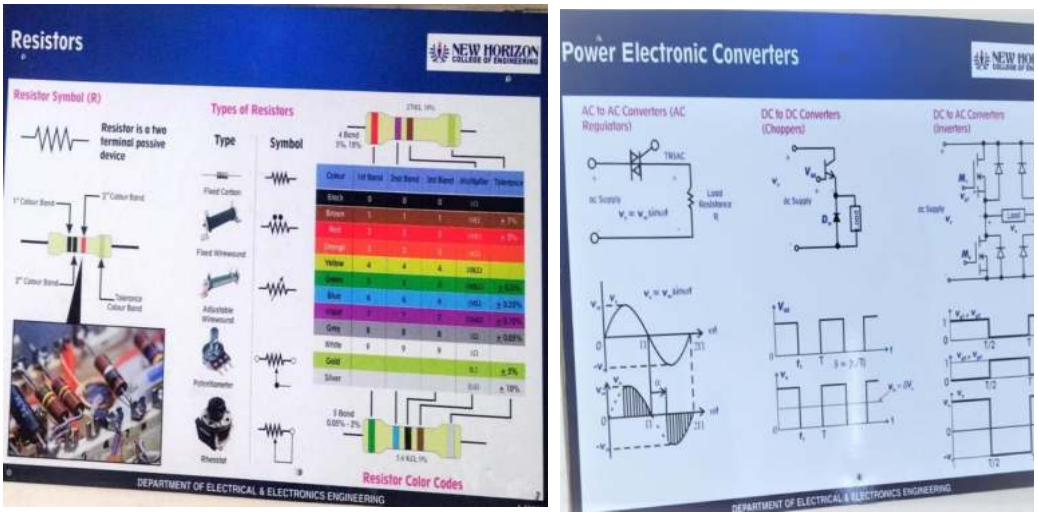


Figure 5.8.3 iv).a Analog Electronics Circuits Laboratory Charts

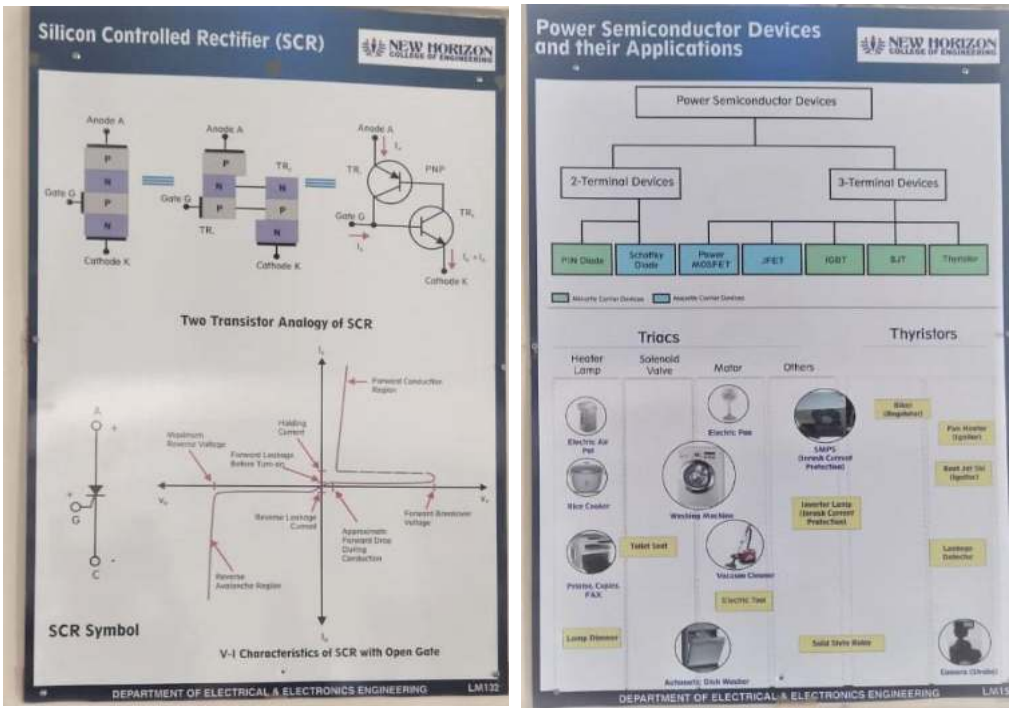
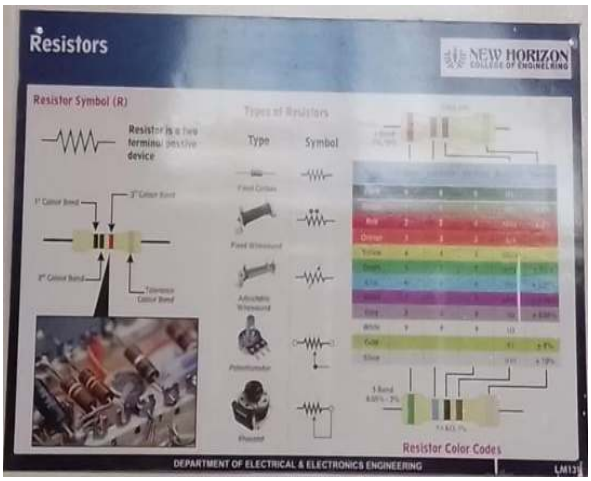


Figure 5.8.3 iv).b Power Electronics Laboratory Charts





Figure 5.8.3 iv).c Electrical Machines Laboratory Charts



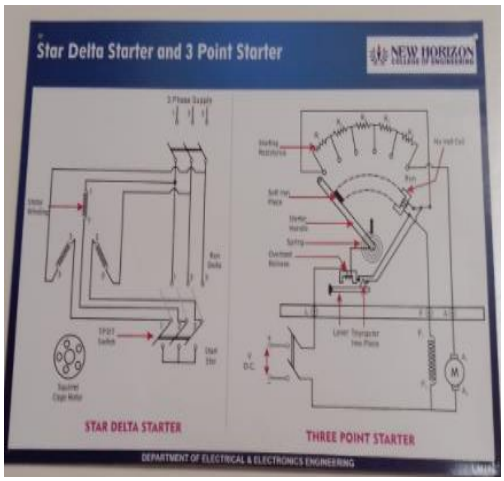
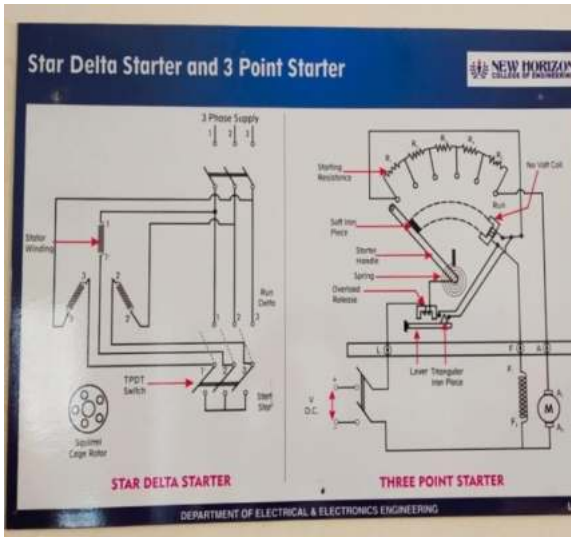


Figure 5.8.3 iv).d Basic Electrical and Electronics Engineering Laboratory Charts



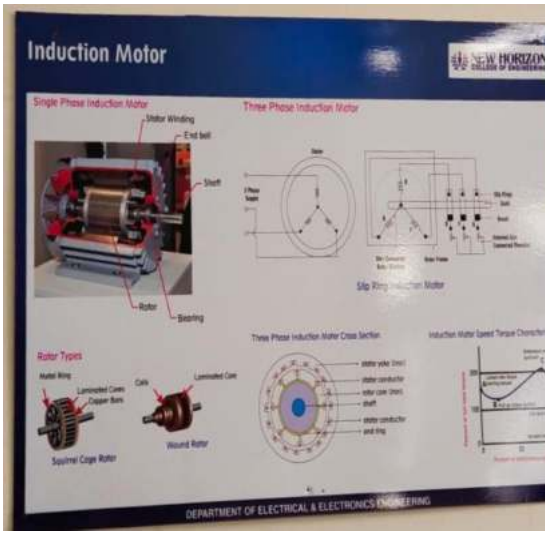


Figure 5.8.3 iv).e Electrical Machines Laboratory Charts

5.8.4 Consultancy (from Industry) (20)

(Provide a list with Project Title, Funding Agency, Amount and Duration)
Funding Amount (Cumulative during CAYm1, CAYm2 and CAYm3):
Amount >10 Lakh 20 Marks,
Amount <10 and > 8 Lakh 15 Marks,
Amount < 8 and > 6 Lakh 10 Marks,
Amount < 6 and > 4 Lakh 5 Marks,
Amount < 4 and > 2 Lakh 2 Marks,
Amount < 2 Lakh 0 Mark

Table B.5.8.4.a Consultancy for the CAYm1 2021-22

SI No.	Project Title	Duration	Funding Agency	Amount (in Rupees)
1.	Fire alarm, fire fighting and safety automation system	1 Year	Instroll LLC, Doha	Rs. 3,00,000
2.	Industrial research work on Java Development and Integration Expertise	1 Year	YGK Technologies Pvt Ltd	Rs. 90,000
Total Amount (X):				**Rs. 3,90,000.00**

Table B.5.8.4.b Consultancy for the CAYm2 2020-21

SI No.	Project Title	Duration	Funding Agency	Amount (in Rupees)
1.	Liquid analysis system	1 Year	Instroll LLC, Doha	Rs. 2,50,000
2.	Industrial research work on Java Development and Integration Expertise	1 Year	YGK Technologies Pvt Ltd	Rs. 90,000
Total Amount (Y):				**Rs. 3,40,000.00**

Table B.5.8.4.c Consultancy for the CAYm3 2019-20

SI No.	Project Title	Duration	Funding Agency	Amount (in Rupees)
1.	Process gas analysis system	1 Year	Instroll LLC, Doha	Rs. 2,50,000
2.	Industrial research work on Java Development and Integration Expertise	1 Year	YGK Technologies Pvt Ltd	Rs. 80,000
Total Amount (Z):				**Rs. 3,30,000.00**

Cumulative Amount (X + Y + Z) = Rs. 10,60,000.00

5.9 Faculty Performance Appraisal and Development System (FPADS):(10)

Faculty members of Higher Educational Institutions today have to perform a variety of tasks pertaining to diverse roles. In addition to instruction, Faculty members need to innovate and conduct research for their self-renewal, keep abreast with changes in technology, and develop expertise for effective implementation of curricula. They are also expected to provide services to the industry and community for understanding and contributing to the solution of real life problems in industry. Another role relates to the shouldering of administrative responsibilities and co-operation with other Faculty, Heads- of-Departments and the Head of Institute. An effective performance appraisal system for Faculty is vital for optimizing the contribution of individual Faculty to institutional performance.

The assessment is based on:

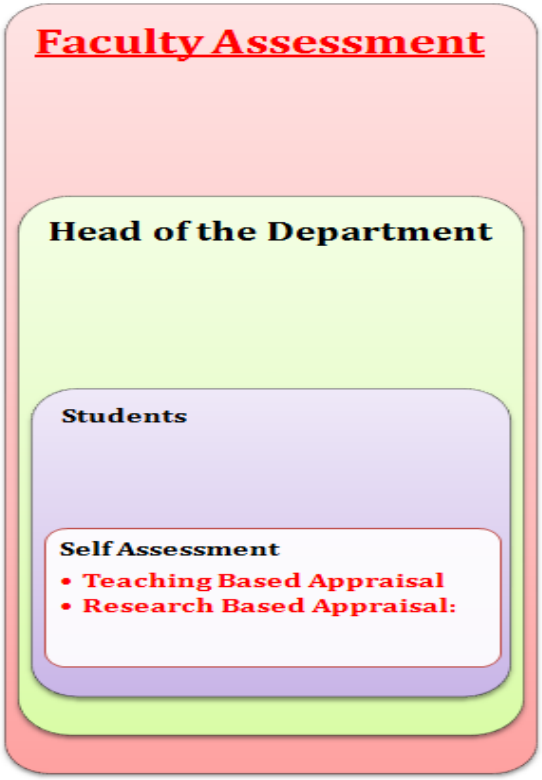
- A well-defined system for faculty appraisal for all the assessment years (5).
- Its implementation and effectiveness (5).

The university follows the Performance Based Assessment System as prescribed by the UGC. The system was adopted after a thorough discussion and review. The performance review gives a great opportunity to the concerned faculty and the department to look into the areas for improvement and take necessary remedial steps. The purposes of this evaluation arefollowing:

a. Assess and promote excellence in theteaching/learning process.
b. Meet the educational needs of students and community bycontinually
c. monitoring instructional performance.
d. Provide a constructive framework for evaluating faculty performance by identifying areas of strength and areas for improvement in classroom instruction.
e. Provide a basis for professional growthand development.

Faculty Performance Appraisal and Development System.

Basic Criteria for Appraisal System:



Teaching Based Appraisal:

- Percentage of Assigned Classes taken.
- PBL projects supervised.
- Swayam / NPTEL course in Blended mode.
- Innovation in teaching pedagogy.
- Number of Guest Lectures/Workshops/Seminar organized for the students.
- Designing of new courses / Revision of courses.
- Extra activities carried out with regard to slow and fast learners.
- MOOC courses completed.
- Proper maintenance of Course Files as per the prescribed list of contents.
- Attainment of Course Outcomes (COs).

- Research Based Appraisal:
- Papers published in SCOPUS Indexed Approved journals.
- Outside Consultancies completed during the assessment period.
- Conference organized by the department during the assessment period.
- Papers presented at Conferences, Seminars, Workshops, Symposia, Trade Journals (National/International).
- Membership of Chapters such IEEE, Institute of Engineers etc.
- Funded Research Projects handled as Principle Investigator (PI) or as Co-PI during the Membership of Chapters Patents granted in the school
- Initiatives and Outreach activities.
- Conduct of Training Programs (FDP/Workshop) should be the Organizer.

Performance Rating Scale:

(PART 'A')

≡ PERFORMANCE APPRA|SAL: TEACH|NG STAFF

In conformity with the job responsibilities (prescribed by AICTE) Assessment period from Jun 2022 To May 2023

(Personal Particular)

Name:
Vinoth Kumar K

Educational Qualifications:
Doctorate Degree

Are you a recognized PH.D guide:

Department:
Electrical & Electronics Engineering

Designation:
Associate Professor

No. of years served in NHCE till date:
2.07

Total Experience till date:
13.11

Any extraordinary achievement during the assessment period:

(PART 'B')

Academic Duties and responsibilities assigned

	Subject Assigned	No. of Classes Planned	No. of Classes Conducted	Remarks
ODD Semester Theory				

	Laboratory	No. of Experiments Planned	No. of Experiments Conducted	Remarks
ODD Semester Laboratory				

	Subject Assigned	No. of Classes Planned	No. of Classes Conducted	Remarks
EVEN Semester Theory				

	Laboratory	No. of Experiments Planned	No. of Experiments Conducted	Remarks
EVEN Semester Laboratory				

Applicable to Faculties handled Autonomous scheme

	Subjects Assigned	Self Study / Sem / Student	Assignments / Semester	Quiz / Semester
ODD SEMESTER				

	Subjects Assigned	Self Study / Sem / Student	Assignments / Semester	Quiz / Semester
EVEN SEMESTER				

(PART 'C')

A brief pen picture of self, not exceeding in 5 to 6 lines, highlighting the administrative and support activities entrusted

(PART 'D')

(Appraisal on a 5 point rating scale)

Note: Please put a tick in the appropriate rating

(PART 'E')

Formula Used: (Grand Result % * 5) / 100

(Result Conversion Scale: 100% - 5, 80% - 4, 60% - 3, 40% - 2, 20% - 1, 0% - 0)

ODD Semester

	Sub 1	Sub 2	Sub 3	Sub 4	Sub 5	Average
Student Feedback:						
Result:						

EVEN Semester

	Sub 1	Sub 2	Sub 3	Sub 4	Sub 5	Average
Student Feedback:						
Result:						

Grand Average

	ODD	EVEN	Grand
Student Feedback:	0.00	0.00	0.00
Result:	0.00	0.00	0.00

Summary

SUMMARY OF PART "D"

Total points awarded to staff: (D1)

(Points Obtained / Maximum Points *5)

Points awarded with % weight age: (D1*)

SUMMARY OF PART "E"

Average of student Feedback and Result (E1)

% weightage based on grand average: (E1*)

OVERALL SUMMARY

Annual performance index (D + E) =

CORRESPONDING RANKING TAKING INTO ACCOUNT THE POINT SCORE AND CONVERTING IT TO TOTAL WEIGHTAGE OF 75%+25%= 100

Final Grade:

4.5 – 5.0 : OUTSTANDING
4.0 – 4.4 : Very good
3.0 – 3.9 : Good
2.0 – 2.9 : Fair
Less than 2: Poor

☰ Documents

Attach Document Choose File No file chosen

Attach Document Choose File No file chosen

☰ Others

Additional weightage for the following will be considered :

1. No. of patents filed (Please furnish details and update in HRMS)

2. No. of books published (please furnish details and update in HRMS) per patent

3. Contribution in promoting institute industry, R & D activities and consultancy services (Minimum 02 proposals per academic year for Professor cadre)

4. Contribution through project

Vinoth Kumar K
Signature of faculty member
Date: 26/04/2023

≡ GUIDELINES TO HEADS OF DEPARTMENT FOR FILLING UP PERFORMANCE APPRAISAL FORM IN RESPECT OF TEACHING STAFF

1. Every faculty person will be assessed on ..... items/areas of achievement on the pressure point rating scale. The concept of rating scale are given below:

★ Outstanding : Excellent professional competence, unblemished track record, utmost efficiency & effectiveness, optimum human capacity utilization, punctuality , sincerity and dedication of highest order.

★ Very good: Satisfactory professional competence with reasonable efficiency & effectiveness, reasonable extent of human capacity utilization and high order of punctuality, sincerity and dedication.

★ Good: Just satisfactory performance with marginal level of efficiency and effectiveness. Medium human capacity utilization, punctuality, sincerity and dedication just adequate to deliver minimum satisfactory performance.

★ Fair: Performance much below the level of expectations. Lack of efficiency and effectiveness, zeal and enthusiasm in performing his/her duties. Under utilization of capacity advertently or inadvertently(due to physical, mental disabilities)

★ Poor: A deplorable performance devoid of initiative efforts, zeal or enthusiasm. A liability for the organisation with either total lack of capacity, utilization to perform or advertently shirking from responsibilities.

2. PROCEDURE OF COMPUTATION OF GRADING

★ 75% weightage of the total points awarded in performance appraisal.
★ 25% weightage will be given for points awarded in the faculty evaluation by students both from both semesters.

3. CORRESPONDING RANKING TAKING INTO ACCOUNT THE POINT SCORE AND CONVERTING IT TO TOTAL WEIGHTAGE OF 75%+25%= 100%

4.5 – 5.0 : OUTSTANDING
4.0 – 4.4 : Very good
3.0 – 3.9 : Good
2.0 – 2.9 : Fair
Less than 2: Poor

4. HOD's are required to fill up the performance appraisal proforma in presence of the concerned teaching staff by asking the staff explain item wise performance and their perceptions about the point grades. The HOD's after taking into account the submissions and expectations of the concerned staff & his own perceptions/ option about the capability of the staff, will put a tick on mark particular point scale. In case the ticked grade does not tally with the expectations of the staff, the reasons for variations must be told to staff by HOD in explicit terms.

5. The HODs are to ensure that assessment is based on the performance of the individual throughout the stipulated assessment period and not based on seasonal performance. Further biases all sorts and preferential treatment to selected ones should be avoided to make the appraisal system totally transparent and purposeful.

6. Both the HOD and the staff have to sign in the appraisal proforma at the appropriate place meant for the purpose. The employees should invariably sign even if they have some reservation on the assessment grades given by HOD's on certain items. They can mention the particular



items where they have reservations/ disagreement below their signature at the appropriate place mentioned there in. These dissenting items/points or divergences will be discussed by the staff with Principal at appropriate time after seeking interview or if otherwise automatically called by Principal.

7. The decision of the Principal an all dissenting matters will be final & binding on employees. No further query or representations on the subject will be entertained at later stage.

≡ Approvers Details

Employee Code	Name
NH-0453	Sujitha
NH-0371	Manjunatha
NH-0001	V Manjula

Submit

5.10 Visiting/Adjunct/Emeritus Facultyetc (10):

- Adjunct faculty also includes Industry experts.
- Provide details of participation and contributions in teaching and learning and/or research by visiting/adjunct/Emeritus faculty etc.
- Provision of visiting/adjunct faculty(1)
- Minimum 50 hours per year interaction with adjunct faculty from industry/retired professors etc. (9)
- (Minimum 50 hours' interaction in a year will result in 3 marks for that year; 3marks x 3years= 9marks)

Table B.5.10.1 Consolidated Hour Details for Visiting /Adjunct Faculty

Academic Year	Number of Hours
2022-23	101
2021-22	104
2020-21	51

Table B.5.10.2 Visiting Faculty Session Details for the Academic Year 2020-2021

Sl. No	Name of the Industrial Expert	Designation	Course Name with Code	No. of hours
1	Mr. Thomas Briere	Director, Indo-French Centre of Excellence in Electricity, Automation and Energy	20EEE55 Industrial Automation	25
2	Mr. Thomas Briere	Director, Indo-French Centre of Excellence in Electricity, Automation and Energy	20EEE653 Advanced Industrial and Building Automation	26

Table B. 5.10.3 Visiting Faculty Session Details for the Academic Year 2021-2022

Sl. No	Name of the Industrial Expert	Designation	Course Name with Code	No. of hours
1	Mr. Kishore Kumar Kulkarni	Rajamane Hegde Services (P) Ltd, Tumkuru	20EEE55 Industrial Automation	52
2	Mr. S Vinoth Kumar	Design Engineer – P&C, Balfour Beatty Infrastructure Pvt Ltd, 6th Floor, N1-Balsa Block, Embassy Manyata Business Park, Nagawara, Rachenahalli Village, Bangalore 560045	20EEE653 Advanced Industrial and Building Automation	52

Table B.5.10.4 Visiting Faculty Session Details for the Academic Year 2022-2023

Sl. No	Name of the Industrial Expert	Designation	Course Name with Code	No. of hours
1	Mr. S Vinoth Kumar	Design Engineer – P&C, Balfour Beatty Infrastructure Pvt Ltd, 6th Floor, N1-Balsa Block, Embassy Manyata Business Park, Nagawara, Rachenahalli Village, Bangalore 560045	20EEE55 Industrial Automation	51
2	Mr. Kishore Kumar Kulkarni	Rajamane Hegde Services (P) Ltd, Tumkuru	20EEE653 Advanced Industrial and Building Automation	50

Table B.5.10.5 Emeritus Faculty Details

No	Name of the Emeritus Professor	Details	Academic Year	No. of hours
1	Dr. S. Dharmalingam	Retired General manager, BHEL, Tiruchirappalli	2019-20	52
2	Dr. S. Dharmalingam	Retired General manager, BHEL, Tiruchirappalli	2020-21	62 (Online)
3	Dr. S. Dharmalingam	Retired General manager, BHEL, Tiruchirappalli	2021-22	32 (Online) + 25 (Offline)
4	Dr. S. Dharmalingam	Retired General manager, BHEL, Tiruchirappalli	2022-23	35 (Ongoing)

Department of
Electrical and Electronics Engineering

Criterion - 6

Facilities and Technical Support

CRITERION 6	FACILITIES AND TECHNICAL SUPPORT	80

6.1. Adequate and Well Equipped Laboratories, and Technical Manpower (40)

Department of Electrical and Electronics Engineering has well equipped Eight laboratories which includes Electric Circuit Theory Laboratory, Analog & Linear Integrated Circuits Laboratory, D.C. Machines and Transformers Laboratory, Control Systems Laboratory, Synchronous and Induction Machines Laboratory, Microcontroller and Embedded Systems Laboratory, Power System Analysis Laboratory, Power Electronics Laboratory, Relay and High Voltage Engineering Laboratory, Simulation tools for Electrical Engineering Laboratory and Schneider Electric – Industrial Automation Laboratory. All the laboratories are furnished with adequate equipment as specified by the curriculum and it meets academic standards. 'Indo French Center of Excellence for Electricity Automation and Energy – Industrial Automation Laboratory' are established with Industry standards. Department laboratories are facilitated with the latest version of software cluster to fulfill both academic and industry requirements.

Available software cluster includes MATLAB, Mi Power, Pspice –ORCAD, Python, Keil µVision, Proteus, PLC (Unity Pro), SCADA (VijeoSciTect), HMI (Vijeo Designer), Building Expert (Building Automation), FX-Net (Fire Alarm), DNS (CCTV), C-Bus (Home Automation). Safety instructions, safety tools including first aid box are provided in all the laboratories. Qualified and trained faculty members supported by a technical staff are available in the laboratories to guide and assist the students by providing constant support to ensure smooth conduct of the Practical sessions, research and development activities.

Table 6.1a: Adequate and well equipped laboratories and technical man power (Even Semester)

Sl. No	Name of the Laboratory	No. of Students per setup (Batch Size)	Name of the Important Equipment	Weekly utilization status (all the courses for which the lab is utilized) in Hours	Technical Manpower Support		
					Name of the technical staff	Designation	Qualification
1	Control Systems Laboratory	3 students per setup and 20 students in Batch	➢ Lag and Lead network unit ➢ Single phase Auto Transformer ➢ DC Servo motor ➢ 2 Phase AC Servomotor ➢ Synchro Pair ➢ PID Controller ➢ Wheatstone Bridge ➢ Kelvin dual Bridge ➢ Maxwell's Bridge ➢ Schering Bridge ➢ De-Sauty's Bridge ➢ Signal Generator	18 Hours	Ms. Rajeshwari.K	Foremen	**Diploma, B.Tech, M.B.A**
2	Synchronous and Induction Machines Laboratory	3 students per setup and 20 students in Batch	➢ 3 H.P Squirrel cage Induction Motor ➢ 3 kW Synchronous Motor ➢ 2 kW Slip-ring Induction motor	18 Hours	Mr. G.S. Siddalingeswara Swamy	Lab Instructor	**I.T.I, Diploma (Pursuing)**
3	Microcontroller and Embedded Systems Laboratory	3 students per setup and 20 students in Batch	➢ 8051 Microcontroller kits ➢ Alpha Numeric LCD Display ➢ DAC Interfacing Kit ➢ Stepper Motor Interface ➢ Elevator Interface Kit ➢ Temperature Controller Interface kit ➢ MSP 430 Teaching Kit ➢ Arduino ➢ Sensors	18 Hours	Mr. Venkatesha.S	Lab Instructor	**Diploma, B.E**

4	Power System Analysis Laboratory	1 Student per system and 20 Students in Batch	➢ Desktop Computers	18 Hours	Mr. Megha Sandesh.B.P	Lab Instructor	**Diploma, B.E**
5	Power Electronics Laboratory	3 students per setup and 20 students in Batch	➢ IGBT study unit ➢ UJT firing circuit ➢ Force Commutation study unit ➢ DC chopper circuit ➢ Stepper motor Speed control unit ➢ Dual trace Analog Oscilloscope ➢ Single phase Auto Transformer	18 Hours	Ms. Rajeshwari. K	Foremen	**Diploma, B.Tech, M.B.A**
6	**Basic Industrial Automation Lab**	**1 Student per system and 20 Students in Batch**	➢ **Control Panel Training kit for HMI, SCADA & PLC** ➢ **Fire Alarm System** ➢ **Surface treatment System** ➢ **Home Automation Bench** ➢ **Building and Energy Management System** ➢ **Access Control, CCTV, & Public Address system Bench**	**27 Hours**	**Mr. Narasimha Murthy.P.S**	**Lab Instructor**	**I.T.I, Diploma**

Table 6.1b: Adequate and well equipped laboratories, and technical manpower (Odd Semester)

Sl. No	Name of the Laboratory	No. of Student s per setup (Batch Size)	Name of the Important Equipment	Weekly utilization status (all the courses for which the lab is utilized) Hours	Technical Manpower Support		
					Name of the technical staff	Designation	Qualification
1	Analog and Linear Integrated Circuits Laboratory	3 students per setup and 20 students in Batch	➢ Signal generator (2MHz) ➢ 20MHz Dual Trace CRO ➢ Regulated DC Power Supply (0-30V)	12 Hours	Mr. Venkatesha.S	Lab Instructor	Diploma, B.E
2	Electric Circuit Theory Laboratory	1 Student per system and 20 Students in Batch	➢ Desktop Computers ➢ Regulated DC Power Supply (0-30V) ➢ Dual trace CRO ➢ Function Generator	12 Hours	Ms. Poorva. M	Lab Instructor	Diploma, B.E, &M.Tech
3	DC Machines and Transformers Laboratory	3 students per setup and 20 students in Batch	➢ DC Motor ➢ DC Compound Generator ➢ DC Compound Motor ➢ 2 kVA,1.5 kVA Transformer ➢ Rectifier Unit	12 Hours	Mr. G.S. Siddalingeswara Swamy	Lab Instructor	I.T.I, Diploma (Pursuing)
4	Relay and High Voltage Engineering Laboratory	3 students per setup and 20 students in Batch	➢ 50kV AC/DC Transformer ➢ Control Panel ➢ Transformer oil tester ➢ PIV Rectifier ➢ Solid state over current Relay ➢ Microprocessor based Over current Relay ➢ Generator Protection Simulation Unit	18 Hours	Mr. Rajesh.B.K	Lab Instructor	I.T.I, Diploma
5	Simulation tools for Electrical Engineering Laboratory	1 Student per system and 20 Students in Batch	➢ Desktop Computers	18 Hours	Mr. Megha Sandesh.B.P	Lab Instructor	Diploma, B.E
6	Advanced Industrial & Building Automation Lab	1 Student per system and 20 Students in Batch	➢ Control Panel Training kit for HMI, SCADA & PLC ➢ Fire Alarm System ➢ Surface treatment System ➢ Home Automation Bench ➢ Building and Energy Management System ➢ Access Control, CCTV, &PASystem	27 Hours	Mr. Narasimha Murthy	Lab Instructor	I.T.I, Diploma

6.1.1: Additional Facilities provided for better quality of learning experience:

6.1.1a Teaching aids – chalk / white board, multimedia projectors,etc.

Table 6.1.1a Teaching aids for better Learning Experience

Sl. No	Teaching aids	Quantity
1	Interactive LED display Smart Board	9
2	Chalk/Markers Boards in Smart Class Rooms	6
3	Chalk/Markers Boards in Laboratories	8
4	Multimedia Projectors	6

6.1.1b Acoustics, classroom, conditions of chair/benches, air circulation, lighting exists, ambiance, and other amenities/facilities

Table 6.1.1b Availability of Smart Class Rooms

Sl. No.	Room Description/Class room number	Quantity of chairs and benches	Conditions/Description of available ambiance
1	**B201**	18 Benches	1. Buildings are designed by the professional architects who gave utmost care in providing academic ambience (LED Lights & fans) in all the rooms. 2. Proper ventilation is provided in all the classrooms with doors and windows that allow maximum day light. 3. In case of emergency all the classrooms doors are sufficiently wide to evacuate people. 4. Fully Equipped Projection System, Smart Board, Audio/Video facilities with recording Internet/Wi-Fi high bandwidth
2	**B202**		
3	**B203**		
4	**B204**		
5	**B205**		
6	**B219**		

6.1.1c Additional facilities provided for the students

Table6.1.1c provides the additional facilities created for students for their professional experience.

Table 6.1.1c Additional facilities created for the students

Sl. No.	Facility Name	Detail	Purpose of facility	Utilization	Students benefit	Relevance to POs and PSOs
1.	Research and Development Laboratory	1. MATLAB 2. Mi Power 3. Unity Pro 4. Vijeo Designer 5. Building Automation 6. Home Automation	To encourage students in research and development activities.	As Needed	Facilitates student to gain knowledge in the recent advancements of technologies in the field of Electrical and Electronics domain	PO1-PO12, PS01, PSO2
2.	Indo French Center of Excellence for Electricity Automation and Energy	1. Unity Pro 2. Vijeo Designer 3. Building Expert 4. SCADA 5. FX-Net 6. DNS 7. C-BUS	To enhance student knowledge to meet the industry standards.	27 hrs per Week	Enhance the competency in Industrial Automation topic using Schneider Electric softwares	PO3-PO5, PS01, PSO2
3.	Global Professional Program	1. Solar PV Installation 2. Electrical AutoCAD 3. Certificate Course in Management & Leadership 4. Training and certification programme on Robotics based Automation 5. ORCAD 6. MSP	Academic Features-Employment centric syllabus designed as per industry expectation.	80 hrs in four years of course	Value added programs have been introduced in the department to keep students abreast with the current trends in technology.	PO3-PO5, PO9, PS01, PSO2
4.	Internet Facility	Bandwidth 300Mbps	Self-learning/ Seminars/ Solve Assignments, Documentations.	Unlimited	For the Courses specified in curriculum and co-curricular activities	PO12
5.	Tutorial Classes	Conducted for analytical courses	To improve problem solving skills for the students.	As per curriculum	For the Courses specified in curriculum with tutorial.	PO2, PSO1

6.	Department Library	Program Specific text books and references books, Previous year question papers	To provide additional reference for the students.	As Needed	The Department Library serves the student need in academic and research activities.	PO12
7.	Digital Library	IEEE Xplore, Science Direct, etc	Books, Technical Papers, Journals, Previous year question paper, Power Point Presentations, Video Lectures, Access to IEEE Xplore	As Needed	Courses specified in curriculum.	PO12
8.	Surveillance Cameras	IP Cameras	To enhance security of the department.	Round the clock	Security purpose.	NA
9.	Ramp/ Washrooms/Wheel Chair	Each one (Boys/Girls)	For differently abled students.	For regular usage	To ensure that the differently abled students access the campus hassle free.	NA

6.1.1d: Academics Laboratory details

Table 6.1.1d provides the curriculum laboratory infrastructure with their usage, number of experiments, quality of instruments and manual availability.

Table 6.1.1d: Laboratory Infrastructure details

S.No.	Lab Name	Exclusive/ Shared	No. of Experiments	Quality of Instruments	Manual Availability
1	Control Systems Laboratory (Room No: B-218)	Exclusive	12 Experiments	As per the Academic Standard	Yes
2	Synchronous and Induction Machines Laboratory (Room No: B-011)	Exclusive	12 Experiments	As per the Academic Standard	Yes
3	Microcontroller and Embedded Systems Laboratory (Room No: B-215)	Exclusive	12 Experiments	As per the Academic Standard	Yes
4	Power System Analysis Laboratory (Room No: B-210)	Exclusive	12 Experiments	As per the Academic Standard	Yes
5	Power Electronics Laboratory (Room No: B-216)	Exclusive	12 Experiments	As per the Academic Standard	Yes
6	Analog and Linear Integrated Circuits Laboratory (Room No: B-215)	Exclusive	12 Experiments	As per the Academic Standard	Yes
7	Electric Circuit Theory Laboratory (Room No: B-217)	Exclusive	12 Experiments	As per the Academic Standard	Yes
8	DC Machines and Transformers Laboratory (Room No: B-011)	Exclusive	12 Experiments	As per the Academic Standard	Yes
9	Relay and High Voltage Engineering Laboratory (Room No: B-011A)	Exclusive	12 Experiments	As per the Academic Standard	Yes
10	Simulation tools for Electrical Engineering Laboratory (Room No: B-210)	Exclusive	12 Experiments	As per the Academic Standard	Yes
11	Basic Industrial Automation Lab (Room No: B-001)	Exclusive	12 Experiments	As per the Academic Standard	Yes
12	Advanced Industrial & Building Automation Lab (Room No: B-001)	Exclusive	12 Experiments	As per the Academic Standard	Yes

GLIMPSES OF LABORATORY FACILITIES



Figure 6.1 – Control Systems Laboratory



Figure 6.2 – Synchronous and Induction Machines Laboratory



Figure 6.3 –Microcontroller and Embedded Systems Laboratory



Figure 6.4 –Power System Analysis Laboratory



Figure 6.5 –Power Electronics Laboratory



Figure 6.6 – Analog & Linear Integrated Circuit Laboratory



Figure 6.7 –DC Machines and Transformers Laboratory



Figure 6.8 – Electric Circuit Theory Laboratory



Figure 6.9 - Relay and HVE Laboratory



Figure 6.10: Simulation tools for Electrical Engineering Laboratory



Figure 6.11:Basic Industrial Laboratory



Figure 6.12: Advanced Industrial and Building Automation Laboratory

6.1.2 - Availability of Adequate and Qualified Technical Supporting Staff in the Department

Table 6.1.2 List of Qualified Technical Supporting staff

Sl.No.	Name of the Technical Staff	Designation	Qualification	Exclusive/ Shared	Name of the Physical Laboratory	Responsibility
1	Ms. Rajeshwari.K	Foremen	Diploma, B.Tech, M.B.A	Exclusive	Control Systems Laboratory & Power Electronics Laboratory	1.Maintaining equipment and tools in the lab. 2. Maintaining inventory/ Asset register for materials, equipment and parts purchased for his /her labs. 3. Maintaining log books & Attendance register with lab manuals. 4. Initiating necessary steps to maintain cleanliness in the lab. 5. Guiding of students regarding the proper usage of equipment. 6. Ensuring safety rules in the labs. 7. To maintain discipline in the lab including checking of Identity cards of the students.
2	Mr. G.S. Siddalingeswara Swamy	Lab Instructor	I.T.I, (Diploma)	Exclusive	Synchronous and Induction Machines Laboratory & DC Machines and Transformers Laboratory	
3	Mr. Venkatesha.S	Lab Instructor	Diploma, B.E	Exclusive	Analog and Linear Integrated Circuits Laboratory & Microcontroller and Embedded Systems Laboratory	
4	Mr. Megha Sandesh.B.P	Lab Instructor	Diploma, B.E	Exclusive	Simulation tools for Electrical Engineering Laboratory & Power System Analysis Laboratory	
5	Mr. Narasimha Murthy	Lab Instructor	I.T.I, Diploma	Exclusive	Schneider Electric – Industrial Automation Lab	
6	Ms. Poorva. M	Lab Instructor	Diploma, B.E, &M.Tech	Exclusive	Electric Circuit Theory Laboratory	
7	Mr. Rajesh.B.K	Lab Instructor	I.T.I, Diploma	Exclusive	Relay and High Voltage Engineering Laboratory	

6.2. Laboratories maintenance and overall ambiance (10)

Department of Electrical and Electronics Engineering have the necessary infrastructure for all academic laboratories and Research Centre. Every Laboratory is equipped with White/Green board, seating Arrangements and with Wi-Fi facility. Computer system based laboratories are facilitated with Air Conditioning facility. Each laboratory is handled by one faculty supported by a co-faculty. Also, every laboratory has a lab instructor/ technical assistant, who provides constant support and ensures maintenance of the laboratories.

Preventive Maintenance

1. The service and maintenance of the laboratory equipment are carried out regularly based on frequency of execution (daily, weekly, monthly, quarterly, half yearly and yearly) as identified.
2. Consumables are periodically verified and replaced if required.
3. Electrical safety is properly ensured for all the laboratories.
4. Hygiene is maintained in overall department.
5. Preventive measure is carried out by technical staffs of the department based on available resources and expertise.

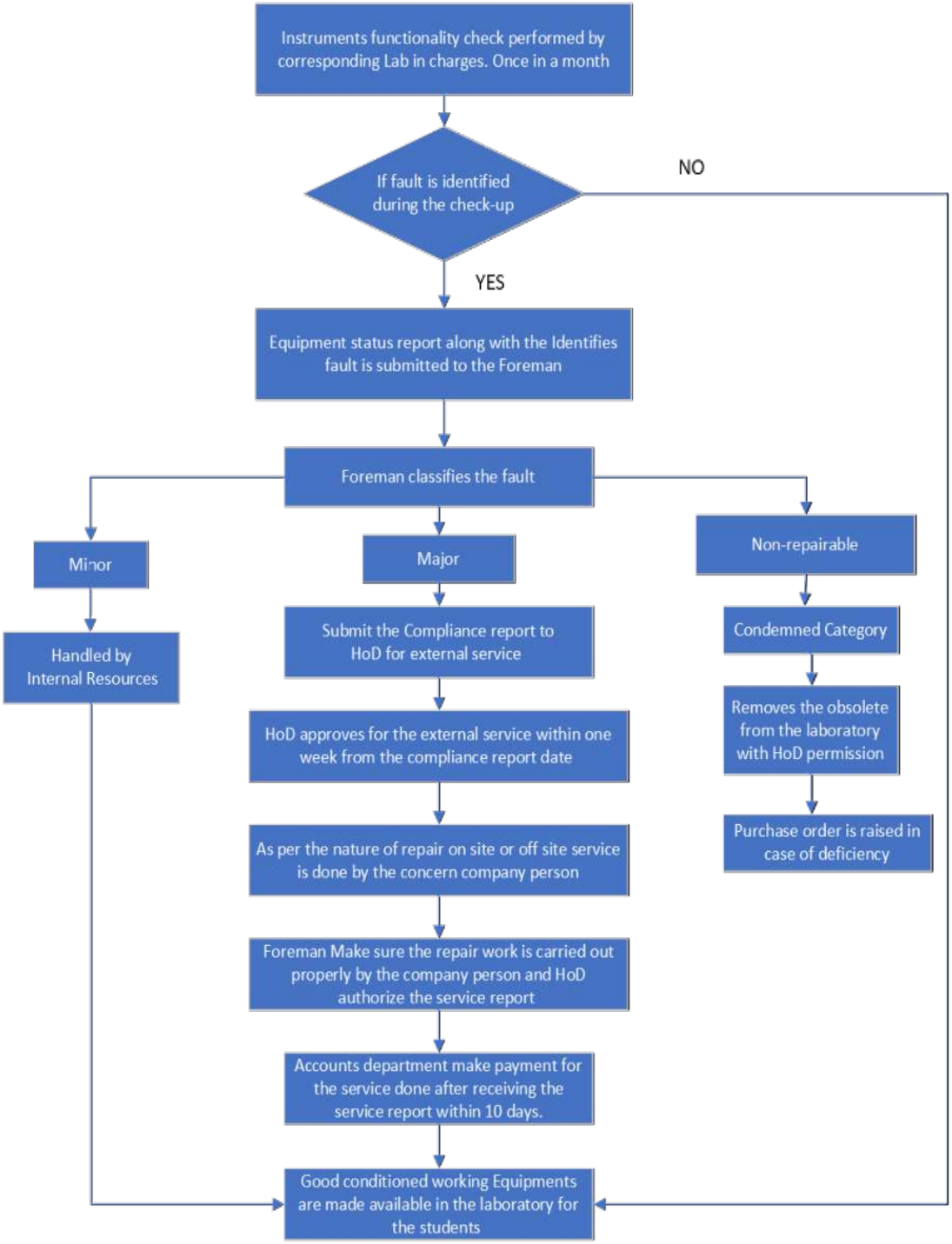
Breakdown Maintenance

1. Unexpected breakdown of equipment in the laboratory is recorded in the breakdown maintenance record.
2. Breakdown services are carried out by the technical staff of the department based on available resources and expertise.
3. If company service is required, the same issue is escalated and service is done based on the vendor availability with in minimum duration.
4. Computer based services are also carried by the system administrator (technical staff) of the department.

Repair Work

1. Repair works in all the laboratories are classified into three modes:
    - Minor
    - Major
    - Non-repairable.
2. Minor repair works are carried out by the technical assistants in the laboratory internally. Technical assistants from other departments are also utilized if required.
3. Major repair works that cannot be carried out internally are sent to the external service centers/suppliers. The equipment is initially checked for non-functionality and based on the type of repair; technical person from the industries/suppliers is called for carrying out the repair work.
4. The equipment or kits that are obsolete / cannot be repaired / non availability of the spares and other such difficulties fall under condemned category. These items are inspected by the technical committee of the institution and based on their report, the equipment is condemned.
5. Technical staffs are well trained for maintenance and calibration process.

Process Flow of Maintenance in Department



Overall Ambience:

1. Department has adequate number of laboratories which is utilized throughout the year on a periodic time line basis to meet the curriculum requirements and also to enhance the practical skills of the students.
2. Necessary furniture for students is provided in each laboratory.
3. Laboratories are equipped with sufficient equipment to conduct the experiments.
4. Laboratory manuals contains information on vision, mission, PEO, PO, PSO, safety precautions, equipment handling instructions along with the details of the experiments are distributed to students well in advance.
5. 5KW Hybrid Solar system is commissioned to harness the clean energy to power up the Labs and class rooms.
6. UPS facility is available in all the laboratories.
7. Lighting system is very effective, along with the natural light in every laboratory.
8. All the laboratories are equipped with white/Green board, projector, computers, Internet, and other such teaching- learning aids.
9. ICTs supported learning strategies are used for the enhancement of teaching learning process.
10. Institute has established 9 Industry sponsored laboratories (Centre of Excellence). Indo French Center of Excellence for Electricity Automation and Energy (IFCEEAE) is specific to the department through which students can earn international certification on Industrial Automation Laboratory and promote placement opportunities.
11. Every laboratory has dedicated technical staff resource.
12. It is ensured that the deputed technical staff has competent skills for handling hardware software tools pertaining to the laboratory.
13. Research laboratory is available for all faculty members and students to carry out their research work.
14. Project laboratory has been provided exclusively for the students to implement their minor and major projects.
15. Department laboratories are available with technical support beyond college working hours as well as on the holidays on demand by students and faculty members.
16. Students are encouraged to conduct open ended experiments to improve their practical skills.

Code of conduct for the laboratories:

- Wearing ID card is mandatory inside the laboratory.
- Students are expected to be regular and punctual to the laboratory sessions.
- Students have to come prepared for the experiments as per the cycle of experiments.
- Students shall be permitted to do the experiment only if he/she brings the observation book and laboratory record duly completed.
- Attendance for all the laboratory and internal tests are compulsory.
- Students must handle laboratory equipment as per the instructions and should keep the laboratory clean and tidy.
- Any student found indulging in meddling with systems/equipment will be punished.
- Students are advised not to install, remove or copy any application without prior permission from the faculty in-charge.
- Students are advised not to use any non-educational applications or sites

6.3. Safety measures in laboratories (10)

Table 6.3: Safety Measures in Lab

Sl. NO	Laboratory names	Safety Measures
1	Control Systems Laboratory	First Aid Box and Fire Extinguisher are available in the laboratory
		The laboratory instructions/guidelines are displayed in the laboratory.
		Electrical wires are protected by MCB (Miniature Circuit Breaker), RCBO (Residual Current Breaker Operator) and Fuses
		Avoid the use of condemned equipment and provides needful equipment and components.
		Equipment's in the laboratory are with fuses of correct ratings
		Equipment's in the laboratory are calibrated and ensured proper wiring and grounding.
		Maintain a clean and organized laboratory.
		Do's and Don'ts board
2	Synchronous and Induction Machines Laboratory/ DC Machines and Transformers Laboratory	The laboratory instructions/guidelines are displayed in the laboratory.
		First Aid Kit and Fire Extinguisher are available in the laboratory
		All electrical wires are protected by MCB, RCBO and Fuses
		Avoid the use of condemned equipment and provides needful equipment and components
		Trainer kits are equipped with proper fuse ratings and are calibrated.
		Maintain a clean and organized laboratory.
		Do's and Don'ts board
3	Analog and Linear Integrated Circuits Laboratory / Microcontroller and Embedded Systems Laboratory	The laboratory instructions/guidelines are displayed in the laboratory.
		First Aid Box and Fire Extinguisher are available in the laboratory
		All electrical wires are protected by MCB, RCBO and Fuses
		Computer systems are configured with the latest updates of software.
		Do's and Don'ts board
		Periodical servicing of the lab equipment.
		Maintain a clean and organized laboratory.
		All electrical wires are protected by MCB, RCBO and Fuses
		All instruments are calibrated and equipped with proper fuse ratings.
		The laboratory instructions/guidelines are displayed in the laboratory, Maintain a clean and organized laboratory and Do's and Don'ts

5	Power Electronics Laboratory	First Aid Box and Fire Extinguisher are available in the laboratory
		All electrical wires are protected by MCB, RCBO and Fuses
		Periodical servicing of the lab equipment.
		The laboratory instructions/guidelines are displayed in the laboratory
		Do's and Don'ts board
		Maintain a clean and organized laboratory.
		Suitable storage area
6	Electric Circuit Theory Laboratory	First Aid Box and Fire Extinguisher are available in the laboratory
		All electrical wires are protected by MCB, RCBO and Fuses
		Computer systems are configured with the latest updates of software
		Periodical servicing of the lab equipment and computers
		Trainer kits are equipped with correct fuses ratings and are calibrated.
		The laboratory instructions/guidelines are displayed in the laboratory
		Maintain a clean and organized laboratory.
		Do's and Don'ts board
		Suitable storage area
7	Relay and High Voltage Engineering Laboratory	First Aid Box and Fire Extinguisher are available in the laboratory
		All electrical wires are protected by MCB, RCBO and Fuses
		Periodical servicing of the lab equipment and computers
		Interfacing modules are calibrated.
		The laboratory instructions/guidelines are displayed in the laboratory
		Do's and Don'ts board, Maintain a clean and organized laboratory and Suitable storage area
8	Basic Industrial Automation Laboratory / Advanced Industrial and Building Automation Laboratory	First Aid Box and Fire Extinguisher are available in the laboratory
		All electrical wires are protected by MCB, RCBO and Fuses
		Computer systems are configured with the latest updates of software.
		Periodical servicing of the lab equipment and computers
		Do's and Don'ts board
		Cell phones usages are prohibited.
		Maintain a clean and organized laboratory.
		Suitable storage area

SAFETY MEASURES IN LAB



Figure 6.13: First aid Box



Figure 6.14: Fire Extinguisher



Figure 6.15: Miniature Circuit Breaker Switches



Figure 6.16: Sealed LAN Connector



Figure 6.17: Air Conditioners in System Laboratories



Figure 6.18: Smart Board in Centre of Excellence

6.4 Project Laboratory (20)

Table 6.4: Project laboratory (Facility, Utilization and Relevance of POs and PSOs)

Sl No	Lab Name	Details	Facility in the Lab	Utilization	Relevance's to POs and PSOs
1	**Project Laboratory**	27 computers, Projector, Monitor 17", Intel i3 Processor, 4GB RAM	MATLAB, Mi Power, LT Spice, AutoCAD	UG students, research scholars and faculty members utilize for their mini projects, projects and research activities	PO1-PO12, PSO 1 & PSO 2

6.4a: Facilities of Research and Development Laboratory:

The Electrical and Electronics Engineering sector is a key player in the research and one of the most needed globalized industries. The demand for Electrical and Electronics Engineering hardware development and commercialization of the product is expected to reach its peak in the year 2020. In order to progressively increase the value addition in Electrical and Electronics product development, a sustained R&D programme in the Electrical and Electronics Engineering sector is essential for the use of the faculty members and student community.

In order to promote a vibrant and sustainable environment for R&D laboratory, domains are identified as the respective divisions under this Group listed below.

Divisions under R&D:

- Power Electronics and Drives
- Power and Energy
- Embedded System

Table 6.4a Software Facilities in Research and Development Laboratory

Name of Software	Description	Licensed
Mi Power	Version - 6	Licensed
Pspice	Version - 9.1/17.2 lite	Open Source
Arduino	Version - 2.0.3	Open Source
Keil	Version - 4.3	Open Source
Unity Pro	Version - 1.1	Licensed
Vijeo Designer	Version - 6.2	Licensed
Python	Version - 3.11.1	Open Source
Building Expert (Building Automation)	Version - 2020	Licensed
SCADA (VijeoSciTect)	Version - 7.50	Licensed
FX-Net (Fire Alarm)	Version - 7.4	Licensed
DNS (CCTV)	Version - 2017	Licensed
C-BUS (Home Automation)	Version - 1.15.5	Licensed
MATLAB	Version - 2007	Licensed
Tinkercad		Online Platform
Dev C++	Version - 5.50	Open Source
Blue JAVA	Version - 5.1.0	Open Source
Intel Quartus	Version - 22.1	Open Source

6.4b GLIMPSES OF PROJECT FACILITIES



Figure 6.19- Therapeutic treadmill



Figure 6.20 – Artificial Intelligence based SRLF-Driving car using Robotic Model



Figure – 6.21-Silent surveillance autonomous drone for disaster management and military security using artificial intelligence



Figure – 6.22 – Implementation of parameter estimation of an electric bicycle using IoT for village / rural/disabled community

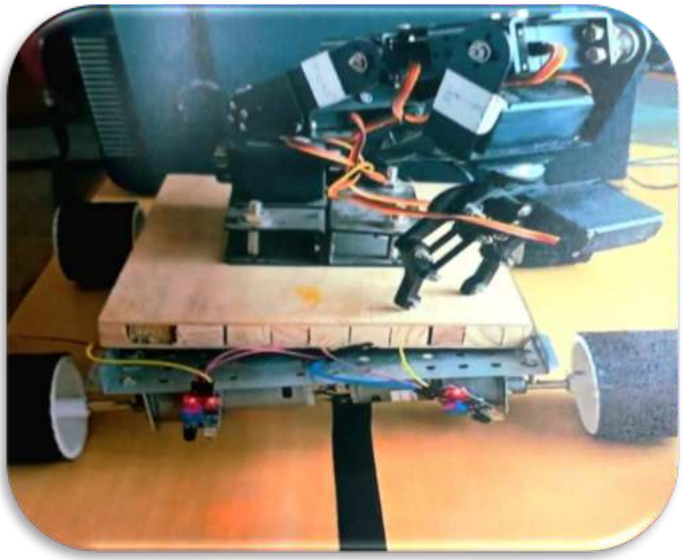


Figure – 6.23- Implementation and design of Cobots in Floriculture

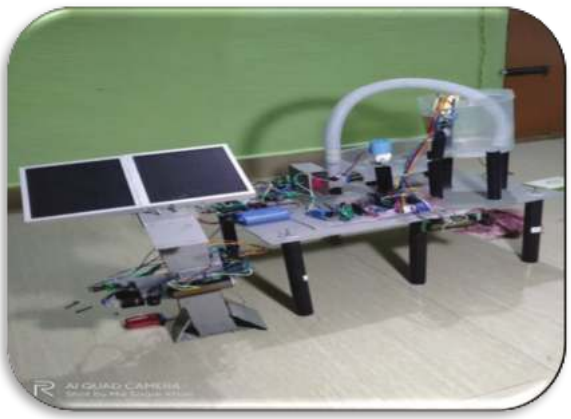


Figure – 6.24- Solar based energy efficient hybrid SLBLDC motor for Agriculture



Figure – 6.25- Electrical mountain Board



Figure – 6.26- Design and Fabrication of Quad Bike for Physically Challenged

Department of
Electrical and Electronics Engineering

Criterion - 7

Continuous Improvement

CRITERION 7	CONTINUOUS IMPROVEMENT	75

7. CONTINUOUS IMPROVEMENT (75)

7.1 Actions taken based on the results of evaluation of each of the POs & PSOs (30)

Identify the areas of weaknesses in the program based on the analysis of evaluation of POs & PSOs attainment levels. Measures identified and implemented to improve POs & PSOs attainment levels for the assessment years. Actions to be written as per table in 3.3.2.

Examples of analysis and proposed action

Sample 1-In a course on EM theory student performance has been consistently low with respect to some COs. Analysis of answer scripts and discussions with the students revealed that this could be attributed to a weaker course on vector calculus.
Action taken-revision of the course syllabus was carried out (instructor/text book changed too has been changed, when deemed appropriate).

Sample 2-In a course that had group projects it was determined that the expectations from this course about PO3 (like: "to meet the specifications with consideration for the public health and safety, and the cultural, societal, and environmental considerations") were not realized as there were no discussions about these aspects while planning and execution of the project.
Action Taken-Project planning, monitoring and evaluation included in rubrics related to these aspects.

❖ **POs Attainment Levels and Actions for improvement – CAY (2021-22)**

Table 7.1.1. POs Attainment Levels and Actions for Improvement –CAY 2021-22.

POs	Target Level	Attainment Level	Observation
PO1: Engineering Knowledge: Apply the knowledge of mathematics, science, engineering fundamentals and an engineering specialization to the solution of complex engineering problems in Electrical and Electronics Engineering.			
PO1	**2.6**	**2.84**	➢ Target is achieved. ➢ Awareness of Mathematics and Engineering fundamentals in Engineering problems ➢ The following actions were taken to enhance the target level.
Action 1: Tutorial classes on applied mathematics have been arranged for the students to solve complex engineering problems in control systems, network theory etc.			

Action 2: Bridge courses were conducted before the semester beginning for 1st year subjects.

Action 3: A few new Power electronics hardware kits have been purchased and their uses have been demonstrated during the theory classes of 20EEE62 course to help the students understand the utilization and functions of the PE kits.

Action 4. Expert lectures on VLSI Design flow using Xilinx have been arranged for the students in order to reinforce their knowledge about the application of the subject.

PO2: Problem analysis: Identify, formulate, review research literature, and analyse complex engineering problems in Electrical and Electronics Engineering reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.

PO2	**2.6**	**2.85**	➢ Target is achieved. ➢ Enhanced ability to analyse the assigned problems is desirable ➢ The following actions were taken to enhance the target level.

Action 1: Incorporation of more numerical problems during their regular lectures

Action 2: Coaching classes were conducted for numerical subjects beyond the regular planned classes

Action 3: Application oriented problems were solved in Electric circuit theory (19EEE35), Digital system design (19EEE34), Microcontroller and embedded systems (19EEE44) to improve logical thinking.

Action 4: In Signal and Systems (20EEE54) tutorial sessions were taken for the application of theory to real life problem.

PO3: Design and development of solutions: Design solutions for complex engineering problems and design system components or processes of Electrical and Electronics Engineering that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.

PO3	**2.6**	**2.83**	➢ Target is achieved. ➢ Design solutions for Engineering problems ➢ The following actions were taken to enhance the target level.

Action 1: Societal and environmental design problems were given as self-study to students in professional elective courses. A guest lecture in Emerging Trends in Electrical Substation Design has been conducted.

Action 2: In Electronics devices and Circuit (19EEE33) and Linear Integrated circuits (19EEE46), Assignments were given to students to solve real field design problems.

Action 3: The remedial sessions were arranged to enhance the performance of the students in Signals &Systems (20EEE54) and Control Systems (20EEE52) courses.

PO4: Investigation of complex problem: Use research-based knowledge and research methods including design of experiments in Electrical and Electronics Engineering, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.

PO4	**2.6**	**2.79**	➢ Target is achieved. ➢ Better exposure on Complex problem analysis ➢ The following actions were taken to enhance the target level.
Action 1: Several workshops were conducted on the Embedded system and microcontroller lab experiments. **Action 2:** In Power System Analysis Lab (20EEL66), Special attention was given to demonstrate how to analyse and interpret experimental data and synthesize a research conclusion/outcome. Design solutions for Engineering problems **Action 3:** Research based complex problems were given as assignment in Power Electronics (20EEE62), Signals & System (20EEE54), to improve practical skills of the students. **Action 4:** Industry Expert lecture on "Motors for industrial applications" has been conducted and guest talk on "Smart drives used in mining field" has been arranged.			
PO5: Modern tool usage: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modelling to complex engineering activities in Electrical and Electronics Engineering with an understanding of the limitations.			
PO5	**2.6**	**2.82**	➢ Target is achieved. ➢ Usage of additional software's latest testing equipment ➢ The following actions were taken to enhance the target level.
Action 1: Complex design problem using modern tool were given as assignment to the students in Power System analysis (20EEE61). **Action 2:** Workshops were conducted on several Electrical and Electronics engineering software like MATLAB, MI POWER. **Action 3:** Hands-on session on MATLAB-Simulink engineering tool were given to students to understand the concept of Power system Analysis (20EEE61), Power Electronics (20EEE62) and Transmission and Distribution (20EEE51) courses. **Action 4:** ECOSTRUXURE TRANSFORMER an Expert lecture from Schneider Electric has been conducted.			
PO6: Engineer and society: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice in Electrical and Electronics Engineering.			
PO6	**2.6**	**2.56**	Target is not achieved. The following actions were taken to enhance the target level.
Action 1: Students were motivated to participate on extracurricular and club activities to enhance their awareness on societal requirements and programs on clean and renewable energy was organized			

<table>
<tr><td colspan="4">through clubs to inculcate a strong sense of responsibility among the budding student engineers.
Action 2: Students will be encouraged to participate in social clubs like Environment Club, Nature Club, and Green energy club.Guest lecture on synchro phasor Technology has been organized for the students to gain the knowledge on power system.</td></tr>
<tr><td colspan="4">PO7: Environment and sustainability: Understand the impact of the professional engineering solutions of Electrical and Electronics Engineering in societal and environmental contexts, and demonstrate the knowledge and need for sustainable development.</td></tr>
<tr><td>PO7</td><td>2.6</td><td>2.76</td><td>Target is achieved. The following actions were taken to enhance the target level.</td></tr>
<tr><td colspan="4">Action 1: Short video were presented to instil sense of responsibility among the students and also to promote sustainable environment.
Action 2: Awareness program on green energy vehicle to nature will be given to promote a sustainable environment.Guest lecture on Evolving Technologies & Progressive Markets in Power Systems has been conducted.
Action 3: Proper guidance were given to the students to implement renewable energy projects using optimized material that would guarantee sustainable development.</td></tr>
<tr><td colspan="4">PO8: Ethics: Apply ethical principles and commit to professional ethics, responsibilities and norms of the engineering practice.</td></tr>
<tr><td>PO8</td><td>2.6</td><td>2.85</td><td>Target is achieved. The following actions were taken to enhance the target level.</td></tr>
<tr><td colspan="4">Action 1: Guest Lectures were arranged on topics related to professional ethics / value based education.
Action 2: Online video links on ethical principles in Electrical subjects were shared to students.
Action 3: Students were encouraged to get their mini project, major project and internship reports for plagiarism check to ensure proper practice of professional ethics.</td></tr>
<tr><td colspan="4">PO9: Individual and teamwork: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.</td></tr>
<tr><td>PO9</td><td>2.6</td><td>2.88</td><td>Target is achieved. The following actions were taken to enhance the target level.</td></tr>
<tr><td colspan="4">Action 1: Students were motivated to participate in various club activities where they will learn to function effectively both as individuals and as team members in a group.
Action 2: Several students' professional chapter activities were organized to demonstrate their abilities as team members in a group.
Action 3: Students were motivated to work in a team in project work/Internship.</td></tr>
<tr><td colspan="4">PO10: Communication: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.</td></tr>
<tr><td>PO10</td><td>2.6</td><td>2.87</td><td>Target is achieved. The following actions were taken to enhance the target level.</td></tr>
</table>

Action 1: Students were given training to write effective reports and make effective presentations on projects undertaken. **Action 2:** Students were encouraged to participate in class room presentations and national/international conferences/seminars/symposia/Hackathon/Cisco Ideathon. **Action 3:** In Open Elective and professional elective courses, Students were encouraged to give effective self-study presentation on the given topic. **Action 4:** Guest Lectures were organized on personality development/Life skills/public speaking of the students.			
PO11: Project management and finance: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.			
PO11	**2.6**	**2.52**	Target is not attained. Following actions were taken to enhance the target level.
Action 1: Students were encouraged to do multidisciplinary project involving allied departments. **Action 2:** Students were motivated to handle financial management during mini project, major project and club activities. **Action 3:** The importance of project and management is disseminated through awareness programs			
PO12: Lifelong learning: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.			
PO12	**2.6**	**2.80**	Target is achieved. The following actions were taken to enhance the target level.
Action 1: The recent technology like Electric Vehicle, Battery Management system in electric vehicle will be introduced to the students. **Action 2:** Students were motivated to take up NPTEL Certification on Python, VLSI related subjects. **Action 3:** Students were motivated to take up Industry oriented certification like MATLAB, Python. **Action 4:** Students were motivated to pursue higher studies in areas of Renewable energy, Electric Vehicle Technology in premier institution.			

❖ PSOs Attainment Levels and Actions for improvement – CAY (2021-22)

PSOs	Target Level	Attainment Level	Observation
PSO1: To demonstrate the ability to design and develop complex systems in the areas of Power system and Power electronics			
PSO1	**2.6**	**2.81**	Target is achieved. The following actions were taken to enhance the target level.
Action 1: Students are motivated to take up the real life problems during their project work so that they can design, analyse and find solution which gives exposure to latest technologies. **Action 2:** Students were given design oriented activities in emerging fields of Electrical and Electronics engineering. **Action 3:** Students were encouraged to take up MOOC courses as part of Co-curricular activities.			

PSO2: To demonstrate the ability to solve complex Power system related problems in real life using latest hardware and software tools along with analytical skills to contribute to useful, frugal and eco-friendly solutions.			
PSO2	**2.6**	**2.80**	Target is achieved. The following actions were taken to enhance the target level.
Action 1: Hands on workshop were conducted from industry experts on latest hardware and software for getting real time exposure. **Action 2:** Short term training program were conducted on program specific courses **Action 3:** Students were motivated to take up industry related project to get understanding of advanced industry tools.			

7.2 Academic Audit and actions taken thereof during the period of Assessment (15)

(Academic Audit system/process and its implementation in relation to Continuous Improvement)

7.2.1 Academic Audit Process

A best practise that should be continued in any institution for improved outcomes is academic audit. Assessing the academic achievement of each faculty member and the department is the major goal of academic audit. This technique encourages individuals to take responsibility for their own academic success. Academic audit can be used to evaluate the department's strengths and weaknesses. Comparing the academic performance of departments and faculty members is made easier by quantifying academic achievement. This technique fosters healthy rivalry among the faculty members of each department as well as within each department.

The academic audits are carried out and assessed in accordance with ISO standards. Both internal and external audits are part of the process. Faculty, laboratory, and departmental operations are all subject to audits. Fig 7.2.1 shows the academic audit process followed in EEE department and Figure 7.2.2 depicts the academic audit process flow chart with the assessment committee and parameter. The department of electrical and electronic engineering adheres to the following academic audit process:

PLAN:

The academic audit focusses on the following

- Academic Calendar
- Timetable
- Syllabus books
- workload allotment
- faculty competency
- course allotment
- faculty portfolio
- Attendance registers
- Class List
- Professional and open electives
- Lesson plan
- Workshop
- Guest lectures
- Club Activities
- Mini projects and projects
- Internships

- Mentoring
- CO-PO mapping are planned by course coordinator and verified by module co-ordinator
- Program co-ordinator
- CIE and SEE details
- Coaching class details
- Laboratory manuals and documents related to laboratories

DO: The following teaching -learning methodologies are followed by faculties for the benefits of the students:
Innovative teaching, Assignment, Quiz, Self-study, Internal assessment, value added courses, placement and training, Guest/expert lectures, workshops, webinars, seminars, Industrial visit and CIE and SEE exam

CHECK:
All the above-mentioned academic process files and the teaching-learning documents are checked and verified by the DAB and PAC committee members every semester.

ACT: Action on teaching methods, Revision of CO/PO and Curriculum were done by departmental advisory board (DAB) and IQAC which completes PDCA process of Department of Electrical and Electronics Engineering.

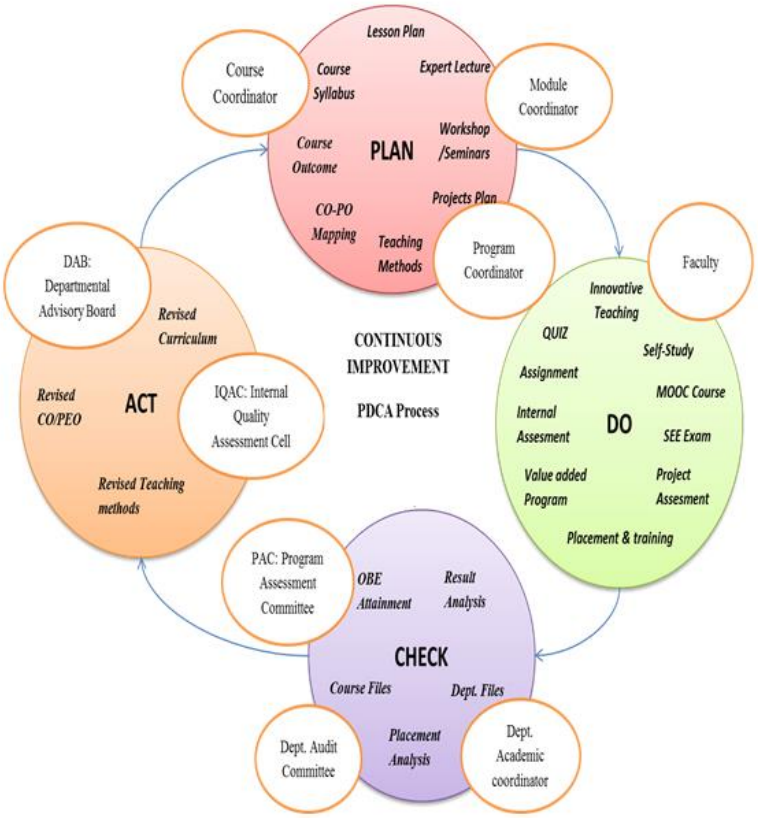


Fig 7.2.1Academic Audit Process followed in EEE Department

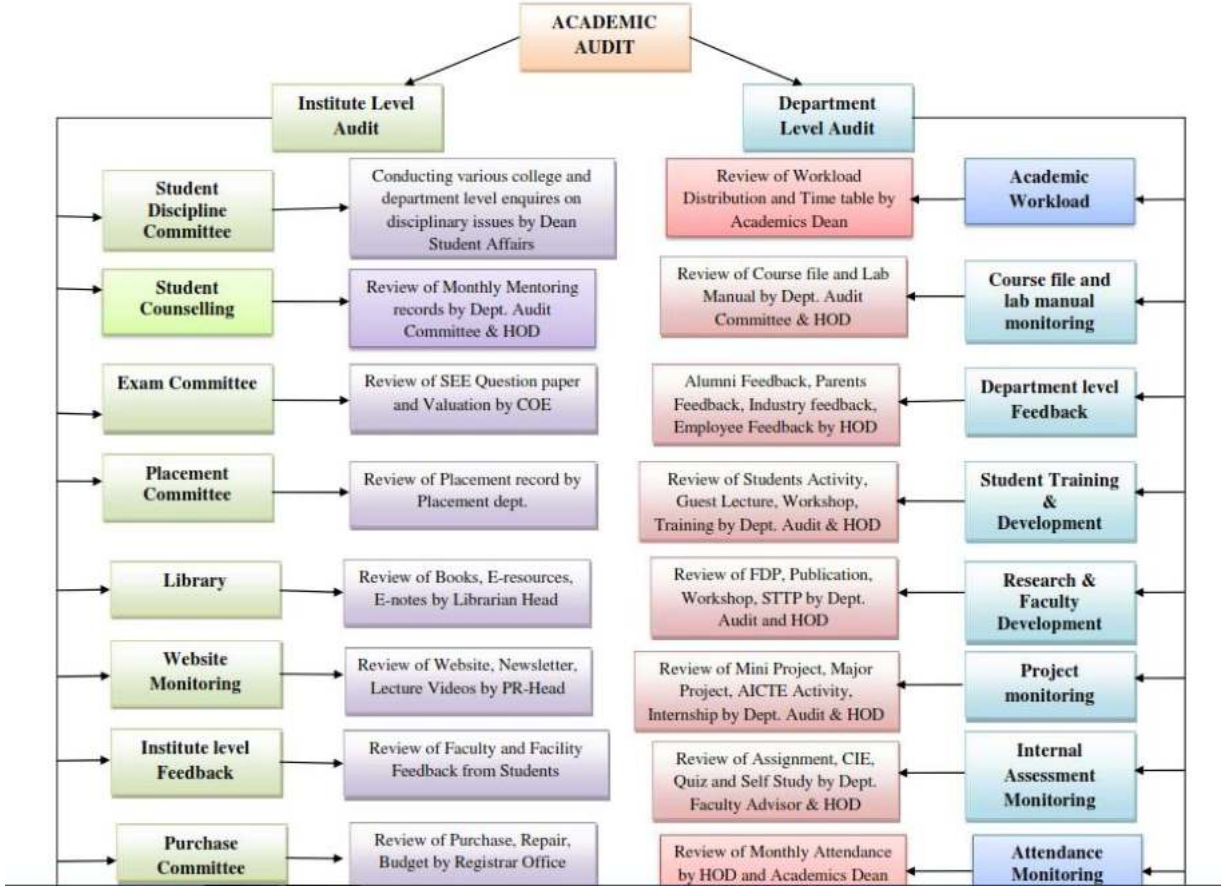


Fig 7.2.2 Audit Committee and Assessment Parameter Flow chart

Department audit process flow chart is shown in the fig 7.2.3

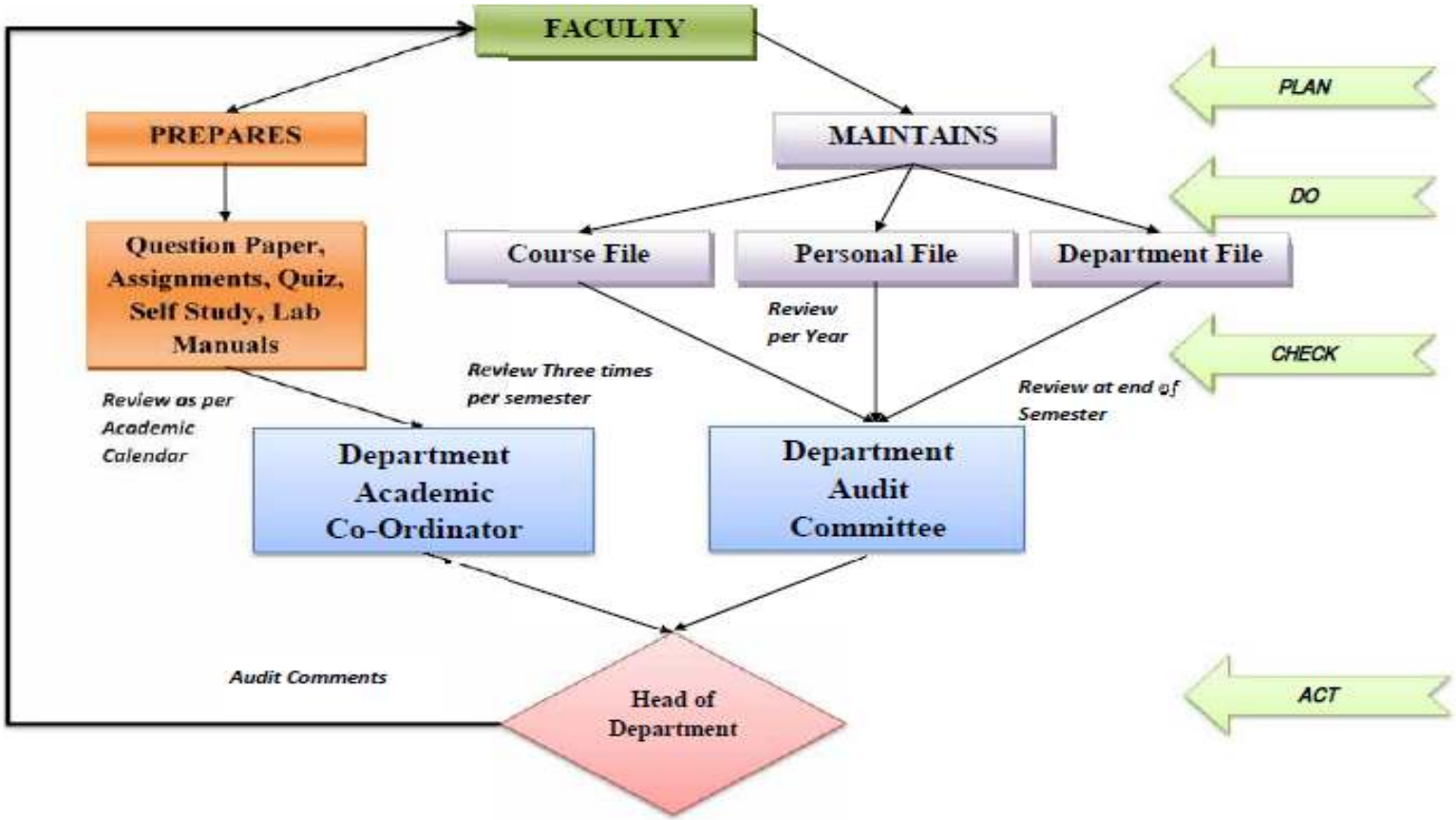


Fig 7.2.3 Department Audit Process flow chart

Table 7.2.1. Academic Audit assessment and Implementation

Sl. No	Assessment Criteria	Frequency	Conduct Mechanism and Action Plan	Implementation and Effectiveness
Department Level Audit				
1	Academic Curriculum Monitoring	Once in a Year	1. Verifying Scheme and Syllabus (Hardcopy) since inception. 2. Verifying the course outcome, program outcome and Program specific outcome by Board of Studies. 3. Collecting the feedback about the course outcome and program outcome from different stakeholders. 4. Revising the curriculum, course outcome, program outcome and teaching methods by Department advisory board (DAB) and verification by HoD. 5. Submitting the minute of meeting report to the dean academics.	Verification of revised curriculum/CO-PO by Dean Academics
2	Academic Workload Monitoring	Once in a Semester	1. Verifying subject preference of faculties as per the domain area. 2. Verifying academic workload and portfolios for the current year. 3. Verifying Calendar of Events, departmental timetable, lab timetable, Individual timetable, open elective time table, couching class time table per semester. 4. Collecting total workload of individual faculty by the department. 5. Submitting of workload report by HOD to the Dean academics.	Verification of workload reports and timetable by Dean Academics.
3	Attendance monitoring	Monthly Once	1. Verification of Master Attendance in Automation (Contineo Software) once in month. 2. Collecting Long Absentee List from Class Teachers. 3. Verification of Shortage of Attendance and Issue of warning to	Verification of Attendance reports by office of Dean Academics, and

			students. 4. Collecting Monthly Cumulative Attendance Report from individual subject faculty. 5. Reviewing of shortage of attendance with HOD & Dean Academics. 6. Submitting of report to the Dean Academics by department faculty advisor 7. Obtaining feedback on Course outcome attainment using automation (Contineo Software). 8. Result analysis of internal exams on regular basis.	HOD
4	Internal Assessment Monitoring	As per Academic Calendar	1. Assessing of Question Paper Format with Correct CO mapping as per syllabus and RBT level. 2. Assessing Assignment, Quiz and Self Study by department Faculty Advisor. 3. Documenting invigilators list, schedule and timetable. 4. Verification of Invigilator Availability in the Examination Hall by IA Co-ordinator. 5 Collecting Absentee report and recording actions taken. 6. Submitting of report to the Faculty Advisor in the prescribed format. 7. Monitoring Retest as per Schedule and Timings. 8. Verification of assessment, Quiz and self-study marks entry in automation (Contineo software). 9. Preparing consolidated marks statements.	Verification of reports by office of Dean Academics and HOD

			10. Verifying CO-PO attainment by the individual subject. 11. Listing of failures along with the corrective and actions taken report by subject faculty. 12. Submitting of report to the Dean academics in the prescribed format.	
5	Course file and lab manual monitoring	Monthly once	1. Regular verification of course file by department Audit Committee. Course file particulars: i. Calendar of Events ii. Subject Allotment iii. Time Table iv. Syllabus v. Lesson Plan vi. Attendance Register vii. Assignment Questions viii. Internal Question Paper and Scheme of Evaluation ix. Internal Test Marks x. IA- Result Analysis & CAPA Report xi. Previous Year Question Papers xii. Special Class Records (if conducted) xiii. Teacher- Appraisal Feedback xiv. Exam Related Work 2. Verification of lab manuals with additional experiments by department Audit Committee. (Open ended.) 3. Submission of audit finding report to the HOD in the prescribed format.	Verification of reports by office of Dean Academics and HOD
6	Project monitoring	As per Academic Schedule	1. Verification of All Mini and Major Project Titles and Batches of Students. 2. Verification of all Internship and External Projects and their accompanying, progress reports.	Verification of reports by office of Dean Academics and

			3. Monitoring Student Guide Contact hours. 4. Submitting of report to the project co-ordinator and HOD in the prescribed format. 5. Encouraging and helping students to convert their project into quality technical articles. 6. Publishing and helping students to convert their project into quality technical articles.	HOD
7	Training & development	Monthly once	1. Identifying of training and development needs of students. 2. Training pre-final year students through Internships. 3. Organizing Professional Tours. 4. Offering Guidance for Higher Studies in India or Abroad. 5. Organizing Guest lecture, workshops/ seminars on Technical Skills, Emotional Intelligence, Soft Skills etc. 6. Encouraging students to join and participate in Students Club activity and Professional society activity. 7. Encouraging the student to participate in societal activities to be responsible citizen.	Verification by HOD and Dean R&D
8	Research & Faculty development	Semester wise	1. Encouraging faculty and students to pursue their research plans by submitting research proposals to various agencies and scientific laboratories. 2. Allocating funds budgeted by the college for support of research and professional development.	

			3. Assuring proper accountability in the use of grants. 4. Ensuring the proper functioning of Labs. 5. Encouraging faculty to submit research article to reputed journals. 6. Encouraging and motivating faculty to apply their research ideas to Indian Patent. 7. Motivating teaching faculty to publish technical books.	Verification by HOD & Dean R&D
Institute Level Audit				
1	Student Discipline Committee (Institute Level)	Monthly once	1. Ensuring maintenance of good student discipline and providing proper amenities for student wellbeing on the campus. 2. Conducting various college and department level enquires on disciplinary issues. 3. Proper functioning of anti- ragging cell. 4. Creating awareness among students about the negative effects / disciplinary actions of ragging on the campus.	Verification of reports by office of Dean Student Affairs and HOD
2	Student Mentoring/ Counselling	Monthly once	1. Striving to work in a coordinated manner as an efficient team. 2. Holding of regular meetings with the students to discuss all relevant issues concerning student welfare for there all round development. 3. Regular meeting of students with department counsellor to discuss any specific issue faced by the students.	Verification of reports by Dean Student Affairs, Head Counsellor & HOD
3	Feedback	End of semester	1. Obtaining online faculty feedback and facilities feedback at the end of the semester from the students. 2. Obtaining employee, alumni feedback and exit surveys whenever necessary. 3. Reviewing of feedback with the concerned Heads	Verification by HOD &Dean Academics

			4. Counselling the faculty to strengthen their performance. 5. Preparing a consolidated department wise report. 6. Submitting of report to the HOD in the prescribed format.	
4	Exam Committee	As per the academic calendar	1. Documenting and submitting of the following to the faculty adviser: **a.** Examination notices received from Dean Academics **b.** Circulars for students regarding Exam Fee Collection, the last date of fee collection, modalities of payments of fine **c.** Examination Time table, Invigilation duty chart, seating plans for the students **d.** Result analysis **e.** Disciplinary issues and corrective actions 2. Scrutinize the SEE question papers and scheme of valuation, Number of paper set by external and internal examiners by the Board of Examiners. 3. Maintaining of all records pertaining to Examinations by the Examination Cell. 4. Addressing of grievances of administration, faculty, staff and students on all examination related issues. 5. Reporting any issues and suggestions to Controller of Examination (COE) in the prescribed format**.**	Verification by HOD & Controller of Examination (COE)
5	Purchase Committee	Once in a Year	1. Recommending any new lab facilities setup to enhance the quality of the labs 2. Reviewing the budget proposals for purchase of lab components, lab software, PC, printers and other lab equipment's. 3.Updating the In-Out register, device calibration records, Lab components repair records 4.Submitting the report to the office of registrar in the prescribed	Verification of reports by HOD and office of registrar, QASDC

			format	
6	Library	Once in a Year	1. Recommending any furniture, assistive devices, or other materials that would enhance the quality of the library. 2. Recommending guidelines to HODs for purchasing instructional materials and journals 3. Reviewing budget proposals for books, journals, materials, and equipment needed to further the library's educational endeavours. 4. Updating the books inventory, damaged books inventory and lost books inventory file. 5. Submitting of report to the office of library in the prescribed format.	Verification of reports by Head-Librarian
7	Placement Committee	As Required	1. Updating student placement record file. 2. Ensuring steps to conduct mock interviews and personality tests for the final year students. 3. Conducting various Career Fairs 4. Submitting detailed Campus Placements Activity Report for the current academic Year. 5. Conducting various soft skills, aptitude skills and language training sessions.	Data is available with T&P cell
8	Website Monitoring	As Required	1. Ensuring department event posters and details are updated in college website 2. Updating the college website after completion of the event. 3. Recommending any updates about the department in the college website.	Data is available with PR Department

7.2.2 Internal Audit Committee

The department audit committee member's details are given in Table 7.2.2 and the institute audit committee member's details are given in Table 7.2.3.

Table 7.2.2 Department Audit Committee

Department Audit Committee			
Sl. No	**Academic Year**	**Semester**	**Audit Committee Members**
1	2021-22	Even Semester	Dr. Mahesh M, Dr. Sujitha S, MrInbasakaran S, Dr. Gunapriya B, Dr. Vinoth Kumar K, Dr. Joshua Daniel Raj
2	2021-22	Odd Semester	Dr. Mahesh M, Dr. Sujitha S, Mr. Inbasakaran S, Dr. Gunapriya B, Dr. Vinoth Kumar K, Dr. Joshua Daniel Raj
3	2020-21	Even Semester	Dr. Mahesh M, Dr. Sujitha S, Mr. Inbasakaran S, Dr. Gunapriya B, Dr. Vinoth Kumar K, Dr. Joshua Daniel Raj
4	2020-21	Odd Semester	Dr. Mahesh M, Dr. Sujitha S, Mr. Inbasakaran S, Dr. Gunapriya B, Dr. Vinoth Kumar K, Mr. Joshua Daniel Raj
5	2019-20	Even Semester	Dr. Ramkumar S, Dr. Ganesh C, Dr. Sujitha S, Mr. Inbasakaran S, Dr. Gunapriya B, Mr. Mohan Das, Mr. Joshua Daniel Raj
6	2019-20	Odd Semester	Dr. Ramkumar S, Dr. Ganesh C, Dr. Sujitha S, Mr. Inbasakaran S, Mr.Joshua Daniel Raj, Dr. Gunapriya B, Mr. Mohan Das,

Table 7.2.3 Institute Audit Committee

Institute Audit Committee		
Sl. No	**Academic Year**	**Auditors**
1	2021-22	Dr Anandhi, Dean Academics Dr Sanjeev Sharma, Dean QASDC Dr Uma Reddy, HoD-AI &ML Dr Rajalakshmi, HoD-CSE Dr Aravinda K, HoD-ECE,Convener
2	2020-21	Dr. Amarjeet Singh, Dean Academics Dr Sanjeev Sharma, HoD-ECE Dr Uma Reddy, HoD-AI &ML Dr. Anitha S Rai, Dean-Library& Information Center, Convener
3	2019-20	Dr. Prashanth CSR, Dean Academics Ms. Hima Bindhu, Educational Program Analyst, NHQASDC Dr. Anandavardhan, Professor and HOD, BioTech Dr. Niranjan, Professor and HOD, Civil Dr. Anitha S Rai, Dean- Library& Information center, Convener

7.2.3 External Audit process

The external audit is conducted by Visveswaraya Technological University (VTU) once in a year. University appoints a group of experts from various institutions wherein financial details and administrative details are verified at institute level. The course files, lab Manuals, department files and result analysis are verified at the respective department. The external audit committee prepares report based on the observation and institute submit the compliance report to the university. The external audit process flow chart is shown in the Fig 7.2.4.

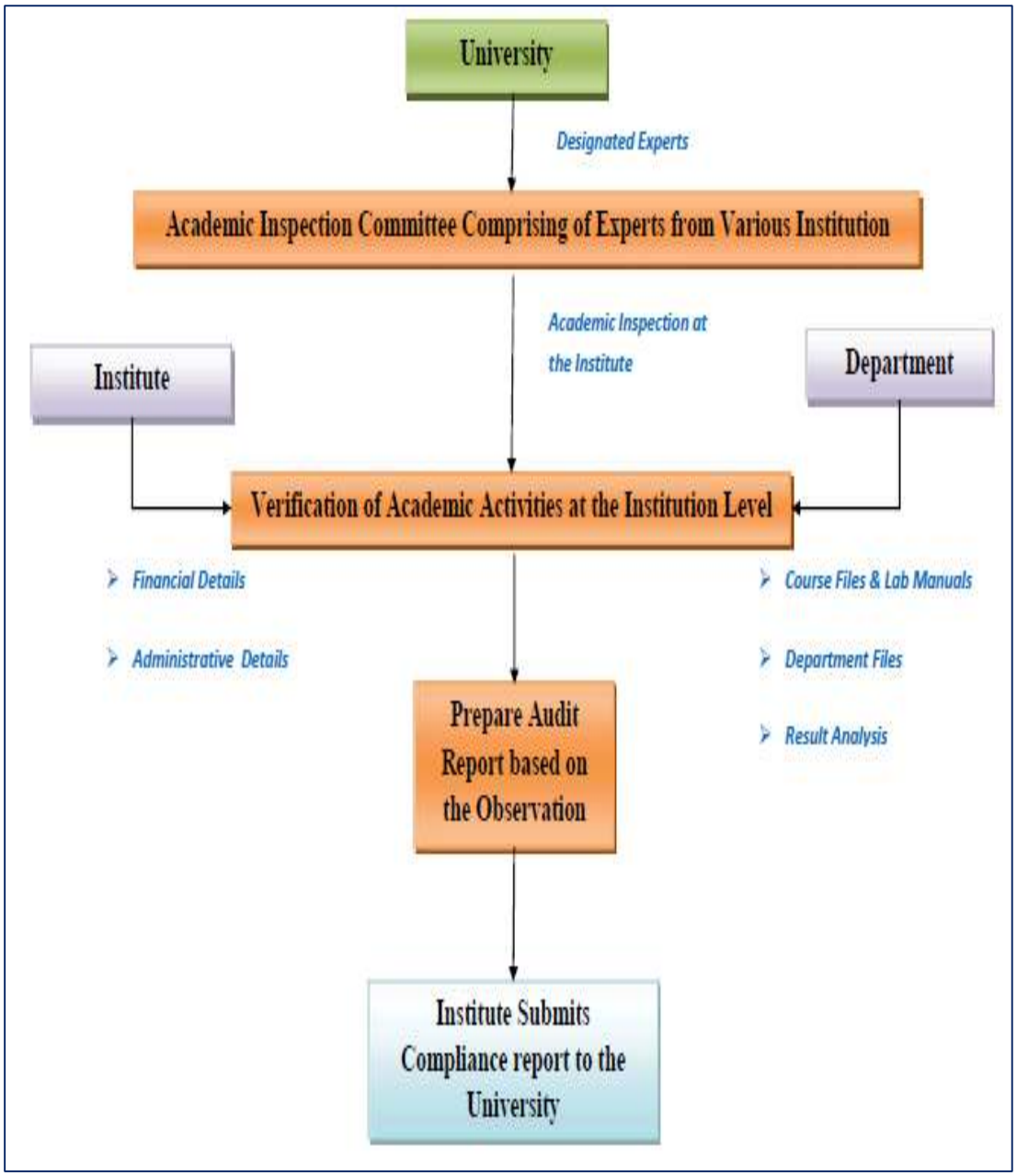


Fig 7.2.4 External Audit Process flow chart

7.2.4 Audit Findings sample compliance report

The sample copies of audit compliance reports of different auditors are shown in Fig 7.2.5, Fig 7.2.6 and Fig 7.2.7.

NEW HORIZON COLLEGE OF ENGINEERING

INTERNAL QUALITY ASSURANCE CELL (IQAC)

INTERNAL AUDIT OBSERVATIONS CHECKLIST (AUDITOR-1)

NAME OF THE AUDITEE DEPARTMENT: EEE

Sl. No.	DETAILS	Remarks
1	Guest lecture and Expert lecture (Details, Feedback, Analysis)	Webinar , Alumni
2	Events organized by the department (FDPs, Workshops, Symposiums, Seminars, Webinars, Conferences, Alumni talks)	FDP, available workshop, symposium - not conducted
3	Industrial visit details and Impact Analysis	Impact Analysis is missing
4	Student Internships and Impact Analysis	Odd sem - Not available
5	Mini-projects, Major Projects documentation and Mapping of type of Projects	Mapping of type of projects is missing
6	Course Feedback (from students: for Module Coordinator meetings)	Course feedback not taken
7	MoU signed by the department	No MoU's done from 2021 Aug to till date
8	Mentoring records	Stage 2 report from counsellor is missing
9	Parent-Teacher-Meeting	PTM not conducted
10	Alumni database and Meetings	Print of Alumni to be taken
11	Departmental Magazines / Newsletters	Hard copy yet to take print
12	Industrial Training for Faculty	No data for Odd sem
13	Research guides and scholars list (with attendance details for all research scholars)	No research scholars under VTU

Fig 7.2.5 Sample audit compliance report 1

INTERNAL QUALITY ASSURANCE CELL (IQAC)

INTERNAL AUDIT OBSERVATIONS CHECKLIST (AUDITOR-2)

NAME OF THE AUDITEE DEPARTMENT: EEE

Sl. No.	ACADEMIC FILES	Remarks
1	College Vision, Mission	As per the old format
2	Department Vision, Mission and PEOs	these Vision, Mission,Pos and PSOs datakept separate not available in academic files
3	POs and PSOs	
4	Marks awarded for external co-curricular participation (if applicable)	Not awarded any marks for this
5	Special Class Records (if conducted)	Not conducted / few courses only taken coaching classes

Fig 7.2.6 Sample audit compliance report 2

NEW HORIZON COLLEGE OF ENGINEERING

INTERNAL QUALITY ASSURANCE CELL (IQAC)

INTERNAL AUDIT OBSERVATIONS CHECKLIST (AUDITOR-3)

NAME OF THE AUDITEE DEPARTMENT: Electrical and Electronics Engineering

Sl. No.	DETAILS	Remarks
1	Course preferences	Only 2 courses are opted
2	Workload calculation	Academic unit and portfolio <= 39
3	Class Time-table and Individual Time-table	Signatures are missing
4	Attendance registers (faculty-wise) (pink books)	Only 11 books are shown

Fig 7.2.7 Sample audit compliance report 3

7.3 Improvement in Placement, Higher Studies and Entrepreneurship (10)

Assessment is based on improvement in:

- Placement: number, quality placement, core industry, pay packages etc.
- Higher studies: performance in GATE, GRE, GMAT, CAT etc., and admissions in premier Institutions
- Entrepreneurs

7.3.1 Placement details:

The placement details for the academic years 2021-22, 2020-21 & 2019-20 are shown in Table 7.3.1, Table 7.3.2 & Table 7.3.3.

Table 7.3.1 Placement data for the year 2021-22

S. No	Name of Company	No. of students placed	Salary Per Annum per students in Rupees
1.	Automation Anywhere	8*	852000
2.	DXC Technology	11*	400000
3.	Capgemini	23	750000
4.	CGI	9*	425000
5.	Wipro Ltd	5	350000
6.	Cognizant	8*	700000
7.	Musigma	4	300000
8.	Galaxe Solution	1	350000
9.	Happiest Minds Technologies Pvt. Ltd	4	420000
10.	Accenture	4	650000
11.	Kishu Giken Kogyo	1	2000000
12.	Ernst & Young	3	425000
13.	TheMathCompany	1	450000
14.	IBM	2	450000
15.	CERNER CORPORATION	1	750000
16.	Tudip Technologies Pvt Ltd	3	350000
17.	L&T Technology Services	5*	400000
18.	EXL Service	5	400000
19.	Sky Point	1	350000
20.	Anora Semiconductor Labs Private Limited	1	500000
21.	MyCaptain	1	450000
22.	IQVIA	1	700000
23.	Comviva	6	375000
24.	Hashedin By Deloitte	1*	784500
25.	Hexaware Technologies	1*	400000
26.	Skyhigh Security	1*	900000
27.	TCS	2	360000
	Total students placed	**99**	**Average Pay = 564500**
	Average students placed	**87.61%**	

*Considered double offers

Table 7.3.2 Placement data for the year 2020-21

S. No	Name of Company	No. of students placed	Salary Per Annum per students in Rupees
1.	Automation Anywhere	4	852000
2.	Tudip Technologies Pvt Ltd	14	350000
3.	Capgemini	17	680000
4.	NTT Data Services	9*	350000
5.	BOSCH	18	500000
6.	Cognizant	14	450000
7.	CBRE	6	25000
8.	LOWE"S India	4	824000
9.	IQVIA	4	500000
10.	Accenture	10	650000
11.	INFOSYS	3	350000
12.	Ernst & Young	5*	487173
13.	Mindtree	1	330000
14.	Eurofins IT Solutions India Pvt Ltd	1	700000
15.	TCS	6	300000
16.	ESKO	2	650000
17.	Simply Vyapar App Pvt Ltd	2	300000
18.	VERZEO Edutech	1	500000
19.	CREATORS MATCH Ltd.	1	2400000
20.	WIPRO	1	350000
	Total students placed	**103**	**Average Pay = 589377**
	Average students placed	**86.55%**	

Table 7.3.3 Placement data for the year 2019-20

S. No	Name of Company	No. of students placed	Salary Per Annum per students in Rupees
1.	Hexaware Technologies	12*	450000
2.	Cognizant	10	450000
3.	TCS	7*	350000
4.	ITC Infotech Ltd	6	375000
5.	EXL Service	10	300000
6.	JMR Infotech	6	340000
7.	Examly	1	500000
8.	BYJU's	2	300000
9.	Capgemini	15	380000
10.	IBM India	4	725000
11.	EPSILON	6	460000
12.	Eurofins IT Solutions India Pvt Ltd	4	700000
13.	Surya Software	1	500000
14.	Netradyne Technology Pvt Ltd	3	400000
15.	Visionet System Inc	3	500000
16.	Altran	4	350000
17.	ExtraMarks	3*	520000
18.	Ernst & Young	5	361905
19.	Wealth Clinic Ltd	1	350000
20.	L&T Technology Services	5*	425000
	Total students placed	**102**	**Average Pay = 436845**
	Average students placed	**86.44%**	

*Considered double offers

7.3.1.1 Comparative Analysis of Placement

The details of number of students placed and the package received by students are shown in Table 7.3.4. The comparative analysis of placement details is shown in Fig. 7.3.1 a, and b.

Table 7.3.4 Comparative Analysis of Placement

Year	Total number of Eligible students	Total number of students placed	% of students placed	Improvement in %
2021-2022	113	99	87.61	1.06
2020-2021	119	103	86.55	0.11
2019-2020	118	102	86.44	4.78
Year	**Total number of Eligible students**	**Highest Pay Package received by student (in Rupees)**	**Lowest Pay Package received by student (in Rupees)**	**Average pay package received by students (in Rupees)**
2021-2022	113	200000	300000	564500
2020-2021	119	240000	25000	589377
2019-2020	118	725000	300000	436845

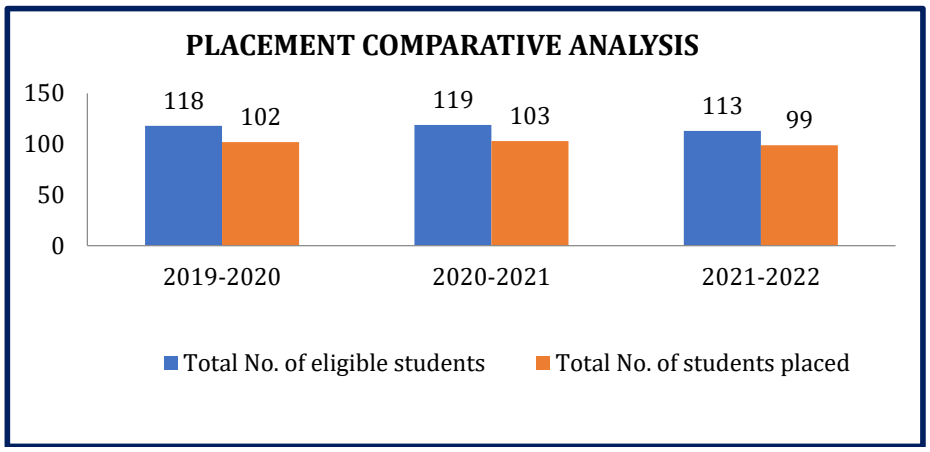


Fig 7.3.1 a. Comparative Analysis of Placement

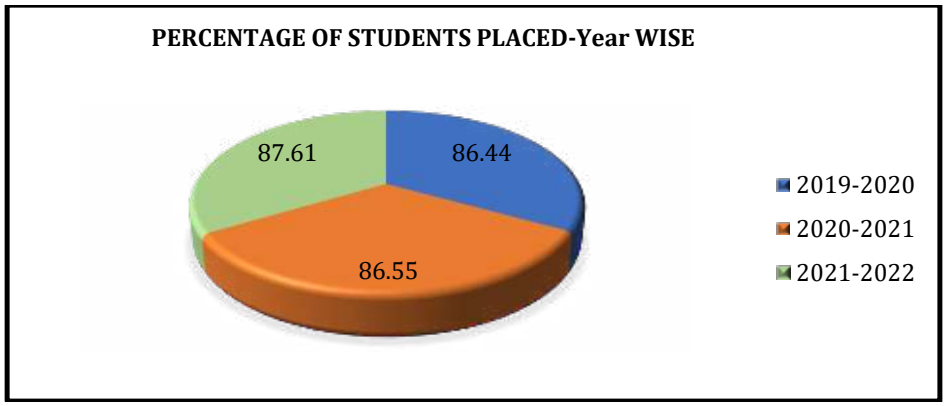


Fig.7.3.1b. Percentage of students Placed-Year wise

7.3.1.2 Improvement in placement

The improvement in the placement for the CAY, CAYm1 and CAYm2 graphs are shown in Fig 7.3.1.d, e and f.

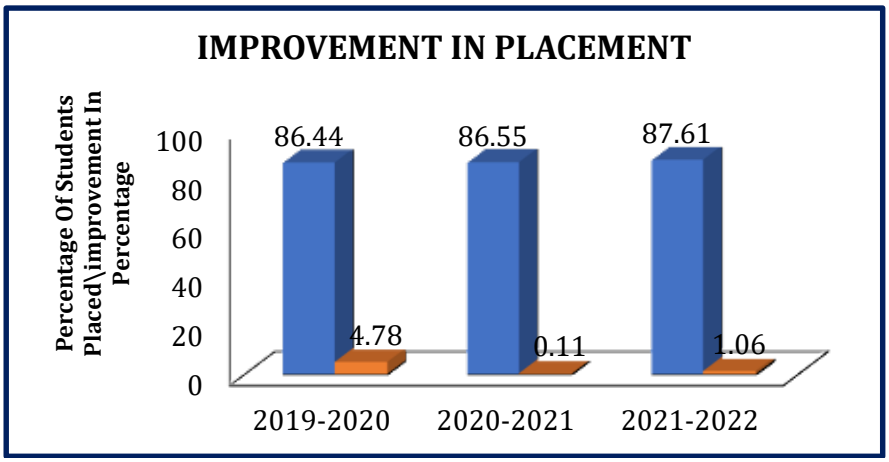


Fig.7.3.1 d. Improvement in placement

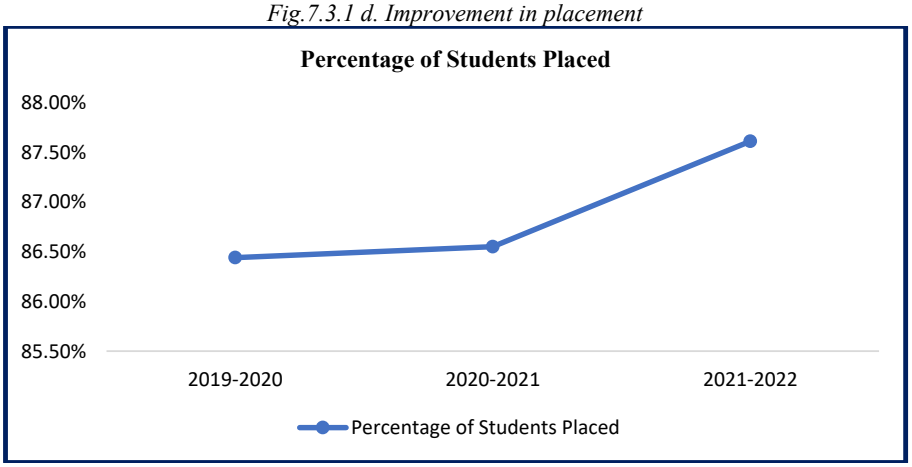


Fig.7.3.1. e. Improvement in placement -Line graph

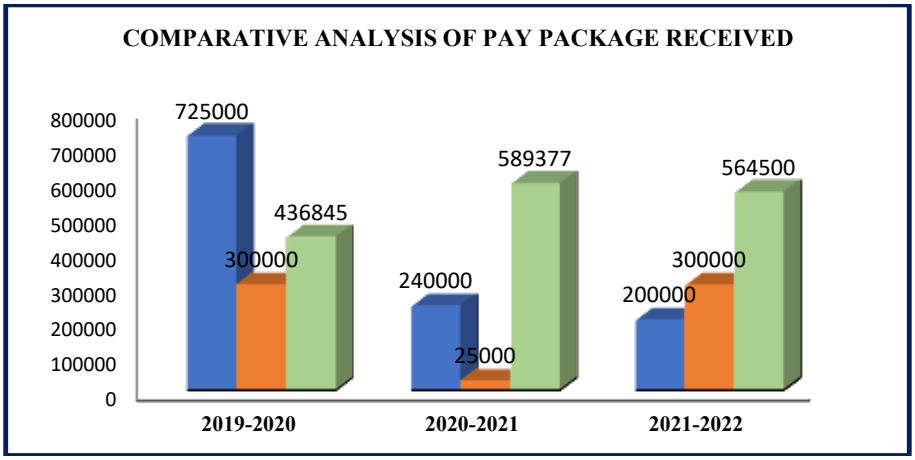


Fig.7.3.1. f. Comparative analysis of packages received

7.3.2 Higher studies details

The higher studies data for the academic years 2021-2022, 2020-2021 and 2019-2020 are shown in Table 7.3.5, 7.3.6 & 7.3.7. The comparative analysis of higher studies details is shown in Fig. 7.3.2.a & 7.3.2.b.

Table 7.3.5 Higher studies data for the year 2021-22

S.No.	Name of the program	Number of students joined
1	M.TECH	1
2	MBA	0
3	MS	6
Total No. of students joined for higher studies		7

Table 7.3.6 Higher studies data for the year 2020-21

S.No.	Name of the program	Number of students joined
1	M.TECH	1
2	MBA	1
3	MS	5
Total No. of students joined for higher studies		7

Table 7.3.7 Higher studies data for the year 2019-20

S.No.	Name of the program	Number of students joined
1	M.TECH	2
2	MBA	2
3	MS	2
Total No. of students joined for higher studies		6

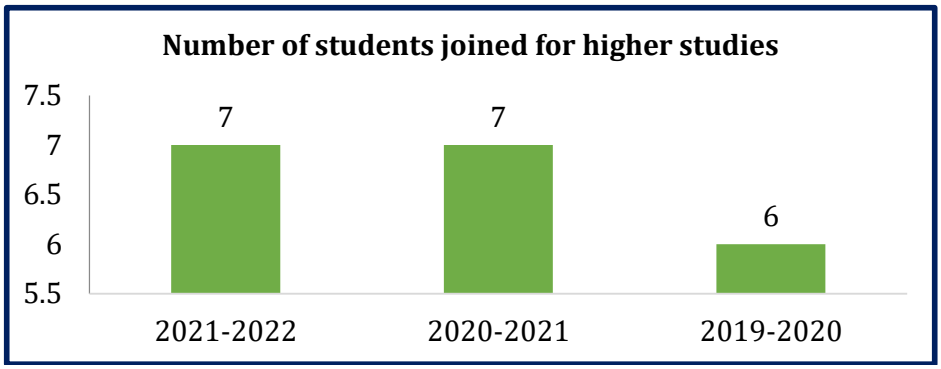


Fig 7.3.2.a Comparative analysis of higher studies

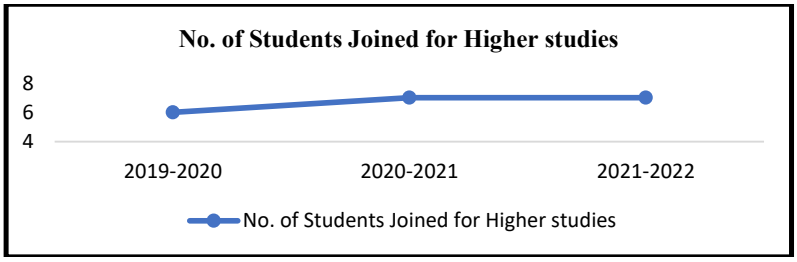


Fig.7.3.2. b Comparative analysis of higher studies -Line graph

7.3.3 Entrepreneurship details

The entrepreneurship data for the academic years 2021-2022, 2020-2021 and 2019-2020 are shown in Table 7.3.8. The comparative analysis of entrepreneurship details is shown in Fig. 7.3.3.a, 7.3.3.b & 7.3.3.c.

Table 7.3.8 Entrepreneurship details for three years

S.No.	Academic Year	Number of students turned as entrepreneur
1	2021-2022	4
2	2020-2021	3
3	2019-2020	3

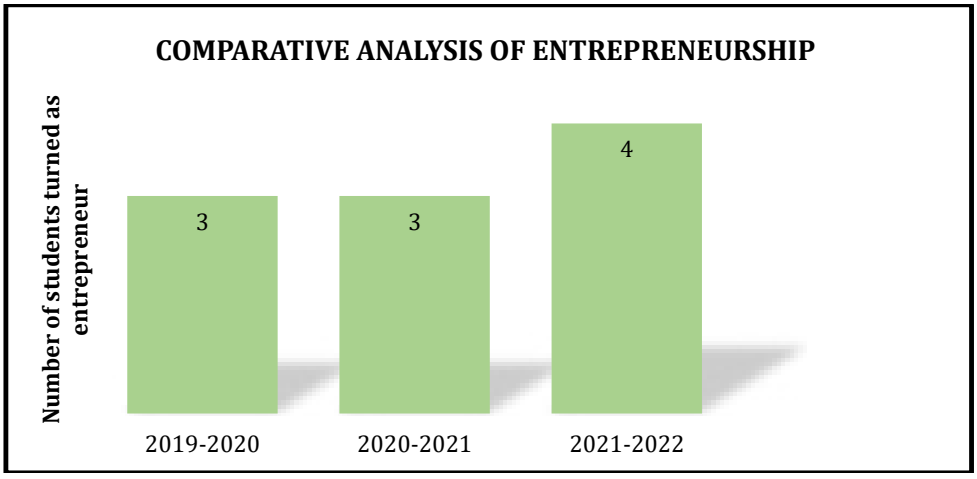


Fig 7.3.3.a Comparative analysis of entrepreneurship

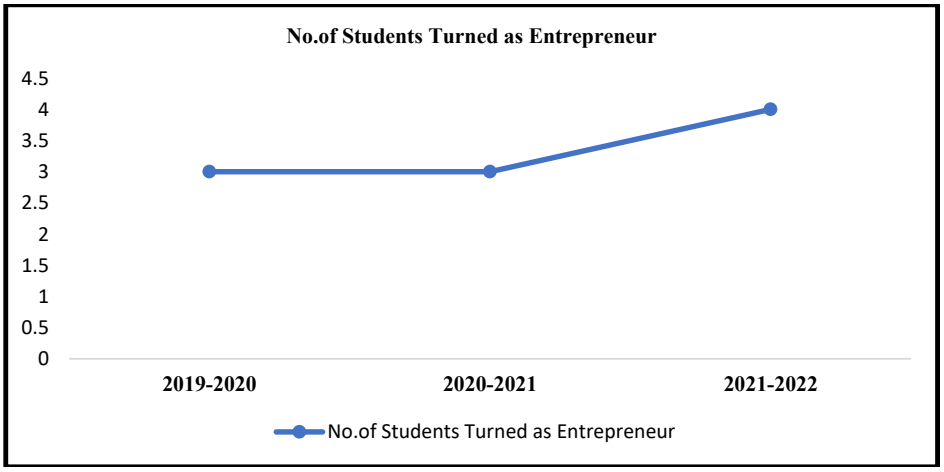


Fig 7.3.3.b Comparative analysis of entrepreneurship- Line graph

The improvement in placement, higher studies and entrepreneurship details are shown in Table 7.3.9 & Fig 7.3.10.

Table 7.3.9 Improvement in placement, higher studies and entrepreneurship

Higher studies comparative analysis report				
Year	**Total No. of students**	**Total No. of students joined for higher studies**	**% of students joined for higher studies**	**% Improvement**
2019-2020	118	6	5.08%	0.08%
2020-2021	119	7	5.88%	0.80%
2021-2022	113	7	6.19%	0.31%
Entrepreneurship comparative analysis report				
Year	**Total No. of students**	**Total No. of students turned as entrepreneur**	**% of students turned as entrepreneur**	**% Improvement**
2019-2020	118	3	2.5%	0.02%
2020-2021	119	3	2.52%	0.02%
2021-2022	113	4	3.53%	1.01%
Placement, Higher studies, and Entrepreneurship comparative analysis				
Year	**Total No. of students**	**Total number of students placed/Higher Studies/turned as entrepreneur**	**Total Percentage**	**Improvement in percentage**
2019-2020	118	111	94.07	0.85%
2020-2021	119	113	94.95	1.67%
2021-2022	113	110	97.35	4%

Table 7.3.10 Placement, Higher Studies & Entrepreneurship for the assessment years

Year	X (No. of students placed in companies or government sector)	Y (No. of students admitted to higher studies)	Z (No. of students turned as entrepreneur)
2019-2020	102	6	3
2020-2021	103	7	3
2021-2022	99	7	4

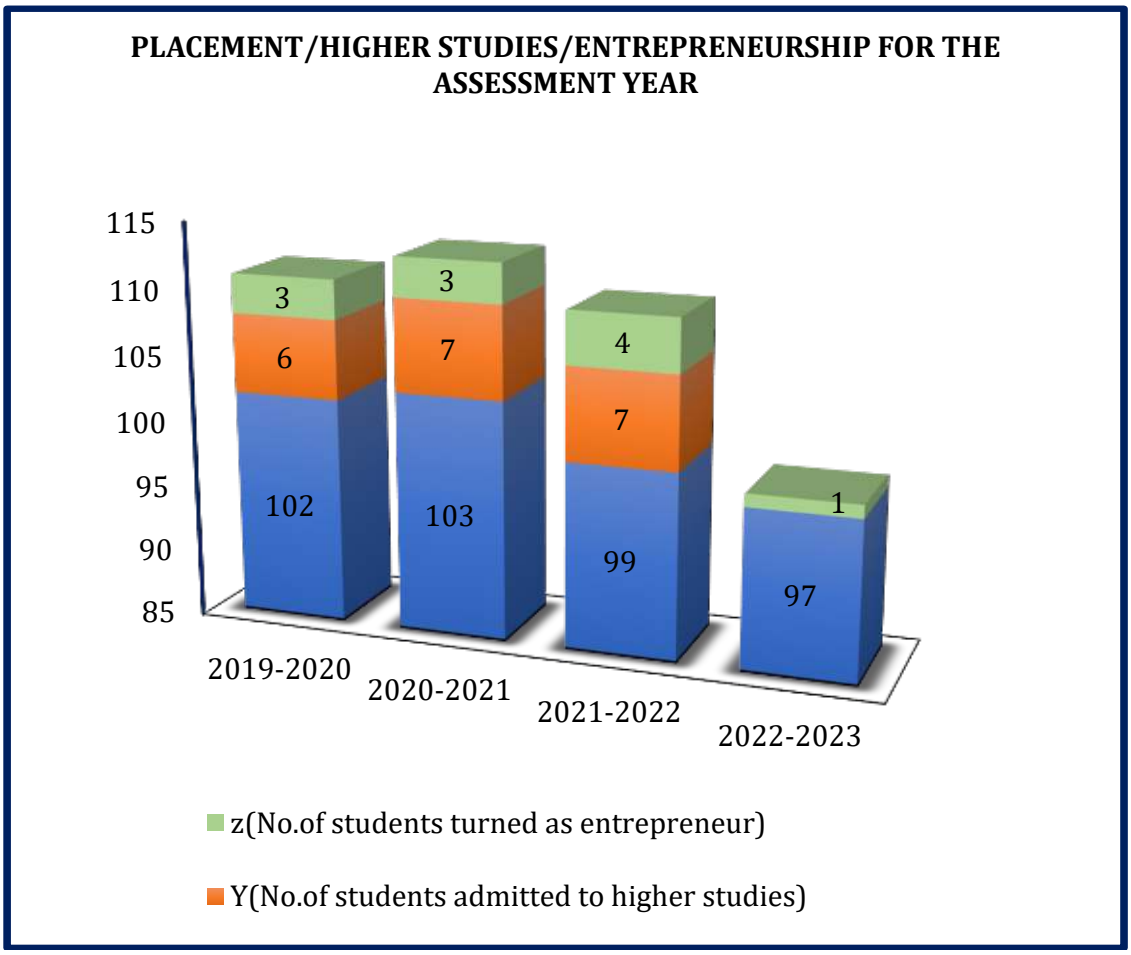


Fig.7.3.3.c. Comparative analysis of placement, higher studies & entrepreneurship

7.4 Improvement in the quality of students admitted to the program (20)

Assessment is based on improvement in terms of ranks/score in qualifying state level/national level entrances tests, percentage marks in Physics, Chemistry and Mathematics in 12th Standard and percentage marks of the lateral entry students.

Table 7.4.1. Admission Data for three Assessment Years

Item	Particulars	CAY (2022-23)	CAY (2021-22)	CAYm1 (2020-21)
National Level Entrance Examination (Name of the Entrance Examination)	No. of Students admitted	-	-	-
	Opening Score/Rank	-	-	-
	Closing Score/Rank	-	-	-
Karnataka Common Entrance Test-CET	No. of Students admitted	52	80	80
	Opening Score/Rank	20077	20785	18025
	Closing Score/Rank	144904	153200	153354
Karnataka Diploma Common Entrance Test (DCET)	No. of Students admitted	13	12	11
	Opening Score/Rank	168	662	2346
	Closing Score/Rank	4775	5804	11298
Average CBSE/Any other Board Result of admitted students (Physics, Chemistry &Maths)		83.24	80.26	80.76

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Self Assessment Report (SAR)

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Criterion - 8

First Year Academics

Electrical and Electronics Engineering

CRITERION 8	First Year Academics	50

8.1: First Year Student-Faculty Ratio (FYSFR, 5)

Data for first year courses to calculate the FYSFR:

Year	Number of Students (Approved intake strength)	**Number of Faculty Members (Considering fractional load)	FYSR	* Assessment = (5x20) / FYSFR (Limited to max. 5)
CAY (2022-23)	1140	79	15	5
CAYm1(2021-22)	1140	76	15	5
CAYm2 (2020-21)	1260	79	16	5
Average	**1180**	**78**	**15**	**5**

Table B.8.1.

**** All faculties are dedicated to first year only**

8.2 Qualification of Faculty Teaching First Year Common Courses (5)

Assessment of qualification = $(5x+3y)/RF$, x = Number of Regular Faculty with Ph.D, y = Number of Regular Faculty with Post-graduate qualification, RF = Number of faculty members required as per SFR of 20:1, Faculty definition as defined in 5.1

Year	X (Number Of Regular Faculty with Ph.D)	Y (Number of Regular Faculty with Post graduate Qualification)	RF (Number of Faculty Members required as per SFR of 20:1)	* Assessment of Faculty qualification (5x+3y) / RF
CAY (2022-23)	21	40	57	3.00
CAYm1(2021-22)	20	32	57	3.00
CAYm2 (2020-21)	25	43	63	4.00
Average	**3.33**			

Table B.8.2.

8.3 First Year Academic Performance (10)

Academic Performance	Information Science & Engineering		
	CAYm1 (2021-22)	CAYm2 (2020-21)	CAYm3 (2019-20)
Mean of CGPA of all Successful students(x)	7.90	8.28	8.14
Total no. of successful students(y)	116	118	117
Total students appeared in the examination(Z)	126	123	125
API=x*(y/Z)	7.27	7.94	7.62
Average	7.61		

Academic Performance = ((Mean of 1st Year Grade Point Grade Point Average of all successful students on a 10 point scale) or (Mean of the percentage of marks in first year of all successful students/10)) x (number of successful students/number of students appeared in the examination)

Successful students are those who are permitted to proceed to the second year.

8.4 Attainment of Course Outcome of First Year Courses

8.4.1 Describe the assessment processes used to gather the data upon which the evaluation of Course Outcomes of first year is done (5)

Assessment Tool Type	Assessment Tool Title	Tool Description
Direct Assessment	**Continuous Internal Evaluation (CIE)**	This is used as an assessment tool to evaluate the attainment of course outcomes, through Assignments, Quizzes, Internal Assessment (Average of 3 Exams) which are conducted throughout the semester and designed in such a way that the evaluation of complete syllabus is covered. This is done for all courses of the semester.
	Laboratory Examinations	The performance in laboratory is evaluated through appropriate rubrics. The students are tested for their Confidence in terms of design of a system and experimentation. Ability of the students to analyze and interpret the results of experiments is continuously evaluated by the faculty during laboratory classes. The Strength of the students in using their skills and tools in the laboratory is also evaluated in external laboratory examinations.
	Semester End Examinations (SEE)	This tool examines at all cognitive levels the ability and understanding of the students with respect to the concepts taught and their applicability in solving complex Engineering problems. The ability of the students to understand and apply knowledge of

		mathematics, science and engineering concepts in solving engineering problems is keenly evaluated.

Table 8.4.1.a Tools used in measuring CO

CO Attainment	Weightage	Assessment Tools
Overall CO Attainment Direct Attainment	100%	Continuous Internal Evaluation CIE (50%)
		Semester End Examinations (SEE) (50%)

Table 8.4.1.b Calculation of CO attainment

The individual COs of the courses is mapped with Correlation level and is being evaluated by prescribed assessment tools. The attainment of individual CO is calculated by assigning separate weightage to the continuous Internal Evaluation, Semester End examination, assignments and quizzes. The attainment of COs is compared with the target level. The CO is said to be attained if its attainment value is greater than or equal to target attainment level.

8.4.1.1. Theory Course Evaluation

Assignments, Quizzes, Internal assessment test, semester end examinations are conducted and evaluated for (both theory and lab) integrated courses.

The distribution of marks for theory& Lab courses (Sample) is as given in table below.

Assessment Tool	Maximum Marks	Marks Scaled to	Weightage
Assignments	15	15	50%
Quizzes	10	10	
Internal Assessment Exam (Avg of 3 Exams)	25	25	
Semester End Examination - Theory	100	50	50%
Everyday Lab session (Each Expt. 10 marks)	10	10	50%
Lab Internal Exam	15	15	
Semester End Examination - Lab	50	25	50%

Table 8.4.1.1. Distribution of marks for theory & Lab courses evaluation.

The Process for Assessment and Attainment of COs is described in the flowchart as shown in Flow Chart

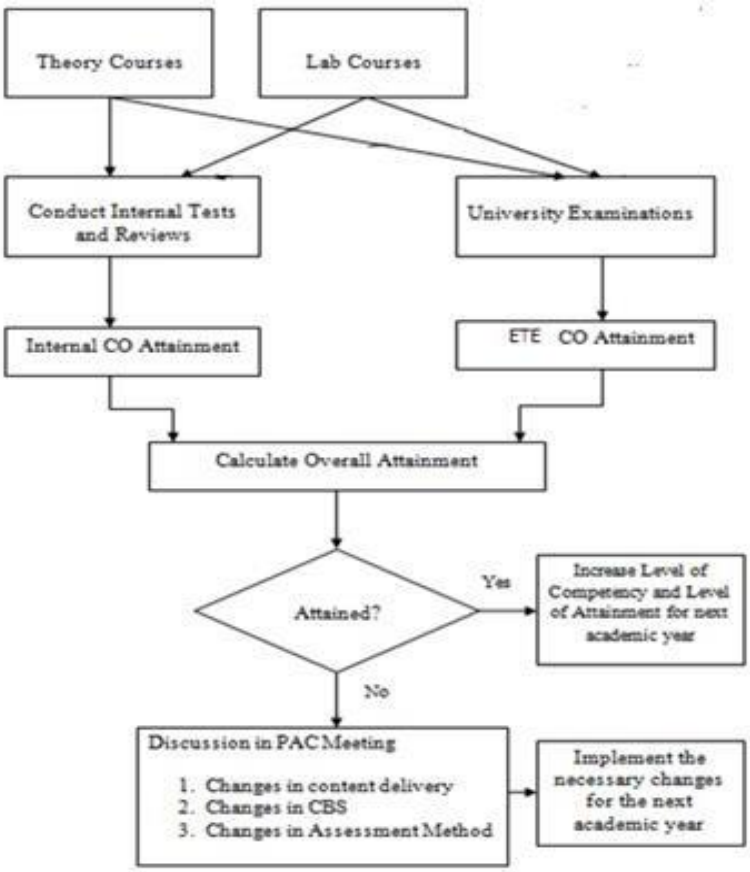


Fig 8.4.1. Process of assessment and attainment of CO

8.4.2 Record the attainment of Course Outcomes of all First Year Courses (5)

Program shall have set attainment levels for all first-year courses. (The attainment levels shall be set considering average performance levels in the institution level examination or any higher value set as target for the assessment years. Attainment level is to be measured in terms of student performance in internal assessments with respect the COs of a subject plus the performance in the institution level examination)

Attainment Levels: Internal Assessment

Course	Attainment Level	CAYm2 (2017-18)	CAYm1 (2018-19)	CAY (2019-20)
Applied Mathematics I	0	less than 40% scored >=28	less than 45% scored >=28	less than 45% scored >=30
	1	40% to 49% scored >=28	45% to 54% scored >=28	45% to 54% scored >=30
	2	50% to 59% scored >=28	55% to 64% scored >=28	55% to 64% scored >=30
	3	60% and more scored >=28	65% and more scored >=28	65% and more scored >=30
Engineering Physics	0	less than 45% scored >=38	less than 45% scored >=28	less than 45% scored >=30
	1	45% to 54% scored >=38	45% to54% scored >=28	45% to 54% scored >=30
	2	55% to 64% scored >=38	55% to 64% scored >=28	55% to 64% scored >=30
	3	65% and more scored >=38	65% and more scored >=28	65% and more scored >=30
Elements of Civil Engineering	0	less than 42% scored>=25	less than 44% scored>=25	less than 45% scored >=30
	1	42% to 51% scored>=25	44% to 53% scored>=25	45% to 54% scored >=30
	2	52% to 61% scored>=25	54% to 63% scored>=25	55% to 64% scored >=30
	3	62% and more scored>=25	64% and more scored>=25	65% and more scored >=30
Elements of Mechanical Engineering	0	less than 40% scored >=36	less than 40% scored >=25	less than 40% scored >=28
	1	40% to49% scored >=36	40% to 49% scored >=25	40% to 49% scored >=28
	2	50% to 59% scored >=36	50% to 59% scored >=25	50% to 59% scored >=28
	3	60% and more scored >=36	60% and more scored >=25	60% and more scored >=28
Basic Electrical Engineering	0	less than 45% scored >=23	less than 50% scored >=25	less than 51% scored >=28
	1	45% to54% scored >=23	50% to 59% scored >=25	51% to 61% scored >=28
	2	55% to 64% scored >=23	60% to 69% scored >=25	62% to 71% scored >=28
	3	65% and more scored >=23	70% and more scored >=25	72% and more scored >=28
Engineering Physics Lab	0	Included with Theory as it is an integrated subject	less than 50% scored >=15	less than 50% scored >=18
	1		50% to59% scored >=15	50% to59% scored >=18
	2		60% to 69% scored >=15	60% to 69% scored >=18
	3		70% and more scored >=15	70% and more scored >=18

Basic Electrical Engineering Lab	0	No Lab Course	less than 40% scored >=15	less than 45% scored >=18
	1		40% to49% scored >=15	45% to54% scored >=18
	2		50% to 59% scored >=15	55% to 64% scored >=18
	3		60% and more scored >=15	65% and more scored >=18
Applied Mathematics II	0	less than 40% scored >=28	less than 45% scored >=28	less than 45% scored >=30
	1	40% to 49% scored >=28	45% to 54% scored >=28	45% to 54% scored >=30
	2	50% to 59% scored >=28	55% to 64% scored >=28	55% to 64% scored >=30
	3	60% and more scored >=28	65% and more scored >=28	65% and more scored >=30
Engineering Chemistry	0	less than 45% scored >=38	less than 45% scored >=28	less than 50% scored >=28
	1	45% to54% scored >=38	45% to54% scored >=28	50% to59% scored >=28
	2	55% to 64% scored >=38	55% to 64% scored >=28	60% to 69% scored >=28
	3	65% and more scored >=38	65% and more scored >=28	70% and more scored >=28
Introduction to Programming with C	0	less than 40% scored >=38	less than 45% scored >=25	less than 40% scored >=25
	1	40% to49% scored >=38	45% to54% scored >=25	40% to 49% scored >=25
	2	50% to 59% scored >=38	55% to 64% scored >=25	50% to 59% scored >=25
	3	60% and more scored >=38	65% and more scored >=25	60% and more scored >=25
Computer Aided Engineering Drawing	0	less than 40% scored>=27	less than 40% scored>=28	less than 40% scored>=29
	1	40% to 49% scored>=27	40% to 49% scored>=28	40% to 49% scored>=29
	2	50% to 59% scored>=27	50% to 59% scored>=28	50% to 59% scored>=29
	3	60% and more scored>=27	60% and more scored>=28	60% and more scored>=29
Basic Electronics	0	less than 30% scored >=29	less than 30% scored >=30	less than 30% scored >=31
	1	30% to 39% scored >=29	30% to 39% scored >=30	30% to 39% scored >=31
	2	40% to 49% scored >=29	40% to 49% scored >=30	40% to 49% scored >=31
	3	50% and more scored >=29	50% and more scored >=30	50% and more scored >=31

Programming in C Lab	0	Included with Theory as it is an integrated subject	less than 45% scored >=13	less than 40% scored >=13
	1		45% to54% scored >=13	40% to49% scored >=13
	2		55% to 64% scored >=13	50% to 59% scored >=13
	3		65% and more scored >=13	60% and more scored >=13
Engineering Chemistry Lab	0	Included with Theory as it is an integrated subject	less than 50% scored >=15	less than 55% scored >=15
	1		50% to59% scored >=15	55% to64% scored >=15
	2		60% to 69% scored >=15	65% to 70% scored >=15
	3		70% and more scored >=15	75% and more scored >=15
Business / Professional communication	0	less than 32% scored >=13	less than 34% scored >=13	less than 35% scored >=14
	1	32% to 41% scored >=13	34% to 43% scored >=13	35% to 44% scored >=14
	2	42% to 51% scored >=13	44% to 53% scored >=13	45% to 54% scored >=14
	3	52% and more scored >=13	54% and more scored >=13	55% and more scored >=14
Environmental Science & Awareness	0	less than 44% scored>=30	Course removed and included in higher semester	Course removed and included in higher semester
	1	45% to 54% scored>=30		
	2	55% to 64% scored>=30		
	3	65% and more scored>=30		

Attainment Levels: External Assessment

Course	Attainment Level	CAYm2 2017-18	CAYm1 2018-19	CAY 2019-20
Applied Mathematics I	0	less than 40% scored >=56	less than 45% scored >=56	less than 45% scored >=60
	1	40% to 49% scored >=56	45% to 54% scored >=56	45% to 54% scored >=60
	2	50% to 59% scored >=56	55% to 64% scored >=56	55% to 64% scored >=60
	3	60% and more scored >=56	65% and more scored >=56	65% and more scored >=60
Engineering Physics	0	less than 45% scored >=76	less than 45% scored >=56	less than 45% scored >=60
	1	45% to54% scored >=76	45% to54% scored >=56	45% to 54% scored >=60
	2	55% to 64% scored >=76	55% to 64% scored >=56	55% to 64% scored >=60
	3	65% and more scored >=76	65% and more scored >=56	65% and more scored >=60
Elements of Civil Engineering	0	less than 42% scored>=50	less than 44% scored>=50	less than 45% scored >=60
	1	42% to 51% scored>=50	44% to 53% scored>=50	45% to 54% scored >=60
	2	52% to 61% scored>=50	54% to 63% scored>=50	55% to 64% scored >=60
	3	62% and more scored>=50	64% and more scored>=50	65% and more scored >=60
Elements of Mechanical Engineering	0	less than 40% scored >=72	less than 40% scored >=50	less than 40% scored >=56
	1	40% to49% scored >=72	40% to 49% scored >=50	40% to 49% scored >=56
	2	50% to 59% scored >=72	50% to 59% scored >=50	50% to 59% scored >=56
	3	60% and more scored >=72	60% and more scored >=50	60% and more scored >=56
Basic Electrical Engineering	0	less than 45% scored >=46	less than 50% scored >=50	less than 51% scored >=56
	1	45% to54% scored >=46	50% to 59% scored >=50	51% to 61% scored >=56
	2	55% to 64% scored >=46	60% to 69% scored >=50	62% to 71% scored >=56
	3	65% and more scored >=46	70% and more scored >=50	72% and more scored >=56

Basic Electrical Engineering Lab	0	No Lab	less than 40% scored >=30	less than 45% scored >=36
	1		40% to49% scored >=30	45% to54% scored >=36
	2		50% to 59% scored >=30	55% to 64% scored >=36
	3		60% and more scored >=30	65% and more scored >=36
Engineering Physics Lab	0	Included with Theory as it is an integrated subject	less than 50% scored >=30	less than 50% scored >=36
	1		50% to59% scored >=30	50% to59% scored >=36
	2		60% to 69% scored >=30	60% to 69% scored >=36
	3		70% and more scored >=30	70% and more scored >=36
Applied Mathematics II	0	less than 40% scored >=56	less than 45% scored >=56	less than 45% scored >=60
	1	40% to 49% scored >=56	45% to 54% scored >=56	45% to 54% scored >=60
	2	50% to 59% scored >=56	55% to 64% scored >=56	55% to 64% scored >=60
	3	60% and more scored >=56	65% and more scored >=56	65% and more scored >=60
Engineering Chemistry	0	less than 45% scored >=76	less than 45% scored >=56	less than 50% scored >=56
	1	45% to54% scored >=76	45% to 54% scored >=56	50% to59% scored >=56
	2	55% to 64% scored >=76	55% to 64% scored >=56	60% to 69% scored >=56
	3	65% and more scored >=76	65% and more scored >=56	70% and more scored >=56
Introduction to Programming with C	0	less than 40% scored >=76	less than 45% scored >=50	less than 40% scored >=50
	1	40% to49% scored >=76	45% to54% scored >=50	40% to 49% scored >=50
	2	50% to 59% scored >=76	55% to 64% scored >=50	50% to 59% scored >=50
	3	60% and more scored >=76	65% and more scored >=50	60% and more scored >=50
Computer Aided Engineering Drawing	0	less than 40% scored>=54	less than 40% scored>=56	less than 40% scored>=58
	1	40% to 49% scored>=54	40% to 49% scored>=56	40% to 49% scored>=58
	2	50% to 59% scored>=54	50% to 59% scored>=56	50% to 59% scored>=58
	3	60% and more scored>=54	60% and more scored>=56	60% and more scored>=58

Basic Electronics	0	less than 30% scored >=58	less than 30% scored >=60	less than 30% scored >=62
	1	30% to 39% scored >=58	30% to 39% scored >=60	30% to 39% scored >=62
	2	40% to 49% scored >=58	40% to 49% scored >=60	40% to 49% scored >=62
	3	50% and more scored >=58	50% and more scored >=60	50% and more scored >=62
Programming in C & Data Structures lab	0	Included with Theory as it is an integrated subject	less than 45% scored >=26	less than 40% scored >=26
	1		45% to54% scored >=26	40% to49% scored >=26
	2		55% to 64% scored >=26	50% to 59% scored >=26
	3		65% and more scored >=26	60% and more scored >=26
Engineering Chemistry Lab	0	Included with Theory as it is an integrated subject	less than 50% scored >=30	less than 55% scored >=30
	1		50% to59% scored >=30	55% to64% scored >=30
	2		60% to 69% scored >=30	65% to 70% scored >=30
	3		70% and more scored >=30	75% and more scored >=30
Business / Professional communication	0	less than 32% scored >=26	less than 34% scored >=26	less than 35% scored >=28
	1	32% to 41% scored >=26	34% to 43% scored >=26	35% to 44% scored >=28
	2	42% to 51% scored >=26	44% to 53% scored >=26	45% to 54% scored >=28
	3	52% and more scored >=26	54% and more scored >=26	55% and more scored >=28
Environmental Science & Awareness	0	less than 44% scored>=60	Course removed and included in higher semester	Course removed and included in higher semester
	1	45% to 54% scored>=60		
	2	55% to 64% scored>=60		
	3	65% and more scored>=60		

Table 8.4.2.

8.4.2.1 Calculations

Direct Attainment (DA) =

Semester End Examination * 0.5 + Continuous Internal Assessment * 0.5

Total Attainment = DA

8.4.2.2 The following table shows the attainment of course outcome.

CO Attainment 2017-18

S. No.	Course Code	Course Name	Direct Attainment		Overall CO attainment
			C IE Evaluations	Semester End Exam	
1	MAT11	Engineering Mathematics I	3	3	3
2	PHY12/22	Engineering Physics	3	3	3
3	MEE13/23	Elements of Mechanical Engineering	3	3	3
4	CIV14/24	Elements of Civil Engineering	3	3	3
5	EEE15/25	Basic Electrical Engineering	3	3	3
6	HSS162/262	Professional Communication	3	3	3
7	MAT21	Engineering Mathematics II	3	3	3
8	CHE12/22	Engineering Chemistry	3	3	3
9	CSE13/23	Introduction to Programming with C	3	3	3
10	MEE14/24	Computer Aided Engineering Drawing	3	3	3
11	ECE15/25	Basic Electronics	3	2.8	2.9
12	HSS161/261	Environmental Science & Awareness	3	3	3

Table 8.4.2.1a CO Attainment CAYm2 (2017-18)

CO Attainment 2018-19

S. No.	Course Code	Course Name	Direct Attainment		Overall CO attainment
			C IE Evaluations	Semester End Exam	
1	18MAT11	Applied Mathematics I	3	3	3
2	18PHY12/22	Engineering Physics	3	3	3
3	18MEE13/23	Elements of Mechanical Engineering	3	3	3
4	18CIV14/24	Elements of Civil Engineering	3	3	3
5	18EEE15/25	Basic Electrical Engineering	3	2.6	2.8
6	18PHL16/26	Engineering Physics Lab	3	3	3
8	18EEL17/27	Basic Electrical Engineering Lab	3	3	3
9	18MAT21	Applied Mathematics II	3	3	3
10	18CHE12/22	Engineering Chemistry	3	3	3
11	18CSE13/23	Introduction to Programming with C	3	2.8	2.9
12	18MEE14/24	Computer Aided Engineering Drawing	3	2.8	2.9
13	18ECE15/25	Basic Electronics	3	3	3
14	18CHL17/27	Engineering Chemistry Lab	3	3	3
15	18CSL18/28	Programming with C Lab	3	3	3
16	18HSS16/26	Professional Communication	3	3	3

Table 8.4.2.1b CO Attainment CAYm1 (2018-19)

CO Attainment 2019-20

S. No.	Course Code	Course Name	Direct Attainment		Overall CO attainment
			C IE Evaluations	Semester End Exam	

1	19MAT11	Applied Mathematics I	3	3	3
2	19PHY12/22	Engineering Physics	3	3	3
3	19MEE13/23	Elements of Mechanical Engineering	3	3	3
4	19CIV14/24	Elements of Civil Engineering	3	2.8	2.9
5	19EEE15/25	Basic Electrical Engineering	3	3	3
6	19PHL16/26	Engineering Physics Lab	3	3	3
8	19EEL17/27	Basic Electrical Engineering Lab	3	2.4	2.7
9	19MAT21	Applied Mathematics II	3	3	3
10	19CHE12/22	Engineering Chemistry	3	3	3
11	19CSE13/23	Introduction to Programming with C	3	2.7	2.9
12	19MEE14/24	Computer Aided Engineering Drawing	3	3	3
13	19ECE15/25	Basic Electronics	3	2.8	2.9
14	19CHL17/27	Engineering Chemistry Lab	3	3	3
15	19CSL18/28	Programming with C Lab	3	3	3
16	19HSS271	Professional Communication	3	3	3

Table 8.4.2.1c CO Attainment CAY (2019-20)

8.5. Attainment of Program Outcomes from first year courses (20)

8.5.1. Indicate results of evaluation of each relevant PO and/or PSO if applicable(10)

The relevant program outcomes that are to be addressed at first year need to be identified by the institution Program Outcome attainment levels shall be set for all relevant POs and/or PSOs through first year courses.

(Describe the assessment processes that demonstrate the degree to which the Program Outcomes and Program Specific Outcomes are attained through first year courses and document the attainment levels. Also include

information on assessment processes used to gather the data upon which the evaluation of each Program Outcome is based indicating the frequency with which these processes are carried out)

The process to assess the attainment of the Program Outcomes and Program Specific Outcomes begins with the assessments of course outcomes attainment. The assessment of POs /PSOs during first year involves direct methods of assessment only.

	Assessment method	**Assessment Tool**	**Frequency**
POs/PSOs attainment	Direct Method	Course outcomes attainment	At end of every semester

DAC collects the data for internal and external assessment of POs and PSOs from the respective source and calculate the attainment. Direct assessment level of POs and PSOs is determined by taking average of course attainment level across all courses addressing that PO and/or PSO.

Programme Articulation Matrix 2017-18

Course Code	Course Name	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO 10	PO 11	PO 12
MAT11	Engineering Mathematics I	3	3	3	2	2	-	-	-	-	1	-	3
PHY12/22	Engineering Physics	3	2	2	-	-	-	-	-	2	-	-	1
MEE13/23	Elements of Mechanical Engineering	3	1	3	-	3	2	1	-	-	3	-	1
CIV14/24	Elements of Civil Engineering	3	2	1	1	-	-	-	-	-	-	-	1
EEE15/25	Basic Electrical Engineering	3	3	2	2	-	-	-	-	-	2	1	-
MAT21	Engineering Mathematics II	3	3	3	3	3	-	-	-	1	3	-	3
CHE12/22	Engineering Chemistry	3	3	-	-	-	-	3	-	-	-	-	3
CSE13/23	Introduction to Programming with C	3	3	3	1	3	-	-	-	3	1	-	1
MEE14/24	Computer Aided Engineering Drawing	2	-	2	2	1	-	-	-	-	2	-	2
ECE15/25	Basic Electronics	3	2	2	-	-	-	-	-	-	-	-	-
HSS161/261	Environmental Science and Awareness	3	3	-	3	-	-	3	2	-	-	-	-
HSS162/262	Professional Communication	-	-	-	-	-	-	-	3	2	3	-	3
Avg.		**2.9**	**2.5**	**2.3**	**2.0**	**2.4**	**2.0**	**2.3**	**2.5**	**2.0**	**2.1**	**1.0**	**2.0**

Table 8.5.1.1a Programme Articulation Matrix 2017-18

Programme Articulation Matrix 2018-19

Course	Course Name	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO 10	PO 11	PO 12
18MAT11	Applied Mathematics I	3	3	3	2	2	-	--	-	-	2	-	3
18PHY12/22	Engineering Physics	3	2	2	-	-	-	-	-	2	-	-	1
18MEE13/23	Elements of Mechanical Engineering	3	1	3	-	3	2	1	-	-	3	-	1
18CIV14/24	Elements of Civil Engineering	3	2	1	1	-	-	-	-	-	-	-	1
18EEE15/25	Basic Electrical Engineering	3	3	2	1	1	-	-	-	-	-	2	-
18PHL16/26	Engineering Physics Lab	3	2	2	-	-	-	-	-	2	-	-	1
18EEL17/27	Basic Electrical Engineering Lab	3	3	2	1	1	-	-	3	-	-	-	2
18MAT21	Applied Mathematics II	3	3	3	3	3	-	-	-	1	3	-	3
18CHE12/22	Engineering Chemistry	3	3	-	-	-	-	3	-	-	-	-	3
18CSE13/23	Introduction to Programming with C	3	3	3	1	3	-	-	-	3	1	-	1
18MEE14/24	Computer Aided Engineering Drawing	2	-	2	2	1	-	-	-	-	2	-	2
18ECE15/25	Basic Electronics	3	2	2	-	-	-	-	-	-	-	-	-
18CHL17/27	Engineering Chemistry Lab	3	3	-	-	-	-	3	-	-	-	-	3
18CSL18/28	Programming with C Lab	3	3	3	3	3	-	-	-	3	-	-	3
18HSS16/26	Professional Communication	-	-	-	-	-	-	-	3	2	3	-	3
Avg.		**2.9**	**2.5**	**2.3**	**1.8**	**2.1**	**2.0**	**2.3**	**3.0**	**2.2**	**2.3**	**2.0**	**2.1**

Table 8.5.1.1b Programme Articulation Matrix 2018-19

Programme Articulation Matrix 2019-20

Course	Course Name	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO 10	PO 11	PO 12
19MAT11	Applied Mathematics I	3	3	3	3	-	-	-	-	2	3	-	3
19PHY12/22	Engineering Physics	3	2	-	-	2	1	-	-	2	-	-	1
19MEE13/23	Elements of Mechanical Engineering	3	1	3	-	3	2	1	-	-	3	-	1
19CIV14/24	Elements of Civil Engineering	3	2	1	1	-	-	-	-	-	-	-	1
19EEE15/25	Basic Electrical Engineering	3	3	-	2	1	-	-	-	-	-	-	-
19PHL16/26	Engineering Physics Lab	3	2	2	-	2	1	-	-	2	-	-	1
19EEL17/27	Basic Electrical Engineering Lab	3	3	2	2	1	-	-	-	2	2	-	-
19MAT21	Applied Mathematics II	3	3	3	3	3	-	-	-	1	3	-	3
19CHE12/22	Engineering Chemistry	3	2	-	-	-	-	2	-	-	-	-	2
19CSE13/23	Introduction to Programming with C	3	3	3	1	3	-	-	-	3	1	-	1
19MEE14/24	Computer Aided Engineering Drawing	2	-	2	2	1	-	-	-	-	2	-	2
19ECE15/25	Basic Electronics	3	3	3	-	-	-	-	-	-	-	-	-
19CHL17/27	Engineering Chemistry Lab	3	-	-	-	-	-	-	-	-	-	-	3
19CSL18/28	Programming with C Lab	3	3	3	3	3	-	-	-	3	-	-	3
19HSS271	Professional Communication	-	-	-	-	-	-	-	3	3	3	-	3
Avg.		**2.93**	**2.50**	**2.50**	**2.13**	**2.11**	**1.33**	**1.50**	**3.00**	**2.25**	**2.43**	**-**	**2.00**

Table 8.5.1.1c Programme Articulation Matrix 2019-20

PO Attainment (2017-18)

Course	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
MAT11	3	3	3	3	3	-	-	-	-	3	-	3
PHY12/22	3	3	3	-	-	-	-	-	3	-	-	3
MEE13/23	3	3	3	-	3	3	3	-	-	3		3
CIV14/24	3	3	3	-	-	-	-	-	-	-	-	3
EEE15/25	3	3	3	3	-	-	-	-	-	3	3	-
MAT21	3	3	3	3	3	-	-	-	3	3	-	3
CHE12/22	3	3	-	-	-	-	3	-	-	-	-	3
CSE13/23	3	3	3	3	3	-	-	-	3	3	-	3
MEE14/24	3	-	3	3	3	-	-	-	-	3	-	3
ECE15/25	2.86	2.75	2.75	-	-	-	-	-	-	-	-	-
HSS161/261	2.9	3	-	3	-	-	2.9	3	-	-	-	-
HSS162/262	-	-	-	-	-	-	-	3	3	3	-	3
Direct Attainment	2.98	2.97	2.97	3	3	3	2.97	3	3	3	3	3

Table 8.5.1.2a PO Attainment (2017-18)

PO Attainment (2018-19)

Course	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
18MAT11	3	3	3	3	3	-	-	-	-	3	-	3
18PHY12/22	3	3	3	-	-	-	-	-	3	-	-	3
18MEE13/23	3	3	3	-	3	3	3	-	-	3	-	3
18CIV14/24	3	3	3	3	-	-	-	-	-	-	-	3
18EEE15/25	2.81	2.81	2.81	2.81	2.81	-	-	2.7	-	-	2.92	2.7
18PHL16/26	3	3	3	-	-	-	-	-	3	-	-	3
18EEL17/27	3	3	3	3	3	3	3	3	-	-	-	3
18MAT21	3	3	3	3	3	-	-	-	3	3	-	3
18CHE12/22	3	3	-	-	-	-	3	-	-	-	-	3
18CSE13/23	2.815	2.75	2.75	2.75	2.82	-	-	-	2.82	2.795	-	2.81
18MEE14/24	3	-	2.56	3	3	-	-	-	-	3	-	3
18ECE15/25	2.845	2.87	2.87	-	-	-	-	-	-	-	-	-
18CHL17/27	3	3	-	-	-	-	3	-	-	-	-	3
18CSL18/28	3	3	3	3	3	-	-	-	3	-	-	3
18HSS16/26	-							3	3	3	-	3
Direct Attainment	2.96	2.96	2.91	2.94	2.95	3	3	2.95	2.97	2.96	2.92	2.98

Table 8.5.1.2b PO Attainment (2018-19)

PO Attainment (2019-20)

Course	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
19MAT11	3	3	3	3	-	-	-	-	3	3	-	3
19PHY12/22	3	3	-	-	3	3	-	-	3	-	-	3
19MEE13/23	3	3	3	-	3	3	3	-	-	3	-	3
19CIV14/24	3	3	3	3.0								3.0
19EEE15/25	3	3	-	3	3	-	-	-	-	-	-	-
19PHL16/26	3	3	3	-	3	3	-	-	3	-	-	3
19EEL17/27	2.8	2.8	2.8	2.8	2.8				2.84	2.84		
19MAT21	3	3	3	3	3	-	-	-	3	3	-	3
19CHE12/22	3	3	-	-	-	-	3	-	-	-	-	3
19CSE13/23	2.5	2.4	2.5	3.0	2.6	-	-	-	2.55			2.51
19MEE14/24	3.0	-	3.0	3.0	3	-	-	-	-	3	-	3
19ECE15/25	2.9	2.9	2.8	-	-	-	-	-	-	-	-	-
19CHL17/27	3	-	-	-	-	-	-	-	-	-	-	3
19CSL18/28	2.8	2.8	2.8	2.8	2.8				2.8			2.8
19HSS271	-	-	-	-	-	-	-	3	3	3	-	3
Direct Attainment	2.93	2.91	2.89	2.95	2.91	3	3	3	2.9	2.97	-	2.94

Table 8.5.1.2c PO Attainment (2019-20)

Target Attainment Level

Target Attainment Level	2017-18	2018-19	2019-20
	2.4	2.6	2.7

8.5.2. Actions taken based on the results of evaluation of relevant Pos (5):

PO Attainment Levels and Actions for improvement: 2017-18

PO	Target Level	Attainment Level	Observations
PO-1: **Engineering knowledge**: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.			
PO-1	2.4	2.96	**Target Achieved**
Tour of NHCE labs was organized to first year students			
PO	Target Level	Attainment Level	Observations
PO-2: Problem analysis: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.			
PO-2	2.4	2.96	**Target Achieved**
Organized Expert Lectures from leading R & D organizations such as Tata Institute of Fundamental Research (TIFR)Bangalore, International Researchers (USA), National Aerospace Laboratories (NAL) Bangalore, Raman Research institute (RRI) Bangalore			
PO	Target Level	Attainment Level	Observations
PO-3: **Design/development of solutions**: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.			
PO-3	2.4	2.91	**Target Achieved**
Students of the first year attended a “Lecture on PLC (Programmable Logic Controller) & SCADA			
PO	Target Level	Attainment Level	Observations
PO-4: **Conduct investigations of complex problems**: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.			
PO-4	2.4	2.94	**Target Achieved**
The significance of literature survey was outlined to students			
PO	Target Level	Attainment Level	Observations

PO-5: **Modern tool usage**: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.			
PO-5	2.4	2.95	**Target Achieved**
Students of the first year attended a lecture "Demonstration of Cisco Lab and MATLAB"			
PO	Target Level	Attainment Level	Observations
PO-6: **The engineer and society**: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.			
PO-6	2.4	3	**Target Achieved**
Engineers primary obligation is to protect the safety, health and welfare of the public. Engineers decision making is very important because the ultimate beneficiary is the general public or society at large. This was emphasized through the course Constitution of India and Professional Ethics. Three weeks induction program also outlined the contribution of engineers to the society			
PO	Target Level	Attainment Level	Observations
PO-7: **Environment and Sustainability:** Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.			
PO-7	2.4	3	**Target Achieved**
Students of the first year attended "A talk and demonstration through videos on waste management"			
PO	Target Level	Attainment Level	Observations
PO-8: **Ethics**: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.			
PO-8	2.4	2.95	**Target Achieved**
Ethics will guide the engineers to mould the personality trait of an individual which will play a key role in instilling discipline and facilitating students to become a responsible citizen of the nation. This is also reemphasized through the course Constitution of India and Professional Ethics			

PO	Target Level	Attainment Level	Observations

PO-9: **Individual and team work**: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.			
PO-9	2.4	2.97	**Target Achieved**
As part of the self-study evaluation, students were assigned the small projects in groups; working in the groups enabled them to understand the intricacies of team work and decision-making process			
PO	Target Level	Attainment Level	Observations
PO-10: **Communication**: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.			
PO-10	2.4	2.96	**Target Achieved**
The "Center for Soft Skills and Life Long Learning" ensures the students are equipped with all possible communication tools			
PO	Target Level	Attainment Level	Observations
PO-11: **Project management and finance**: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.			
PO-11	2.4	2.92	**Target Achieved**
Students get hands on experience on managing small group tasks and associated finances by participating actively in the Curricular, Co-curricular and Technical clubs. Technically too students were assigned the small projects in groups as part of the self-study evaluation, which teaches the nuances of project management			
PO	Target Level	Attainment Level	Observations
PO-12: **Life-long learning**: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.			
PO-12	2.4	2.99	**Target Achieved**
The "Center for Soft Skills and Life Long Learning" conducts various activities			

Attainment Levels and Actions for improvement: 2018-19

PO	Target Level	Attainment Level	Observations
PO-1: **Engineering knowledge**: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.			
PO-1	2.6	2.96	**Target Achieved**
Emphasized the role of fundamental sciences in engineering domain by conducting the virtual tours of the Labs related to Engineering department			
PO	Target Level	Attainment Level	Observations
PO-2: Problem analysis: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.			
PO-2	2.6	2.96	**Target Achieved**
Organized Expert Lectures from leading R & D organizations such as Tata Institute of Fundamental Research (TIFR)Bangalore, International Researchers (USA), National Aerospace Laboratories (NAL) Bangalore, Raman Research institute (RRI) Bangalore.			
PO	Target Level	Attainment Level	Observations
PO-3: **Design/development of solutions**: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.			
PO-3	2.6	2.91	**Target Achieved**
Workshop on CAED was conducted to the students. Using the Industry Institute labs students were demonstrated the solution for engineering problems. As well the students were assigned the small projects as self study and the project exhibition was conducted at the end of the semester			
PO	Target Level	Attainment Level	Observations
PO-4: **Conduct investigations of complex problems**: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.			
PO-4	2.6	2.94	**Target Achieved**
The significance of literature survey was outlined to students			
PO	Target Level	Attainment Level	Observations

PO-5: **Modern tool usage**: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.			
PO-5	2.6	2.95	**Target Achieved**
The product and design applications were demonstrated using CISCO Lab and MATLAB tool			
PO	Target Level	Attainment Level	Observations
PO-6: **The engineer and society**: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.			
PO-6	2.6	3	**Target Achieved**
Engineers primary obligation is to protect the safety , health and welfare of the public. Engineers decision making is very important because the ultimate beneficiary are the general public or society at large. This was emphasized through the course Constitution of India and Professional Ethics. Three weeks induction program also outlined the contribution of engineers to the society			
PO	Target Level	Attainment Level	Observations
PO-7: **Environment and Sustainability:** Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.			
PO-7	2.6	3	**Target Achieved**
The electronic waste management and its need in the current digital world impacting the ecological balance was demonstrated through Videos			
PO	Target Level	Attainment Level	Observations
PO-8: **Ethics**: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.			
PO-8	2.6	2.95	**Target Achieved**
Ethics will guide the engineers to mould the personality trait of an individual which will play a key role in instilling discipline and facilitating students to become a responsible citizen of the nation. This is also reemphasized through the course Constitution of India and Professional Ethics.			

PO	Target Level	Attainment Level	Observations

PO-9: **Individual and team work**: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.			
PO-9	2.6	2.97	**Target Achieved**
As part of the self study evaluation, students were assigned the small projects in groups ;working in the groups enabled them to understand the intricacies of team work and decision making process			
PO	Target Level	Attainment Level	Observations
PO-10: **Communication**: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.			
PO-10	2.6	2.96	**Target Achieved**
The "Center for Soft Skills and Life Long Learning" ensures the students are equipped with all possible communication tools			
PO	Target Level	Attainment Level	Observations
PO-11: **Project management and finance**: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.			
PO-11	2.6	2.92	**Target Achieved**
Students get hands on experience on managing small group tasks and associated finances by participating actively in the Curricular, Co-curricular and Technical clubs. Technically too students were assigned the small projects in groups as part of the self study evaluation, which teaches the nuances of project management			
PO	Target Level	Attainment Level	Observations
PO-12: **Life-long learning**: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.			
PO-12	2.6	2.99	**Target Achieved**
The "Center for Soft Skills and Life Long Learning" conducts various activities			

8.5.2 PO Attainment Levels and Actions for improvement: 2019-20

PO	Target Level	Attainment Level	Observations
PO-1: **Engineering knowledge**: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.			
PO-1	2.7	2.93	**Target Achieved**
An online virtual tour of the computer lab was conducted for first year students and a Lecture on Pseudo code-A method for designing Software was delivered			
PO	Target Level	Attainment Level	Observations
PO-2: Problem analysis: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.			
PO-2	2.7	2.91	**Target Achieved**
Experts from leading research organizations, industry and institutes of National importance delivered the guest talk for the students emphasizing on bridging the gap of fundamental science with applied science and to solve those problems with engineering tool			
PO	Target Level	Attainment Level	Observations
PO-3: **Design/development of solutions**: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.			
PO-3	2.7	2.89	**Target Achieved**
Students were delivered an online Lecture on “Why Python is Essential for Data Analysis” in connection with Industry Institute - Big Data and Data Analytics Lab: HP Vertica Lab			
PO	Target Level	Attainment Level	Observations
PO-4: **Conduct investigations of complex problems**: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.			
PO-4	2.7	2.95	**Target Achieved**
The significance of literature survey was outlined to students and students were invited to join the online webinars			
PO	Target Level	Attainment Level	Observations
PO-5: **Modern tool usage**: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.			
PO-5	2.7	2.91	**Target Achieved**
Students of first year were given an online lecture on “Virtualization Essentials and the modern tool usage			
PO	Target Level	Attainment Level	Observations
PO-6: **The engineer and society**: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.			
PO-6	2.7	3	**Target Achieved**
The motivational talks by the industry experts emphasized the value system and the difference engineers could bring in the society.This was also emphasized through the course Constitution of India and Professional Ethics			

PO	Target Level	Attainment Level	Observations
PO-7: **Environment and Sustainability:** Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.			
PO-7	2.7	3	**Target Achieved**
An online awareness lecture on "Environmental Impacts of Computer Technology" for the students of first year was conducted			
PO	Target Level	Attainment Level	Observations
PO-8: **Ethics**: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.			
PO-8	2.7	3	**Target Achieved**
This is also reemphasized through the course Constitution of India and Professional Ethics.			
PO	Target Level	Attainment Level	Observations
PO-9: **Individual and team work**: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.			
PO-9	2.7	2.9	**Target Achieved**
In order to gain the activity points, students choose the tasks to be performed in groups ;working in the groups enabled them to understand the functioning of team and facilitated them to inculcate the team spirit.			
PO	Target Level	Attainment Level	Observations
PO-10: **Communication**: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.			
PO-10	2.7	2.97	**Target Achieved**
At frequent intervals the the "Center for Soft Skills and Life Long Learning" will conduct various programmes to ensure the students are equipped with all possible communication tools			
PO	Target Level	Attainment Level	Observations
PO-11: **Project management and finance**: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.			
PO-11	-	-	**Target Achieved**
Students get hands on experience on managing small group tasks and associated finances by participating actively in the Curricular, Co-curricular and Technical clubs. Students activity points initiative will enable them hands on experience of managing finances			
PO	Target Level	Attainment Level	Observations
PO-12: **Life-long learning**: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.			
PO-12	2.7	2.94	**Target Achieved**
The "Center for Soft Skills and Life Long Learning" conducts various activities			

Information Science & Engineering

CRITERION 8	First Year Academics	50

8.1: First Year Student-Faculty Ratio (FYSFR, 5)

Data for first year courses to calculate the FYSFR:

Year	Number of Students (Approved intake strength)	**Number of Faculty Members (Considering fractional load)	FYSR	* Assessment = (5x20) / FYSFR (Limited to max. 5)
CAY (2022-23)	1140	79	14	5
CAYm1(2021-22)	1140	76	15	5
CAYm2 (2020-21)	1260	79	16	5
Average	**1180**	**78**	**15**	**5**

Table B.8.1.

**** All faculties are dedicated to first year only**

8.2 Qualification of Faculty Teaching First Year Common Courses (5)

Assessment of qualification = $(5x+3y)/RF$, x = Number of Regular Faculty with Ph.D, y = Number of Regular Faculty with Post-graduate qualification, RF = Number of faculty members required as per SFR of 20:1, Faculty definition as defined in 5.1

Year	X (Number Of Regular Faculty with Ph.D)	Y (Number of Regular Faculty with Post graduate Qualification)	RF (Number of Faculty Members required as per SFR of 20:1)	* Assessment of Faculty qualification (5x+3y) / RF
CAY (2022-23)	21	40	57	3.00
CAYm1(2021-22)	20	32	57	3.00
CAYm2 (2020-21)	25	43	63	4.00
Average	**3.33**			

Table B.8.2.

8.3 First Year Academic Performance (10)

Academic Performance	Information Science & Engineering		
	CAYm1 (2021-22)	CAYm2 (2020-21)	CAYm3 (2019-20)
Mean of CGPA of all Successful students(x)	8.13	8.40	8.27
Total no. of successful students(y)	118	122	129
Total students appeared in the examination(Z)	128	136	139
API=x*(y/Z)	7.49	7.54	7.68
Average	7.57		

Academic Performance = ((Mean of 1st Year Grade Point Grade Point Average of all successful students on a 10 point scale) or (Mean of the percentage of marks in first year of all successful students/10)) x (number of successful students/number of students appeared in the examination)

Successful students are those who are permitted to proceed to the second year.

8.4 Attainment of Course Outcome of First Year Courses

8.4.1 Describe the assessment processes used to gather the data upon which the evaluation of Course Outcomes of first year is done (5)

Assessment Tool Type	Assessment Tool Title	Tool Description
Direct Assessment	**Continuous Internal Evaluation (CIE)**	This is used as an assessment tool to evaluate the attainment of course outcomes, through Assignments, Quizzes, Internal Assessment (Average of 3 Exams) which are conducted throughout the semester and designed in such a way that the evaluation of complete syllabus is covered. This is done for all courses of the semester.
	Laboratory Examinations	The performance in laboratory is evaluated through appropriate rubrics. The students are tested for their Confidence in terms of design of a system and experimentation. Ability of the students to analyze and interpret the results of experiments is continuously evaluated by the faculty during laboratory classes. The Strength of the students in using their skills and tools in the laboratory is also evaluated in external laboratory examinations.
	Semester End Examinations (SEE)	This tool examines at all cognitive levels the ability and understanding of the students with respect to the concepts taught and their applicability in solving complex Engineering problems. The ability of the students to understand and apply knowledge of

		mathematics, science and engineering concepts in solving engineering problems is keenly evaluated.

Table 8.4.1.a Tools used in measuring CO

CO Attainment	Weightage	Assessment Tools
Overall CO Attainment Direct Attainment	100%	Continuous Internal Evaluation CIE (50%)
		Semester End Examinations (SEE) (50%)

Table 8.4.1.b Calculation of CO attainment

The individual COs of the courses is mapped with Correlation level and is being evaluated by prescribed assessment tools. The attainment of individual CO is calculated by assigning separate weightage to the continuous Internal Evaluation, Semester End examination, assignments and quizzes. The attainment of COs is compared with the target level. The CO is said to be attained if its attainment value is greater than or equal to target attainment level.

8.4.1.1. Theory Course Evaluation

Assignments, Quizzes, Internal assessment test, semester end examinations are conducted and evaluated for (both theory and lab) integrated courses.

The distribution of marks for theory& Lab courses (Sample) is as given in table below.

Assessment Tool	Maximum Marks	Marks Scaled to	Weightage
Assignments	15	15	50%
Quizzes	10	10	
Internal Assessment Exam (Avg of 3 Exams)	25	25	
Semester End Examination - Theory	100	50	50%
Everyday Lab session (Each Expt. 10 marks)	10	10	50%
Lab Internal Exam	15	15	
Semester End Examination - Lab	50	25	50%

Table 8.4.1.1. Distribution of marks for theory & Lab courses evaluation.

The Process for Assessment and Attainment of COs is described in the flowchart as shown in Flow Chart

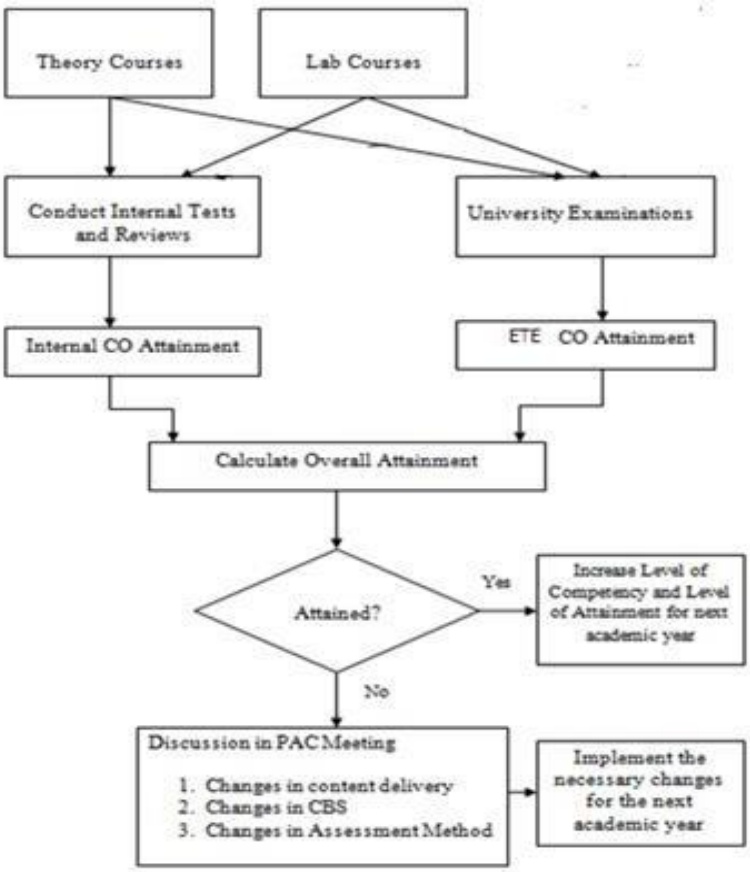


Fig 8.4.1. Process of assessment and attainment of CO

8.4.2 Record the attainment of Course Outcomes of all First Year Courses (5)

Program shall have set attainment levels for all first-year courses. (The attainment levels shall be set considering average performance levels in the institution level examination or any higher value set as target for the assessment years. Attainment level is to be measured in terms of student performance in internal assessments with respect the COs of a subject plus the performance in the institution level examination)

Attainment Levels: Internal Assessment

Course	Attainment Level	CAYm2 (2017-18)	CAYm1 (2018-19)	CAY (2019-20)
Applied Mathematics I	0	less than 40% scored >=28	less than 45% scored >=28	less than 45% scored >=30
	1	40% to 49% scored >=28	45% to 54% scored >=28	45% to 54% scored >=30
	2	50% to 59% scored >=28	55% to 64% scored >=28	55% to 64% scored >=30
	3	60% and more scored >=28	65% and more scored >=28	65% and more scored >=30
Engineering Physics	0	less than 45% scored >=38	less than 45% scored >=28	less than 45% scored >=30
	1	45% to 54% scored >=38	45% to54% scored >=28	45% to 54% scored >=30
	2	55% to 64% scored >=38	55% to 64% scored >=28	55% to 64% scored >=30
	3	65% and more scored >=38	65% and more scored >=28	65% and more scored >=30
Elements of Civil Engineering	0	less than 42% scored>=25	less than 44% scored>=25	less than 45% scored >=30
	1	42% to 51% scored>=25	44% to 53% scored>=25	45% to 54% scored >=30
	2	52% to 61% scored>=25	54% to 63% scored>=25	55% to 64% scored >=30
	3	62% and more scored>=25	64% and more scored>=25	65% and more scored >=30
Elements of Mechanical Engineering	0	less than 40% scored >=36	less than 40% scored >=25	less than 40% scored >=28
	1	40% to49% scored >=36	40% to 49% scored >=25	40% to 49% scored >=28
	2	50% to 59% scored >=36	50% to 59% scored >=25	50% to 59% scored >=28
	3	60% and more scored >=36	60% and more scored >=25	60% and more scored >=28
Basic Electrical Engineering	0	less than 45% scored >=23	less than 50% scored >=25	less than 51% scored >=28
	1	45% to54% scored >=23	50% to 59% scored >=25	51% to 61% scored >=28
	2	55% to 64% scored >=23	60% to 69% scored >=25	62% to 71% scored >=28
	3	65% and more scored >=23	70% and more scored >=25	72% and more scored >=28
Engineering Physics Lab	0	Included with Theory as it is an integrated subject	less than 50% scored >=15	less than 50% scored >=18
	1		50% to59% scored >=15	50% to59% scored >=18
	2		60% to 69% scored >=15	60% to 69% scored >=18
	3		70% and more scored >=15	70% and more scored >=18

Basic Electrical Engineering Lab	0	No Lab Course	less than 40% scored >=15	less than 45% scored >=18
	1		40% to49% scored >=15	45% to54% scored >=18
	2		50% to 59% scored >=15	55% to 64% scored >=18
	3		60% and more scored >=15	65% and more scored >=18
Applied Mathematics II	0	less than 40% scored >=28	less than 45% scored >=28	less than 45% scored >=30
	1	40% to 49% scored >=28	45% to 54% scored >=28	45% to 54% scored >=30
	2	50% to 59% scored >=28	55% to 64% scored >=28	55% to 64% scored >=30
	3	60% and more scored >=28	65% and more scored >=28	65% and more scored >=30
Engineering Chemistry	0	less than 45% scored >=38	less than 45% scored >=28	less than 50% scored >=28
	1	45% to54% scored >=38	45% to54% scored >=28	50% to59% scored >=28
	2	55% to 64% scored >=38	55% to 64% scored >=28	60% to 69% scored >=28
	3	65% and more scored >=38	65% and more scored >=28	70% and more scored >=28
Introduction to Programming with C	0	less than 40% scored >=38	less than 45% scored >=25	less than 40% scored >=25
	1	40% to49% scored >=38	45% to54% scored >=25	40% to 49% scored >=25
	2	50% to 59% scored >=38	55% to 64% scored >=25	50% to 59% scored >=25
	3	60% and more scored >=38	65% and more scored >=25	60% and more scored >=25
Computer Aided Engineering Drawing	0	less than 40% scored>=27	less than 40% scored>=28	less than 40% scored>=29
	1	40% to 49% scored>=27	40% to 49% scored>=28	40% to 49% scored>=29
	2	50% to 59% scored>=27	50% to 59% scored>=28	50% to 59% scored>=29
	3	60% and more scored>=27	60% and more scored>=28	60% and more scored>=29
Basic Electronics	0	less than 30% scored >=29	less than 30% scored >=30	less than 30% scored >=31
	1	30% to 39% scored >=29	30% to 39% scored >=30	30% to 39% scored >=31
	2	40% to 49% scored >=29	40% to 49% scored >=30	40% to 49% scored >=31
	3	50% and more scored >=29	50% and more scored >=30	50% and more scored >=31

Programming in C Lab	0	Included with Theory as it is an integrated subject	less than 45% scored >=13	less than 40% scored >=13
	1		45% to54% scored >=13	40% to49% scored >=13
	2		55% to 64% scored >=13	50% to 59% scored >=13
	3		65% and more scored >=13	60% and more scored >=13
Engineering Chemistry Lab	0	Included with Theory as it is an integrated subject	less than 50% scored >=15	less than 55% scored >=15
	1		50% to59% scored >=15	55% to64% scored >=15
	2		60% to 69% scored >=15	65% to 70% scored >=15
	3		70% and more scored >=15	75% and more scored >=15
Business / Professional communication	0	less than 32% scored >=13	less than 34% scored >=13	less than 35% scored >=14
	1	32% to 41% scored >=13	34% to 43% scored >=13	35% to 44% scored >=14
	2	42% to 51% scored >=13	44% to 53% scored >=13	45% to 54% scored >=14
	3	52% and more scored >=13	54% and more scored >=13	55% and more scored >=14
Environmental Science & Awareness	0	less than 44% scored>=30	Course removed and included in higher semester	Course removed and included in higher semester
	1	45% to 54% scored>=30		
	2	55% to 64% scored>=30		
	3	65% and more scored>=30		

Attainment Levels: External Assessment

Course	Attainment Level	CAYm2 2017-18	CAYm1 2018-19	CAY 2019-20
Applied Mathematics I	0	less than 40% scored >=56	less than 45% scored >=56	less than 45% scored >=60
	1	40% to 49% scored >=56	45% to 54% scored >=56	45% to 54% scored >=60
	2	50% to 59% scored >=56	55% to 64% scored >=56	55% to 64% scored >=60
	3	60% and more scored >=56	65% and more scored >=56	65% and more scored >=60
Engineering Physics	0	less than 45% scored >=76	less than 45% scored >=56	less than 45% scored >=60
	1	45% to54% scored >=76	45% to54% scored >=56	45% to 54% scored >=60
	2	55% to 64% scored >=76	55% to 64% scored >=56	55% to 64% scored >=60
	3	65% and more scored >=76	65% and more scored >=56	65% and more scored >=60
Elements of Civil Engineering	0	less than 42% scored>=50	less than 44% scored>=50	less than 45% scored >=60
	1	42% to 51% scored>=50	44% to 53% scored>=50	45% to 54% scored >=60
	2	52% to 61% scored>=50	54% to 63% scored>=50	55% to 64% scored >=60
	3	62% and more scored>=50	64% and more scored>=50	65% and more scored >=60
Elements of Mechanical Engineering	0	less than 40% scored >=72	less than 40% scored >=50	less than 40% scored >=56
	1	40% to49% scored >=72	40% to 49% scored >=50	40% to 49% scored >=56
	2	50% to 59% scored >=72	50% to 59% scored >=50	50% to 59% scored >=56
	3	60% and more scored >=72	60% and more scored >=50	60% and more scored >=56
Basic Electrical Engineering	0	less than 45% scored >=46	less than 50% scored >=50	less than 51% scored >=56
	1	45% to54% scored >=46	50% to 59% scored >=50	51% to 61% scored >=56
	2	55% to 64% scored >=46	60% to 69% scored >=50	62% to 71% scored >=56
	3	65% and more scored >=46	70% and more scored >=50	72% and more scored >=56

Basic Electrical Engineering Lab	0	No Lab	less than 40% scored >=30	less than 45% scored >=36
	1		40% to49% scored >=30	45% to54% scored >=36
	2		50% to 59% scored >=30	55% to 64% scored >=36
	3		60% and more scored >=30	65% and more scored >=36
Engineering Physics Lab	0	Included with Theory as it is an integrated subject	less than 50% scored >=30	less than 50% scored >=36
	1		50% to59% scored >=30	50% to59% scored >=36
	2		60% to 69% scored >=30	60% to 69% scored >=36
	3		70% and more scored >=30	70% and more scored >=36
Applied Mathematics II	0	less than 40% scored >=56	less than 45% scored >=56	less than 45% scored >=60
	1	40% to 49% scored >=56	45% to 54% scored >=56	45% to 54% scored >=60
	2	50% to 59% scored >=56	55% to 64% scored >=56	55% to 64% scored >=60
	3	60% and more scored >=56	65% and more scored >=56	65% and more scored >=60
Engineering Chemistry	0	less than 45% scored >=76	less than 45% scored >=56	less than 50% scored >=56
	1	45% to54% scored >=76	45% to 54% scored >=56	50% to59% scored >=56
	2	55% to 64% scored >=76	55% to 64% scored >=56	60% to 69% scored >=56
	3	65% and more scored >=76	65% and more scored >=56	70% and more scored >=56
Introduction to Programming with C	0	less than 40% scored >=76	less than 45% scored >=50	less than 40% scored >=50
	1	40% to49% scored >=76	45% to54% scored >=50	40% to 49% scored >=50
	2	50% to 59% scored >=76	55% to 64% scored >=50	50% to 59% scored >=50
	3	60% and more scored >=76	65% and more scored >=50	60% and more scored >=50
Computer Aided Engineering Drawing	0	less than 40% scored>=54	less than 40% scored>=56	less than 40% scored>=58
	1	40% to 49% scored>=54	40% to 49% scored>=56	40% to 49% scored>=58
	2	50% to 59% scored>=54	50% to 59% scored>=56	50% to 59% scored>=58
	3	60% and more scored>=54	60% and more scored>=56	60% and more scored>=58

Basic Electronics	0	less than 30% scored >=58	less than 30% scored >=60	less than 30% scored >=62
	1	30% to 39% scored >=58	30% to 39% scored >=60	30% to 39% scored >=62
	2	40% to 49% scored >=58	40% to 49% scored >=60	40% to 49% scored >=62
	3	50% and more scored >=58	50% and more scored >=60	50% and more scored >=62
Programming in C & Data Structures lab	0	Included with Theory as it is an integrated subject	less than 45% scored >=26	less than 40% scored >=26
	1		45% to54% scored >=26	40% to49% scored >=26
	2		55% to 64% scored >=26	50% to 59% scored >=26
	3		65% and more scored >=26	60% and more scored >=26
Engineering Chemistry Lab	0	Included with Theory as it is an integrated subject	less than 50% scored >=30	less than 55% scored >=30
	1		50% to59% scored >=30	55% to64% scored >=30
	2		60% to 69% scored >=30	65% to 70% scored >=30
	3		70% and more scored >=30	75% and more scored >=30
Business / Professional communication	0	less than 32% scored >=26	less than 34% scored >=26	less than 35% scored >=28
	1	32% to 41% scored >=26	34% to 43% scored >=26	35% to 44% scored >=28
	2	42% to 51% scored >=26	44% to 53% scored >=26	45% to 54% scored >=28
	3	52% and more scored >=26	54% and more scored >=26	55% and more scored >=28
Environmental Science & Awareness	0	less than 44% scored>=60	Course removed and included in higher semester	Course removed and included in higher semester
	1	45% to 54% scored>=60		
	2	55% to 64% scored>=60		
	3	65% and more scored>=60		

Table 8.4.2.

8.4.2.1 Calculations

Direct Attainment (DA) =

Semester End Examination * 0.5 + Continuous Internal Assessment * 0.5

Total Attainment = DA

8.4.2.2 The following table shows the attainment of course outcome.

CO Attainment 2017-18

S. No.	Course Code	Course Name	Direct Attainment		Overall CO attainment
			C IE Evaluations	Semester End Exam	
1	MAT11	Engineering Mathematics I	3	3	3
2	PHY12/22	Engineering Physics	3	3	3
3	MEE13/23	Elements of Mechanical Engineering	3	3	3
4	CIV14/24	Elements of Civil Engineering	3	3	3
5	EEE15/25	Basic Electrical Engineering	3	3	3
6	HSS162/262	Professional Communication	3	3	3
7	MAT21	Engineering Mathematics II	3	3	3
8	CHE12/22	Engineering Chemistry	3	3	3
9	CSE13/23	Introduction to Programming with C	3	3	3
10	MEE14/24	Computer Aided Engineering Drawing	3	3	3
11	ECE15/25	Basic Electronics	3	2.8	2.9
12	HSS161/261	Environmental Science & Awareness	3	3	3

Table 8.4.2.1a CO Attainment CAYm2 (2017-18)

CO Attainment 2018-19

S. No.	Course Code	Course Name	Direct Attainment		Overall CO attainment
			C IE Evaluations	Semester End Exam	
1	18MAT11	Applied Mathematics I	3	3	3
2	18PHY12/22	Engineering Physics	3	3	3
3	18MEE13/23	Elements of Mechanical Engineering	3	3	3
4	18CIV14/24	Elements of Civil Engineering	3	3	3
5	18EEE15/25	Basic Electrical Engineering	3	2.6	2.8
6	18PHL16/26	Engineering Physics Lab	3	3	3
8	18EEL17/27	Basic Electrical Engineering Lab	3	3	3
9	18MAT21	Applied Mathematics II	3	3	3
10	18CHE12/22	Engineering Chemistry	3	3	3
11	18CSE13/23	Introduction to Programming with C	3	2.8	2.9
12	18MEE14/24	Computer Aided Engineering Drawing	3	2.8	2.9
13	18ECE15/25	Basic Electronics	3	3	3
14	18CHL17/27	Engineering Chemistry Lab	3	3	3
15	18CSL18/28	Programming with C Lab	3	3	3
16	18HSS16/26	Professional Communication	3	3	3

Table 8.4.2.1b CO Attainment CAYm1 (2018-19)

CO Attainment 2019-20

S. No.	Course Code	Course Name	Direct Attainment		Overall CO attainment
			C IE Evaluations	Semester End Exam	

1	19MAT11	Applied Mathematics I	3	3	3
2	19PHY12/22	Engineering Physics	3	3	3
3	19MEE13/23	Elements of Mechanical Engineering	3	3	3
4	19CIV14/24	Elements of Civil Engineering	3	2.8	2.9
5	19EEE15/25	Basic Electrical Engineering	3	3	3
6	19PHL16/26	Engineering Physics Lab	3	3	3
8	19EEL17/27	Basic Electrical Engineering Lab	3	2.4	2.7
9	19MAT21	Applied Mathematics II	3	3	3
10	19CHE12/22	Engineering Chemistry	3	3	3
11	19CSE13/23	Introduction to Programming with C	3	2.7	2.9
12	19MEE14/24	Computer Aided Engineering Drawing	3	3	3
13	19ECE15/25	Basic Electronics	3	2.8	2.9
14	19CHL17/27	Engineering Chemistry Lab	3	3	3
15	19CSL18/28	Programming with C Lab	3	3	3
16	19HSS271	Professional Communication	3	3	3

Table 8.4.2.1c CO Attainment CAY (2019-20)

8.5. Attainment of Program Outcomes from first year courses (20)

8.5.1. Indicate results of evaluation of each relevant PO and/or PSO if applicable(10)

The relevant program outcomes that are to be addressed at first year need to be identified by the institution Program Outcome attainment levels shall be set for all relevant POs and/or PSOs through first year courses.

(Describe the assessment processes that demonstrate the degree to which the Program Outcomes and Program Specific Outcomes are attained through first year courses and document the attainment levels. Also include

information on assessment processes used to gather the data upon which the evaluation of each Program Outcome is based indicating the frequency with which these processes are carried out)

The process to assess the attainment of the Program Outcomes and Program Specific Outcomes begins with the assessments of course outcomes attainment. The assessment of POs /PSOs during first year involves direct methods of assessment only.

	Assessment method	**Assessment Tool**	**Frequency**
POs/PSOs attainment	Direct Method	Course outcomes attainment	At end of every semester

DAC collects the data for internal and external assessment of POs and PSOs from the respective source and calculate the attainment. Direct assessment level of POs and PSOs is determined by taking average of course attainment level across all courses addressing that PO and/or PSO.

Programme Articulation Matrix 2017-18

Course Code	Course Name	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO 10	PO 11	PO 12
MAT11	Engineering Mathematics I	3	3	3	2	2	-	-	-	-	1	-	3
PHY12/22	Engineering Physics	3	2	2	-	-	-	-	-	2	-	-	1
MEE13/23	Elements of Mechanical Engineering	3	1	3	-	3	2	1	-	-	3	-	1
CIV14/24	Elements of Civil Engineering	3	2	1	1	-	-	-	-	-	-	-	1
EEE15/25	Basic Electrical Engineering	3	3	2	2	-	-	-	-	-	2	1	-
MAT21	Engineering Mathematics II	3	3	3	3	3	-	-	-	1	3	-	3
CHE12/22	Engineering Chemistry	3	3	-	-	-	-	3	-	-	-	-	3
CSE13/23	Introduction to Programming with C	3	3	3	1	3	-	-	-	3	1	-	1
MEE14/24	Computer Aided Engineering Drawing	2	-	2	2	1	-	-	-	-	2	-	2
ECE15/25	Basic Electronics	3	2	2	-	-	-	-	-	-	-	-	-
HSS161/261	Environmental Science and Awareness	3	3	-	3	-	-	3	2	-	-	-	-
HSS162/262	Professional Communication	-	-	-	-	-	-	-	3	2	3	-	3
Avg.		**2.9**	**2.5**	**2.3**	**2.0**	**2.4**	**2.0**	**2.3**	**2.5**	**2.0**	**2.1**	**1.0**	**2.0**

Table 8.5.1.1a Programme Articulation Matrix 2017-18

Programme Articulation Matrix 2018-19

Course	Course Name	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO 10	PO 11	PO 12
18MAT11	Applied Mathematics I	3	3	3	2	2	-	--	-	-	2	-	3
18PHY12/22	Engineering Physics	3	2	2	-	-	-	-	-	2	-	-	1
18MEE13/23	Elements of Mechanical Engineering	3	1	3	-	3	2	1	-	-	3	-	1
18CIV14/24	Elements of Civil Engineering	3	2	1	1	-	-	-	-	-	-	-	1
18EEE15/25	Basic Electrical Engineering	3	3	2	1	1	-	-	-	-	-	2	-
18PHL16/26	Engineering Physics Lab	3	2	2	-	-	-	-	-	2	-	-	1
18EEL17/27	Basic Electrical Engineering Lab	3	3	2	1	1	-	-	3	-	-	-	2
18MAT21	Applied Mathematics II	3	3	3	3	3	-	-	-	1	3	-	3
18CHE12/22	Engineering Chemistry	3	3	-	-	-	-	3	-	-	-	-	3
18CSE13/23	Introduction to Programming with C	3	3	3	1	3	-	-	-	3	1	-	1
18MEE14/24	Computer Aided Engineering Drawing	2	-	2	2	1	-	-	-	-	2	-	2
18ECE15/25	Basic Electronics	3	2	2	-	-	-	-	-	-	-	-	-
18CHL17/27	Engineering Chemistry Lab	3	3	-	-	-	-	3	-	-	-	-	3
18CSL18/28	Programming with C Lab	3	3	3	3	3	-	-	-	3	-	-	3
18HSS16/26	Professional Communication	-	-	-	-	-	-	-	3	2	3	-	3
Avg.		**2.9**	**2.5**	**2.3**	**1.8**	**2.1**	**2.0**	**2.3**	**3.0**	**2.2**	**2.3**	**2.0**	**2.1**

Table 8.5.1.1b Programme Articulation Matrix 2018-19

Programme Articulation Matrix 2019-20

Course	Course Name	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO 10	PO 11	PO 12
19MAT11	Applied Mathematics I	3	3	3	3	-	-	-	-	2	3	-	3
19PHY12/22	Engineering Physics	3	2	-	-	2	1	-	-	2	-	-	1
19MEE13/23	Elements of Mechanical Engineering	3	1	3	-	3	2	1	-	-	3	-	1
19CIV14/24	Elements of Civil Engineering	3	2	1	1	-	-	-	-	-	-	-	1
19EEE15/25	Basic Electrical Engineering	3	3	-	2	1	-	-	-	-	-	-	-
19PHL16/26	Engineering Physics Lab	3	2	2	-	2	1	-	-	2	-	-	1
19EEL17/27	Basic Electrical Engineering Lab	3	3	2	2	1	-	-	-	2	2	-	-
19MAT21	Applied Mathematics II	3	3	3	3	3	-	-	-	1	3	-	3
19CHE12/22	Engineering Chemistry	3	2	-	-	-	-	2	-	-	-	-	2
19CSE13/23	Introduction to Programming with C	3	3	3	1	3	-	-	-	3	1	-	1
19MEE14/24	Computer Aided Engineering Drawing	2	-	2	2	1	-	-	-	-	2	-	2
19ECE15/25	Basic Electronics	3	3	3	-	-	-	-	-	-	-	-	-
19CHL17/27	Engineering Chemistry Lab	3	-	-	-	-	-	-	-	-	-	-	3
19CSL18/28	Programming with C Lab	3	3	3	3	3	-	-	-	3	-	-	3
19HSS271	Professional Communication	-	-	-	-	-	-	-	3	3	3	-	3
Avg.		**2.93**	**2.50**	**2.50**	**2.13**	**2.11**	**1.33**	**1.50**	**3.00**	**2.25**	**2.43**	**-**	**2.00**

Table 8.5.1.1c Programme Articulation Matrix 2019-20

PO Attainment (2017-18)

Course	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
MAT11	3	3	3	3	3	-	-	-	-	3	-	3
PHY12/22	3	3	3	-	-	-	-	-	3	-	-	3
MEE13/23	3	3	3	-	3	3	3	-	-	3		3
CIV14/24	3	3	3	-	-	-	-	-	-	-	-	3
EEE15/25	3	3	3	3	-	-	-	-	-	3	3	-
MAT21	3	3	3	3	3	-	-	-	3	3	-	3
CHE12/22	3	3	-	-	-	-	3	-	-	-	-	3
CSE13/23	3	3	3	3	3	-	-	-	3	3	-	3
MEE14/24	3	-	3	3	3	-	-	-	-	3	-	3
ECE15/25	2.86	2.75	2.75	-	-	-	-	-	-	-	-	-
HSS161/261	2.9	3	-	3	-	-	2.9	3	-	-	-	-
HSS162/262	-	-	-	-	-	-	-	3	3	3	-	3
Direct Attainment	2.98	2.97	2.97	3	3	3	2.97	3	3	3	3	3

Table 8.5.1.2a PO Attainment (2017-18)

PO Attainment (2018-19)

Course	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
18MAT11	3	3	3	3	3	-	-	-	-	3	-	3
18PHY12/22	3	3	3	-	-	-	-	-	3	-	-	3
18MEE13/23	3	3	3	-	3	3	3	-	-	3	-	3
18CIV14/24	3	3	3	3	-	-	-	-	-	-	-	3
18EEE15/25	2.81	2.81	2.81	2.81	2.81	-	-	2.7	-	-	2.92	2.7
18PHL16/26	3	3	3	-	-	-	-	-	3	-	-	3
18EEL17/27	3	3	3	3	3	3	3	3	-	-	-	3
18MAT21	3	3	3	3	3	-	-	-	3	3	-	3
18CHE12/22	3	3	-	-	-	-	3	-	-	-	-	3
18CSE13/23	2.815	2.75	2.75	2.75	2.82	-	-	-	2.82	2.795	-	2.81
18MEE14/24	3	-	2.56	3	3	-	-	-	-	3	-	3
18ECE15/25	2.845	2.87	2.87	-	-	-	-	-	-	-	-	-
18CHL17/27	3	3	-	-	-	-	3	-	-	-	-	3
18CSL18/28	3	3	3	3	3	-	-	-	3	-	-	3
18HSS16/26	-							3	3	3	-	3
Direct Attainment	2.96	2.96	2.91	2.94	2.95	3	3	2.95	2.97	2.96	2.92	2.98

Table 8.5.1.2b PO Attainment (2018-19)

PO Attainment (2019-20)

Course	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
19MAT11	3	3	3	3	-	-	-	-	3	3	-	3
19PHY12/22	3	3	-	-	3	3	-	-	3	-	-	3
19MEE13/23	3	3	3	-	3	3	3	-	-	3	-	3
19CIV14/24	3	3	3	3.0								3.0
19EEE15/25	3	3	-	3	3	-	-	-	-	-	-	-
19PHL16/26	3	3	3	-	3	3	-	-	3	-	-	3
19EEL17/27	2.8	2.8	2.8	2.8	2.8				2.84	2.84		
19MAT21	3	3	3	3	3	-	-	-	3	3	-	3
19CHE12/22	3	3	-	-	-	-	3	-	-	-	-	3
19CSE13/23	2.5	2.4	2.5	3.0	2.6	-	-	-	2.55			2.51
19MEE14/24	3.0	-	3.0	3.0	3	-	-	-	-	3	-	3
19ECE15/25	2.9	2.9	2.8	-	-	-	-	-	-	-	-	-
19CHL17/27	3	-	-	-	-	-	-	-	-	-	-	3
19CSL18/28	2.8	2.8	2.8	2.8	2.8				2.8			2.8
19HSS271	-	-	-	-	-	-	-	3	3	3	-	3
Direct Attainment	2.93	2.91	2.89	2.95	2.91	3	3	3	2.9	2.97	-	2.94

Table 8.5.1.2c PO Attainment (2019-20)

Target Attainment Level

Target Attainment Level	2017-18	2018-19	2019-20
	2.4	2.6	2.7

8.5.2. Actions taken based on the results of evaluation of relevant Pos (5):

PO Attainment Levels and Actions for improvement: 2017-18

PO	Target Level	Attainment Level	Observations
PO-1: **Engineering knowledge**: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.			
PO-1	2.4	2.96	**Target Achieved**
Tour of NHCE labs was organized to first year students			
PO	Target Level	Attainment Level	Observations
PO-2: Problem analysis: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.			
PO-2	2.4	2.96	**Target Achieved**
Organized Expert Lectures from leading R & D organizations such as Tata Institute of Fundamental Research (TIFR)Bangalore, International Researchers (USA), National Aerospace Laboratories (NAL) Bangalore, Raman Research institute (RRI) Bangalore			
PO	Target Level	Attainment Level	Observations
PO-3: **Design/development of solutions**: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.			
PO-3	2.4	2.91	**Target Achieved**
Students of the first year attended a “Lecture on PLC (Programmable Logic Controller) & SCADA			
PO	Target Level	Attainment Level	Observations
PO-4: **Conduct investigations of complex problems**: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.			
PO-4	2.4	2.94	**Target Achieved**
The significance of literature survey was outlined to students			
PO	Target Level	Attainment Level	Observations

PO-5: **Modern tool usage**: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.			
PO-5	2.4	2.95	**Target Achieved**
Students of the first year attended a lecture "Demonstration of Cisco Lab and MATLAB"			
PO	Target Level	Attainment Level	Observations
PO-6: **The engineer and society**: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.			
PO-6	2.4	3	**Target Achieved**
Engineers primary obligation is to protect the safety, health and welfare of the public. Engineers decision making is very important because the ultimate beneficiary is the general public or society at large. This was emphasized through the course Constitution of India and Professional Ethics. Three weeks induction program also outlined the contribution of engineers to the society			
PO	Target Level	Attainment Level	Observations
PO-7: **Environment and Sustainability:** Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.			
PO-7	2.4	3	**Target Achieved**
Students of the first year attended "A talk and demonstration through videos on waste management"			
PO	Target Level	Attainment Level	Observations
PO-8: **Ethics**: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.			
PO-8	2.4	2.95	**Target Achieved**
Ethics will guide the engineers to mould the personality trait of an individual which will play a key role in instilling discipline and facilitating students to become a responsible citizen of the nation. This is also reemphasized through the course Constitution of India and Professional Ethics			

PO	Target Level	Attainment Level	Observations
PO-9: **Individual and team work**: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.			
PO-9	2.4	2.97	**Target Achieved**
As part of the self-study evaluation, students were assigned the small projects in groups; working in the groups enabled them to understand the intricacies of team work and decision-making process			
PO	Target Level	Attainment Level	Observations
PO-10: **Communication**: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.			
PO-10	2.4	2.96	**Target Achieved**
The "Center for Soft Skills and Life Long Learning" ensures the students are equipped with all possible communication tools			
PO	Target Level	Attainment Level	Observations
PO-11: **Project management and finance**: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.			
PO-11	2.4	2.92	**Target Achieved**
Students get hands on experience on managing small group tasks and associated finances by participating actively in the Curricular, Co-curricular and Technical clubs. Technically too students were assigned the small projects in groups as part of the self-study evaluation, which teaches the nuances of project management			
PO	Target Level	Attainment Level	Observations
PO-12: **Life-long learning**: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.			
PO-12	2.4	2.99	**Target Achieved**
The "Center for Soft Skills and Life Long Learning" conducts various activities			

Attainment Levels and Actions for improvement: 2018-19

PO	Target Level	Attainment Level	Observations
PO-1: **Engineering knowledge**: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.			
PO-1	2.6	2.96	**Target Achieved**
Emphasized the role of fundamental sciences in engineering domain by conducting the virtual tours of the Labs related to Engineering department			
PO	Target Level	Attainment Level	Observations
PO-2: Problem analysis: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.			
PO-2	2.6	2.96	**Target Achieved**
Organized Expert Lectures from leading R & D organizations such as Tata Institute of Fundamental Research (TIFR)Bangalore, International Researchers (USA), National Aerospace Laboratories (NAL) Bangalore, Raman Research institute (RRI) Bangalore.			
PO	Target Level	Attainment Level	Observations
PO-3: **Design/development of solutions**: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.			
PO-3	2.6	2.91	**Target Achieved**
Workshop on CAED was conducted to the students. Using the Industry Institute labs students were demonstrated the solution for engineering problems. As well the students were assigned the small projects as self study and the project exhibition was conducted at the end of the semester			
PO	Target Level	Attainment Level	Observations
PO-4: **Conduct investigations of complex problems**: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.			
PO-4	2.6	2.94	**Target Achieved**
The significance of literature survey was outlined to students			
PO	Target Level	Attainment Level	Observations

PO-5: **Modern tool usage**: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.			
PO-5	2.6	2.95	**Target Achieved**
The product and design applications were demonstrated using CISCO Lab and MATLAB tool			
PO	Target Level	Attainment Level	Observations
PO-6: **The engineer and society**: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.			
PO-6	2.6	3	**Target Achieved**
Engineers primary obligation is to protect the safety , health and welfare of the public. Engineers decision making is very important because the ultimate beneficiary are the general public or society at large. This was emphasized through the course Constitution of India and Professional Ethics. Three weeks induction program also outlined the contribution of engineers to the society			
PO	Target Level	Attainment Level	Observations
PO-7: **Environment and Sustainability:** Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.			
PO-7	2.6	3	**Target Achieved**
The electronic waste management and its need in the current digital world impacting the ecological balance was demonstrated through Videos			
PO	Target Level	Attainment Level	Observations
PO-8: **Ethics**: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.			
PO-8	2.6	2.95	**Target Achieved**
Ethics will guide the engineers to mould the personality trait of an individual which will play a key role in instilling discipline and facilitating students to become a responsible citizen of the nation. This is also reemphasized through the course Constitution of India and Professional Ethics.			

PO	Target Level	Attainment Level	Observations
PO-9: **Individual and team work**: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.			
PO-9	2.6	2.97	**Target Achieved**
As part of the self study evaluation, students were assigned the small projects in groups ;working in the groups enabled them to understand the intricacies of team work and decision making process			
PO	Target Level	Attainment Level	Observations
PO-10: **Communication**: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.			
PO-10	2.6	2.96	**Target Achieved**
The "Center for Soft Skills and Life Long Learning" ensures the students are equipped with all possible communication tools			
PO	Target Level	Attainment Level	Observations
PO-11: **Project management and finance**: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.			
PO-11	2.6	2.92	**Target Achieved**
Students get hands on experience on managing small group tasks and associated finances by participating actively in the Curricular, Co-curricular and Technical clubs. Technically too students were assigned the small projects in groups as part of the self study evaluation, which teaches the nuances of project management			
PO	Target Level	Attainment Level	Observations
PO-12: **Life-long learning**: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.			
PO-12	2.6	2.99	**Target Achieved**
The "Center for Soft Skills and Life Long Learning" conducts various activities			

8.5.2 PO Attainment Levels and Actions for improvement: 2019-20

PO	Target Level	Attainment Level	Observations
PO-1: **Engineering knowledge**: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.			
PO-1	2.7	2.93	**Target Achieved**
An online virtual tour of the computer lab was conducted for first year students and a Lecture on Pseudo code-A method for designing Software was delivered			
PO	Target Level	Attainment Level	Observations
PO-2: Problem analysis: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.			
PO-2	2.7	2.91	**Target Achieved**
Experts from leading research organizations, industry and institutes of National importance delivered the guest talk for the students emphasizing on bridging the gap of fundamental science with applied science and to solve those problems with engineering tool			
PO	Target Level	Attainment Level	Observations
PO-3: **Design/development of solutions**: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.			
PO-3	2.7	2.89	**Target Achieved**
Students were delivered an online Lecture on “Why Python is Essential for Data Analysis” in connection with Industry Institute - Big Data and Data Analytics Lab: HP Vertica Lab			
PO	Target Level	Attainment Level	Observations
PO-4: **Conduct investigations of complex problems**: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.			
PO-4	2.7	2.95	**Target Achieved**
The significance of literature survey was outlined to students and students were invited to join the online webinars			
PO	Target Level	Attainment Level	Observations
PO-5: **Modern tool usage**: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.			
PO-5	2.7	2.91	**Target Achieved**
Students of first year were given an online lecture on “Virtualization Essentials and the modern tool usage			
PO	Target Level	Attainment Level	Observations
PO-6: **The engineer and society**: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.			
PO-6	2.7	3	**Target Achieved**
The motivational talks by the industry experts emphasized the value system and the difference engineers could bring in the society.This was also emphasized through the course Constitution of India and Professional Ethics			

PO	Target Level	Attainment Level	Observations
PO-7: **Environment and Sustainability:** Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.			
PO-7	2.7	3	**Target Achieved**
An online awareness lecture on "Environmental Impacts of Computer Technology" for the students of first year was conducted			
PO	Target Level	Attainment Level	Observations
PO-8: **Ethics**: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.			
PO-8	2.7	3	**Target Achieved**
This is also reemphasized through the course Constitution of India and Professional Ethics.			
PO	Target Level	Attainment Level	Observations
PO-9: **Individual and team work**: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.			
PO-9	2.7	2.9	**Target Achieved**
In order to gain the activity points, students choose the tasks to be performed in groups ;working in the groups enabled them to understand the functioning of team and facilitated them to inculcate the team spirit.			
PO	Target Level	Attainment Level	Observations
PO-10: **Communication**: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.			
PO-10	2.7	2.97	**Target Achieved**
At frequent intervals the the "Center for Soft Skills and Life Long Learning" will conduct various programmes to ensure the students are equipped with all possible communication tools			
PO	Target Level	Attainment Level	Observations
PO-11: **Project management and finance**: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.			
PO-11	-	-	**Target Achieved**
Students get hands on experience on managing small group tasks and associated finances by participating actively in the Curricular, Co-curricular and Technical clubs. Students activity points initiative will enable them hands on experience of managing finances			
PO	Target Level	Attainment Level	Observations
PO-12: **Life-long learning**: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.			
PO-12	2.7	2.94	**Target Achieved**
The "Center for Soft Skills and Life Long Learning" conducts various activities			

Criterion - 9

Student Support Systems

CRITERION 9	STUDENT SUPPORT SYSTEMS	50

9.1 Mentoring system to help at individual level (5)

(*Type of mentoring: Professional guidance/career advancement/coursework specific/ laboratory specific/all-round development, number of faculty mentors, number of students per mentor, Frequency of meeting. The institution may report the details of the mentoring system that has been developed for the students for various purposes and also state the efficacy of such system)*

1. Mentoring System

The role of the faculty as a mentor is one of nurturing and providing support for a student during the transition period in academic, professional as well as personal augmentation. In all departments of the Institution, mentoring is a continuous process where faculty mentors serve as a resource who will respond to many questions, trivial or complex, that the student might pose; support students in choosing course work that meets their needs and interests; encourage students to actively participate in seminars and laboratory work that are realistic in scope; and counsel the students on any other academic, professional, personal growth, etc., for necessary advice/guidance/help.

Role of a Mentor

- Keeps the records of student's profile in the prescribed format
- Maintains the records of absentees, problems/issues
- Explains to students the academic rules and regulation.
- Collects or downloads the attendance of each student for all courses either on monthly basis (if done manually) or fortnightly
- Examines the results of the students and counsel for poor results within a week after the results is published.
- Communicates with parents of students to discuss students' performance, any attendance issues and future plan at least twice in a semester.
- Gives specific guidance to students in selecting elective courses for registration.
- Gives guidance and information to plan for industry internship.
- Ensures to provide study material for advanced courses or advance study
- Gives guidance to students for selecting project topic, project guide, counsel them

on back papers and debarred courses.

- Reports Unresolved cases of students to Dean / HOD and if Dean / HOD require further attention to resolve the issue, the un resolved cases can be brought to the attention of higher authorities'/ student counselors.

I. Types of mentoring activities done towards students

- **Academic Growth**
  - First, mentors educate their mentees in a particular course, serving as masters to the developing learners by analyzing their performance in continuous internal evaluation tests (CIE).
  - Based on academic record, students with good performance are encouraged to achieve next higher level of performance and slow learners are motivated and guided to improve the performance.
  - The mentors counsel the students for their low attendance, low performance in examination (with the emphasis on the reason(s) of low attendance and performance).
  - Information of academic planners, academic schedules and e-learning resources are shared to enhance their knowledge.
  - Students are given training for taking up competitive exam GATE, IES, UPSC etc.
  - Faculty members encourage students to do poster presentation on the mini-projects and PBL based project learning.

- **Professional Guidance**
  - The students are encouraged and guided to register themselves in the professional bodies like IEEE, CSI, and ISTE etc. to create awareness and enhance the knowledge about the various activities including research in their area of specialization.
  - Mentors support their learning and enhance their laboratory and research skills through technical workshops/symposiums.
  - Industry based training is offered to students to improve their chances of employability.
  - Students are encouraged to develop their oral and written communication skills by writing research papers /articles and presenting in national and international conferences.
  - The projects are designed based on real time scenarios to apprise students about the working culture of industry and industry expectations.

- **Career Advancement**
  - Students are supported to take up online certification courses offered by MOOC/NPTEL/SWAYAM to strengthen the qualification for their academic progression. This also helps them to achieve higher career paths in the applied areas of their specializations.
  - Career guidance and counseling is provided by senior faculty members and placement Co-coordinators
  - Value added training programs are arranged to enhance their placement opportunities as well as to support their research in industry. Students are also encouraged to take up international professional certification for example in CISCO, Microsoft, Java, etc. This helps the students to improve their profiles for future.

- **Laboratory Specific**
  - Counsel irregular students to laboratory classes to attend regularly and complete backlog experiments during specified extra hours.
  - Arrange special lab coaching for Students with backlogs in external lab exams.
- **All-round Development**
  - Encourage and support students towards all round development through participation in literary, cultural and sports activities which helps to develop leadership qualities, decision making abilities, team spirit, socio-psychological awareness, and shapes the student into an intellectually integrated person.

- **Student Personality development**
  - Empower and enable inner adjustments by individual students to counter and cope with physical, emotional, mental, social and environmental challenges through student-counselor interaction/ through meditation workshops/ through other specialized workshops / activities.
  - Use of therapeutic interventions by counselors where necessary; such as Cognitive Behavior Therapy(CBT), Rational Emotive Behavior Therapy (REBT), Desensitization Therapy, Psychodynamic therapy, Group therapy and so on.
  - Engage in family /peer counseling by Counselor/ Mentor /HOD to strengthen student's interpersonal relationships thereby improving their grades.

II. List of Training activities

- Orientation of the students prior to Placement season.
- Aptitude Training.
- Mock online aptitude practice test.

- Technical training through labs.
- Mock online technical practice test.
- One to one career counseling and guidance to all the students.
- Mock Group Discussion practice.
- Personality development activities.
- Life skill trainings.
- Verbal and written communication trainings.
- Company specific trainings.
- Mock face to face interviews.
- Industry visits.
- Internship opportunities.
- Participation in Hackathon and other coding challenge contests.

Table 9.1.1.A: Summary of Mentoring System for EEE

Parameter	Description
Types of mentoring activities	Academic growth / Professional guidance / career advancement / laboratory specific / All – round development / Student personality development
Number of faculty mentors	30
Number of students per mentor	14-16
Frequency of meeting	Once in a month
Types of mentoring activities	Academic growth / Professional guidance / career advancement / laboratory specific / All – round development / Student personality development

Table 9.1.1.B: Summary of Mentoring System for ISE

Parameter	Description
Types of mentoring activities	Academic growth / Professional guidance / career advancement / laboratory specific / All – round development / Student personality development
Number of faculty mentors	28
Number of students per mentor	20-25
Frequency of meeting	Once in a month
Counselor available for specific number of students	One per branch

The student mentoring process flow is shown below

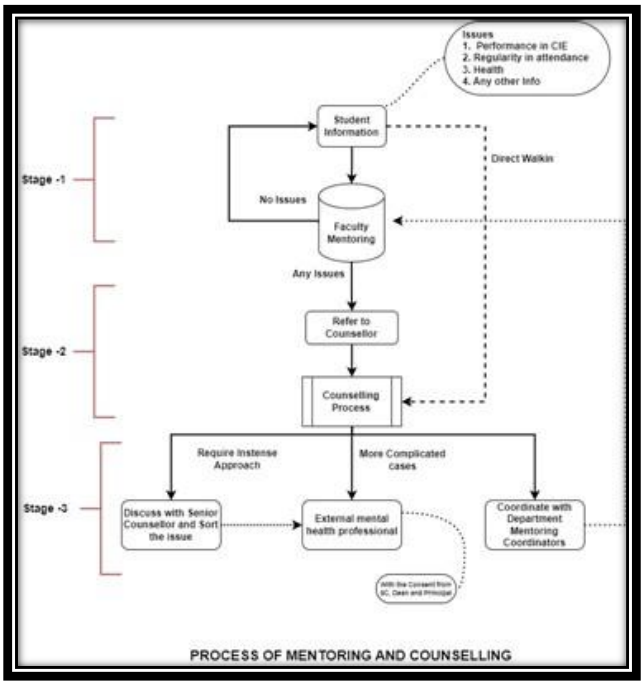


Figure 9.1.1: The structure of mentoring report

III. Counseling System

Department of Counseling offers individual, group and family counseling in the campus. The Department is equipped with 6 professionally qualified counselors who are easily approachable to the students and help them to deal with their daily life challenges and develop an insight for making right choices and decisions in their lives. In the department, each counselor allows an individual to have an opportunity to improve upon their understanding of themselves, including their pattern of thoughts, behavior, feelings and the ways in which these may have been problematic in their lives. It also helps to examine how to tap into existing resources or develop new ones that enhance their academic and personal lives.

Procedure to be followed by counselors at NHCE:

- Department of counseling always focuses on mental health as well as academic achievement of students.
- Counselors are easily approachable to the students in two ways either through referral or self -walk in.
- Counselor helps them to deal with their daily life challenges and develop an insight for making right choices and decisions in their lives.
- After first session of counselling, counselor always follows up the students.
- If requires counselor uses paper pencil tests to find out the exact issue of students.
- Counselor always maintains soft copy report of the students. Department of counseling conducts awareness program for the students.
- In this pandemic situation it's difficult to meet the students in person but department

of counseling always ready to help students online or offline.

Table 9.1.2: Details of Counselors committee members

Sl. No.	Name	Designation
1	**Ms Rajina R**	**Student Counselor**
2	**Ms Manasa T J**	**Student Counselor**
3	**Ms Prachi Bhavsar**	**Student Counselor**
4	**Ms Pallavi**	**Student Counselor**

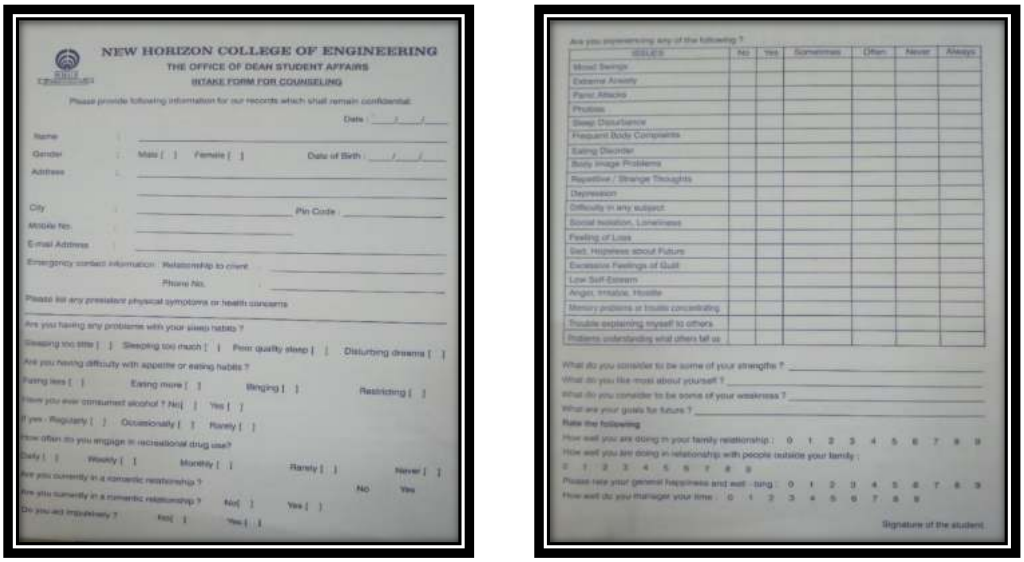


Figure 9.1.2: Format of the counseling form used by counselor

IV. Efficacy of mentoring/counseling system:

The mentoring/counseling system developed by the college is very effective as defined by different parameters as listed.

Table 9.1.3: Efficacy of Mentoring System

Parameters	Outcome
Student's Attendance:	Enhanced / improved
The Involvement of Students in the Academics, Co-Curricular and Extra-Curricular:	Has improved
Individual Student's Talents/ Skills Identified and Nurtured towards:	Excellence (the mentor/counselor/student ratio being optimum for supported growth).
Students' Self-Confidence/ Self-Esteem:	Improved over time, thus making inner adjustments easier and coping with and tackling successfully external challenges like facing job interviews/ speaking in public /giving presentations/ even mentoring peers.

9.1 (A) Sample Format of Mentoring System for EEE



Figure 9.1.3: A snap shot of the mentoring system

Table 9.1.4: List of Courses offered for Life Long Learning

Semester	Course Codes	Subject Name New
I	21MA11	Engineering Mathematics I
I	21CH12	Engineering Chemistry
III	21EEE31A	Applied Mathematics -III
III	21HSS331A	Entrepreneurship Development-2
III	21EEE37A	DC Machines and Transformers
III	21HSS342A	Environmental Science
IV	21HSS421A	Life skills for Engineers
IV	21HSS441A	Constitution of India and Professional Ethics
IV	21EEE41A	Applied Mathematics – IV
IV	21EEE45A	Control Systems
IV	21EEE46A	Synchronous and Induction Machines
IV	21EEE47A	Microcontroller and Embedded Systems
V	EEE52	Control Systems
V	EEE53	Synchronous and Induction Machines
V	EEE54	Signals and Systems
V	EEE55	Industrial Automation
VI	EEE61	Power system Analysis
VI	EEE63	Power system Protection
VII	EEE71A	Special Electrical Machines
VII	EEE754A	Neural network and Fuzzy logic in Electrical Engineering
VII	EEL78A	Project Phase-I
VIII	EEE83A	Internship
VIII	EEE84A	Project Phase- II

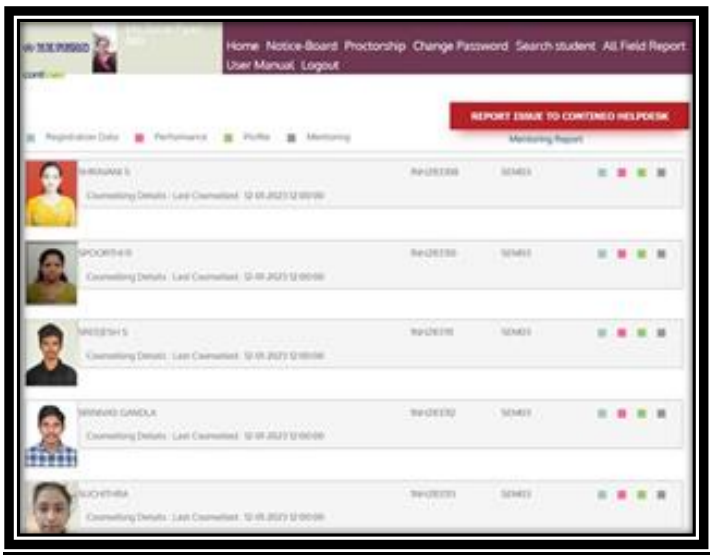
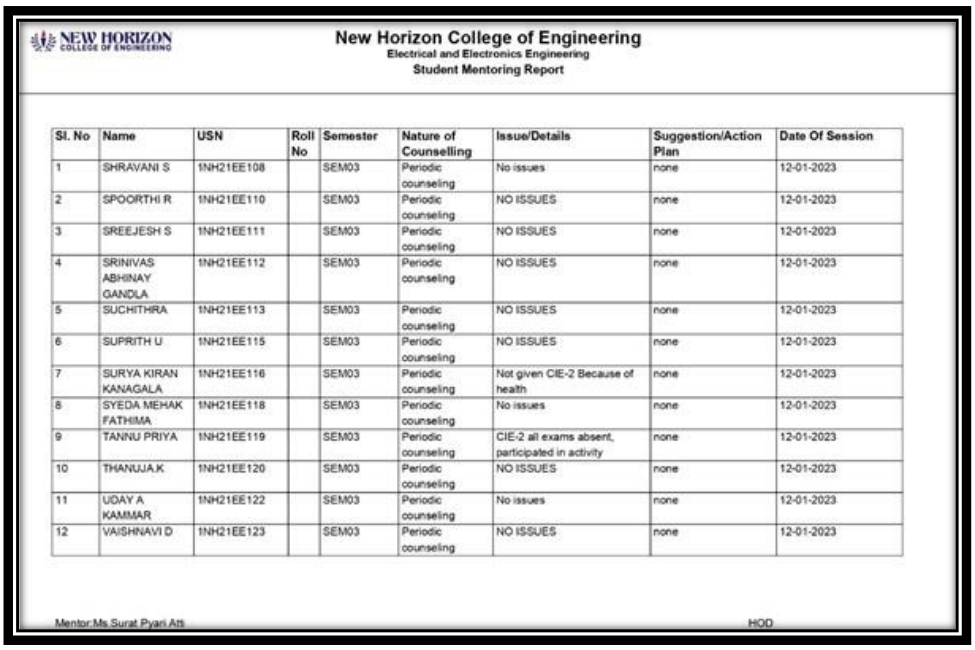


Figure 9.1.4: Sample Student mentoring in Contineo



NEW HORIZON COLLEGE OF ENGINEERING

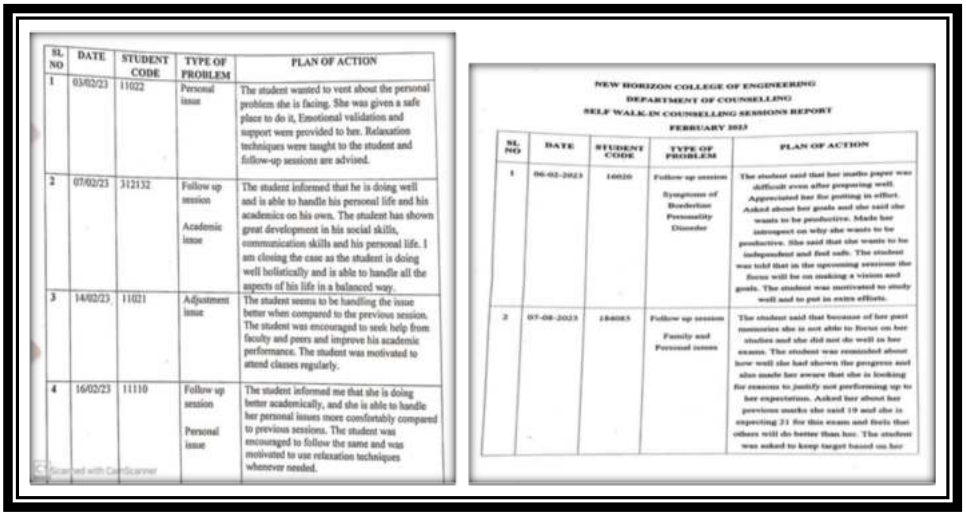
New Horizon College of Engineering
Electrical and Electronics Engineering
Student Mentoring Report

Sl. No	Name	USN	Roll No	Semester	Nature of Counselling	Issue/Details	Suggestion/Action Plan	Date Of Session
1	SHRAVANI S	1NH21EE108		SEM03	Periodic counseling	No issues	none	12-01-2023
2	SPOORTHI R	1NH21EE110		SEM03	Periodic counseling	NO ISSUES	none	12-01-2023
3	SREEJESH S	1NH21EE111		SEM03	Periodic counseling	NO ISSUES	none	12-01-2023
4	SRINIVAS ABHINAY GANDLA	1NH21EE112		SEM03	Periodic counseling	NO ISSUES	none	12-01-2023
5	SUCHITHRA	1NH21EE113		SEM03	Periodic counseling	NO ISSUES	none	12-01-2023
6	SUPRITH U	1NH21EE115		SEM03	Periodic counseling	NO ISSUES	none	12-01-2023
7	SURYA KIRAN KANAGALA	1NH21EE116		SEM03	Periodic counseling	Not given CIE-2 Because of health	none	12-01-2023
8	SYEDA MEHAK FATHIMA	1NH21EE118		SEM03	Periodic counseling	No issues	none	12-01-2023
9	TANNU PRIYA	1NH21EE119		SEM03	Periodic counseling	CIE-2 all exams absent, participated in activity	none	12-01-2023
10	THANUJA.K	1NH21EE120		SEM03	Periodic counseling	NO ISSUES	none	12-01-2023
11	UDAY A KAMMAR	1NH21EE122		SEM03	Periodic counseling	No issues	none	12-01-2023
12	VAISHNAVI D	1NH21EE123		SEM03	Periodic counseling	NO ISSUES	none	12-01-2023

Mentor:Ms.Surat Pyari Atti

HOD

Figure 9.1.5 Sample Student mentoring report



SL NO	DATE	STUDENT CODE	TYPE OF PROBLEM	PLAN OF ACTION
1	03/02/23	11022	Personal issue	The student wanted to vent about the personal problem she is facing. She was given a safe place to do it, Emotional validation and support were provided to her. Relaxation techniques were taught to the student and follow-up sessions are advised.
2	07/02/23	312132	Follow up session Academic issue	The student informed that he is doing well and is able to handle his personal life and his academics on his own. The student has shown great development in his social skills, communication skills and his personal life. I am closing the case as the student is doing well holistically and is able to handle all the aspects of his life in a balanced way.
3	14/02/23	11021	Adjustment issue	The student seems to be handling the issue better when compared to the previous session. The student was encouraged to seek help from faculty and peers and improve his academic performance. The student was motivated to attend classes regularly.
4	16/02/23	11110	Follow up session Personal issue	The student informed me that she is doing better academically, and she is able to handle her personal issues more comfortably compared to previous sessions. The student was encouraged to follow the same and was motivated to use relaxation techniques whenever needed.

NEW HORIZON COLLEGE OF ENGINEERING
DEPARTMENT OF COUNSELLING
SELF WALK-IN COUNSELLING SESSIONS REPORT
FEBRUARY 2023

SL NO	DATE	STUDENT CODE	TYPE OF PROBLEM	PLAN OF ACTION
1	06-02-2023	14020	Follow up session Symptoms of Borderline Personality Disorder	The student said that her maths paper was difficult even after preparing well. Appreciated her for putting in effort. Asked about her goals and she said she wants to be productive. Made her introspect on why she wants to be productive. She said that she wants to be independent and feel safe. The student was told that in the upcoming sessions the focus will be on making a vision and goals. The student was motivated to study well and to put in extra efforts.
2	07-08-2023	184083	Follow up session Family and Personal issues	The student said that because of her past memories she is not able to focus on her studies and she did not do well in her exams. The student was reminded about how well she had shown the progress and also made her aware that she is looking for reasons to justify not performing up to her expectations. Asked her about her previous marks she said 19 and she is expecting 21 for this exam and feels that others will do better than her. The student was asked to keep target based on her

Figure 9.1.6: Sample Student Counselling Report -EEE

Table 9.1.5: Impact of efficacy of mentoring/counseling system

Type of Mentoring/ Counseling	2022-23		2021-22		2020-21	
	No. of students counseled	No. of students improved	No. of students counseled	No. of students improved	No. of students counseled	No. of students improved
Academic guidance	28	20	25	17	26	15

9.1 (B) Sample Format of Mentoring System for ISE



Figure 9.1.7: A snap shot of the mentoring system – ISE

Table 9.1.6 List of Courses offered for Life Long Learning -ISE

Semester	Course Code	Subject Name
Course Specific		
III	ISE36A	Operating System
III	ISE37A	Data Base Management Systems
IV	ISE45A	Data Structures with C
IV	ISE46A	Object Oriented Programming using Java
IV	ISE47A	Internet Of Things
V	ISE51A	Web Internet Programming
V	ISE52A	Design and Analysis of Algorithms
V	ISE54A	Software Engineering & Project Management
V	ISE53A	Data Science
VI	ISE61A	Mobile Application Development
VI	ISE62A	Advanced Java
VI	ISE651A	User Interface Design
VI	ISE653A	C# & .Net
VI	ISE654A	Computer Graphics using Open GL
VI	ISE655A	Soft Computing
VII	ISE71A	Software Testing & Automation
VII	ISE72A	Computer Networks
VII	ISE73A	Cryptography and Information Security
VII	ISE741A	Computer Forensics
VII	ISE742A	Cloud Computing
VII	ISE744A	Information Theory & Coding
VIII	ISE753A	DevOps
VIII	ISE755A	Deep Learning
Laboratory Specific		
III	ISL36A	Operating System Lab
III	ISL37A	Database Management Systems Lab
IV	ISL45A	Data Structures with C Lab
IV	ISL46A	Object Oriented Programming using Java
IV	ISL47A	Internet of things Lab

V	ISL57A	Design and Analysis of Algorithms Lab
V	ISL56A	Web Internet Programming Lab
V	ISL58A	Data Science Lab
VI	ISL67A	Advanced Java Lab
VI	ISL66A	Mobile Application Development
VI	ISL68A	Machine Learning Lab
VII	ISL76A	Software Testing &Automation Lab
VII	ISL77A	Computer Networks Lab
All-round Development		
III	HSS321	Life skills for Engineers
III	HSS331	Entrepreneurship Development
III	HSS341	Constitution of India and Professional Ethics
IV	HSS442	Environmental Science
Student personality development activity		
III	ISE38A	Mini Project in C
V	ISE59B	Mini Project in Web Internet Programming
VI	ISE69B	Mini Project in Java
VII	ISE78A	Project Phase -1
VIII	ISE82A	Internship
VIII	ISE83A	Project Phase-2

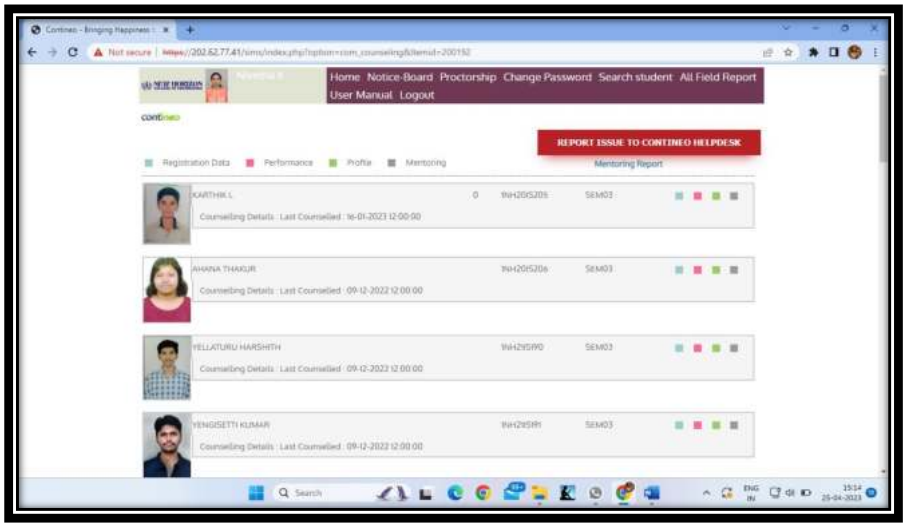
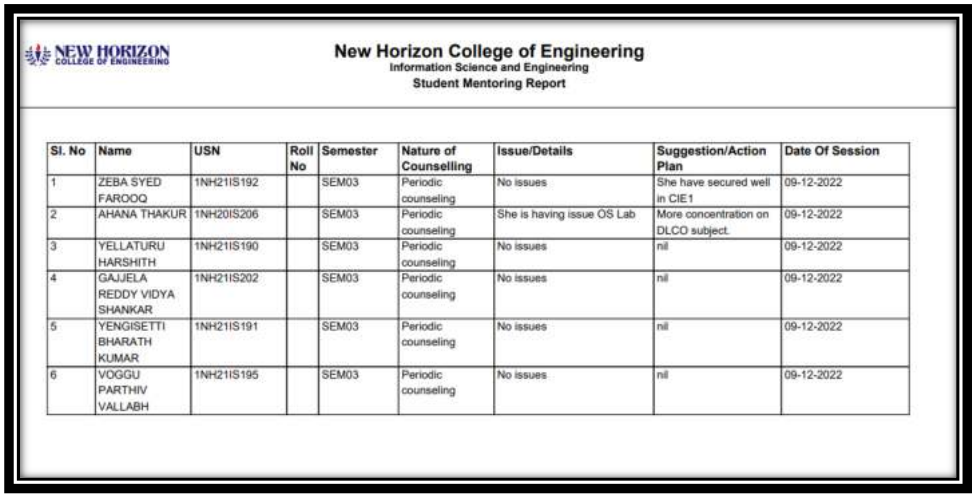


Figure 9.1.8: Sample Format of Mentoring System for ISE

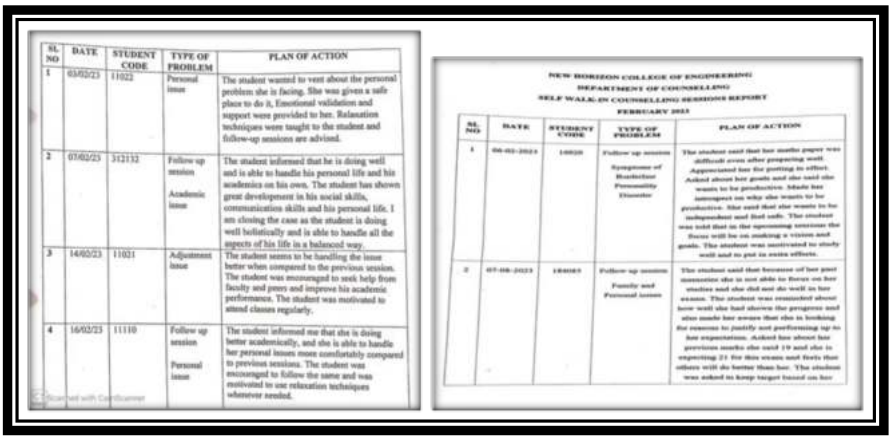


NEW HORIZON COLLEGE OF ENGINEERING

New Horizon College of Engineering
Information Science and Engineering
Student Mentoring Report

Sl. No	Name	USN	Roll No	Semester	Nature of Counselling	Issue/Details	Suggestion/Action Plan	Date Of Session
1	ZEBA SYED FAROOQ	1NH21IS192		SEM03	Periodic counseling	No issues	She have secured well in CIE1	09-12-2022
2	AHANA THAKUR	1NH20IS206		SEM03	Periodic counseling	She is having issue OS Lab	More concentration on DLCO subject.	09-12-2022
3	YELLATURU HARSHITH	1NH21IS190		SEM03	Periodic counseling	No issues	nil	09-12-2022
4	GAJJELA REDDY VIDYA SHANKAR	1NH21IS202		SEM03	Periodic counseling	No issues	nil	09-12-2022
5	YENGISETTI BHARATH KUMAR	1NH21IS191		SEM03	Periodic counseling	No issues	nil	09-12-2022
6	VOGGU PARTHIV VALLABH	1NH21IS195		SEM03	Periodic counseling	No issues	nil	09-12-2022

Figure 9.1.9 : Sample Student Mentoring Report -ISE



SL NO	DATE	STUDENT CODE	TYPE OF PROBLEM	PLAN OF ACTION
1	03/02/23	11022	Personal issue	The student wanted to vent about the personal problem she is facing. She was given a safe place to do it, Emotional validation and support were provided to her. Relaxation techniques were taught to the student and follow-up sessions are advised.
2	07/02/23	312132	Follow up session Academic issue	The student informed that he is doing well and is able to handle his personal life and his academics on his own. The student has shown great development in his social skills, communication skills and his personal life. I am closing the case as the student is doing well holistically and is able to handle all the aspects of his life in a balanced way.
3	14/02/23	11021	Adjustment issue	The student seems to be handling the issue better when compared to the previous session. The student was encouraged to seek help from faculty and peers and improve his academic performance. The student was motivated to attend classes regularly.
4	16/02/23	11110	Follow up session Personal issue	The student informed me that she is doing better academically, and she is able to handle her personal issues more comfortably compared to previous sessions. The student was encouraged to follow the same and was motivated to use relaxation techniques whenever needed.

Figure 9.1.9: Sample Counseling Report -ISE

Table 9.7: Impact of efficacy of mentoring/counseling system -ISE

Type of Mentoring/ Counseling	2019-20		2020-21		2021-22	
	No. of students counseled	No. of students improved	No. of students counseled	No. of students improved	No. of students counseled	No. of students improved
Academic guidance	19	15	52	42	30	16

9.2.Feedback analysis and reward /corrective measures taken, if any (10)

(Feedback collected for all courses Specify the feedback collection process Average Percentage of students who participate Basis of reward/ corrective measures, if any; Indices used for measuring quality of teaching& learning and summary of the index values for all courses/teachers; Number of corrective actions taken).

Feedback on Teaching-Learning by Students

The entire process is executed in following three stages

- Feedback collection
- Feedback analysis
- Reward / corrective measures

Feedback Collection Process

- Feedback mechanism is well organized system in the college for all courses.
- All the students are allowed to give feedback.
- Computerized feedback is collected from students for all the courses. The feedback collection process is discussed in Table 9.8

Table 9.2.1: Feedback collection process

Title	Description
Feedback collection process	Online feedback from all students on respective courses
Process	Online on CONTINEO
Frequency of feedback Collection	Twice in a semester
Metrics used for calculation	5-Excellent 4-Very good 3-Good 2-Satisfactory 1-Below average

Feedback Analysis Process

Summary of the feedback reports pertaining to course, program and teaching- learning is prepared, usually on the scale of 1 to 5. The minimum expected feedback for a faculty member from the students is 3.5 on 5-point scale rating system. The feedback is shared with heads of the respective departments. Informal feedback is also taken directly by the heads from time to time during the ongoing semester. A special emphasis is paid on transparency and impact of the feedback system. A broad range of parameters that are used for collecting the feedback data is as given below.

- Particular on timely coverage of syllabus
- Ability to integrate content with other courses
- Depth of the course content including project work, if any
- Learning value (in terms of knowledge, concepts, manual skills, analytical abilities and broadening perspectives)
- Lectures are interesting
- Logical structuring & sequencing of course content into modules
- Promptness & adequacy of feedback provided by teacher on academic performance
- Promptness in Evaluation of Tests, Assignments and Quizzes
- Punctuality (starting time & ending time for lectures, Lab classes and Tutorials Classes)
- Recap of last lecture, assignments, quizzes, projects, discussion, case studies etc.
- Teacher comes well prepared to teach in the class
- Teacher encourages students to ask questions and are satisfied with answers
- Teacher encourages students to think independently
- Teacher gives real life examples/ uses videos
- Teacher is approachable to students for Academic/ personal advice
- Teacher is clear with course concepts
- Teacher is enthusiastic about teaching the course
- Teacher provides course and lecture outline at the semester beginning
- Teacher suggests web-links related to the topics taught
- Teacher takes extra care to ensure learning
- Teacher uploads the teaching material well before the class
- The course materials (e.g. text, case studies, readings etc.) are helpful in learning the course. The evaluation process is well designed during the course
- There is clarity in presentation, considering language, voice and black board writing

A format of student feedback on teaching -learning is given in figure

FORMAT of Student Feedback on Teaching – Learning

Questionnaire

1. Clarity in explaining the subject
2. Subject explained was easy to understand
3. Content quality is relevant and useful
4. Faculty answers to your queries/questions
5. Coverage of topic/subject is on time
6. The concepts were explained with examples
7. Faculty preparation for the class
8. Faculty guidance for preparation of seminar, conference and exam
9. Punctuality of the faculty for the class
10. Communicates distinctly and effectively
11. Treats students with respect and effectively
12. Control of the classroom by faculty
13. Relevance of assignments to the subject
14. Overall satisfaction
15. Discussion of any interesting topic beyond the syllabus but relevant to the field.
16. Usefulness of the question papers of internal tests in your preparation for the examination.
17. Helpfulness of the online course material (question bank, etc.) and assignments for you to understand and prepare and for tests and examination.
18. Accessibility availability after the class hours in the college.

Rating of Scale

5- Excellent
4- Very Good
3- Good
2- Fair
1- Poor

Figure 9.2.1: Format of student feedback on Teaching – Learning

Reward / corrective measures

Methodology being followed for corrective measures taken:

Based on the consolidated feedback and faculty self-appraisal reports, the faculty members are appraised about their performance. Some of the faculty members are appreciated and awarded monetarily, in recognition of their exemplary efforts of

- Resourcefulness
- Innovations in bringing about the change
- Dependability in their work
- Expertise used and developed in academics, research and patenting

Necessary corrective actions taken for the faculty members whose feedback score is less than the institution standard, are as given below.

Head of the Department chairing the senior faculty members advise the faculty member suitably with regard to

- Clarity in explanation, effective communication, syllabus coverage
- Participating in Faculty Development Programs (FDPs).
- Enhancing their academic skill set with the peer support within a stipulated time period.

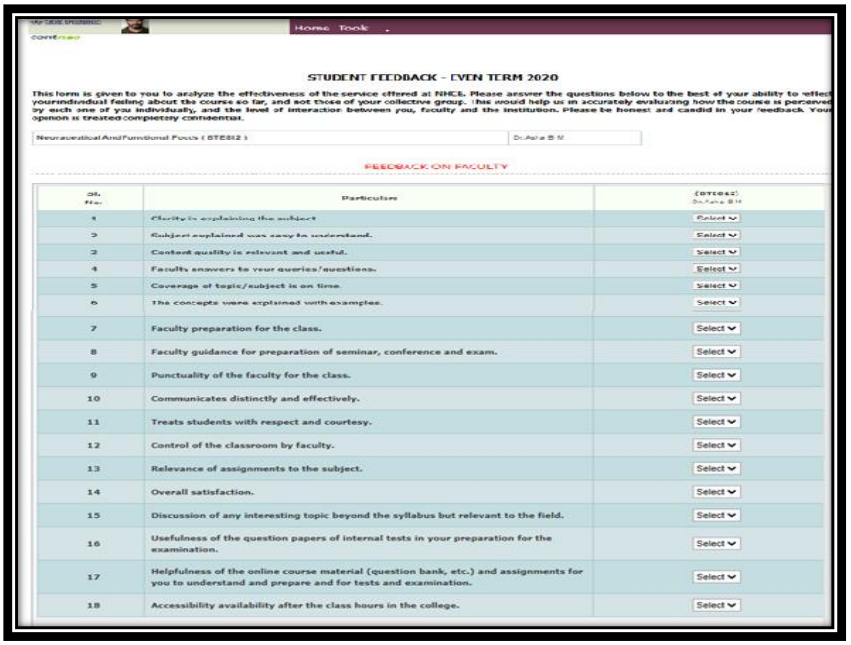
The performance is reviewed regularly.

9.2 Sample Feedback analysis

A broad range of parameters that are used for collecting the feedback data is as given below.

- Particular on timely coverage of syllabus
- Ability to integrate content with other courses
- Depth of the course content including project work, if any
- Learning value (in terms of knowledge, concepts, manual skills, analytical abilities and broadening perspectives)
- Lectures are interesting
- Logical structuring & sequencing of course content into modules
- Promptness & adequacy of feedback provided by teacher on academic performance
- Promptness in Evaluation of Tests, Assignments and Quizzes
- Punctuality (starting time & ending time for lectures, Lab classes and Tutorials Classes)
- Recap of last lecture, assignments, quizzes, projects, discussion, case studies etc.
- Teacher comes well prepared to teach in the class
- Teacher encourages students to ask questions and are satisfied with answers
- Teacher encourages students to think independently
- Teacher gives real life examples/ uses videos
- Teacher is approachable to students for Academic/ personal advice
- Teacher is clear with course concepts
- Teacher is enthusiastic about teaching the course
- Teacher provides course and lecture outline at the semester beginning
- Teacher suggests web-links related to the topics taught
- Teacher takes extra care to ensure learning
- Teacher uploads the teaching material well before the class

- The course materials (e.g. text, case studies, readings etc.) are helpful in learning the course
- The evaluation process is well designed during the course
- There is clarity in presentation, considering language, voice and blackboard writing



STUDENT FEEDBACK – EVEN TERM 2020

FEEDBACK ON FACULTY

Sl. No.	Particulars	
1	Clarity in explaining the subject	Select
2	Subject explained was easy to understand.	Select
3	Content quality is relevant and useful.	Select
4	Faculty answers to your queries/questions.	Select
5	Coverage of topic/subject is on time.	Select
6	The concepts were explained with examples.	Select
7	Faculty preparation for the class.	Select
8	Faculty guidance for preparation of seminar, conference and exam.	Select
9	Punctuality of the faculty for the class.	Select
10	Communicates distinctly and effectively.	Select
11	Treats students with respect and courtesy.	Select
12	Control of the classroom by faculty.	Select
13	Relevance of assignments to the subject.	Select
14	Overall satisfaction.	Select
15	Discussion of any interesting topic beyond the syllabus but relevant to the field.	Select
16	Usefulness of the question papers of internal tests in your preparation for the examination.	Select
17	Helpfulness of the online course material (question bank, etc.) and assignments for you to understand and prepare and for tests and examination.	Select
18	Accessibility availability after the class hours in the college.	Select

Figure 9.2.2: Sample Students feedback on Teaching -Learning

Rewards/Corrective Measures

Based on the consolidated feedback reports and faculty self-appraisal reports, the faculty members are apprised about their performance.

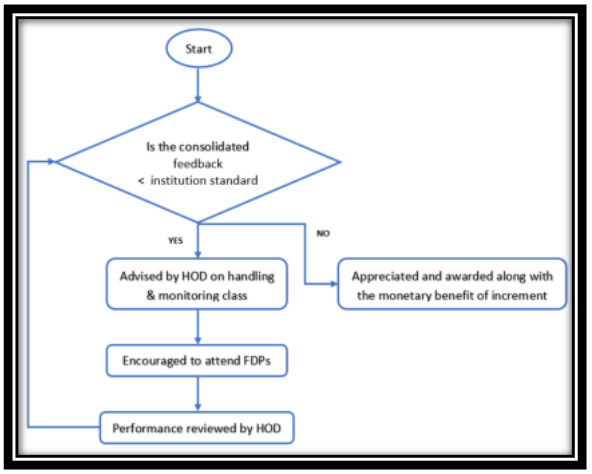
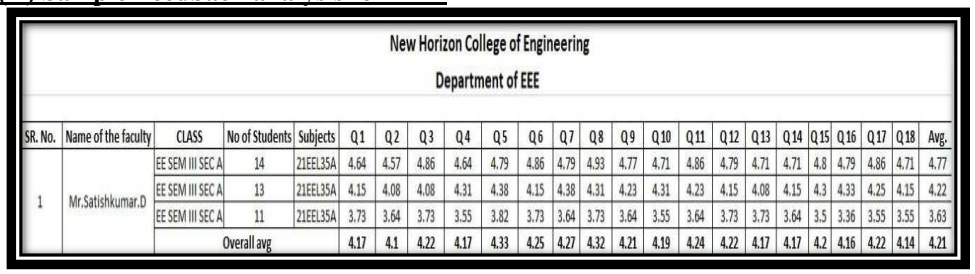


Figure 9.2.3: Sample Corrective Measure on teaching-learning

9.2 (A) Sample Feedback analysis for EEE



New Horizon College of Engineering

Department of EEE

SR. No.	Name of the faculty	CLASS	No of Students	Subjects	Q.1	Q.2	Q.3	Q.4	Q.5	Q.6	Q.7	Q.8	Q.9	Q.10	Q.11	Q.12	Q.13	Q.14	Q.15	Q.16	Q.17	Q.18	Avg.
1	Mr.Satishkumar.D	EE SEM III SEC A	14	21EEL35A	4.64	4.57	4.86	4.64	4.79	4.86	4.79	4.93	4.77	4.71	4.86	4.79	4.71	4.71	4.8	4.79	4.86	4.71	4.77
		EE SEM III SEC A	13	21EEL35A	4.15	4.08	4.08	4.31	4.38	4.15	4.38	4.31	4.23	4.31	4.23	4.15	4.08	4.15	4.3	4.33	4.25	4.15	4.22
		EE SEM III SEC A	11	21EEL35A	3.73	3.64	3.73	3.55	3.82	3.73	3.64	3.73	3.64	3.55	3.64	3.73	3.73	3.64	3.5	3.36	3.55	3.55	3.63
		Overall avg			4.17	4.1	4.22	4.17	4.33	4.25	4.27	4.32	4.21	4.19	4.24	4.22	4.17	4.17	4.2	4.16	4.22	4.14	4.21

Figure 9.2.4: Sample Students feedback on Teaching –Learning – EEE

A consolidation of feedback analysis on teaching -learning department wise is given in table 9.2.4

Table 9.2.1.A : Feedback Analysis -EEE

NEW HORIZON COLLEGE OF ENGINEERING			
DEPARTMENT OF ELECTRICAL AND ELECTRONIC ENGINEERING			
Faculty feedback analysis - 2022-23 - EVEN SEM			
Sl.No	**Feedback Range**	**Faculty Name**	**Score**
1	**4.5-5**	Dr. K.Vinoth Kumar	4.67
2		Mrs. A. Anitha	4.61
3		Ms. Sangeetha C N	4.6
4		Dr. S. Sujitha	4.58
5		Prof. Anand K	4.58
6		Dr. N.Prabhakaran	4.58
7		Ms. Soumya K V	4.52
8		R MOHAN DAS	4.51
9		Mr. SUNIL	4.51
10		Mr. Joshua Daniel Raj	4.5
11		Ms. Manochitra G	4.49
12		Ms. Pooja Jose	4.45
13	**4-4.5**	Mr. Kodandapani D	4.44
14		Dr.Revathi R P	4.44
15		Mrs. Kavitha Chenna Reddy Chenna Reddy	4.38
16		Ms.Geetha Varma	4.38
17		Mr. Kartheek Vankadara	4.36
18		Dr.V.Agalya	4.36
19		Mr.Satishkumar.D	4.21
20		Ms.Surat Pyari Atti	4.14

Table 9.2.2 : Faculty Feedback Analysis for EVEN Semester 2023

Total number of Faculties		**EEE**
		20
Feedback	**4.5-5**	**10**
Feedback	**4-4.5**	**10**
Feedback	**3.5-3.99**	**0**
Feedback	**less than 3.5**	**0**

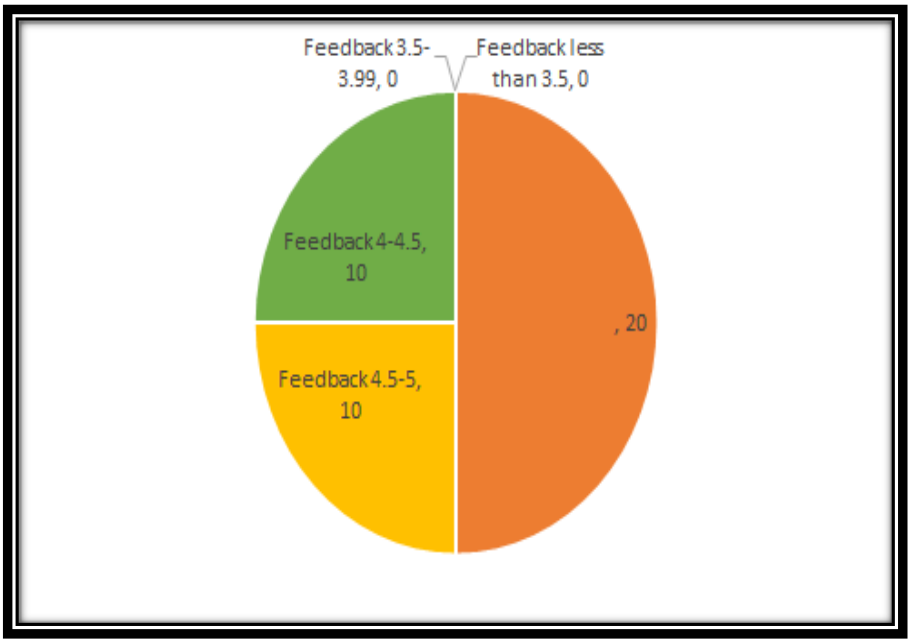


Figure 9.2.5: Sample Feedback Analysis on Teaching- Learning

- List of faculties with student feedback <3.5 Nil
- Activity followed for faculty having student feedback <3.5 Nil
- FDP attended by faculty having student feedback<3.5 Nil
- NPTEL courses attended by faculties having student feedback <3.5 Nil

9.2 (B) Sample Feedback analysis for ISE

New Horizon College of Engineering

Department of ISE

SR. No.	Name of the faculty	CLASS	No of Students	Subjects	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12	Q13	Q14	Q15	Q16	Q17	Q18	Avg.
1	Arvind Kapse	IS SEM III SEC B	62	21ISE37A	4.24	4.35	4.32	4.52	4.32	4.56	4.26	4.34	4.55	4.44	4.37	4.48	4.58	4.27	4.4	4.37	4.37	4.52	4.4
		IS SEM III SEC B	31	21ISL37A	4.55	4.48	4.55	4.42	4.58	4.32	4.32	4.35	4.52	4.42	4.55	4.52	4.42	4.29	4.4	4.45	4.42	4.4	4.44
		IS SEM III SEC B	31	21ISL37A	4.52	4.55	4.55	4.39	4.61	4.52	4.58	4.39	4.52	4.58	4.68	4.55	4.65	4.52	4.7	4.68	4.65	4.65	4.57
		IS SEM V SEC A	46	20ISE551A	4.69	4.76	4.76	4.84	4.87	4.82	4.87	4.82	4.91	4.89	4.87	4.89	4.93	4.96	4.9	4.91	4.84	4.84	4.86
		Overall avg			4.5	4.54	4.55	4.54	4.6	4.56	4.51	4.48	4.63	4.58	4.62	4.61	4.65	4.51	4.6	4.6	4.57	4.6	4.57

Figure 9.2.6: Sample students feedback on teaching-learning - ISE

A consolidation of feedback analysis on teaching -learning department wise is given in table 9.2.3

Table 9.2.3: Sample feedback analysis on Teaching –Learning -ISE

NEW HORIZON COLLEGE OF ENGINEERING			
DEPARTMENT OF INFORMATION SCIENCE AND ENGINEERING			
Faculty feedback analysis - 2022-23 - EVEN SEM			
Sl.no.	**Feedback range**	**Name of the faculty**	**Score**
1	**4.5 – 5**	Ms. Vijaya	4.71
2		Ms. Suma T	4.83
3		Dr. Saravanan K	4.82
4		Sabarinath S.	4.78
5		Dr Mohan H S	4.65
6		Ankita Jeewankar	4.61
7		Suneetha V	4.77
8		Jaydeep Amin Prabhakar	4.78
9		Arvind Kapse	4.57
10		Dr Sivaramkrishnan S	4.66
11		Kiran Kumar B	4.58
12		Prof. Anand K	4.63
13		DevRanjan Chatterjee	4.64
14		Saranya Batta	4.58
15		Nivetha K	4.64
16		SWATHI B	4.85
17		VANDANA C P	4.78
18		Srinivasan L	4.84
19		Suvika K V	4.82
20		Dr Rajlakshmi Ghatkamble	4.64
21		Karthiyayini J	4.74
22		Priya N	4.57
23		DIVYA KV	4.72
24		Sony M Kuriakose	4.71
25		Bibiana Jeniffer	4.69
26		Dr Anandhi R J	4.57
27		Latha S S	4.51
28		Rama Dan	4.52
29		Anitha R	4.52
30	**4-4.5**	Mrs. M S Shoba Nhce	4.49
31		Prabhu James	4.48
32		Kalaivani D	4.39
33		Neha Jadhav	4.32
34		Karthick Myilvahanan Jothivel	4.36
35		Shruthi G R	4.42
36		Chitti T N	4.39
37		Krishnaveni A	4.49
38		Shalini A	4.2

Table 9.2.2 : Faculty Feedback Analysis for Even Sem 2022-23

Total number of Faculties		**38**
Feedback	4.5-5	29
Feedback	4-4.5	09
Feedback	3.5-3.99	0
Feedback	less than 3.5	0

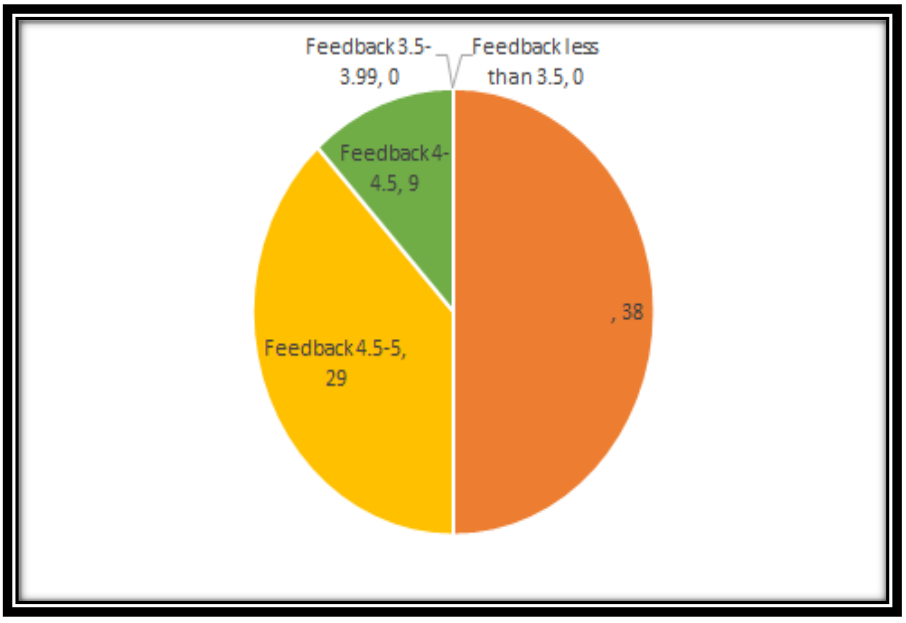


Figure 9.2.7: Sample feedback analysis on Teaching- Learning - ISE

1) List of faculties with student feedback <3.5----------Nil
2) Activity followed for faculty having student feedback <3.5--------Nil
3) FDP attended by faculty having student feedback<3.5----------Nil
4) NPTEL courses attended by faculties having student feedback <3.5------Nil

A common format of faculty feedback and corrective measure analysis on teaching - learning is given in figure 9.2.8

NEW HORIZON COLLEGE OF ENGINEERING, BANGALURU

DEPARTMENT OF _____

FACULTY FEEDBACK AND CORRECTIVE MEASURE ANALYSIS

FACULTY NAME: - DESIGNATION: - SEM/ YEAR: -

Sl. No	Curriculum, Teaching, Learning and Evaluation:	Excellent (5)	Very Good (4)	Good (3)	Average (2)	Poor (1)
1.	Clarity in explaining the subject & Treats students with respect and courtesy.					
2	Communicates distinctly and effectively.					
3	Aims and objectives of the syllabi are well defined and clear to students					
4	Course content is followed by corresponding reference books/materials					
5	The course/syllabus has good balance between theory and Lab.					
6	The course/syllabus of this subject increased my knowledge and perspective in the subject area					
7	The course/program of studies carries sufficient number of optional papers.					
8	Counseling the faculty through counselors About building confidence in handling the subject(referral*)					
9.	Deputing faculty to FDP (if any) (referral)					

REMARK IF ANY----------

Figure 9.2.8: Sample Corrective Measure on teaching-learning

9.3. Feedback on facilities (5)

(Assessment is based on student feedback collection, analysis and corrective action taken).

A standard procedure of feedback on facilities demonstrates a commitment to excellence in the planning and provision of services across different departments of the University. The feedback is collected from the students on the facilities available in the university such as class room infrastructure, library, laboratories, hostel, playground, Internet facility, food court etc.

The feedback is analyzed and the necessary corrective measures are implemented after discussions with the management.

The feedback on facilities is taken up in the department as per the following steps:

1) Feedback collection
2) Feedback analysis
3) Corrective measures

Feedback Collection:

A formal feedback is gathered, at least once during every semester, about the use and satisfaction with a variety of facilities and services which are categorized as

- General Facilities &Services
- Technology Services
- Specialized Services

A broad range of parameters that are used for collecting feedback on facilities is given below:

- Availability of teaching aids such as multimedia projectors, speakers etc. in classrooms/ tutorial rooms
- Library space and ambience, timings and usage
- Adequacy of number of titles in library or range of text and reference books covering syllabus relating to different courses
- Adequacy of Internet facilities in terms availability of terminals &bandwidth
- Drinking water facilities & their maintenance
- Canteen facilities
- Medical & first-aid facilities
- Housekeeping &maintenance
- Infrastructure for Co-curricular and extra-curricular activities
- Mentoring system to help students at individual level

The details of feedback collection process on facilities are summarized in Table 9.10

Table 9.3.1: Details of feedback collection process

Items	Description
Feedback collected on all facilities provided by the college.	YES
Feedback collection process	Computerized
Feedback receiver	Administrative officer / Admin manager
Frequency of feedback collection	Once in an academic year
Metrics used for calculation	Strongly agree Agree Partially agree Disagree
Purpose of comments	For improving the quality of facilities.

Format of student feedback on Facility

Feedback analysis

A combined report is prepared on the basis of students' feedback under the supervision of committee and corrective action suggested to the appropriate departments/person to resolve these problems and improve the facilities continuously. A sample feedback on facilities is given below.

On institution website, a student's portal is made available to post students grievances. When students register their complaint, they are being referred to corresponding department for timely resolution.



Figure 9.3.1: Table Tennis room



Figure 9.3.2: Gymnasium

The feedback format consists of following questions

Questionnaire

1. How do you rate the Canteen facilities provided by the institution?
2. How do you rate the class room Infrastructure?
3. How do rate the cyber lab facility provided by the institution?
4. Are you satisfied with the extracurricular infrastructure at College?
5. Are you satisfied with the Hostel Facility provided by the institution?

6. How do you rate the Lab facilities at the institution?
7. How do you rate the Library Facilities provided by the institution?
8. Are you satisfied with the placement support provided?
9. How is the responsiveness of Accounts office?
10. How is the responsiveness of College Admin office?
11. How is the responsiveness of Exam office?
12. How do you rate the Sports facilities provided by the Institution?
13. Are you satisfied with the toilet facilities and Maintenance?
14. How do you rate the transport facility provided by the college?



Figure 9.23: Sample Student feedback on facilities

Rating of Scale
5-Excellent
4-Very Good
3-Good
2-Satisfactory
1-Below Average

On the institution website, a student's portal is made available to post students' grievances. When students register their complaints, they are being referred to corresponding department for timely resolution.

Corrective Measures
Some of the corrective actions taken are

- Recreation center
- Dance room and music room in boys' hostel
- Gymnasium
- Table Tennis room
- Enhancement of food court

NEW HORIZON COLLEGE OF ENGINEERING, BANGALURU

FEEDBACK FORM ON FACILITIES

YEAR:……. SEM:…….

SEC:…….

FACILITIES/ RATINGS	EXCELLENT (5)	VERY GOOD (4)	GOOD (3)	AVERAGE (2)	FAIR (1)
CLASS ROOM INFRASTRUCTURE					
LIBRARY					
LABORATORIES					
CANTEEN					
PLAYGROUND					
INTERNET FACILITY					
INDOOR STADIUM					
PARKING SPACE					
COLLEGE AMBIENCE					
MEDICAL FACILITY					
OVERALL RATING					

REMARK IF ANY

Figure 9.3.4: Sample Student feedback on facilities

9.3(A) Feedback analysis for EEE

New Horizon College of Engineering		
Feedback on Facilities of the Institute		
SR. No.	Question	Avg. Rating
1	Library facilities.	4.44
2	Canteen facilities.	4.33
3	Placement support provided.	4.39
4	Lab facilities.	4.31
5	Cyber Lab facility.	4.28
6	Classroom Infrastructure.	4.24
7	Extra-curricular activities at College.	4.34
8	Responsiveness of college admin office.	4.2
9	Responsiveness of Exam office.	4.29
10	Responsiveness of Accounts office.	4.14
11	Transport facilities of the College.	4.28
12	Toilet facilities and maintenance.	4.2
13	Hostel Facility.	4.15
14	Sports Facility.	4.23
Total Average		4.27
No. of Student		2735

Figure 9.3.5 A: Sample Student feedback on facilities – EEE

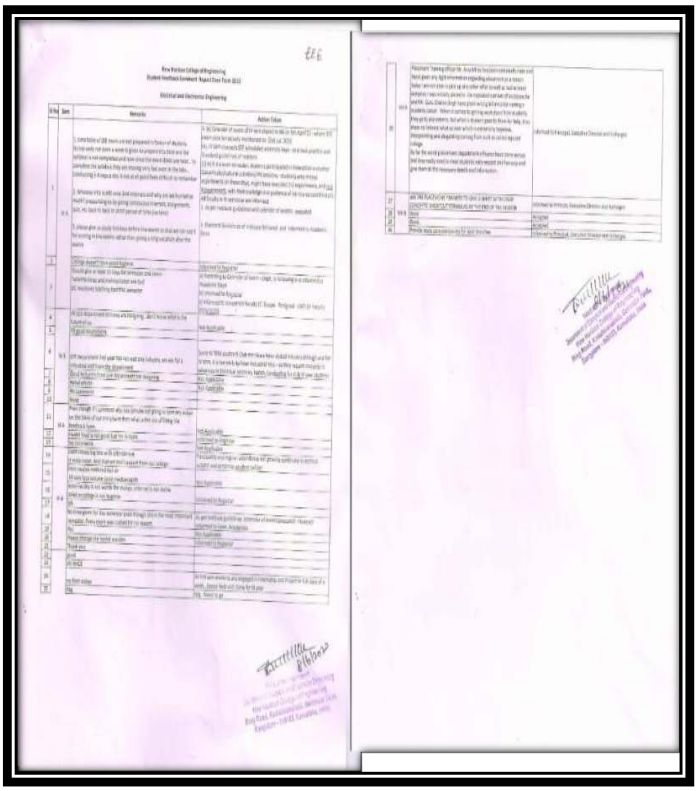


Figure 9.3.6. A: Feedback and Corrective Action - EEE

9.3(B) Feedback analysis for ISE

New Horizon College of Engineering		
Feedback on Facilities of the Institute		
SR. No.	Question	Avg. Rating
1	Library facilities.	4.44
2	Canteen facilities.	4.33
3	Placement support provided.	4.39
4	Lab facilities.	4.31
5	Cyber Lab facility.	4.28
6	Classroom Infrastructure.	4.24
7	Extra-curricular activities at College.	4.34
8	Responsiveness of college admin office.	4.2
9	Responsiveness of Exam office.	4.29
10	Responsiveness of Accounts office.	4.14
11	Transport facilities of the College.	4.28
12	Toilet facilities and maintenance.	4.2
13	Hostel Facility.	4.15
14	Sports Facility.	4.23
Total Average		4.27
No. of Student		2735

Figure 9.3.5 B: Sample Student feedback on facilities - ISE

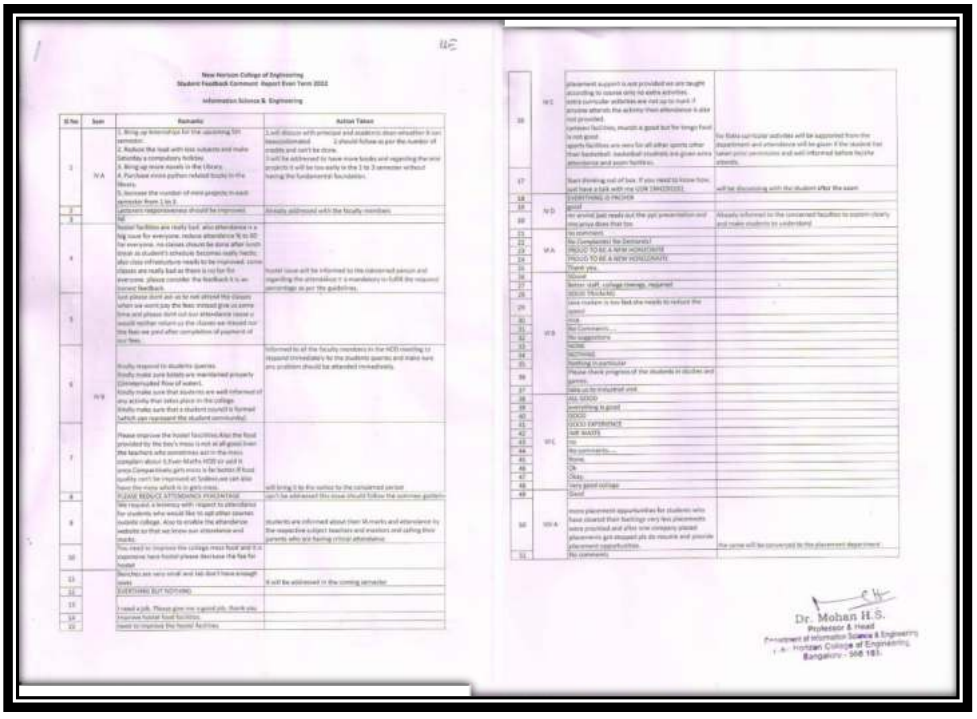


Figure 9.3.6. B: Feedback and Corrective Action - ISE

9.4 Self-Learning (5)

(*The institution needs to specify the facilities, materials and scope for self-learning / learning beyond syllabus, Webinars, Podcast, MOOCs etc. and evaluate their effectiveness)*

Self-learning is endorsed in the institution by generating self-learning facilities under various learning activities, resources and environments for students based on their academic background. Students are encouraged for self-learning by personal counseling and mentoring.

Scope of Self-learning

- Web based learning (Learning a course online or partially online through MOOCs, NPTEL, SWAYAM, edX, Coursera, Webinars, YouTube)
- Library and Digital Library
- McGraw-Hill digital books
- Learning activities around collaborative projects (PBL- Project Based Learning)
- Learning around case descriptions (Case Study)
- Assignments
- Professional bodies
- Club activities

Additional resources for online learning for both faculty and students

Exposure was given for additional learning resources both for faculty and students. Some of the resources are listed below:

- NHCE digital library resources on the Internet (earlier it was on Intranet) – text books / Question papers / Lesson modules / Student project reports / other references / e-books are available online
- 3062 users from New Horizon College of Engineering registered on the portal vtuconsortium.org, qualifying as the highest number among all the colleges as per the communication received from Prof. Konnur, Advisor- VTU Consortium, VTU, Belagavi
- Virtual labs
- e-Content URL's
- Open access resources
- 408 e-books
- Online certification courses
- Websites for academic enrichment
- Webinars

Table 9.4.1: A sample list of webinars organized during Covid

Webinars organized by New Horizon College of Engineering during Covid (to name a few)
Coping with studies during dark clouds of Covid 19 Collegedunia
How to sharpen the skills?
Math works
MATLAB
Intellectual property rights
Competency mapping and career direction
Career opportunities post Covid 19
Latest trends in Machine Language
Embracing the new normal
Future of HR
Cracking the code of career development
Data driven decision-making using AI
Emerging trends in business and finance
Power train and electromagnetic transients
Reshaping of HR practices and business excellence
AI applications in industries

Following are the various modes of self-learning and facilities created in the institution.

Table 9.4.2: Self Learning Facilities

Web based learning	• It creates the opportunity for sharing ideas & knowledge and also helps improving lifelong learning skills by providing easy access to global resources. • It improves cross-cultural relation-ships which lead to collaboration between institution educators and learners locally and internationally. • Enhances active learning. • Contextualized content can be shared by all
Library/Digital Library	• The college library provides information and ideas that are fundamental to functioning successfully in today's information and knowledge-based society. • College library equips students with learning skills and develop their knowledge The Digital Library offers, • NPTEL videos. • Sufficient systems with multimedia facilities. • Institutional membership of DELNET, a library networking database. • Internet facility.
Project Based Learning	• Enables students to think from different angles or simply 'to think out of the box'. • To aid in language development and in particular subject

	areas of study. • Helps in building knowledge base. • Helps in building Team work
Case study	Students are actively engaged in figuring out the principles by abstracting from the examples. This develops their skills in: • Problem solving • Analytical tools, quantitative and/or qualitative, depending on the case • Decision making in complex situations • Coping with ambiguities
Professional Bodies	• Joining a professional association will be one of the most important activities in a student's career. • To increase knowledge in their own fields, expand networking possibilities or jump start to job hunt, a professional association membership is an option which is worth exploring. • All career options are corresponding professional association that offers valuable information and resources for their career enhancement. • ISTE, IEEE and CSI student chapters are established where the students can achieve the knowledge about the advance engineering skills.
Club Activities	• Helps in building knowledge base. • It increases visibility, credibility, and competitive advantage • It can be an excellent chance to network with other people in related field, allowing the student to feel more integrated into professional community.
Assignments	• It enables students to go through the topics in a more elaborate manner in order to explore the academic topic which lead to an overall better learning experience for students. • Assignments help the students to understand the subject in a more detailed pattern. • Faculty will conduct assignments on regular basis with two units of every subject and these are graded.

The Source and Tools of Self Learning

The sources and tools of self-learning used are as shown in Table 9.13

Table 9.4.3: Sample Sources and tools of self-learning

Sl. No.	Self-Learning Sources	Tools	ICT Support
1.	E Courses/Learning	NPTEL Course Era Swayam Udemy	Computer System Internet Connection
2.	Workshops	Conducted by different organizations	Computer System Internet Connection
3.	Conferences	Organized by various institution	Computer System Internet Connection
4.	Self-Study	Self-study topics as specified by faculty handling courses	Computer System Internet Connection
5.	Projects Based Learning	Students gain knowledge and skills by developing mini projects and projects	Computer System Internet Connection

Process of Self Learning

In the classrooms:

- Faculty members run at least 2 video lectures per course and evaluate as per Table 9.4.4

Giving Reference of Materials:

- Faculty member shall give reference of video lectures or other online materials for every topic.
- The reference shall be mentioned in the lecture schedule

Table 9.4.4: Mode of evaluation with various related sources of self-learning

Sl. No.	Mode of Evaluation	Related Sources in which student shall be asked by faculty member to prepare through self-learning	Description
1.	Quiz	E-Books, Course and lecture materials	Questions are framed on the portion of content in which student are asked to prepare through self-learning using all sources mentioned. Quiz is conducted in the class or it shall be conducted online or in extra class (if students are free)
2.	Quiz	On the video material posted by faculty for flipped class room.	Quiz is conducted in the class or it shall be conducted online.
3.	Presentation	Magazine, Journal and articles	Student is asked to prepare on particular topics through self study (in magazine, journal.
4.	Assignment on problem solving	Course and lecture materials	Assignment on problem solving is given by faculty member on lecture material.
5.	Report preparation	Magazine, Journal and articles	Students are asked to write a review report on literature.
6.	Viva	Books, Course and lecture materials	Faculty member conducts viva voce to know the level of understanding.
7.	Quiz /test	MOOC/SWAYAM/NPTEL other ICT tool	Students register and take up the examination and obtain certificates.

9.4(A) Scope of Self-learning for EEE

A.MOOC Courses by Students

MOOC courses are used as an alternative method to bridge the gap and expand the existing knowledge. Every academic year students are appraised of the MOOC courses that can be considered as self-study for specific courses of the semester. Students are encouraged to take up at least one MOOC for the courses specified. This exposes the student to the different avenues of learning like interactive user forums and multimedia repositories, thereby ensuring the development of lifelong learning skills.

A year wise consolidation of the MOOC courses registered and completed by students is given in Table 9.4.10.

Table9.4.10.A:MOOC Courses Registered and Completed by Students

Sl. No	Year/ Sem	NPTEL Course Name	Course Duration	Total No. of Students Registered
Academic Year 2019-2020				
1	3rd/6 Sem	Energy Economics And Policy - Online	8 Weeks	80
2	3rd/6 Sem	Programming In Java - Online	8 Weeks	1
3	4th/7 Sem	Google Cloud Computing Foundation Course	4 Weeks	1
Academic Year 2020-2021				
1	3rd/6 Sem	Energy Economics And Policy – Online	8 Weeks	6
2	3rd /5th Sem	Cloud computing	8 Weeks	1
3	3rd/6 Sem	Programming in C++	8 Weeks	2
4	3rd/6 Sem	Introduction to Smart Grid	8 Weeks	7
5	4th/7 Sem	Design of photovoltaic systems	12 Weeks	1
Academic Year 2021 – 2022				
1	3rd/6 Sem	Neural Science for Engineers	12 Weeks	1
2	3rd/6 Sem	Introduction to Industry 4.0 and Industrial Internet of Things	12 Weeks	1
Academic Year 2022 – 2023				
1	3rd/6 Sem	C Programming and Assembly language	4 Weeks	94
2	3rd/6 Sem	Programming, Data Structures and Algorithms Using Python	8 Weeks	2
3	3rd/6 Sem	Basic Environmental Engineering and Pollution Abatement	12 Weeks	1

Table 9.4.10 .A : MOOC Courses Registered and Completed by Faculty

Sl. No	Faculty	NPTEL Course Name	Course Duration	Total No. of faculties Registered
Academic Year 2021-2022				
1	Faculty	Programming in Java	12 weeks	1
Academic Year 2020-21				
1	Faculty	Accreditation and Outcome Based Learning	4 weeks	1
2	Faculty	Introduction to Smart Grid	4 weeks	3
3	Faculty	Advances in UHV Transmission and Distribution	4 weeks	1
4	Faculty	Introduction to Research	4 weeks	1
5	Faculty	NBA Accreditation and Teaching - Learning in Engineering(NATE)	4 weeks	1
6	Faculty	Effective Engineering Teaching and Practice	4 weeks	1

A.1 Paper Publication

The department also encourages students to publish papers in national/international journals. To promote this culture department/institution organizes National / International conferences as well. Table 9.4.11, 9.4.12 shows the papers published by the students of Electrical and Electronics Engineering in various journals / conferences

Table 9.4.11: Paper Publication by Student - 2022-23

Sl No	USN	Student Name	Paper Title	Conference Name	Date of Publication
1	1NH18EE031	Mohammed Omer Ali	A Review on Self Stabilizing Platform in Scope of Merchant Navy Applications	2022 First International Conference on Artificial Intelligence Trends and Pattern Recognition (ICAITPR)	03-08-2022
	1NH18EE057	Siddhartha Sunil Singh			
	1NH18EE066	Tahoora Imtiyaz			
	1NH18EE036	Nayrah M A			
2	1NH18EE031	Mohammed Omer Ali	PID Controller Based Self Stabilizing for Inertia Platform using Electrical Parallel Technology	2022 IEEE 2nd Mysore Sub Section International Conference (MysuruCon)	13-12-2022
	1NH18EE057	Siddhartha Sunil Singh			
	1NH18EE066	Tahoora Imtiyaz			
	1NH18EE036	Nayrah M A			
3	1NH18EE055	Shiva R V	ANFIS based Vibration Monitoring System for Agriculture Pumping System with Fuzzy Logic Inference	2022 3rd International Conference on Smart Electronics and Communication (ICOSEC)	22-11-2022
	1NH18EE049	Sagar Kulkarni			
	1NH18EE040	Lavin Ponnappa M M			
4	1NH18EE017	Greeshma Chennareddy	Modelling and Design of Solar-Powered DC Refrigerator for Vaccines Transportation in Remote Areas	2022 3rd International Conference on Smart Electronics and Communication (ICOSEC)	22-11-2022
	1NH18EE010	Chitra S			
	1NH18EE013	Kavipriya E			
	1NH18EE050	Sahana B			
5	1NH18EE758	Vishwanath Patil	An Accident Identification and Alerting System by Using Raspberry Pi	2022 IEEE 2nd Mysore Sub Section International Conference (MysuruCon)	13-12-2022
	1NH18EE733	P.Md.Muthahir Khan			
	1NH18EE707	Bharatesh Shiradoni			

	1NH18EE754	Venkan Gouda			
6	1NH18EE758	Vishwanath Patil	Implementation of Smart Vehicle Accident Detection using Raspberry PI in Smart Cities	2022 4th International Conference on Inventive Research in Computing Applications (ICIRCA)	29-12-2022
	1NH18EE733	P.Md.Muthahir Khan			
	1NH18EE707	Bharatesh Shiradoni			
	1NH18EE754	Venkan Gouda			
7	1NH18EE067	Sayanth PV	Analysis of Performance Enhancement for DC Distribution for Residential Distribution Network using hybrid AC DC Distribution Network	2022 International Conference on Edge Computing and Applications (ICECAA)	08-11-2022
	1NH18EE756	Vishal Suresh			
	1NH18EE701	Adithya Hegde			
	1NH18EE739	Nahush S			
8	1NH18EE710	C Bhavana Singh	Data Analytics for Parameter Estimation of an Electric Bicycle using IoT	2022 7th International Conference on Communication and Electronics Systems	29-07-2022
	1NH18EE708	Bhavana YC			
	1NH18EE709	Bindhu V			
9	1NH19EE003	Abhishek	A review of remote health monitoring system for patients sing IoT	International Conferene on Automation, Computing and Renewable Systems (ICACRS-2022)	07-02-2023
	1NH19EE013	Anil Hegde H			
	1NH19EE032	Dhruva S Srinivas			
	1NH19EE038	Krishna Chaitanya			
10	1NH19EE008	Aishwarya P	A Review of Theft Diagnosis from Smart Energy Meter Using IoT	2022 6th International Conference on Electronics, Communication and Aerospace Technology	16-01-2023
	1NH19EE023	Charishma A			
	1NH19EE042	Gautammee KK			
	1NH19EE055	Kesamreddy Deepthi			
11	1NH19EE066	M Rohith Kumar Reddy	Design and fabrication of Quad Bike for physically Challenged person	International Conference on Smart Generation Computing, Communication	06-04-2023
	1NH19EE046	Harshitha R			
12	1NH19EE018	Anoopkumar H S	Herbs Ailment Diagnosis using AI Techniques for Sustainable Innovation in Agriculture	2023 4th International Conference on Innovative Trends in Information Technology (ICITIIT)	20-03-2023
	1NH19EE024	Chethan D R			
	1NH19EE028	Deekshith More B			
	1NH19EE062	Kushal A Y			

13	1NH19EE027	Dechamma V S	Study of Interfacing PLC With HMI for Industrial Applications	2023 Second International Conference on Electronics and Renewable Systems (ICEARS)	05-04-2023
	1NH19EE047	J Likitha			
	1NH19EE050	Jayanth R			
	1NH20EE407	Prajwal R M			
14	1NH18EE014	Faraz Ahmed Mullah	A Review on Autopilot using Neuro Evaluation of Augmenting Topologies	2023 International Conference on Intelligent Data Communication Technologies and Internet of Things (IDCIoT)	01-03-2023
	1NH19EE037	Hemanth G N			
	1NH19EE048	J Prajwal			
	1NH19EE065	M Gopal			
15	1NH20EE408	Shiva Shankara M	A Review of Sequential Control & Monitoring of Distribution Lines in Substations	2022 International Conference on Automation, Computing and Renewable Systems (ICACRS)	07-02-2023
	1NH20EE401	Binay Kumar Yadav			
	1NH19EE083	P. Sindhu			
	1NH18EE407	Yashvantha P			
16	1NH19EE085	Ravi Nandan	Artificial Intelligence based Self-Driving Car using Robotic Model	2023 Third International Conference on Artificial Intelligence and Smart Energy (ICAIS)	27-03-2023
	1NH19EE127	Roopeshwar Reddy			
	1NH19EE123	Vinod Kumar R			
	1NH19EE125	W Y Jhansipriya			
17	1NH19EE069	Manoj Kumar H V	AI and IoT based detection of pesticide in organic fruits and vegetables	2023 International Conference on Intelligent and Innovative Technologies in Computing, Electrical and Electronics (IITCEE)	10-04-2023
	1NH19EE070	Manoj Kumar P			
	1NH19EE080	Naveen R N			
	1NH19EE095	Sandeep Naik R			
18	1NH19EE071	Maruthi B	A review of dynamic wireless transfer system technology used in solar wireless electric vehicle charging station	2022 International Conference on Automation, Computing and Renewable Systems (ICACRS)	07-02-2023
	1NH19EE092	Rahul			
	1NH19EE098	Santhosh Melvin D			
	1NH19EE101	Sathish			
19	1NH19EE072	Meghana N T	Solar Powered Multi-functional agricultural robot		17-03-2023

	1NH19EE121	Vandana R		International Conference on Knowledge Engineering and Communication Systems	
	1NH19EE122	Vidya G R			
20	1NH19EE091	Rachna Palli	Study of Stepper motor control using programmabke logic controller (PLS) based on Industry 4.0	2022 International Conference on Smart Generation Computing, Communication and Networking (SMART GENCON)	06-04-2023
	1NH19EE107	Sowmya Shree			
	1NH18EE021	Jeshwanth V			
	1NH18EE060	Vernon Victor			
21	1NH19EE008	Aishwarya P	IoT detection based energy meter integrated with smart devices	2023 Second International Conference on Electronics and Renewable Systems (ICEARS)	05-04-2023
	1NH19EE023	Charishma A			
	1NH19EE042	Gautammee KK			
	1NH19EE055	Kesamreddy Deepthi			
22	1NH19EE010	Aisiri M Urs	Electric Quad Bike with hybrid charging mode for physically challenged	2023 7th International Conference on Computing Methodologies and Communication (ICCMC)	04-04-2023
	1NH19EE046	Harshitha R			
	1NH19EE066	M Rohith Kumar Reddy			
	1NH20EE403	Koushik P			
23	1NH19EE072	Meghana N T	Solar Powered Autonomous Multipurpose Agricultural Robot Using Bluetooth	2023 Second International Conference on Electronics and Renewable Systems (ICEARS)	05-04-2023
	1NH19EE121	Vandana R			
	1NH19EE122	Vidya G R			
24	1NH19EE004	Abhishek Bedant	Non-Invasive Method of Detecting Anemia using AI & IoT	2023 International Conference on Innovative Data Communication Technologies and Application (ICIDCA)	20-04-2023
	1NH19EE061	Kumar Abhishek			
	1NH19EE067	Madhav Reddy C			
	1NH19EE060	Kota Vikramaadhitya			
25	1NH19EE068	Manish	Wild Animals Intrusion Detection for Safe Commuting in Forest Corridors using AI Techniques	2023 3rd International Conference on Innovative Practices in Technology and Management (ICIPTM)	10-05-2023
	1NH19EE100	Sarthak Ghorai			
	1NH19EE105	Shariq Ahmed			
	1NH19EE109	Subhajit Das			
26	1NH19EE073	Meghana S	A Novel EV Charging Using Stationary Bike		10-05-2023

	1NH19EE099	Santhosh Kummi		2023 3rd International Conference on Innovative Practices in Technology and Management (ICIPTM)	
	1NH19EE110	Suraj Raju Jadhav			
	1NH19EE120	U Mohammed Arshad			
27	1NH19EE097	Sanskriti Agarwalla	Silent Surveillance Autonomous Drone For Disaster Management And Military Security Using Artificial Intelligence	2023 3rd International Conference on Innovative Practices in Technology and Management (ICIPTM)	10-05-2023
	1NH19EE106	Sharmi Kanaujia			
	1NH19EE103	Sheikh Sameer			
	1NH19EE114	Tabasum Manzoor			
28	1NH19EE102	Shaif Alam	Study of Battery Management System using Watchdog Software	2023 3rd International Conference on Innovative Practices in Technology and Management (ICIPTM)	10-05-2023
	1NH19EE113	Swastik Shukla			
	1NH19EE129	Zahra Goher Sultana			
29	1NH19EE001	Abdul Samedh	Automated Tumbler Cleaner	2023 3rd International Conference on Innovative Practices in Technology and Management (ICIPTM)	10-05-2023
	1NH19EE030	Darshan R			
	1NH19EE034	Faiz Ur Rahman			
30	1NH19EE009	Aishwarya V H	Implementation of Accident Detection and Reporting System Using IOT	2023 3rd International Conference on Innovative Practices in Technology and Management (ICIPTM)	10-05-2023
	1NH19EE011	Akshatha Shree			
	1NH19EE019	Anusha S			
	1NH19EE057	Khushi J Vibhuthi			
31	1NH19EE090	R. Varun	Analysis Of Electrical Parameters For Formula Style Electric Vehicle	2023 3rd International Conference on Innovative Practices in Technology and Management (ICIPTM)	10-05-2023
	1NH19EE093	Ritika Kapoor			
	1NH19EE116	Tejas V			
	1NH19EE104	Shambhavi Bhagat			
32	1NH19EE005	Abrar Altaf Dar	Solar Fed Flood Alert System Using Arduino	2023 IEEE 3rd International Conference on Technology, Engineering, Management for Societal impact using Marketing, Entrepreneurship and Talent (TEMSMET)	16-06-2023
	1NH19EE016	Ankit Kumar			
	1NH19EE033	Ezra D Cunha			
	1NH19EE040	Gaurav P Kumar			

Table 9.4.12: Paper Publication by Student - 2021-22

Academic Year 2021-22					
Sl No	**USN**	**Student Name**	**Paper Title**	**Conference Name**	**Date of Publication**
1	1NH18EE039	Nischal Dinesh	A review of solar powered electric Bi-hybrid vehicle compared with IC Engine Vehicles using graph analytics with AI	2022 4th International Conference on Smart Systems and Inventive Technology (ICSSIT)	25-Feb-22
	1NH18EE042	Prajwal			
	1NH18EE053	Sarthak Das			
	1NH18EE005	Ashu Anand			
2	1NH18EE039	Nischal Dinesh	Artificial Intelligence Based Solar Powered Electric Bi- hybrid Vehicle Compared with IC Engine Vehicles Using Graph Analytics	2022 International Conference for Advancement in Technology (ICONAT)	10-Mar-22
	1NH18EE042	Prajwal			
	1NH18EE053	Sarthak Das			
	1NH18EE005	Ashu Anand			
3	1NH18EE011	Darshini Machamma M S	IoT Based Parameters Calculation of Electric Bicycle using OpenModelica Simulation Tool with Data Analytics Technology	2022 IEEE International Conference on Distributed Computing and Electrical Circuits and Electronics (ICDCECE)	13-Jun-22
	1NH18EE004	Appaji			
	1NH18EE032	Mohammed Tauqeer Ali			
4	1NH18EE011	Darshini Machamma M S	An IoT based Data Analytics for Electric Bicycle using OpenModelica Simulation Tool	2022 International Conference for Advancement in Technology (ICONAT)	10-Mar-22
	1NH18EE004	Appaji			
	1NH18EE032	Mohammed Tauqeer Ali			
5	1NH18EE031	Mohammed Omer Ali	A Review on Triboelectric Nanogenerators (TENGs) using Internet of Things	2021 International Conference on Forensics, Analytics, Big Data, Security (FABS)	09-Feb-22
	1NH18EE057	Siddhartha Sunil Singh			
	1NH18EE066	Tahoora Imtiyaz			
	1NH18EE036	Nayrah M A			
6	1NH18EE055	Shiva R V	An implementation of soft computing approach of smart control for induction motor using ANFIS	2022 4th International Conference on Smart Systems and Inventive Technology (ICSSIT)	25-Feb-22
	1NH18EE049	Sagar Kulkarni			
	1NH18EE040	Lavin Ponnappa M M			
7	1NH18EE017	Greeshma Chennareddy	Renewable energy based efficient portable DC refrigerator for rural electrification and convenience - An Overview	2022 Second International Conference on Artificial Intelligence and Smart Energy (ICAIS)	30-Mar-22
	1NH18EE010	Chitra S			
	1NH18EE013	Kavipriya E			

	1NH18EE050	Sahana B			
8	1NH18EE022	Jibran Zaidi	A review of Arduinobased hand gesture controlled robot using IoT	2022 Second International Conference on Artificial Intelligence and Smart Energy (ICAIS)	30-Mar-22
	1NH18EE061	Vikram			
	1NH18EE027	Nirupa Vardhan			
	1NH18EE020	Jaffer			
9	1NH18EE735	Pranav R Naik	A Review on Optimization Techniques of Charging the Battery in EV	2022 Second International Conference on Artificial Intelligence and Smart Energy (ICAIS)	30-Mar-22
	1NH18EE738	Rahul Vijay Lingadhal			
	1NH18EE736	R Puneeth Venkat Sai Varma			
	1NH18EE737	R Supraja			
10	1NH18EE735	Pranav R Naik	A review on optimization techniques of battery charging in electric vehicles	2022 2nd International Conference on Artificial Intelligence and Signal Processing (AISP)	25-Apr-22
	1NH18EE738	Rahul Vijay Lingadhal			
	1NH18EE736	R Puneeth Venkat Sai Varma			
	1NH18EE737	R Supraja			
11	1NH18EE710	C Bhavana Singh	Analysis of Parameter Estimation of an Electric Bicycle Using IoT with Data Analytics Technique	2022 4th International Conference on Smart Systems and Inventive Technology (ICSSIT)	25-Feb-22
	1NH18EE708	Bhavana YC			
	1NH18EE709	Bindhu V			
12	1NH18EE718	Joanna Alicia D	A Survey on Detection of Power theft in Transmission and Distribution	2022 International Conference on Computer Communication and Informatics (ICCCI)	31-Mar-22
	1NH18EE715	Deepthi D			
	1NH18EE740	Shawin Krishna			
	1NH18EE706	Bellam Sreekanth Reddy			
13	1NH18EE025	Karthik N	A survey on Smart Traffic Control System for Emerging vehicles	2022 International Conference on Computer Communication and Informatics (ICCCI)	31-Mar-22
	1NH18EE009	Lakshmipathi C			
	1NH18EE003	Anirudh			

Scope of Self-learning for EEE

Web based learning

NEW HORIZON COLLEGE OF ENGINEERING

Department of Electrical and Electronics Engineering

Mentors for V semester NPTEL Courses

ODD Sem 2020-21

S.No	Name of the course	Mentor
1	Energy Economics And Policy – Online	Mr Sunil K
2	Cloud computing	Dr. Joshua Daniel Raj
3	Programming in C++	Dr. Joshua Daniel Raj
4	Introduction to Smart Grid	Mr Vinod Kumar K
5	Design of photovoltaic systems	Mrs Karthika Ganesh

Library/Digital Library

- The Institution library provides information and ideas that are fundamental to functioning successfully in today's information and knowledge based society.
- The Institution library equips students with learning skills and develop the knowledge
- Availability of NPTEL videos.
- Sufficient systems with multimedia facilities.
- Institutional membership of DELNET, a library networking database.
- Internet facility

LIST OF JOURNALS

Sl No.	Title	No of Issues	Publisher
1	IETE Journal of Research	6	Taylor & Francis
2	Electronics (Switzerland)	8	MDPI
3	TELKOMNIKA (Telecommunication Computing Electronics and Control)	6	UAD
4	Energies	24	MDPI
5	Biomedical Signal Processing and Control	10	Science Direct

Project Based Learning

Project-based learning (PBL) promotes development of critical thinking and problem-solving skills by allowing students to work in teams on real world projects. However, in spite of its effectiveness, the use of PBL in engineering classrooms has been limited due to the challenges associated with its design and implementation.

4 Mini Projects including Extensive survey and Final year projects are carried out based on Project Based Learning

Case study

Through case studies, students will improve their ability to learn and retain concepts in their courses, on work terms and in their professional lives. One of the best means to create case studies is by converting them from student-generated work reports.

Joining a professional body opens up a vast network of knowledge and expertise that is much wider than your immediate university

Professional Bodies	community. Students will gain access to those who are one or two steps ahead of them and it helps them feel part of a community of like- minded people. IEEES PELS, IES, PES Students Chapter is in existence.
Club Activities	**Green energy club** To bring out the enthusiasm and ability of the students towards communication and create awareness. To acquire knowledge on various topics. **U-Create club** To stimulate lateral thinking, inculcate creative and innovative thoughts among the young budding engineers for the enhancement of society **E-Soft Club** To create a center for promoting research-oriented, industrially relevant, socially beneficial, and cost-effective solutions using the latest technologies
Assignments	It enables students to go through the topics in a more elaborate manner in order to explore the academic topic which lead to an overall better learning experience for students.
Industrial visit	Industry visits help enhance interpersonal skills and communication techniques. Students become more aware of industry practices and regulations during industry visits. Industry visits broaden the outlook of students with exposure to different workforces from different industries
Internships	During an internship, students work on real projects, get acquainted with the current market trends, sharpen their technical skills, and learn in- demand technical skills. Apart from this, an internship introduces them to the corporate world, teaches them professional ethics and polishes their soft skills like communication and inter personal skills. With an internship they can become engineer's way before their graduation which could prove to be extremely helpful for an effortless adaptation to work environment when they join a full time job.
Conference/Seminar/Workshop	Engineering is forever changing. Technology changes. Methods and processes change. Environmental focuses change. Everything changes. And the rate of change is ever-increasing. Conference/Seminar/workshop help students in, Broadening their knowledge Cross pollinating their ideas Developing their Network Advancing their careers Re igniting their enthusiasm or passion.

Table 9.4.13: Records of evaluation of self-learning activities

Records of Self Learning Activities to be maintained by each faculty								
Sl. No	Mode of Evaluation	Source of Self-learning activities	Name of source of self-learning activities	URL Reference given by faculty	Date of event conducted by faculty	No. of participants	Avg. marks (%)	Event conducted by faculty (Yes/No)
1	Quiz	Lecture	Signals and Systems 20EE54, Lecture no.54	https://docs.google.com/forms/d/e/1FAIpQLSebOu9Nk87Yl9qHR4zL7vFovFOKoTRHOk_H9lRqKyFFM9yyXQ/viewform	17-04-2020	110	90%	Yes
2	Presentation	Journal and articles	A review of remote health monitoring system for patients sing IoT	Abhishek Anil Hegde H Dhruva S Srinivas Krishna Chaitanya	07-02-2023	50	70%	Yes
3	Assignment on problem solving	Course and lecture Materials	Power Electronics – lecture materials on Concrete mix design	https://classroom.google.com/c/NDgzNDE0MjExMzkx	21-06-2022	41	100%	Yes
4	Viva	SWAYAM “C Programming and Assembly language	https://onlinecourses.nptel.ac.in/noc19_cs44 /preview (https://onlinecourses.nptel.ac.in /noc19_cs44/preview)	Dr Joshua Daniel Raj	29-07-2022	94	60%	Yes

Summary:

The overall aim of this review is to evaluate the effectiveness of self-directed learning which aims to enhance the professional skill of students.

- Most of the students agreed that self-learning process is an effective approach for learning in addition to traditional method of teaching.
- Most of the students admitted that self-learning process help them in preparing better to reach their goals.
- Students are able to do better in competitive examinations and get placed in suitable companies

A. Utilization and its effectiveness:

- The overall aim of this review is to evaluate the effectiveness of self- directed learning on the professional development of students.
- Most of the students reached to a conclusion that self-learning process is an effective approach for learning but not more than the traditional method of teaching.
- Students are motivated to improve their initiation in reaching their goals.
- Students are able to scan through the reading material available to them.
- Many of the needs of students are best met by learning process. The students are encouraged to learn by themselves for their present and future needs.
- Students are able to do better in competitive examinations and get placed in suitable companies.

9.4(B) Scope of Self-learning for ISE

MOOC courses are used as an alternative method to bridge the gap and expand the existing knowledge. Every academic year students are appraised of the MOOC courses that can be considered as self-study for specific courses of the semester. Students are encouraged to take up at least one MOOC for the courses specified. This exposes the student to the different avenues of learning like interactive user forums and multimedia repositories, thereby ensuring the development of lifelong learning skills.

A year wise consolidation of the MOOC courses registered and completed by students is given in Table 9.4.5

Table 9.4.5: MOOC Courses Registered and Completed

Sl. No	Year/Sem	NPTEL Course Name	Course Duration	Total No. of Students Registered
Academic Year 2021-2022				
1	2rd/4th Sem	The Joy of computing using python	12 Weeks	204
2	3rd/5th Sem	Introduction to Machine learning	12 Weeks	234
3	3rd/5th Sem	Design and analysis of algorithms	8 Weeks	235
Academic Year 2020-2021				
1	2rd/4 Sem	Programming in JAVA	12 Weeks	235
2	3rd/6th Sem	Machine Learning ML	8Weeks	149
3	4th/7 Sem	Object oriented analysis and Design	8 Weeks	143
4	3rd/5 Sem	Design and analysis of algorithms	8 Weeks	149
5	2rd/3 Sem	The Joy of computing using python	12 Weeks	221
Academic Year 2019 – 2020				
1	2nd/ 4th Sem	Programming in Java	12 Weeks	149
2	3rd/ 6th Sem	Joy of Computing with Python	12 Weeks	120
3	3rd/ 6th Sem	Modern Application Development	8 Weeks	22
4	2nd/ 3rd Sem	Joy of Computing with Python	12 Weeks	120
5	3rd/ 5th Sem	Data Science for Engineers	8 Weeks	76
6	3rd/ 5th Sem	Cloud Computing	8 Weeks	70

Paper Publication

The department also encourages students to publish papers in national/international journals. To promote this culture department/institution organizes National/International conferences as well. Table 9.16 shows the papers published by the students of Computer Science and Engineering in various journals/conferences

Table 9.4.6: Paper Publication by Students AY 2021-2022

S.No	Student Name	USN	Title of Paper	Journal/ Conference Details
1	Silpa S	1NH18IS106	Survey on IoT based PotHole Detection	IEEE control System Letters
	Sonali PreethaNandagopalan	1NH18IS109		
	Shripriya J	1NH18IS133		
2	Stebin Sebastian	1NH18IS140	Review on IoT-Mobile App based on Rural Development in Terms of Agriculture	International Journal of Innovative Technology and Exploring Engineering (IJITEE)
	Tadepalli Balaji Sai Swapnil	1NH18IS116		
	Nikhil Ch	1NH18IS071		
	Nidhish Vemula Prabhakar	1NH18IS070		
3	Keerthana H	1NH18IS138	Raspberry Based robotic Device for women Safety	International Journal of Mechanical Engineering
	Mala H R	1NH18IS057		
	Mohammed Faizan	1NH18IS062		
	Mohammed Ismail	1NH18IS063		
4	Vismaye M	1NH18IS126	Soft Support: Specially Abled Communication	International Conference on Advanced Computing Technologies and Applications
	Keerthishree V	1NH18IS135		
	Harshitha R	1NH18IS039		
	Pradeepthi K	1NH18IS050		
5	Abhishek V Rai	1NH18IS003	Secured Eye Pay: An E-payment a Application for visually impaired people	International Mobile and Embedded Technology Conference (MECON)
	R Likhith	1NH18IS053		
	R Abhiram	1NH18IS002		
	Amogh V Pai	1NH18IS007		
6	Ritom Tamuli	1NH18IS086	Android Based Fall Detection and	Second International Conference on Artificial

	Ayush Sinha	1NH18IS019	Tracking App for Aged People	Intelligence and Smart Energy (ICAIS)
	Srutibanta Samantara	1NH18IS112		
7	Arpita Chowdary Vantipalli	1NH18IS016	IOT based AquaSwach	2nd International Conference on Artificial Intelligence and Signal Processing (AISP)
	Darshana Sailu Tanti	1NH18IS028		
	K Malvika Ravi	1NH18IS058		
	Krtin Kannan	1NH18IS044		
8	Yashmitha R	1NH18IS128	IoT based Divyang Assistant Technology: Your Hearing Support	International Conference on Electronics and Renewable Systems (ICEARS)
	Tejal Lalji Rangani	1NH18IS118		
	Anushka Sen	1NH18IS129		
9	B Mounica	1NH18IS065	A Survey of Real-time Health Care Tracking System for Post Covid Patients	Second International Conference on Artificial Intelligence and Smart Energy (ICAIS)
	M Akshatha	1NH18IS006		
	Anupam Kumar	1NH18IS013		
10	Vinay Hegde	1NH18IS124	Securo Point for the Application of Malware Detection in android Apps	Internationl Conference on Software Engineering and Computer Science
	Prajwal P	1NH16IS079		
	Chrisel Fernandes	1NH18IS026		
11	Sanjana Hombal	1NH18IS134	Health Monitoring System Using IoT	International Conference on Emerging Trends in Engineering and Technology - Signal and Information Processing
	Sanchitha BS	1NH18IS095		
	Shreya L	1NH18IS139		
	Sharanya G	1NH18IS035		
12	Pooja T	1NH18IS076	Survey on IoT based Farm Freshness Mobile Application	International Conference on Advanced Computing Technologies and Applications (ICACTA)
	Punith Kumar S	1NH18IS079		
	Shankar Y	1NH18IS136		
	Gowtham V	1NH18IS037		
13	Samrudh G R	1NH18IS094	Developing an Intelligent Model to Detect Micro Facial Expression	2022 International Conference on Advanced Computing Technologies and Applications (ICACTA)
	Gautam	1NH18IS037		
	Tejasvi Patil	1NH18IS120		
	Sagar Shankar	1NH18IS090		
	R Karthik	1NH18IS131		
	A Sanjana	1NH18IS097		
14	Sangeetha D	1NH18IS096	Survey on IoT based E-Farming	2022 International Conference on Sustainable

	K L Suchala	1NH18IS099	Technology Enabled Farming	Computing and Data Communication Systems
	R H Shravya	1NH18IS081		
	B S Soundhaaryha	1NH18IS110		
15	Manan Agarwal	1NH18IS059	A Survey on Various Aproaches to e-waste management	2022 International Conference on Computer Communication and Informatics
	Shubhodeep Sarkar	1NH18IS104		
	Md Asif Kamal Quadri	1NH18IS061		
	Dhruv Gulati	1NH18IS031		
16	G. Pranay Deepak Reddy	1NH18IS036	IoT Based Low-Cost Robotic Agent Design for Covid-19 affected people	2022 International Conference on Electronics and Renewable Systems
	Bs Sai Pramath	1NH18IS074		
	J.A. Trivedh	1NH18IS043		
17	Jnana P J	1NH18IS041	Smart Glove for Blind	2022 IEEE Delhi Section Conference
	Monisha C	1NH18IS064		
	Pallavi V	1NH18IS073		
	Saloni K	1NH18IS093		
18	Karthik R	1NH18IS047	Blockchain-based IoT Device Security	2nd International Conference on Artificial Intelligence and Signal Processing, AISP
	Sanjana A	1NH18IS097		
19	G Sai Mani Kumar	1NH18IS034	Review Paper on E-Traffic Police IoT Based Auto-Detection of Traffic Rule Violation	International Journal of Innovative Technology and Exploring Engineering (IJITEE)
	B Aravind Kumar	1NH18IS022		
	M Vinay Kumar Reddy	1NH18IS054		
	B Sree Harsha	1NH18IS020		

Table 9.4.7: Paper Publication by Students AY 2020-2021

S.No	Student Name	USN	Title of Paper	Journal/ Conference Details
1	Swasti Choudhary	1NH17IS115	An Approach to Credit Card Fraud Detection	International Journal of Research in Engineering and Science (IJRES)
	Thakur Kiran Singh	1NH17IS119		
	Narendra Kumar Reddy	1NH17IS141		
	Vishal S Balan	1NH17IS146		
2	Yashaswini S	1NH17IS132	IoT Based Hygiene Monitor for Senior Citizens and Mentally Challenged	International Journal of Scientific Research in Computer Science, Engineering and Information Technology IJSRCSEIT
	Charitha V	1NH17IS148		
	Varsha Gowda S J	1NH17IS127		
	Judy Kennedy	1NH17IS142		
3	Nithya B S	1NH17IS137	Traffic Analysis Using Artificial Neural Network	International Journal of Scientific Research in Science and Technology
	Rakshitha N	1NH17IS080		
	Sirisha M	1NH17IS102		
4	Sneha M	1NH17IS104	Smart Band for Monitoring Vitals for Elderly People in Quarantine	International Journal for Research in Applied Science & Engineering Technology
	Meghana	1NH17IS135		
	Bhanupriya	1NH17IS046		
5	Joicy Castilino	1NH17IS045	Cost effective social distance maintenance in primary schools	International Journal of Advance Research Ideas and Innovations in Technology
	Harshitha Sundarvelu	1NH17IS139		
	Helen Hephzibah	1NH17IS042		
	Simran Fathima	1NH17IS0101		
6	Purab Shreeniwas A	1NH17IS073	VR simulation of chemistry lab using blender and unity	International Research Journal of Engineering and Technology (IRJET)
	Shijo Yohannan	1NH17IS098		
	Shailesh P.M	1NH17IS094		
	Syed Sahil Abbas	1NH17IS149		
7	A Sassank Gopal Reddy, RS	1NH17IS007	Land Use Case and Utilization Classification using CNN	International Journal of Research in Engineering and Science (IJRES)
	Sathvik Reddy	1NH17IS076		
	T Praneeth	1NH17IS116		
	Vardhini V	1NH17IS125		
8	Hamsa p o	1NH17IS039	Remote Monitoring And Control Unit Of	International Journal of Research in Engineering and

	Anusha k	1NH17IS015	Solar Photo Voltaic Plant Using IoT	Science (IJRES)
	Girish R	1NH17IS038		
	Prajwal	1NH17IS069		
9	Sneha B K	1NH17IS103	Face and Hand Gesture Recognition System for Controlling VLC Media Player	International Journal of Scientific Research in Science and Technology
	Sahana K M	1NH17IS088		
	Tejaswini S M Patil	1NH17IS144		
10	Raahul Narayana Reddy K	1NH17IS077	Statistical Analysis and Visualization of Covid-19	International Research Journal of Engineering and Technology (IRJET)
	Prasanna Bhat	1NH17IS071		
	Apurba Bhattacharjee	1NH17IS016		
	Srinivas M	1NH17IS107		
11	Vibhav Giri	1NH17IS129	A communication aid application for the physically handicapped	International Research Journal of Engineering and Technology (IRJET)
	Tarun Sharma	1NH17IS117		
	Sushant Chaudhary	1NH17IS113		
	Kshitij Raj	1NH17IS049		
12	Akhila S	1NH17IS008	Automatic Social Distancing System Using Thermal Scanners In Huge Auditorium Or Conference Hall Entrances	International Research Journal of Engineering and Technology (IRJET)
	Vaishnavi R	1NH17IS124		
	Varna Murali	1NH17IS126		
13	G.S Nithyashree	1NH17IS134	Acoustic Echo Cancellation For E-Learning Platform	International Research Journal of Engineering and Technology (IRJET)
	Ashwin Venkatakrishnan	1NH17IS140		
	S. Karthik	1NH17IS084		
	Aneesh Mohan Kumar	1NH17IS012		
14	Abhinav Anand	1NH17IS002	Designing a prototype for Mentally Challenged and Alzheimer Patients	International Journal of Scientific Research in Computer Science, Engineering and Information Technology
	Chinmaya Kumar Nayak	1NH17IS027		
	Ayush Anand	1NH17IS017		
	Deepak Kumar	1NH17IS029		
15	Uma Maheshwari	1NH17IS085	Mask Detection Application	International Journal for Research in Applied Science & Engineering Technology (IJRASET)
	Sahana N Reddy	1NH17IS089		
	Sanjana Sivakumar	1NH17IS091		
16	Nethan Shaik	1NH17IS059	An Enhanced Surveillance Bot for Identification of Mask Defaulters	International Research Journal of Engineering and Technology (IRJET)
	Pavel Anup	1NH17IS011		
	Kirti Devi	1NH17IS048		

	Stevenson Jacob	1NH17IS152		
17	Shami K	1NH17IS096	Feature Learning and Analysis of Pre Existing Conditions Prone to Covid Virus During Second Wave	International Journal of Innovative Research in Technology
	Sharmistha C	1NH17IS097		
	Sowjanya V	1NH17IS106		
	Aneja P	1NH18IS400		
18	Anitha B	1NH17IS013	Automatic Detection of Crimes Captured in CCTV Images for Safety of Senior Citizens	International Journal of Scientific Research in Computer Science, Engineering and Information Technology
	Disha Singh	1NH17IS034		
	Divya Shree M	1NH17IS035		
	Kushala R	1NH17IS050		
19	Akshay S Prathap	1NH17IS009	Implementation of Voice based Touchless Lift System	International Journal of Scientific Research in Computer Science, Engineering and Information Technology
	Aiswarya V Kumar	1NH17IS005		
	Raviteja Kaki	1NH17IS047		
	Ranjitha R	1NH17IS075		

Table 9.4.8: Paper Publication by Students AY 2019-2020

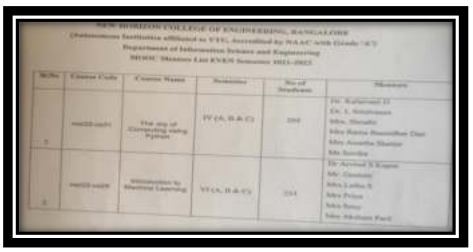
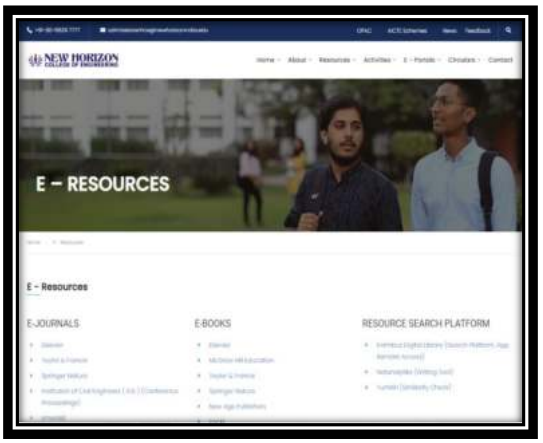
S.No	Student Name	USN	Title of Paper	Journal/ Conference Details
1	Abhishek Ranjan	1NH16IS003	Deforestation Control and Forest Monitoring using Internet of Trees	International Journal of Scientific Research in Compuer Science, Engineering and Information Technology
	Gagan Prasad	1NH16IS033		
	Harshitha Shankar	1NH16IS038		
2	Shravani V	1NH15IS104	House Price Prediction Analysis using Machine Learning	International Journal for Research in Applied Science & Engineering Technology
3	Harish E	1NH16IS037	Hand Gesture Recognition and Voice Conversion for Hearing and Speech Aided Communit	International Journal of Scientific Research in Computer Science, Engineering and Information Technology
	Nikhil Jain D	1NH16IS067		
	Nirdesh Reddy	1NH16IS069		
4	Lakshmi K	1NH16IS020	Voice for the Paralytic Victims	International Journal of Scientific Research in Computer Science, Engineering and Information Technology
	Amithesh K	1NH16IS011		

	Vishak J	1NH16IS123		
5	P Nymisha	1NH16IS070	Covid-19 Visualizer	International Journal for Research in Applied Science & Engineering Technology (IJRASET)
	Shanmathi Kailasam	1NH16IS100		
	Bhawik Tanna	1NH16IS024		
6	Vijay Hegde S	1NH16IS121	Crop Yield Prediction using Machine Learning Algorithm	International Research Journal of Engineering and Technology (IRJET)
	Yashvanth C V	1NH16IS126		
	S Chandra Kiran	1NH16IS129		
7	Prashanth Paul	1NH16IS083	A review on data science approach towards decision-making	International Journal of Scientific Research in Computer Science, Engineering and Information Technology © 2019 IJSRCSEIT
8	Prashanth Paul	1NH16IS081	A Machine Learning Perspective towards Detecting Fake News	International Journal for Research in Applied Science and Engineering Technology
	Prashanth V	1NH16IS084		
	Prem Kumar	1NH16IS086		
9	Muhammad Shahbaz	1NH16IS063	Smart Vision System for Visually Impaired People	International Research Journal of Engineering and Technology (IRJET)
	Sunil K A	1NH16IS112		
	Pramod Sencha	1NH16IS080		
10	Akhilendu	1NH16IS008	Fake Indian Currency Note Recognition	International Research Journal of Engineering and Technology (IRJET)
	Anakha A S	1NH16IS012		
	Meghashree K	1NH16IS059		
	Faris	1NH15IS034		
11	Vachan B D	1NH16IS123	Landmine Detection Using Wireless Robot	International Research Journal of Engineering and Technology (IRJET)
	B S Deepthi	1NH16IS021		
	Geetha B	1NH16IS016		
12	Janav S	1NH16IS049	Solar based Automatic Speed Control of Vehicles in Sensitive Zones	International Journal of Engineering Research & Technology (IJERT)
	Monisha S M	1NH16IS063		
	Pavan Kumar M G	1NH16IS118		
13	Prapul Kumar A	1NH16IS082		

	Pawan jewan	1NH16IS075	Food and Nutrition Evaluation for the Visually Impaired	International Journal for Research in Applied Science & Engineering Technology (IJRASET)
	Pavan Kumar	1NH16IS072		
14	N swetha	1NH16IS064	Charging station for E-Vehicles using solar with IOT	International Journal for Research in Applied Science & Engineering Technology (IJRASET)
	Malika G			
	Pavithra S	1NH16IS073		
15	Anuj prakash	1NH16IS014	Drone Assisted Effective Pesticide Sprayer	International Journal of Scientific Research in Computer Science, Engineering and Information Technology
	Arnab bhowal	1NH16IS016		
	Monisha taj D	1NH16IS062		
16	Anusha D Singh	1NH16IS015	Human Detection using Unmanned ground vehicle	International Journal of Scientific Research in Computer Science, Engineering and Information Technology
	Bharani Prabhakaran	1NH16IS022		
	Joshua Linton J	1NH16IS043		
17	Asha K	1NH17IS400	A Review on Bluetooth embedded robot for agriculture applications	International Research Journal of Engineering and Technology (IRJET)
	Sakthi Sridevi	1NH17IS401		
	Manisha Samal	1NH16IS056		
18	Sudarshan C	1NH16IS111	Breast Cancer Prediction Using ML Techniques	INTERNATIONAL JOURNAL OF ENGINEERING RESEARCH & TECHNOLOGY
	Pranav Pandhi	1NH16IS081		
	Somya Singh	1NH16IS109		
	Ashwini Holla	1NH16IS018		
19	Sathya N	1NH16IS099	Traffic Surveillance Using Smart Drone	International Journal of Scientific Research in Computer Science, Engineering and Information Technology
	Likitha R	1NH16IS052		
	Meghana C A	1NH16IS058		
20	Amina Anwar	1NH16IS140	Traffic Density Management using Movable DIvider and RFID	International Research Journal of Engineering and Technology (IRJET)
	Ramakanth A	1NH16IS089		
	Samya Mannuru	1NH16IS096		
	Thakur Surya Kumar	1NH14IS117		
21	Koushalya R	1NH16IS050		

	Vishal Roshan J	1NH16IS124	Color Blindness Algorithm Comparison for Developing an Android Application	International Research Journal of Engineering and Technology (IRJET)
	Gowtham M N	1NH16IS035		
22	A.Amir Sohail Baig	1NH16IS010	Heart arrhythmia Detection using Deep Learning	International Research Journal of Engineering and Technology (IRJET)
	Amal Singh Bhadauria	1NH16IS009		
	Hemanth Kumar	1NH16IS039		
23	Vrinda Raveendran	1NH16IS125	Machine Learning approaches on Diabetic Retinopathy Prediction	International Journal of Scientific Research in Computer Science, Engineering and Information Technology
	Sri Vidya B M	1NH17IS403		
	Tejavati Hedge	1NH16IS115		
24	Aashika M suresh	1NH16IS001	Solar Energy Equipped IoT Based Vacuum Cleaner	International Journal of Scientific Research in Computer Science, Engineering and Information Technology
	Nikita nanju K	1NH16IS068		
	Sanjana V	1NH16IS097		
25	Abhishek Kumar	1NH16IS002	Implementation of Improved Billing System	International Journal of Scientific Research in Computer Science, Engineering and Information Technology
	Ishu Kumar	1NH16IS040		
	Vathsavi Venkat	1NH16IS143		
26	Siddharth Indoria	1NH16IS105	A literature review on sentiment analysis	International Journal of Scientific Research in Computer Science, Engineering and Information Technology
	Sinchana Bhaskar	1NH16IS107		
	Sharan Gouda	1NH16IS101		

Scope of Self-learning for ISE

Web based learning	Compulsory NPTEL courses: 
Library/Digital Library	 • The Institution library provides information and ideas that are fundamental to functioning successfully in today's information and knowledge based society. • The Institution library equips students with learning skills and develop the knowledge • Availability of NPTEL videos. • Sufficient systems with multimedia facilities. • Institutional membership of DELNET, a library networking database. • Internet facility
Project Based Learning	Project-based learning (PBL) promotes development of critical thinking and problem-solving skills by allowing students to work in teams on real world projects. However, in spite of its effectiveness, the use of PBL in engineering classrooms has been

	limited due to the challenges associated with its design and implementation. 4 Mini Projects including Extensive survey and Final year projects are carried out based on Project Based Learning
Case study	Through case studies, students will improve their ability to learn and retain concepts in their courses, on work terms and in their professional lives. One of the best means to create case studies is by converting them from student-generated work reports.
Professional Bodies	Joining a professional body opens up a vast network of knowledge and expertise that is much wider than your immediate university community. Students will gain access to those who are one or two steps ahead of them and it helps them feel part of a community of like-minded people. ICI Students Chapter is in existence
Club Activities	To identify major environmental problems and to find the best possible remedies. To create an awareness on the need for d environment preservations for a better tomorrow. To provide insight into existing and evolving technologies. To familiarize with real life problems and the ideas to tackle them.
Assignments	It enables students to go through the topics in a more elaborate manner in order to explore the academic topic which lead to an overall better learning experience for students.
Industrial visit	Industry visits help enhance interpersonal skills and communication techniques. Students become more aware of industry practices and regulations during industry visits. Industry visits broaden the outlook of students with exposure to different workforces from different industries
Internships	During an internship, students work on real projects,get acquainted with the current market

	trends,sharpen their technical skills, and learn in-demand technical skills. Apart from this, an internship introduces them to the corporate world,teaches them professional ethics and polishes their soft skills like communication and inter personal skills. With an internship they can become engineer's way before their graduation which could prove to be extremely helpful for an effortless adaptation to work environment when they join a full time job.
Conference/Seminar/Workshop	Engineering is forever changing. Technology changes. Methods and processes change. Environmental focuses change. Everything changes. And the rate of change is ever-increasing. Conference/Seminar/workshop help students in, Broadening their knowledge Cross pollinating their ideas Developing their Network Advancing their careers Re igniting their enthusiasm or passion.

Utilization and its effectiveness:

- The overall aim of this review is to evaluate the effectiveness of self- directed learning on the professional development of students.
- Most of the students reached to a conclusion that self-learning process is an effective approach for learning but not more than the traditional method of teaching.
- Students are motivated to improve their initiation in reaching their goals.
- Students are able to scan through the reading material available to them.
- Many of the needs of students are best met by learning process. The students are encouraged to learn by themselves for their present and future needs.
- Students are able to do better in competitive examinations and get placed in suitable companies.

Table 9.4.9: Detailed list of MOOC course certification for self-learning

Year	2019-20	2020-21	2021-22
Faculty	21	47	14
Students	125	137	183

9.5 Career Guidance, Training, Placement

NHCE offers career guidance and placement on all aspects of career planning, job searching and post-graduate studies. College provides individual counseling for all the students towards reaching goals.

A. Availability of career guidance facilities:

- The college has career guidance and placement cell with 9 full time staff members, headed by Executive Director – Placement & Training.
- The team fine tunes the students by providing insights into the complex dynamics of the corporate world and the current critical industrial & business scenarios.
- Campus Recruitment Training (CRT) program grooms the students in various areas like Quantitative Ability, Verbal Ability, Reasoning Ability, Group Discussion, Personality Development, Attitude and Behavioral Development and Facing Interview.
- An online portal is used for training the students. This portal allows students to register for placement, avail training using the numerous videos and take up tests to assess themselves. In addition, the portal also provides company specific question papers which can be used to ensure better performance in the aptitude/technical tests. Certified Trainers are deputed to take sessions on Verbal, Written and listening skills to ensure our students are well trained in Business English Communication
- Domain and technical training is provided based on the industry requirement.
- Mock interviews and GDs are conducted on a regular basis to equip final and pre-final students to face the challenges of recruitment scenario.
- The placement cell organizes on-campus and off-campus recruitments.
- In addition to the training conducted by the placement division the department organizes training on technical aspects like Data Structures, Java, C, C++ and Python.

An MOU was signed between New Horizon College of Engineering, New Horizon College and Zenken Corporation, Japan on 5th September 2018 to collaborate on campus recruitments for their operations in Japan (International Placements) and to establish Japan Career Centre at

New Horizon Campus, Bangalore. Senior Executives from Zenken are deputed at New Horizon to train students on Japanese companies' requirements.

The College has created the following infrastructure facilities to conduct training program and campus recruitment.

Table 9.5.1: Facilities for Placement & Training

Facilities	Number
Office	1
Auditorium	1
Seminar hall	2
Rooms for Group Discussion	3
Interview Rooms	4
Computer Centers for Online Test	11

The college also has a placement committee that ensures that the needs of the students belonging to different branches of engineering are addressed and all are given equal opportunities.

Industry Sponsored Labs

- Amazon
- Capgemini Industry 4.0 Lab
- VMWare Lab
- SAP Lab
- CISCO Lab
- Schneider Electric Lab
- IBM OpenPower Lab
- Robotic Process Automation
- Capgemini PLM Lab
- Oracle Academy Lab
- Capgemini VLSI Lab
- Altair AI, ML and Data Analytics Lab
- 5G Communication Lab
- HP Vertica Lab
- FANUC ROBOTICS
- Quest Global IIOT Centre of Excellence

Table 9.5.2: Details of Career guidance, Training, Placement committee members

Sl. No.	Name of the faculty	Designation
1	Prof. Gurucharan Singh	Exe, Director - Dept. of HRD
2	Mr. Ranjan Manish	Head - IIC
3	Dr. Sowmya	Prof. & Head Centre for life skills & lifelong learning
4	Mr. Anis Mirza	Sr, HR Manager - CR (L&D &P)
5	Mr. Binod Kumar Singh	HR Manager - CR (L&D &P)
6	Ms. Manisha Joshi	HR Manager - CR (L&D &P)
7	Mr. Manjunath R N	HR Manager - CR (L&D &P)
8	Ms. Sreelatha	Sr. Office Executive
9	Mr. Bharat Suundar	Aptitude Trainer
10	Mr. Karthikeyan	Aptitude Trainer
11	Mr. Santhosh	HR Executive
12	Ms. Suneetha	Sr. Lifeskills Trainer
13	Mr. Devranjan Chatterjee	Lifeskills Trainer
14	Mr. Ramesh	Lifeskills Trainer
15	Mr. Gangadhara Murthy	Lifeskills Trainer
16	Mr. Prabhu James	Lifeskills Trainer
17	Mr. Richard	Lifeskills Trainer

Department of HRD - Structure

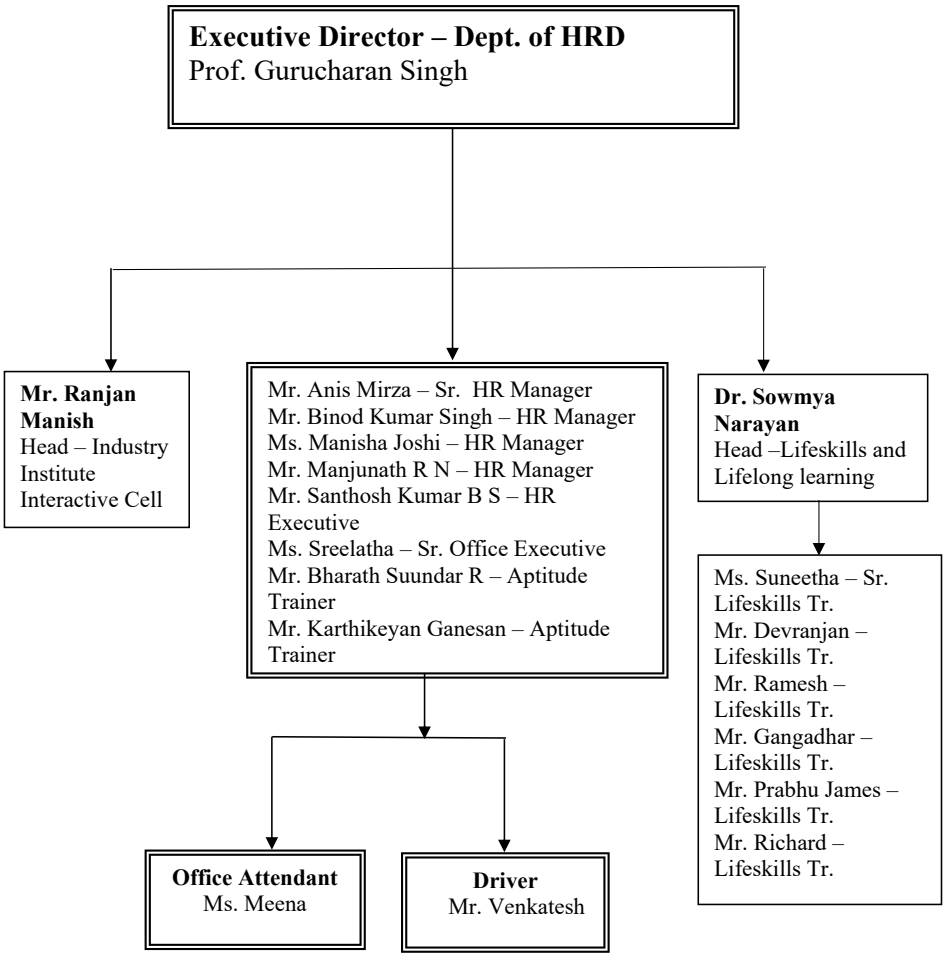


Figure No. 9.27: Structure of department of HRD

B. Pre-Placement Training:

The process involves

- Identification and grooming of capable students for a particular domain
- Arranging Training Sessions from industry resources regularly.
- Counseling the students having less attendance in trainings.
- Interacting with Life skills trainer regularly for inputs on training.
- Maintaining the attendance of the students and sharing the same with Centre for Life Skills and Life Long Learning.
- Ensuring students learn English essentials/business communication as a subject.

-Arranging Aptitude Development training sessions for all programmes of Undergraduate (UG).

-Vista Mind, Ethnus Consultants, Focus Academy for creative Education are engaged to conduct Aptitude Development training which is scheduled as part of academic schedules.
- Soft skills development sessions are scheduled for all UG programmes. PCC India handles Soft skills for all these students by the seasoned trainers experienced in corporate orientation.

- Arranging Technical and domain related sessions and the topics will vary from one programme to another programme. All circuit programmes are taught with basic programming subjects, C, DS etc. Non-circuit programmes students are trained with core subjects and the highlight would be fundamentals of Electrical Engg, Electronics Engg, Mechanical Engg, Civil Engg, Automobile Engg, etc. and some application orientation.

(b)The Roles and Responsibilities of Placement Committee (PC)

- To conduct research regarding the skills, abilities, and credentials employers seek from graduates and also to find relevant job titles and industries for graduates.
- To help students create their resumes and cover letters, find internship or externship sites, and apply for jobs in their fields.
- To arrange for mock interviews to give students practice answering common questions and provide information about companies hiring in the area.
- To develop strong rapport with employers and develop local partnerships with companies where students can do internships or externships or visit for job shadowing. And also to recommend students to these employers after they learn necessary skills.
- To schedule hiring events like job fairs which gives students exposure to potential jobs and helps local companies find suitable candidates.
- To Ensure students availability for all campus recruitment events
- To participate in pre-placement presentations conducted by companies
- To participate in exit meetings at the end of each company recruitment events and to implement suggestions regard to grey areas as mentioned in the feedback in the departmental activities.
- To coordinate with each Department regarding aptitude, soft skills and domain related training activities to students.
- To Visit companies for presenting Department's quality and talent pool availability
- To arrange for domain related training and re-training activities based on companies' feedback.

NEW HORIZON SCHOLAR PROGRAM has focused an initiative to tap potential students at 2nd& 3rd year level and groom them to the best possible opportunities in Corporate, Government or Higher Education purposes. The following interventions are provided for the selected students.

- Conduct problem solving sessions by highly accomplished people in industry / institutions.
- Expose them on areas beyond the engineering textbooks – such as economy, emerging business areas, international affairs, social issues etc.
- Focused technology sessions such as Big Data Analytics, SMAC (Social Media – Mobility Analytics – Cloud Computing), Digital marketing etc.
- Motivation sessions by high achievers in business, entrepreneurship etc.
- Focused on recent advancement in Internet of Things (IOT)by enabling the interconnection and integration of the physical world and the cyber space.
- To develop insight into the usability challenges in developing Artificial Intelligence (AI) systems, and effective means of meeting these challenges and to gain knowledge for collaboration between the Human Computer Interface (HCI) and AI communities.
- Fundamental foundations and application skills for non-circuit branches.

Selection of students: Students are selected at 3rd / 4th semester level by heads of departments. The criteria for selection of students is broadly based on academic performance and exceptionally good students who may not be top in class but have the potential to excel in studies if they are given required support.

Operational arrangements: Identified students will be provided an environment for each other to discuss debate and interact on their thoughts at regular intervals. An exclusive space of about one class room size is provided with necessary aids within the room such as journals, some latest books on innovation, creativity. Two computers with internet connectivity and Air Conditioning facility with biometric based entry are also provided. This space can be branded and showcased for other students to aspire to belong this group.

Career counseling for higher studies:

Career guidance and motivational lectures by Alumni, External guests and faculty are organized frequently.

9.5. A Career counseling for higher studies

Career guidance and motivational lectures by Alumni, External guests and faculty are organized frequently.

Motivation for Higher Studies

Faculties of the department advise and motivate students to pursue higher education by introducing them to the range of benefits available to those who are better equipped. Students are briefed about the opportunities and advantages of pursuing higher education in India and abroad. International education offers the opportunity to broaden horizons and build skills and experiences and makes them more employable, as they gather experience that a lot of other candidates won't have. Students can widen their repertoire and communicate more effectively when exposed to education abroad.

Faculty let the students know that the opportunities for professional development are vast and by building their professional skills, they will move up the jobs ladder and are likely to increase their income quickly. Students are also made aware of the eligibility criteria and are advised to take up tests like GRE, GMAT, IELTS, TOEFL, etc if they are interested in pursuing education overseas. Students who want to pursue education in India are briefed about GATE, CAT, PG CET and given exposure to the various opportunities.

Table 9.5.3: Career counseling for higher studies

Sl. No	Name	Designation
1	Financial Literacy program for SC/ST Students	Dr Sheelan Misra, HOD-MBA, NHCE
2	Workshop on Students exchange program to France	Dean-Academics, NHCE
3	Workshop on Overseas Education for M. S	Mr. Devanand M, Market Development Executive, Global reach, Brigade road, Bangalore
4	Quiz - InQuizitive Minds 2018	Career Launch, Marathalli
5	Motivational talk on Higher studies in Foreign Countries	Ms. Usha Mahadevappa, Manager, Business Development, International Education Specialist (IDP) IDP Education India Pvt. Ltd
6	Motivational talk on Opportunities for Higher Studies in Abroad	Mr. Shaon Basu, Manager, Operations & Academics, Jamboree Education, No. 539, ashwini complex, 2nd Floor, CMH Road, indiranagar, Bangalore-38

Organizing coaching classes for competitive exams

The departments organize coaching classes for GATE and other competitive examinations.

- The placement cell organizes seminars on higher studies and conduct aptitude training sessions.
- Foundation course for Civil Services is offered for interested students appearing for Civil Services. Many books and periodicals are available in the library for the students.

Skill development (Spoken English, Computer Literacy etc.)

Communicative English has been incorporated into the curriculum. The English Language

communication lab with a capacity of 60 consoles has been set up with innovation.

Industry – Institute Collaboration Activities:

The purpose of Industry Institute Collaboration Cell which shall be referred to as IIC hereon is to ensure a paradigm shift in the thought process of a New Horizon student from J2C (Job to Career). This should lead a student towards identification of a SMART CAREER GOAL. Taking a step further, IIC would endeavour to establish connect between eminent faculty members and the relevant industries to join hands and work towards mutually beneficial cause/projects.



Figure No. 9.5.2: Industry Institute interaction

The ulterior aim of IIC is to work towards making New Horizon College of Engineering, a respectable and most sought after Engineering college which provides the best amalgamation of Innovation, entrepreneurship development, skill up gradation, passion and aptitude along with sound theoretical subject knowledge which in turn makes our students industry ready and innovators of tomorrow so that they can pursue their passion and think beyond a job. The efforts and orientation of IIC would be in a manner wherein industry academia alliance would help our students reach the pinnacle of success and also ensure our elite faculty members are amongst the most sought after teaching fraternity.

Centre of Excellence

- Develop best learning process using a comprehensive understanding of industry's best practices.
- Imbibe professionalism, behavioural aspects and awareness as per the industry expectations.
- Continuous improvement to achieve success and growth.

Industry/Incubation

- Align aspirations of the students with the needs of the industries.
- Solutioning is the need of the hour.
- Customer value creation for industry and students
- Attention to both individual and students and groups.

Industry Integration

- Leveraging networking and collaboration with partnership.
- Promote career counselling by organizing guidance lectures by senior corporate personnel.
- Regular interaction with the industry through Seminars, Guest Lectures, Conferences, Corporate Meets, etc.

Internship Visits

- Enable student readiness.
- Training on employable skills.
- Talent transformation.

Table 9.5.4. A : No. of students opted for Higher Education - EEE

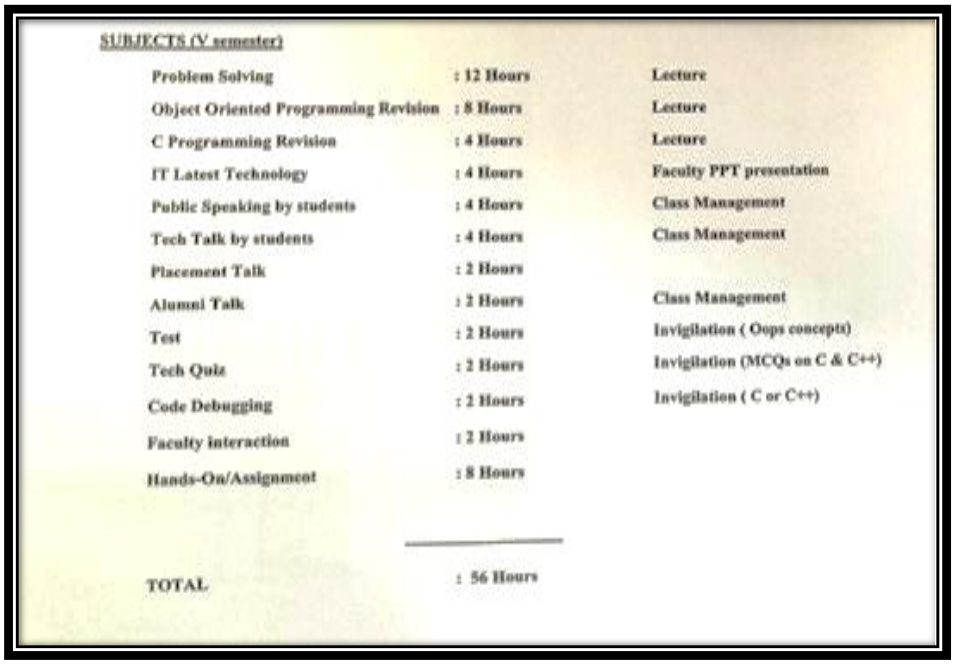
Higher Education M.Tech/MS/Ph.D	2018-22	2017 – 2021	2016-2020
	No. of Students	No. of Students	No. of Students
M.Tech/MS	6	7	5

Table 9.5.4.B : No. of students opted for Higher Education – ISE

Higher Education M.Tech/MS/Ph.D	2018-22	2017 – 2021	2016-2020
	No.of. Students	No. of Students	No. of Students
M.Tech/MS	3	7	3

9.5.B Career Guidance and Placement support

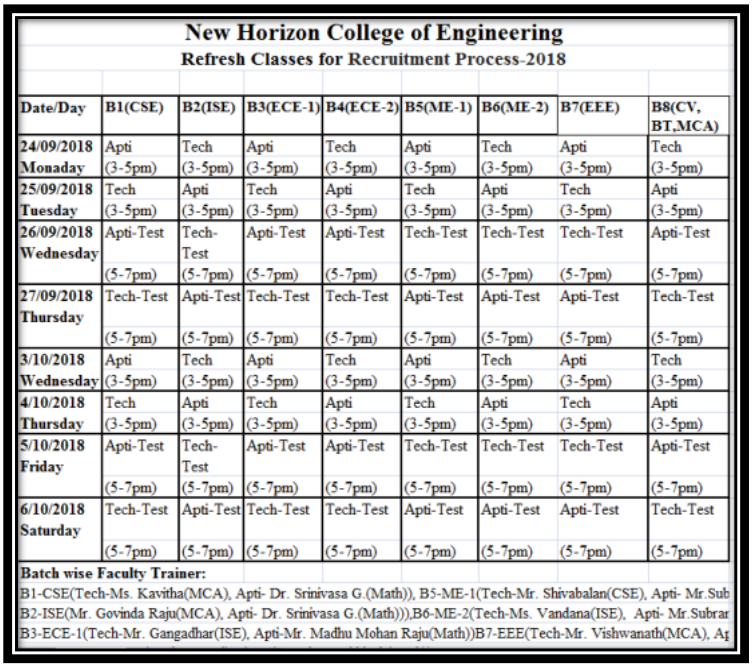
The placement data for the last three academic years and the maximum & average pay package offered to the students of EEE & ISE departments are given.



SUBJECTS (V semester)

Problem Solving	: 12 Hours	Lecture
Object Oriented Programming Revision	: 8 Hours	Lecture
C Programming Revision	: 4 Hours	Lecture
IT Latest Technology	: 4 Hours	Faculty PPT presentation
Public Speaking by students	: 4 Hours	Class Management
Tech Talk by students	: 4 Hours	Class Management
Placement Talk	: 2 Hours	
Alumni Talk	: 2 Hours	Class Management
Test	: 2 Hours	Invigilation (Oops concepts)
Tech Quiz	: 2 Hours	Invigilation (MCQs on C & C++)
Code Debugging	: 2 Hours	Invigilation (C or C++)
Faculty interaction	: 2 Hours	
Hands-On/Assignment	: 8 Hours	
TOTAL	: 56 Hours	

Figure No. 9.5.4: Total number of hours allotted for training



New Horizon College of Engineering

Refresh Classes for Recruitment Process-2018

Date/Day	B1(CSE)	B2(ISE)	B3(ECE-1)	B4(ECE-2)	B5(ME-1)	B6(ME-2)	B7(EEE)	B8(CV, BT,MCA)
24/09/2018 Monaday	Apti (3-5pm)	Tech (3-5pm)	Apti (3-5pm)	Tech (3-5pm)	Apti (3-5pm)	Tech (3-5pm)	Apti (3-5pm)	Tech (3-5pm)
25/09/2018 Tuesday	Tech (3-5pm)	Apti (3-5pm)	Tech (3-5pm)	Apti (3-5pm)	Tech (3-5pm)	Apti (3-5pm)	Tech (3-5pm)	Apti (3-5pm)
26/09/2018 Wednesday	Apti-Test (5-7pm)	Tech-Test (5-7pm)	Apti-Test (5-7pm)	Apti-Test (5-7pm)	Tech-Test (5-7pm)	Tech-Test (5-7pm)	Tech-Test (5-7pm)	Apti-Test (5-7pm)
27/09/2018 Thursday	Tech-Test (5-7pm)	Apti-Test (5-7pm)	Tech-Test (5-7pm)	Tech-Test (5-7pm)	Apti-Test (5-7pm)	Apti-Test (5-7pm)	Apti-Test (5-7pm)	Tech-Test (5-7pm)
3/10/2018 Wednesday	Apti (3-5pm)	Tech (3-5pm)	Apti (3-5pm)	Tech (3-5pm)	Apti (3-5pm)	Tech (3-5pm)	Apti (3-5pm)	Tech (3-5pm)
4/10/2018 Thursday	Tech (3-5pm)	Apti (3-5pm)	Tech (3-5pm)	Apti (3-5pm)	Tech (3-5pm)	Apti (3-5pm)	Tech (3-5pm)	Apti (3-5pm)
5/10/2018 Friday	Apti-Test (5-7pm)	Tech-Test (5-7pm)	Apti-Test (5-7pm)	Apti-Test (5-7pm)	Tech-Test (5-7pm)	Tech-Test (5-7pm)	Tech-Test (5-7pm)	Apti-Test (5-7pm)
6/10/2018 Saturday	Tech-Test (5-7pm)	Apti-Test (5-7pm)	Tech-Test (5-7pm)	Tech-Test (5-7pm)	Apti-Test (5-7pm)	Apti-Test (5-7pm)	Apti-Test (5-7pm)	Tech-Test (5-7pm)

Batch wise Faculty Trainer:

B1-CSE(Tech-Ms. Kavitha(MCA), Apti- Dr. Srinivasa G.(Math)), B5-ME-1(Tech-Mr. Shivabalan(CSE), Apti- Mr.Sub
B2-ISE(Mr. Govinda Raju(MCA), Apti- Dr. Srinivasa G.(Math))),B6-ME-2(Tech-Ms. Vandana(ISE), Apti- Mr.Subrar
B3-ECE-1(Tech-Mr. Gangadhar(ISE), Apti-Mr. Madhu Mohan Raju(Math))B7-EEE(Tech-Mr. Vishwanath(MCA), Ap

Figure No. 9.5.5: Placement training schedule sample for 2018 batch

9.5.C Placement Committee (PC):

The members of the Placement Committee are as below:

Table 9.5.5.A: Members of the Placement Committee - EEE

Name of the Faculty	Designation	Department
Prof. Gurucharan Singh	Executive Director	Dept. of HRD
Mr. Binod Kumar Singh	HR Manager	Dept. of HRD
Dr. Sujitha S	HoD-EEE	Dept. of. EEE
Mr. Sunil Kumar K	Sr. Asst. Professor	Dept. of. EEE
Mr. Kartheek Vankadara	Asst. Professor	Dept. of. EEE

Table 9.5.5.B: Members of the Placement Committee - ISE

Name of the Faculty	Designation	Department
Prof. Gurucharan Singh	Executive Director	Dept. of HRD
Mr. Binod Kumar Singh	HR Manager	Dept. of HRD
Mrs. Shruthi	Asst. Professor	Dept. of. ISE
Mrs. Latha	Asst. Professor	Dept. of. ISE
Mr. Karthik M	Asst. Professor	Dept. of. ISE

Achievements:

(i) EEE Department

Table 9.5.6.A: Placement Details

Sl. No.	Name of the company	Number of students placed
Academic Year 2022-23		
1	Cognizant	13
2	Capgemini	22
3	Computacenter (India) Pvt. Ltd.	2
4	DXC Technology	1
5	Happiest Minds Technologies Pvt. Ltd	2
6	Musigma	3
7	EXL Service	3
8	SAP Labs India	1
9	Steer Engineering	3
10	Ernst & Young	3
11	Mindtree	4
12	Transcaal Power Division India Pvt Ltd	6

13	KPIT	3
14	Dell Technologies	1
15	EPSILON	3
16	Allstate Solutions Pvt Limited	2
17	Visionet System Inc	1
18	TCS	1
Total Placed		**89**
Academic Year 2021-22		
1	Automation Anywhere	7
2	Cognizant	7
3	Capgemini	23
4	DXC Technology	11
5	Ernst & Young	3
6	CGI	9
7	Accenture	5
8	Wipro Ltd	4
9	Musigma	4
10	Galaxe Solutions	2
11	Happiest Minds Technologies Pvt. Ltd	5
12	Kishu Giken Kogyo	1
13	TheMathCompany	1
14	IBM	1
15	CERNER CORPORATION	1
16	Tudip Technologies Pvt Ltd	3
17	L&T Technology Services	4
18	EXL Service	5
19	Sky Point	1
20	Wipro Ltd	4
21	Anora Semiconductor Labs Private Limited	2
22	MyCaptain	1
23	IQVIA	1
24	Tudip Technologies Pvt Ltd	3
25	Comviva	5
26	TCS	1
27	Hashedin By Deloitte	1
28	Skyhigh Security	1
Total Placed		99

Table 9.5.6.B: Pay Package offered to students - EEE

2022-23	Maximum Salary	750000
	Average Salary	598939.3
2021-22	Maximum Salary	900000
	Average Salary	549117.6

(ii) ISE Department

Table 9.5.7.A: Placement details - Academic Year 2018-22 Batch

Name of Company	No. of students Placed
Cognizant	6
Comviva	4
Byjus	2
Capgemini	46
INCADEA	1
EXL Service	5
ESKO	2
CGI	2
Brillio	1
HUGHES SYSTIQUE CORPORATION (HSC)	3
DXC Technology	11
Ernst & Young	5
Wipro Ltd	4
Musigma	2
Galaxe Solutions	1
LOWE"S India	5
Publicis Sapient	1
MyCaptain	1
Accenture	3
TCS	2
Wissen Infotech	1
LTI (Larsen & Toubro Infotech)	2
Starland Company Ltd (Japan)	1
IQVIA	1
Hiver	2
CERNER CORPORATION	3
Legato Health Technologies, Accenture	3
I Exceed technology solutions	1
Tudip Technologies Pvt Ltd	1
Automation Anywhere	1

Zensar	1
Cognisure	1
ArisGlobal Ltd	1
Dell Technologies	1
Happiest Minds Technologies Pvt. Ltd	2
Digit General Insurance	1
Visionet System Inc	1
IBM	3
EPSILON	2
Total	135

Table 9.5.7.B: Pay Package offered to students 2018- 2022

1	**Maximum Salary**	**19,34,000**
2	**Average Salary**	**5,92,282**

Table 9.5.7.C Academic Year 2017-21 batch

Name of Company	No. of students Placed
Capgemini	25
CERNER CORPORATION	5
Cognizant	8
ESKO	3
EXL Service	7
Infogain	10
INFOSYS	7
INTEL	1
L&T Technology Services	10
LOWE"S India	10
LTI (Larsen & Toubro Infotech)	4
Mindtree	12
Mobisy Technologies Ltd	1
National Payment Corporation of India	1
PhonePe	1

Service Line Solutions Pvt Ltd	2
Surya Software	1
TCS	1
Tudip Technologies Pvt Ltd	10
Total	119

Table 9.5.7.D Pay Package offered to students 2017- 2021

1	**Maximum Salary**	**19,14,000**
2	**Average Salary**	**5,61,512**

Table 9.5.7.E Academic Year 2016-2020 batch

Name of Company	No. of students Placed
Altran	1
Accenture	1
Capegemini	15
Catnip	2
Cerner	10
CGI	3
Covance	2
Epsilon	1
Eurofins	2
Extramarks	1
HP	1
Hughes Systems	1
IBM	7
IBS	2
Infosys Ltd	6
ITC infotech	8
L&T	4
LOWES	3
Microgenesis	1
Musigma	1
NTTData	6

Nineleaps	6
Neoway	1
Perfios	1
Simeio Solution	2
Speridian	1
Temairazu Inc	1
Tech Mahindra	1
Surya-soft	1
Visionet	1
Vmware	1
Udan	1
Wipro Limited	17
Total number of students placed	**112**

Table 9.5.7.F Pay Package offered to students 2016- 2020

1	**Maximum Salary**	**22,00,000**
2	**Average Salary**	**5,17,261**

9.6 Entrepreneurship Cell (5)

- NH-EDC was established in August 2011, under the aegis of Department of Management Studies. NH-EDC is headed by Dr. Sheelan Misra, Prof. & HoD– MBA with a team of faculty coordinators from other departments of the college.
- The goal of NH-EDC is to assist students, entrepreneurs, including Institutes' faculty, with pre-venture, start-up or existing business with financial management, marketing, technology and product development and commercialization issues.
- Working in collaboration with National Entrepreneurship Network (NEN), since its inception, NH-EDC has conducted various activities for the college students creating and promoting entrepreneurship awareness at the campus. E-WEEK is one of such initiatives where array of activities is conducted raising the spirit of innovation and creativity which are considered as sparkplugs of entrepreneurship.
- The students are given latest inputs about the industry, the changes happening and the expectations just to make them understand the employability options and opportunities to control unemployment and create better opportunities for youngsters.

Entrepreneurship Initiatives:

- To create an environment for self-employment, promote innovation, incubation and Entrepreneurship development through formal and non-formal programs
- To introduce the concept of Entrepreneurship in curriculum at degree levels
- To develop management personnel at appropriate levels for non-corporate and unorganized sectors like education, rural development, small-scale industry etc
- To utilize the infrastructure facilities and technically trained manpower for the development of non-corporate and unorganized sectors.
- To promote employment opportunities
- Technology Commercialization Assistance and Management Evaluation
- Intellectual Property Rights/Management
- Help with Regulatory Compliance
- Feasibility Study (Technical and Financial)
- Help with Business Basics
- Marketing Assistance/Market Research/Pilot Study/Test Marketing.
- Enhancement of Marketing Skills, Commercialization/Scale up: Access to Bank Loans, Loan Funds and Guarantee Programs and Access to Angel Investors or Venture Capital etc.
- Business Structuring Advisory: Help with Accounting/Financial Management/ Company Formation/Management Team Identification/HR Services.
- Help with Presentation Skills and Business Etiquettes.
- Comprehensive Business Training Programs.

Entrepreneurship Development (ED) Cell facilities:

The infrastructure facilities of Entrepreneurship Development (ED) Cell at NHCE are tabulated in Table 9.6.1 and the details of ED cell committee members are listed in Table 9.6.2.

Table 9.6.1: List of Entrepreneurship Development Cell facilities and physical infrastructure at NHCE

Sl. No.	Description	Number
1	Computer	3
2	Printer	3
3	Scanner	1
4	LCD Projector	1
5	Interactive White Board	1
6	Furniture's	Table-5, Chair-30
7	Seminar Halls/Conference Rooms	1
8	Discussion Rooms	1
9	Video Conferencing Facilities	50 Seats
10	Incubation Space (Cubicles)	1000 Sq.mt
11	Office Space	250 Sq,mt

Entrepreneurship Development Cell committee management:

Table 9.6.2 Entrepreneurship Development Cell committee members

Sl. No.	Name	Dept.	Position
1	Dr. Smita Harwani	MBA	Associate Professor
2	Mr. Sidde Gowda	MCA	Assistant Professor
3	Mr. Prashanth K S	BSH	Assistant Professor
4	Mr. Gagan Purad	CSE	Assistant Professor
5	Ms. Vandana	ISE	Assistant Professor
6	Mr. Kodandapani Depa	EEE	Assistant Professor
7	Dr Piruthiviraj P	ECE	Associate Professor
8	Mr. Ranganathan	CIVIL	Assistant Professor
9	Mr. Puneeth	ME	Assistant Professor
10	Mr. Sunil	AU	Assistant Professor
11	Dr. Upendra	BT	Assistant Professor

Entrepreneurship Development Cell (EDC) conducts various events to help students to know the importance of being an entrepreneur and ways to get financial assistance to become a successful entrepreneur. The list of events conducted is mentioned in Table 9.6.3.

Table 9.6.3.A: List of Events (EEE)

Event	Date	Venue
Talk on "Entrepreneurship Development Talk"	08/02/2019	C504
Entrepreneurship Development Talk on "Idea, Oppurtunity and Business Plan"	31/08/2019	Conference Hall
Study abroad with ease	19-09-2020	Virtual platform
Create a winning business plan	11-12-2020	Virtual platform
You can become an Entrepreneur	24-12-2020	Virtual platform
Are you ready for your startup	17-5-2021	Virtual platform
Start-ups during the Pandemic	13-11-2021	Virtual platform
My story- Motivational session by successful Entrepreneur	18-11-2022	Virtual platform

Table 9.6.3.A: List of Events (EEE & ISE)

Event	Date	Venue
Talk on "Entrepreneurship Development Talk"	08/02/2019	C504
Entrepreneurship Development Talk on "Idea, Oppurtunity and Business Plan"	31/08/2019	Conference Hall
Study abroad with ease	19-09-2020	Virtual platform
Create a winning business plan	11-12-2020	Virtual platform
You can become an Entrepreneur	24-12-2020	Virtual platform
Are you ready for your startup	17-5-2021	Virtual platform
Start-ups during the Pandemic	13-11-2021	Virtual platform
My story- Motivational session by successful Entrepreneur	18-11-2022	Virtual platform

9.7. Co- Curricular and extra- curricular Activities (10)

The college encourages the students to take part in both co-curricular and extra-curricular activities. The students are allowed to take part in various sport activities also.

9.7.1.A Extra-Curricular Activities of EEE

i) Sports

Sports at the NHCE are played with much fervor and passion. There is emphasis on regular exercise and physical fitness. All games are supervised by professional coaches. Equal importance is extended by the department towards extracurricular and co-curricular activities. This can be envisaged by the number of students participating in such events. The department has students who are members of various college/university level teams like basketball, volleyball, football, throwball,etc. Our students regularly participate in tournaments including those at the state level. Given below are the details of such participation in the different academic years.

Table 9.7.1: List of Sporting Events Participated in by Students of EEE

Event Name	Name & USN of Student	Semester of Student	Tournament	Event Date
Academic Year 2022-23				
BASKETBALL	RAKSHAN L 1NH21EE093 SIMRAN 1NH20EE110	III	VTU(NHCE)	28th & 29th NOV 2022
			VTU SELECTIONS	3rd DEC 2022
			SPARDHA	14th TO 17th DEC 2022
			VTU(Dr.AIT)	5th & 6th DEC 2022
			VTU(ATME)	7th TO 9th DEC 2022
		V	SPARDHA	14th TO 17th DEC 2022

			VOLUENTEER	29th NOV 2022
KABADDI (M)	HEMANTH B N 1NH20EE041	V	INFINI	19th TO 21st OCT 2022 26/9/2019 to 28/9 /2019
			VTU(VIT)	4th & 5th NOV 2022
			VTU SELECTIONS	9th & 10th NOV 2022
Wrestling Judo	DARSHAN SURESH SHETTY 1NH20EE028	V	VTU(GAT)	28th & 29th OCT 2022
Hockey	PRAMOD G 1NH20EE081	V	VTU(CMRIT)	9th & 10th NOV 2022
WEIFHT LIFTING	DARSHAN SURESH SHETTY 1NH20EE028	V	VTU(GAT)	28th & 29th OCT 2022
	M ROHITH KUMAR REDDY 1NH19EE066	VII	VTU(GAT)	28th & 29th OCT 2022
	DECHMMA VS 1NH19EE027	VII	VTU(GAT)	28th & 29th OCT 2022
VOLLEYBALL	HEMANTH B N 1NH20EE041	V	VTU(ATRIA)	17th & 18th NOV 2022
CRICKET	YASHWANTHA P 1NH18EE407 SHRINIK 1NH20EE026	VII V	PES	19th TO 22nd NOV 2022
BEST PHYSIQUE	DEEPAK KUMAR SAH 1NH19EE029 ANEELKUMAR N M 1NH21EE015	VII III	VTU(GAT)	28th & 29th OCT 2022
CHESS	YESHWANTH S 1NH20EE127	V	VTU(VIT) VTU(NMAMIT)	1ST & 2ND DEC 2022 5th TO 7th DEC 2022
Academic Year 2021-22				
Volleyball(M)	PRANAV R NAIK 1NH18EE735 KUSHAL NAIK K 1NH20EE056	VII III	NMIT	13th AND 14th MAY 2022
			RVCE	2nd &3rd JUNE 2022
			CIT	24th JUNE 2022
			IISC	25th TO 26th JUNE 2022

			CHRI-SPO	19th TO 22nd APRIL 2022
			ATHLOS	26th TO 29th APRIL 2022
			DEVADAN CUP	28th TO 30th APRIL 2022
BASKETBALL(M)	DHANUSH L 1NH18EE716 SIMRAN KANWAR 1NH20EE110	VIII IV	ATHLOS	26th TO 29th APRIL 2022
			DEVADAN CUP	28th TO 30th APRIL 2022
			NMIT	10th &11th MAY 2022
			MOMENTUM 22	1st & 2nd JUNE 2022
			ATHLOS	26th TO 29th APRIL 2022
			MOMENTUM 22	1st & 2nd JUNE 2022
KABADDI	MANOJ KUMAR P 1NH19EE070 HEMANTH B N 1NH20EE041	VI IV	ATHLOS	26th TO 29th APRIL 2022
			NMIT	13th &14th MAY 2022
			ABHIYANTAN 22	26th MAY 2022
FOOTBALL	R PUNEETH 1NH18EE736	VIII	ATHLOS	26th TO 29th APRIL 2022
			DEVADAN CUP	28th TO 30th APRIL 2022
			MOMENTUM 22	1st & 2nd JUNE 2022
CRICKET	PONNAPPA MM 1NH18EE040 CHANDAN N 1NH18EE711	VIII	DEVADAN CUP	18th TO 25th APRIL
			ATHLOS	26th TO 29th APRIL 2022
			MOMENTUM 22	26th TO 30th MAY 2022
			SEACET	17th TO 20th JUNE 2022
KABBADI(M)	MANOJKUMAR P 1NH19EE070	VI	ATHLOS	26th TO 29th APRIL 2022
			NMIT	13th &14th MAY 2022
			ABHIYANTAN 22	26th MAY 2022

ii) Participation in Inter College and Intra College Events

Students of the department are encouraged to participate in technical activities conducted by other colleges. Several of our students have won events as well. The details of such participation are listed below.

Table: 9.7.1.B Participation in Electrathon

Event	Team members	USN	Role	Remarks
Infinity- Techno-Cultural Fest	DHEERESH VIJAY DEVADIGA	1NH21EE402	Team Leader	Participated
	DONY SNEHIT P	1NH20EE035	Team Member	Participated
	TEJASHREE T	1NH20EE118	Team Member	Participated
	TANTAPUREDDI HARITHA	1NH20EE117	Team Member	Participated

9.7.1.B Extra-Curricular Activities of ISE

(i) Sports

9.7.1.C List of students participation in Sports

Sl.No	Name	Usn	Sem	Event	Date	Tournament	Achievements
1.	DHANUSH BILIGIRI N H	1NH18IS030	III	BASKETBALL (M) TAEKWONDO	1st TO 8th SEP 2019 9th TO 11th SEP 2019 16th & 17th SEP 2019 25th TO 28th SEP 2019 1st TO 4th OCT 2019 14th TO 16th OCT 2019 25th ,30th & 31st OCT 2019 3rd TO 9th NOV 2019 17th & 18th OCT 2019	COURT WARS RIT VTU (BCZ) VTU (IZ) KREEDOSTAVA PESIT CMP PRACTICE ASSOCIATION CUP VTU	PARTICIPATION RUNNERS RUNNERS WINNERS PARTICIPATION PARTICIPATION PARTICIPATION PARTICIPATION GOLD MEDAL
2.	VIGNESH K S	1NH18IS123	III	BADMINTON (M)	24th & 25th AUG 2019 26th & 27th SEP 2019 1st TO 4th OCT 2019	VTU` SPARDHA 2019 REEDOSTAVA	III PLACE WINNERS PARTICIPATION
3.	SUSHANT CHAUDHARY	1NH17IS113	V	CRICKET (M)	12th TO 16th OCT 2019 11th ,13th & 14th NOV 19	PESIT RIT	PARTICIPATION PARTICIPATION
4.	DHRUV GULATI	1NH18IS031	III	CRICKET (M)	12th TO 16th OCT 2019 11th ,13th & 14th NOV 19	PESIT RIT	PARTICIPATION PARTICIPATION
5.	AKASH K R	1NH17IS006	V	HOCKEY	25th TO 28th SEP 2019	ST JOHNS	PARTICIPATIN
6.	GOUTHAM S	1NH17IS147	V	HOCKEY	25th TO 28th SEP 2019	ST JOHNS	PARTICIPATIN
7.	DHANUSH BILIGIRI (Played Nationals)	1NH18IS030	IV	BASKETBALL (M) TAEKWONDO	25th JAN TO 3rd FEB 2020 10th TO 15th FEB 2020 22nd TO 24th FEB 2020 28th & 29th FEB 2020 11th TO 20th MAR 2020	Malleshwaram Cup SPIEL RVCE DEVADAN CUP AIIUT	PARTICIPATION PARTICIPATION PARTICIPATION WINNERS PARTICIPATION
8.	RAJEEV	1NH18EC741	IV	FOOTBALL	22nd TO 24th FEB 2020 27th TO 29th FEB 2020	RVCE CUFE	PARTICIPATION PARTICIPATION

9.	SUSHANT CHAUDHARY	1NH17IS113	VIII	CRICKET	14th, 15th 20th 23rd FEB 2020 16th TO19th FEB 2020 11th TO 20th MAR 2020	CUFEE RVCE VTU	PARTICIPATION PARTICIPATION PARTICIPATION
10.	DHRUV GULATI	1NH18IS031	IV	CRICKET	14th, 15th 20th 23rd FEB 2020 16th TO19th FEB 2020 11th TO 20th MAR 2020	CUFEE RVCE VTU	PARTICIPATION PARTICIPATION PARTICIPATION
11.	BHAVANA SHREE* (Played VTU Nationals)	1NH19IS027	V	BAKETBALL(WOMEN)	22nd TO 25th NOV 2021 5th TO 7th DEC 2021 16th TO 18th DEC 2021 22nd TO 31st DEC 2021	BMSCE PES VTU,BCZ & IZ VTU Nationals	PARTCIPATION PARTCIPATION SECOND RUNNER UP PARTCIPATION
12.	NISTHA SRIVASTAVA	1NH20IS098	III	BAKETBALL(WOMEN)	22nd TO 25th NOV 2021 5th TO 7th DEC 2021 16th TO 18th DEC 2021	BMSCE PES VTU,BCZ & IZ	PARTCIPATION PARTCIPATION SECOND RUNNER UP
13.	RITIKA PATIL	1NH20IS133	III	BAKETBALL(WOMEN)	22nd TO 25th NOV 2021 5th TO 7th DEC 2021 16th TO 18th DEC 2021	BMSCE PES VTU,BCZ & IZ	PARTCIPATION PARTCIPATION SECOND RUNNER UP
14.	DHANUSH BILIGIRI N H	1NH18IS030	VII	BAKETBALL(MEN)	22nd TO 25th NOV 2021 5th TO 7th DEC 2021 15th TO 16th DEC 2021	BMSCE PES VTU,BCZ	PARTCIPATION PARTCIPATION PARTCIPATION
15.	TUSHAR RAJ	1NH19IS175	V	BAKETBALL(MEN)	22nd TO 25th NOV 2021 5th TO 7th DEC 2021 15th TO 16th DEC 2021	BMSCE PES VTU,BCZ	PARTCIPATION PARTCIPATION PARTCIPATION
16.	P JAYAVEER	1NH20IS102	III	BAKETBALL(MEN)	22nd TO 25th NOV 2021 5th TO 7th DEC 2021 15th TO 16th DEC 2021	BMSCE PES VTU,BCZ	PARTCIPATION PARTCIPATION PARTCIPATION
17.	RAHUL G	1NH20IS127	III	BAKETBALL(MEN)	22nd TO 25th NOV 2021 5th TO 7th DEC 2021 15th TO 16th DEC 2021	BMSCE PES VTU,BCZ	PARTCIPATION PARTCIPATION PARTCIPATION
18.	HARSHITA MAHRPATRA	1NH20IS057	III	BADMINTON(W)	15TH AND 16TH NOV 2021	VTU(BCZ)	PARTICIPATION
19.	VIGNESH K S	1NH18IS123	VII	BADMINTON(M)	15TH AND 16TH NOV 2021	VTU(BCZ)	PARTICIPATION

20.	ANAMIKA BHATTACHARYA	1NH18IS008	VII	TABLE TENNIS	24th & 25th NOV 2021 27th & 28th NOV 2021	VTU(BCZ) VTU(IZ)	RUNNERS RUNNERS
21.	T PRANAY	1NH20IS176	III	HOCKEY	17th AND 18th DEC 2021 20th & 21st DEC 2021	VTU(BCZ) VTU(IZ)	RUNNERS PARTICIPATION
22.	DHRUV GULATI	1NH18IS031	VII	CRICKET	4th TO 7th DEC 2021	PES	PARTICIPATION
23.	HARSH ANKIT	1NH18IS143	VII	FOOTBALL	24th AND 25th NOV 2021 5th TO 7th DEC 2021 28th & 29th DEC 2021	BMSCE PESU VTU	PARTICIPATION PARTICIPATION PARTICIPATION
24.	LALITH ADITYA	1NH19IS203	V	FOOTBALL	24th AND 25th NOV 2021 5th TO 7th DEC 2021 28th & 29th DEC 2021	BMSCE PESU VTU	PARTICIPATION PARTICIPATION PARTICIPATION
25.	A NAVEEN	1NH20IS001	III	FOOTBALL	28th & 29th DEC 2021	VTU	PARTICIPATION
	SAI NADH	1NH21EE077	III	CRICKET	19th TO 22nd NOV 2022	PES	PARTICIPATION
	P JAYAVEER	1NH20IS102	V	BASKETBALL(M)	28th & 29th NOV 2022 14th TO 17th DEC 2022	VTU(NHCE) SPARDHA	PARTICIPATION PARTICIPATION
	RITAKA PATIL	1NH20IS133	V	BASKETBALL(W)	29th NOV 2022 5th & 6th DEC 2022 7th TO 9th DEC 2022 14th TO 17th DEC 2022	VOLUENTEER VTU(Dr.AIT) VTU(ATME) SPARDHA	PARTICIPATION 4th PLACE PARTICIPATION PARTICIPATION
	NISTHA SRIVASTAVA	1NH20IS098	V	BASKETBALL(W)	14th TO 17th DEC 2022	SPARDHA	PARTICIPATION
	LOCHAN KUMAR D S	1NH21EC083	III	VOLLEYBALL	17th & 18th NOV 2022 21st & 22nd NOV 2022 14th TO 17th DEC 2022 6th JAN 2023	VTU(ATRIA) VTU(IZ AIT) SPARDHA ARTIYA IT	RUNNERS PARTICIPATION PARTICIPATION PARTICIPATION
26.	D LALITH ADITHYA RAJ	1NH19IS203	VII	FOOTBALL	25TH & 26TH NOV 2022 07TH TO 9TH DEC 2022	VTU(MSRIT) VTU (GNDCE)	RUNNERS PARTICIPATION
27.	TUSHAR RAJ	1NH19IS175	VII	BASKETBALL(M)	28th & 29th NOV 2022	VTU(NHCE)	PARTICIPATION
28.	BHAVANA SHREE	1NH19IS027	VII	BASKETBALL(W)	29th NOV 2022 5th & 6th DEC 2022 7th TO 9th DEC 2022	VOLUENTEER VTU(Dr.AIT) VTU(ATME)	PARTICIPATION 4th PLACE PARTICIPATION

(ii) Participation in Inter College and Intra College Events

Students of the department are encouraged to participate in technical activities conducted by other colleges. Several of our students have won events as well. The details of such participation are listed below.

Table: 9.7.1.D Participation in Inter College and Intra College Events

CAY(2021-22)		
Number of Students Participated in Inter-Institute Events	**Number of Students Within State**	**Number of Students Outside the State**
22	21	1
CAYm1(2020-21)		
Number of Students Participated in Inter Institute Events	**Number of Students Within State**	**Number of Students Outside the State**
26	21	5
CAYm2(2019-20)		
Number of Students Participated in Inter-Institute Events	**Number of Students Within State**	**Number of Students Outside the State**
30	20	10

9.7.2 Co-Curricular Activities

The college encourages the students to take part in both co-curricular and extra-curricular activities. The students are allowed to take part in various sport activities also.

a) Co- Curricular (Club activities) - EEE

Department of EEE has 3 three clubs:

- Green Energy Club
- E-soft Club
- U Create Club

The activities conducted under each club is given in below tables and the pictures of events are shown in figures.



Figure 9.7.2.1 : Codopia (E-SoftClub)



Figure 9.7.1.2: Guest lecture on Eco Building (Green Club)

Table 9.7.2.A: List of Club Activities organized - EEE

Sl. No	Event	Name of Club	Date
Academic Year 2022-23			
1.	Train Excel to the school teachers	ECT	5th Jan 2023
2.	Simulate with us	ECT	17th Nov 2022
3.	War of Words	Green Club	11th Nov 2022
Academic Year 2021-22			
1.	Codopia “A Future Prospective”	ECT	25th May 2022
2.	Shock with Circuits	ECT	1st Jan 2022
Academic Year 2020-21			
1.	Workshop on Industrial Automation	ECT	8th Feb 2020
2.	Guest lecture on ECO-BUILDING	Green Club	6th Nov 2019
3.	HULT PRIZE	UCT	16th Dec 2020

Table 9.7.2.B: List of Co-Curricular Activities -EEE

Event Name	**Event Date**
Expert Lecture in modern trends in power system protection	03.07.2021
Guest lecture on Simulation model for prediction of optimum fuel economy	06.07.2021
Technical Event on “PRAUDYOGEEK”	09.07.2021 to 10.07.2021
Guest lecture on Evolving Technologies and Progressive Markets in Power systems	05-08-2021
Distinguished Lecture on “Model predictive control in power electronics: a critical review and recent industrial products”	29.09.2021
Competitive event "Simulate It".	12.10.2021
Event Name	Event Date
IEEE PELS Distinguished Lecture (Virtual) on "Wide BandGap	23/10/2021

(WBG) Power Electronics Systems for Heavy-Duty Vehicles"	
Synchrophasor Technology (Expert Lecture)	17-01-2022
Industry Expert lecture on"MOTORS FOR INDUSTRIAL APPLICATIONS"	18-01-2022
Alumni talk on " The journey from college to corporate	11-01-2022
Mega Industrial Visit	09-11-2022 to 12/11/22
Industrial Visit	28.05.2022
Guest lecture on 'Phasor estimation algorithms and applications in protective relaying' organised.	17.04.2023
Distinguished Lecture Program on "Wide Bandgap (WBG) Power Electronics Systems for Heavy-Duty Vehicles"	28.10.2021

Table 9.7.2.C: List of Extra-Curricular Activities -EEE

Event Name	Event Date
Seminar on "Intellectual Property Rights (IPR): Protect Your Creativity With Patent'	25.05.2022
Seminar on "ECOSTRUXURE TRANSFORMER"	12-10-2022
Five-Day Workshop On Recent Trends In Energy Storage And Electric Vehicle Technology	25.03.2023 to 29.03.2023
National Workshop on "New paradigm in Renewable Energy – Microgrids, EV and Hydrogen"	18.03.2023
Smart Grid Integration & Energy Storage Systems	14.02.2023
National Workshop on Specific Orientation cum Q&A Session ON Patent Drafting and Filing procedures	18.03.2023
Expert Lecture on VLSI Design flow using Xilinx Vivado	02.01.2023
Guest Talk on "VTU Regulations on BE Honours Degree"	21.10.2023
Distinguished Lecture Program on "Model predictive control in power electronics: a critical review and recent industrial products"	30.09.2021

b) Co- Curricular (Club activities) - ISE

Department of ISE has 5 clubs:

i) i-SWET
ii) i-SCRUM
iii) VITA
iv) NOTE
v) i-CSEH

Table 9.7.2.D: List of Extra-Curricular Activities -ISE

SI.NO	Event	Name of Club	Date
Academic Year 2022-2023			
1.	PRAVAH	-SWET	18/10/2022
2.	.JWALAN	-SWET	16/11/2022
3.	DINEROTE-K	-SCRUM	13/10/22
4.	ENIGMA	i-SCRUM	22/11/22
5.	TECH CHARADES	i-CSEH	19/10/22
6.	Tech-Verse	i-CSEH	23/12/22
7.	Xenium	VITA	20/10/22
8.	Excelsior	VITA	28/11/22
9.	REWIND 2.0	NOTE	18/11/22
10.	THE BIG 4	NOTE	17/10/22
Academic Year 2021-22			
1.	Udhbhava	i-SWET	26/11/21
2.	Spectra	i-SWET	09/06/22
3.	TECH UMANG	i-SCRUM	16/11/21
4.	Infromatics	i-SCRUM	29/12/21
5.	Seminar on Data and deployment	i-SCRUM	05/05/22
6.	Wordsville	i-SCRUM	07/06/22
7.	Seminar on Analytics	i-SCRUM	03/06/22
8.	Code-O-Fiesta	i-CSEH	17/11/21
9.	Omini-tech	i-CSEH	18/01/22
10.	Techwiz	i-CSEH	29/04/22
11.	Eyris	VITA	09/05/22
12.	ZYPHER	VITA	26/11/21
13.	Avishkar	VITA	24/12/21
14.	Techkriti	VITA	09/06/22
15.	Incident Brainstorm	NOTE	19/11/21
16.	HackX	NOTE	06/01/22
17.	Blunder Workshop	NOTE	06/05/22
18.	Rewind	NOTE	13/05/22
Academic Year 2020-21			
1.	Coding Contest	i-SWET	09/06/21
2.	Seminar on IoT	i-SWET	01/04/21
3.	Workshop on ethical Hacking	iScrum	12/04/21
4.	Workshop on cyber security	i-CSEH	23/03/22
5.	Online workshop on-HANA	iScrum	17/12/20
6.	QuBytes 2021-TECHVRISHTI	iScrum	23/09/20-25/09/20
7.	TECHNOWIZZ	VITA	25/09/20
8.	VZARDS	VITA	10/11/20
9.	GEEK INVASION	VITA	08/06/21
10.	UTKRANTI	VITA	22/04/21
11.	Code crash	NOTE	12/04/21

12.	Cybernated conflicts and Design overflow	NOTE	8/11/20
13.	Know BE4	i-CSEH	19/10/20
Academic Year 2019-20			
1.	Data Science with Python	i-SWET	28/08/19
2.	Technical Talk on Artificial Intelligence	i-SWET	26/09/19
3.	Technical Event "T-ZEST"	Scrum	11/09/19
4.	Workshop on "Global Education Awareness Programme and Workshop"	iScrum	24/09/20
5.	Workshop on "Vedic Maths"	iScrum	12/02/20
6.	Cryptoathon	i-CSEH	28/08/19
7.	crytptowar	i-CSEH	24/10/19
8.	SecureLinks	i-CSEH	08/02/20
9.	TECHNOMANCE	VITA	28/08/19
10.	VMWARE IT FORUM	VITA	14/09/19
11.	Artificial Intelligence and its applications	i-SWET	26/08/19
12.	Workshop on Python	NOTE	31/08/19
13.	Technical contest KODERS	NOTE	21/10/19
14.	Workshop Vector design	NOTE	09/02/19

The activities conducted under each club is given in below tables and the pictures of events are shown in figures.



Figure 9.7.1.3: Glimpse of the event “Enigma” conducted by i-SCRUM club of



Figure 9.7.1.4 Glimpse of the event “TECH VERSE” conducted
by i-CSEH club of Department of Information Science and Engineering

9.7.3 Events at Institution Level

Following are the Extra-Curricular activities organized by NHCE every year.

Table 9.7.3.1: List of Extra-Curricular activities organized every year

Sl.No.	Name of the Event
1	Republic Day
2	Independence day
3	Teachers Day
4	Engineers Day
5	Kannada Rajyotsava
6	International Women's Day
7	Birthday of Subhas Chandra Bose
8	Birthday of Sir. M Visvesvaraya
9	Birthday of Sardar Vallabhai Patel
10	Birthday of Rani Channamma
11	Birthday of Jhansi Rani
12	Birthday of Chatrapathi Shivaji
13	Birthday of Shaheed Bhagat Singh
14	Birthday of Swami Vivekananda
15	Birthday of Shaheed Hemu Kalani
16	Birthday of Major Sandeep Unni Krishnan
17	Deepavali
18	Founders' Day
19	Induction Program
20	Graduation Day
21	Freshers' Day
22	Annual Day "SARGAM"

Apart from that, a series of events are organized every year in the institution as a part of extracurricular activities.

Table 9.7.3.2: LIST OF EVENTS CONDUCTED FOR THE YEAR 2019-20

Sl. NO	EVENTS	DATE	ORGANISED BY
1	Kargil Vijay Diwas	26.07.19	Rotaract Club
2	Blood Donation camp	08.08.19	Leo Club
3	Flood relief camp	10.08.19	Rotaract Club
4	Independence Day	15.08.19	NSS club
5	Sargam 2019 – Unveiling the banner	16.08.19	All clubs
6	Sadbhavana Day	20.08.19	NSS Club
7	Leo Club Induction and Installation ceremony	23.08.19	Leo Club
8	Service at Iscon on the occasion of Sri Krishna Janmashtami	24.08.19	NSS Club/Rotract Club
9	Chai Pe Charcha	28.08.19	Socio Political Club, Literary club, Media club
10	One student one Tree	29.08.19	NSS club, Leo Club
11	Fit India Movement	29.08.19	Fitness Club
12	Investiture Ceremony	06.09.19	All Clubs
13	Fresh Face	12.09.19	Fashion Club
14	DKMS-BMST (Stem Cell registry India)	13.09.19	Leo Club
15	Onam celebration	13.09.19	All clubs
16	Sargam 2019 – State Level Inter collegiate fest	20.09.19 21.09.19	All Clubs
17	A visit to Little Lads residency	29.09.19	Leo Club
18	Freeze It 2.0	03.10.19	Photography club
19	Lake Clean up & plantation Drive	05.10.19	Green Warriors club
20	NHMUN	25 & 26.10.19	Literary Club, Socio political club, Media club
21	Spartan Race – Fitness event	25 & 26.10.19	Fitness Club
22	Art competition for Orphanage kids	26.10.19	Art Club, Green Warriors club
23	Deepvali celebration with orphanage Kids (Game stalls)	27.10.19	Rotaract Club
24	Show Off (Indian Classical)	31.10.19	Music Club
25	Birthday of Sardar Vallabhabai Patel	31.10.19	NSS Club
26	Blood Donation Camp	04.11.19	Leo Club
27	Kannada Rajyotsava	05.11.19	NSS Club
28	Republic Day	26.01.20	NHCE
29	International Women's Day	08.03.20	NHCE

Table 9.7.3.3: List of activities conducted for the academic year 2020-21

SL NO	EVENTS	DATE	ORGANISED BY
1.	NHMUN 4.0	01.08.2020	Literary Club
2.	Level Up 2.0	05.08.2020	Dance Club
3.	Independence Day	15.08.2020	Extra curricular clubs
4.	Quiz Competition	15.08.2020	Media Club, Fashion Club, Literary Club
5.	Essay Writing competition	15.08.2020	Media Club, Fashion Club, Literary Club
6.	Sadhbavana Day	20.08.2020	NHCE
7.	Inter-Dept Singing competition	01.09.2020 to 07.09.2020	Music Club
8.	Inter-Dept Extempore competition	08.09.2020 To 14.09.2020	Literary Club
9.	Inter-Dept Debate competition	15.09.2020 To 21.09.2020	Media Club
10.	Inter-Dept Talent show competition	22.09.2020 To 26.09.2020	Fashion Club
11.	Lights, Camera, Login Inter-college competition	19.09.2020	Drama Club
12.	The Yadalam NanjaiahSetty -31st Annual Inter Collegiate Debate Competition 2020-21	27.09.2020	Participated by NHCE Four students
13.	Inter-Dept Singing competition - Final	01.10.2020	Extra Curricular Clubs
14.	Inter-Dept Extempore competition-Final	01.10.2020	Extra Curricular Clubs
15.	Inter-Dept Debate competition-Final	02.10.2020	Extra Curricular Clubs
16.	Inter-Dept Talent show competition-Final	02.10.2020	Extra Curricular Clubs
17.	Jan Andolan Campaign	12.10.2020	NHCE
18.	Anime Quiz	19.11.2020	Literary Club
19.	Friends Quiz	20.11.2020	Literary Club
20.	Marvel Quiz	21.11.2020	Literary Club
21.	Kannada Rajyotsava	28.11.2020	Extra curricular clubs
22.	Painting & Sketching competition Theme: YIN-YANG 2020-The Good and the Bad	28.11.2020	Art Club
23.	Metanoia- Deleting spam and unwanted	15.11.2020	Green warriors club

	mails in order to reduce carbon emission		
24.	Quizito – Quiz on Environment	05.12.2020	Green Warrior Club
25.	Jaya Hey – Vijay Diwas	16.12.2020	Extra curricular clubs
26.	Samardhan:As a part of Social Service, Club members undertook the responsibility of cleaning a garden and planted sapling.	17.01.2021	Green Warriors Club in association with NGO JalaPoshan
27.	Republic Day	26.01.2021	NSS club, Dance Club
28.	Cleanliness Drive_Jakkur Lake, JakkurAgrahara, Bangalore	04.03.2021	Green Warriors club
29.	Oh, Crop – Digital poster making	29.04.2021	Media Club
30.	Digital Poster Making	05.05.2021	Green Warriors Club
31.	Debate competition	05.05.2021 & 06.05.2021	Green Warriors Club
32.	Art competition	06.05.2021	Green Warriors Club
33.	Mock IPL Auction	15.05.2021 &16.05.2021	Literary Club
34.	Shuffle: It was an online event where participants sent in videos of them showcasing their unique sense of fashion through three kinds of outfits - ethnic, formal and western. Participants were judged on creativity, outfits and confidence.	24.05.2021 to 26.05.2021	Fashion Club
35.	Air Crash Scavenger Hunt	05.06.2021	Green Warrior Club
36.	Speculate Rapid Fire	06.06.2021	Green Warrior Club
37.	Yoga(108 Surya Namaskar)	21.06.2021	Green Warrior Club
38.	Oratoria : 1.Talk Till You Drop 2.Shark Tank	25.06.2021	Literary club and Media Club

39.	Oratoria : 1.Middle ground 2.Air Crash	26.06.2021	Literary club and Media Club
40.	Oratoria : 1.Plot Twist 2.Personality 3.Raise the stakes	27.06.2021	Literary club and Media Club
41.	Jun-oon 21	29.06.2021	Dance Club
42.	Vaccinatio Drive	28.06.2021 29.06.2021 30.06.2021	NSS Club
43.	Ethnic Day	28.07.2021	Extra Curricular Clubs
44.	Musica'21 -Turn the Lockdown into a Live Set	15.07.2021	Music club
45.	Webinar on Fitoholic	10.07.2021	Fitness Club
46.	VERGE – Fun filled event	06.07.2021	Dram Club
47.	QUIZICALS'21 Musical Quiz competition	05.07.2021	Music club
48.	Independence Day	15.08.21	NHCE
49.	Experience New Horizon with a Twist	21.08.2021	NHCE

Table 9.7.3.4 : List of Extra Curricular Clubs Activities for the year 2021-22

Sl No	Date	Event	Organized by
1.	15.08.2021	Independence Day	Extracurricular clubs
2.	21.08.2021	Experience New Horizon with a twist	Extracurricular clubs
3.	28.08.2021	Online photography competition	Extracurricular clubs
4.	11.10.2021	Investiture Ceremony for Extracurricular clubs	Extracurricular clubs
5.	12.10.2021	World Mental Health Day	Drama Club
6.	21.10.2021 & 22.10.2021	NHMUN 21	Literary club & Media club
7.	23.10.2021	Reel Making, Short Movie Making, and Poster Design Competition for students	Extracurricular clubs
8.	25.10.2021	Amrutha Mahotsava-75 Clean India: Step towards reducing plastic footprint	NSS club
9.	27.10.2021	Diwali Celebration 2021	Extracurricular clubs
10.	09.11.2021	Quadroccia Event – Face painting & Ramp walk competition	Art Club & Fashion Club
11.	10.11.2021	Blood Donation Camp	Rotary Bangalore Lakeside Club
12.	17.11.2021	Photography Work Shop - A Camera	Photo & Film Club

		friendly workshop for all camera enthusiasts	
13.	18.11.2021	NIDHI BETE (Treasure Hunt)	NSS Club
14.	18.11.2021	Rangitaranga (Paining Competition)	NSS Club & Art Club
15.	18.11.2021	66th Kannada Rajyotsava	NHCE
16.	18.11.2021	Photography Competition	Photo & Film Club & NSS Club
17.	19.11.2021	Communal Harmony Campaign Week – "SLIDE SHARE" PPT presentation on Communal Harmony (In shaping the future of Children)	Socio-political Club
18.	25.11.2021	Communal Harmony Campaign Week – Debate Competition "LET'S DEBATE"	Socio-political Club
19.	27.11.2021	Alumni Meet 2021	Alumni Association
20.	08.12.2021	Spartan Race 2.0	Fitness Club
21.	16.12.2021	Vijay Diwas	Rotaract Club
22.	20.12.2021	Clean Campus Campaign	Extra Curricular Clubs
23.	22.12.2021	Chai PeCharcha	Literary & Socio-Political Club
24.	27.12.2021	Three Muskeeters	Drama Club
25.	10.01.2022 to 13.01.2022	Tribal Community Donation Camp	NSS & Rotaract Club
26.	15.01.2022	Drug Awareness Session	Leo Club
27.	26.2.2022	Inauguration of Dance Studio	NHCE
28.	12.03.2022	Dance Club Auditions	Dance Club
29.	12.03.2022	Fashion Team Auditions	Fashion Club
30.	18.03.2022	Drama Club Auditions	Drama Club
31.	19.03.2022	Digital Poster Making Competition	Media Club
32.	20.03.2022	Art Club Auditions	Art Club
33.	24.03.2022 & 25.03.2022	BOOTCAMP on Professional Ethics	NSS Club
34.	24.03.2022	Stem Cell Registry Camp	Leo Club
35.	26.03.2022 & 27.03.2022	INFINITE	Photography Club
36.	05.04.2022 06.04.2022 07.04.2022	QUIZDOM 2.0 Sitcom Quiz OTT Quiz Harry Potter Quiz	Literary Club
37.	22.04.2022	POD (Photography, Painting, Open-Mic & Debate) Competition	Rotaract Club
38.	06.05.2022	"SHARK TANK"	Green Warriors Club
39.	01.06.2022	"FREEZE IT 3.0" – Photography Competition	Photo and Film Club
40.	01.06.2022	"Fashion Audition" – for Designers and Brands (Revelation'22)	Fashion Club
41.	10.06.2022	"Initium 2022" – Inter-Collegiate Literature and Music Festival	Literary, Media & Music Clubs
42.	11.06.2022	Revelations'22	Extra-Curricular Clubs
43.	25.06.2022	Ethnic Day	Extra-Curricular clubs
44.	07.07.2022	Founder's Day	Extra-Curricular Clubs

Table 9.7.3.5 : List of Extra Curricular Clubs Activities for the year 2022-23

Sl. No.	Date	Event	Organized by
1.	10.08.2022 To 12.08.2022	Flood Relief Camp	Rotaract Club
2.	15.08.2022	75th Independence Celebration	NHCE
3.	27.08.2022	Experience New Horizon with a Twist	NHCE
4.	01.09.2022	Sri Ganesh Chaturthi Pooja and Homa	NHCE
5.	26.09.2022	Cancer Screening Camp (Breast Cancer, Cervical Cancer, & Oral Cancer)	Rotaract Club
6.	14.10.2022	Sargam Banner Unveiling	Extra Curricular Clubs
7.	21.10.2022	Deepotsav	NHCE
8.	27.10.2022	Q&A Session with Payal Ninjiani	Literary Club
9.	31.10.2022	Investiture Ceremony	Extra Curricular Clubs
10.	03.11.2022	Script It Out	Reel India Productions & Drama Club
11.	04.11.2022	LIGHT. CAMERA. ACTION.	Reel India Productions & Drama Club
12.	07.11.2022	Blood Donation Drive	NSS Club
13.	11.11.2022	ART ATTACK (Art Competition)	Art Club
14.	15.11.2022	CLASH OF THE MINDS	Socio-Political Club
15.	16.11.2022	Stand Up Comedy	NSS Club
16.	17.11.2022	Slow Cycling	Leo Club & Fitness Club
17.	18.11.2022	TUG OF WAR	Fitness Club
18.	18.11.2022	Movie Night	Sargam Core Team, NHCE
19.	25.11.2022 & 26.11.2022	SARGAM 2022 - A State Level Inter Collegiate Cultural Fest	All Extra Curricular Clubs
20.	30.11.2022	67th Kannada Rajyotsava	NHCE
21.	01.12.2022	Closet for a Cause, Clothes donation drive	Leo Club & Make A Better Place (MABP, NGO)
22.	21.12.2022	Cover It Up	Media Club
23.	21.12.2022	Study Abroad Options for Engineering Student	NHCE and Imperial Overseas Education Consultants
24.	22.12.2022	Battle of Wits	Literary Club
25.	23.12.2022	MUSICA22	Music Club
26.	23.12.2022	SCAVENGER HUNT	Green Warriors Club
27.	28.12.2022	WAR OF RHETORICANS	Socio-Political Club
28.	04.01.2023	SEPIA CAMINAR	Fashion Club
29.	13.01.2023	PHOTOCRAFT	Photo and Film Club
30.	19.01.2023	QUIZICAL23	Music Club
31.	20.01.2023	A Tribute to Amar Shaheed Hemu	Media Club, Art

		Kalani	Club & Drama Club
32.	23.01.2023	Parakram Diwas (Birth Anniversary of Nethaji Subhash Chandra Bose)	Green Warriors Club
33.	25.01.2023	"VIBE" (Photography, Videography & Editing Competition)	Photo and Film Club
34.	11.02.2023	Experience New Horizon with a Twist	NHCE
35.	20.03.2023	Parliamentary Debate	Socio-Political Club
36.	20.03.2023	Roots & Shoots (Planting in the Waste Bottles?)	Green Warriors Club
37.	20.03.2023	Personality Trait (Rotaract Recruits)	Rotaract Club
38.	21.03.2023	Innovate & Elevate	NSS Club
39.	23.03.2023	Birth Centenary Year of the Legendary Amar Shaheed Hemu Kalani	NHCE & NHCM

9.7.4 Availability of sports facilities:

Table below summarizes the list of indoor and outdoor games available in the campus of NHCE.

Table 9.7.4.1: List of indoor games available in the campus

Sl. No.	Name of the sport facility	Numbers available	Place of availability	Whether available beyond regular timings
1.	Caroms	08 boards	Students Recreation Centre	YES
2.	Chess	08 boards		
3.	Table Tennis	03 boards		
4.	Madison ball	12		
5.	Yoga mats	06		

Table 9.7.4.2: List of outdoor games available in the campus

Sl. No.	Name of the sport facility	Available Kits	Place of availability	Whether available beyond regular timings
1.	Volley ball	12 balls	Open ground	YES
2.	Basket ball	24 balls		
3.	Throw ball	06 balls		
4.	Hand ball	10 balls		
5.	Kho-Kho	2 poles		
6.	Football/Cricket	12 balls		
7.	Shot put	02		
8.	Badminton	10 bats		

9.7.5 National Service Scheme (NSS):

Table 9.7.5.1 Student participation under National Service Scheme (NSS)

Sl.No	Year	Date	Event Name	No. of Students Participated
1.	2022-23	07.11.2022	Blood Donation Drive	157
2.	2022-23	04.11.2022	Community Service Camp at Bandipur	25
3.	2021-22	16.07.2022	Webinar on POCSO Act 2012 and Gender equality	112

4.	2021-22	26.04.2022	Community Service Camp at Bandipur and kabini forest areas	20
5.	2021-22	28.03.22 & 29.03.2022	Community Service Camp at Bandipur	25
6.	2021-22	24.03.2022 & 25.03.2022	BOOTCAMP on Professional Ethics	76
7.	2021-22	10.01.2022 to 13.01.2022	Tribal Community Donation Camp	30
8.	2021-22	20.12.2021	Clean Campus Campaign	165
9.	2021-22	25.10.2021	Amrutha Mahotsava-75 (Clean India: Step towards reducing plastic footprint	75
10.	2020-21	28.06.2021 to 30.06.2021	Vaccination Drive	10
11.	2019-20	29.08.2019	One student one tree (Planted 150 saplings under the initiative of the central government)	102
12.	2019-20	24.08.2019	Service at ISKCON on the occasion of Sri Krishna Janmashtami	35
13.	2019-20	20.08.2019	Sadbhavana Day	5000

Table 9.7.5.2 : List of Major NSS Activities Conducted Details

SL.NO	YEAR	NAME OF EVENT	NUMBER OF PARTICIPANTS
1.	2022	Participated in N.S.S. 73rd Republic Day Parade camp on 26th January 2022 held at Rajpath New Delhi.	1
2.	2021	Participated in South Zone Pre-Republic Day Parade Selection Camp-2021 held at University of Agricultural Sciences, GKVK, Bangalore, organized by Regional Director of NSS Bangalore.	1
3.	2021	Participated in NSS University Level Trials at VTU.	2
4.	04/11/2022	COMMUNITY SERVICE CAMP - Tribal village at H D KOTE.	20
5.	16-07-2022	POSCO ACT 2012 and Gender Equality in association with 'The Rakshin Project By Sakshi'.	30
6.	28/03/2022 TO 29/03/2022	COMMUNITY SERVICE CAMP – Kanakuppeadi Tribal village HUNSUR.	20
7.	26/04/2022	COMMUNITY SERVICE CAMP- Varthihalli Tribal village , Priyapatna taluk	21
8.	25 /10/2021	Amrutha Mahotsava-75 Clean India	20

Table 9.7.5.3: Details of NSS Parade

Year	Name of the award/ medal	Team / Individual	Inter-university / state / National/ International	Name of the event	Name of the student
2022	Participated in N.S.S. 73rd Republic Day Parade camp on 26th January 2022 held at Rajpath New Delhi	Individual	National	Participated in N.S.S.Republic Day Parade camp on 26th January 2022 held at Rajpath New Delhi	Mr.Abhishek SM (1NH20AU001)
2021	Participated in South Zone Pre-Republic Day Parade Selection Camp-2021 held at University of Agricultural Sciences,GKVK, Bangalore, organized by Regional Director of NSS Bangalore	Individual	State level	Participated in South Zone Pre-Republic Day Parade Selection Camp-2021 held at University of Agricultural Sciences,GKVK, Bangalore, organized by Regional Director of NSS Bangalore	Mr.Abhishek S M (1NH20AU001)
2021	Participated in NSS University Level Trials at VTU	Team	University	NSS University Level Trials held at VTU	Mr.AbhishekS M (1NH20AU001) and Lakshminarasimha (1NH20ME059)

Criterion - 10

Governance, Institutional Support and Financial Resources

CRITERION 10	GOVERNANCE, INSTITUTIONAL SUPPORT AND FINANCIAL RESOURCES	(120)

10.1 Organisation, Governance and Transparency (55)

10.1.1. State the Vision and Mission of the Institute (5)

(Vision statement typically indicates aspirations and mission statement states the broad approach to achieve aspirations)

VISION OF THE INSTITUTE

- To emerge as an Institute of eminence in the fields of engineering, technology and management in serving the industry and the nation by empowering students with a high degree of technical, managerial and practical competence.

MISSION OF THE INSTITUTE

- To strengthen the theoretical, practical and ethical dimensions of the learning process by fostering a culture of research and innovative among faculty members and students.
- To encourage long-term interaction between the academia and industry through their involvement in the design of the curriculum and its hands-on implementation.
- To strengthen and mould students in professional, ethical, social and environment dimensions by encouraging participation in co-curricular and extracurricular activities.

10.1.2 Availability of the Institutional Strategic Plan and Its effective implementation and Monitoring (25)

Institutional strategic plan has been made by performing deep analysis of Strength, weakness, Opportunity and Threat of the institute. Several meetings and interactions with Management, Director, Dean Academic, Dean Research, Registrar, all HoDs, Faculties, Supporting staff, Students, Parents and Alumni were held for the same.

Following key points about institute were discussed to carry out the analysis

- Infrastructure/Laboratory/Equipment/Workshop
- Research/Consultancy

- Placement Cell
- Industry interaction
- Workshop/Training Programme for Faculty/Staff/Students
- Mentorship Programme for the students
- Active & Innovative Learning Process
- Outcome based Curriculum
- Admission policies/Fee Structure
- MoU with Reputed Institutes/Industries
- E-Learning/Library
- Skill Development Programme
- Unnat Bharat Abhiyan
- Sports/clubs/Activities/social Service
- Awards/Scholarships
- IT Infrastructure/ digital technology
- Security
- Woman grievance & redressal

After several brainstorming session by keeping above key points in mind, following strategy plans and its implementation & monitoring have been set up that transform New Horizon College of Engineering into globally recognized technical institute.

Sl No	Strategic Plan	Implementation	Monitoring
1	To improve teaching learning environment	•Set up of new Smart Class Rooms •Adoption of Moodle •Use Moocs/NPTEL for e - learning •Arrange Expert Talks •Interaction with industry person •Provide Career Guidance to students •Use service of Adjunct faculty •Successful implementation of OBE	Dean academic of the institute, Deans, and HoDs visit the class rooms, labs daily in order to make healthy academic environment and make sure successful implementation of outcome based education in the campus. In additions to the regular classes, expert talks on emerging areas also arrange weekly in the institute. Daily attendance, assignment, quizzes are uploaded on software and noticed by Dean-Academics and HoDs
2	To improve laboratory/ library	• To setup new labs on emerging areas. • To setup modern Lab for research	Meeting of HODs , Dean academic, Dean research arrange once in each semester for setting up new labs or purchasing of new

		• Rich library resources such as reputed journals/ new books	equipment. In-charge library regularly ask for new books/e-journal from faculties & students and arrange them in the library.
3	To enhance research culture	Funds/Workshop/Training have been arranged for the faculty/students in order to attract funded research project/consultancy	Every month Dean research arrange the meeting with Principal of the institute and encourage the faculty to create the research culture in the institute, arrange the workshop/training/expert talk on emerging areas
4	To enhance interaction with reputed institute	MoU with reputed institute/company has been set up to joint research & exchange of human resources	MoU with reputed institute / industry is decided in the meeting of BOG/ACM
5	To provide mentorship to students	Proper assistance is provided by Mentors to the needy students in all areas such as study, financé, career, etc	Meeting between Mentors & students takes place daily and resolve various problems of students
6	To start new programs in emerging areas	For enhancement of research culture of the institute	Principal of the institute arrange the meeting every month with Dean Academic, Dean Research and HODs and try to find the emerging areas for with new courses can be launched
7	To obtain accreditation for various courses	NAAC and Applied for NBA accreditation and prepared for that	Coordinator of NBA arrange the meeting once in a fortnight of Head of the departments to be accredited with Principal, Dean-Academics, and assess the status of preparation of accreditation
8	To improve quality of campus	Various steps have been taken to provide world class infrastructure in the institute such as digital technology used in every section/ high speed wi-fi/ lush green campus/ smart	In-charge of various section such as building section, hostel warden, computer maintenance , security officer, electrical maintenance etc continuously supervise the concern section and keep the campus up-to-date for easy and better life

		class rooms/ central library/ computer centre/ hygenic hostels/ playgrounds/ indoor stadium/ auditorium /security/electrical maintenance	
9	To improve students placement	Communication has been setup with various MNCs both National and International for campus drives at the institute	Placement team continuously interact with HR of various MNCs for campus recruitment, arrange various career oriented programme at Institute
10	To increase Sports activity/social services	National level sports and cultural & technical activities have been organized. Institute participates and organize various national and international level activities	Sports officer interact regularly with students and arrange facilities of sports, encourage the students for participation at national level competitions. Coordinators of each clubs meet weekly and decide activities to be performed at institute level.
11	Trained students under Skill Development Program	More students have been trained under various schemes of central and state government.	Coordinator interact regularly and assess the performance of trainee, and arrange better environment to improve themselves.
12	To improve the quality of rural areas under the "Unnat Bharat Abhiyan"	Institute is participating in full sprit under "Unnat Bharat Abhiyan" for the development and betterment of rural area	Coordinator of Unnat Bharat Abhiyan takes the meeting of concern faculty & students and make the plan weekly for the betterment of rural areas

10.1.3 Governing body, administrative setup, functions of various bodies, service rules, Procedure, recruitment and promotional policies (10)

List the governing, senate and all other academic and administrative bodies; their memberships, functions and responsibilities; frequency of the meetings and attendance therein, in a tabular form. A few sample minutes of the meetings and action-taken reports should be annexed.

The published rules including service rules, policies and procedures; year of publication shall be listed. Also state the extent of awareness among the employees/students.

- To ensure observance and compliance of instructions issued by AICTE, Government of Karnataka and affiliating University.
- To ensure that the building, land, furniture and facilities are not being used for any other purpose (such as holding political meetings, communal meetings), except for running AICTE approved courses in the institute.
- To submit reports and returns from time to time to AICTE, Government of Karnataka and affiliating University.
- Create peaceful and favourable atmosphere for study free from ragging.

Powers and Functions of Chairperson of Governing Council

- The Chairperson shall intimate the date of the Governing Council meeting to the Principal-cum-Member Secretary for arrangement of Governing Council meeting. In case the Principal-cum-Member Secretary fails or ignores to arrange Governing Council meeting, the Chairperson can call for Governing Council meeting.
- In the event of taking vote on any decision and if a tie occurs, then decision of Chairperson shall be final.
- The Chairperson shall ensure that the decisions taken in Governing Council meeting are implemented by Member Secretary.
- The Chairperson shall ensure that the Governing Council is functioning properly to meet the mission of the Institute.

Powers and Functions of Member Secretary of Governing Council

- Member Secretary of Governing Council of the Institute shall be the Principal, who executes the decisions taken in the Governing Council on behalf of the Governing Council.
- By the order of the Chairperson, Member Secretary shall arrange the Governing Council meeting. In case of unfavouring situations, he/she will intimate the cancellation of the meeting the Chairperson and other members of the Governing Council.

- He would take correspondence on behalf of the Governing Council meeting in relation with the decisions taken in it and get it confirmed by the Chairperson and members present. With confirmation, the proceedings would be forwarded to AICTE, Government of Karnataka and affiliating University.
- The Member Secretary would maintain the properties of the institution and remain in-charge of it, the title deeds and papers related to the need of the institution.
- He will exercise powers and functions as maybe imposed and assigned by the Governing Council from time to time.
- The Member Secretary would issue appointment letters to the staffs selected by the Recruitment Committee after the approval from the sponsoring trust and the Governing Council of the institute.
- To ensure observance and compliance of instructions issued by AICTE, Government of Karnataka and affiliating University.
- To ensure that the building, land, furniture and facilities are not being used for any other purpose (such as holding political meetings, communal meetings), except for running AICTE approved courses in the institute.
- To submit reports and returns from time to time to AICTE, Government of Karnataka and affiliating University.
- Create peaceful and favourable atmosphere for study free from ragging.

Powers and Functions of Chairperson of Governing Council

- The Chairperson shall intimate the date of the Governing Council meeting to the Principal-cum-Member Secretary for arrangement of Governing Council meeting. In case the Principal-cum-Member Secretary fails or ignores to arrange Governing Council meeting, the Chairperson can call for Governing Council meeting.
- In the event of taking vote on any decision and if a tie occurs, then decision of Chairperson shall be final.
- The Chairperson shall ensure that the decisions taken in Governing Council meeting are implemented by Member Secretary.
- The Chairperson shall ensure that the Governing Council is functioning properly to meet the mission of the Institute.

Governing Council

The composition of Governing Council as follows;

Table 10.1.3.1 Governing Council

Sl No.	Member	Address	Designation	Position
1	Dr. Mohan Manghnani	New Horizon College of Engineering, Marathalli, Outer Ring Road, Kadubisanahalli, Bangalore- 560 103	Chairman, NHEI	Chairperson
2	Mr. H N Surya Prakash	New Horizon College of Engineering, Marathalli, Outer Ring Road, Kadubisanahalli, Bangalore- 560 103	Registrar	Member
3	Dr. R Bodhisatvan	New Horizon College of Engineering, Marathalli, Outer Ring Road, Kadubisanahalli, Bangalore- 560 103	Principal-NHC(M)	Member
4	Dr. R.J. Anandhi	New Horizon College of Engineering, Marathalli, Outer Ring Road, Kadubisanahalli, Bangalore- 560 103	Dean-Academics	Member
5	Dr. Vijilius H Raj	New Horizon College of Engineering, Marathalli, Outer Ring Road, Kadubisanahalli, Bangalore- 560 103	Controller of Examination	Member
6	Prof. Gurucharan Singh	New Horizon College of Engineering, Marathalli, Outer Ring Road, Kadubisanahalli, Bangalore- 560 103	Executive Director – Training & Placements	Member
7	Dr Sanjeev Sharma	New Horizon College of Engineering, Marathalli, Outer Ring Road, Kadubisanahalli, Bangalore- 560 103	Dean-QASDC	Member

8	Dr. K N. Subramanya	R V College of Engineering, R V Vidyanikethan Post, Mysuru Road Bengaluru – 560 059	Principal & Professor, R V College of Engineering, Bengaluru	Member
9	Dr. K Swaminathan	Dept. of Civil Engineering, National Institute of Technology Surathkal	Commission (UGC) Nominee	Member
10	AICTE Nominee	Director, AICTE, Palace Road, Bangalore- 560001	Council (AICTE) Nominee	Member
11	DTE Nominee	Directorate of Technical Education, Bangalore – 560001	State Government Nominee	Member
12	Sri. Sagar Nidavani	House 269, 4th cross, 14th Main, Gokula 1st stage, Mathikere, Bangalore- 560054	University (VTU) Nominee & Executive Council Member VTU	Member
13	Dr. Manjunatha	New Horizon College of Engineering, Marathalli, Outer Ring Road, Kadubisanahalli, Bangalore- 560 103	Principal	Ex Officio Member Secretary

Academic Council

Structure/Constitution	Functions/Responsibilities	Frequency of Meetings
Academic Council constituted with •Institution's distinguished Principal as Council Chairman •Dean- Academic affairs as Member Secretary •All Heads of the Departments as Council Members	•Recommend and approve faculty boards, academic regulations, curriculum-scheme and syllabi, teaching & learning practices •Frame regulations regarding students admission into programmes and to conduct of examinations	

•1-Professor, 1-Associate Professor or 1- Assistant Professor(as per seniority in institution) from each department as representing council members(for a period of 2-years) •4(Min.)-External experts from engineering education or Industry as council members nominated by Board of Governors(B.O.G) •1-External expert for each major engineering discipline nominated by vice chancellor, VTU, Belgaum as council member •Institution's controller of examination(COE) as council member	•Suggest and recommend proposed teaching methods/techniques(LCD projector, Smart Board, Online etc..) and student performance evaluation metrics to enhance quality education •Approve students for conferment of degrees, diplomas or certificates by the University. •Recommend to the B.O.G for about 1. Institute new programmes of study 2. Student scholarships, fellowships, medal, prizes with the guideline of relevance •Promote and verify research activities of the institution	Twice in a Year

Table 10.1.3.2 Academic Council

Sl No.	Category	Sl No.	Name
I	Principal of the College – Chairman	1	Dr. Manjunatha
II	All Heads of the Dept. – Members	1	Dr. Sanjeev Sharma
		2	Dr. Sainath
		3	Dr. Anitha Rai
		4	Dr. Niranjan P S
		5	Dr. B Rajalakshmi
		6	Dr. Mohan H S
		7	Dr. Aravinda K
		8	Dr. Shridhar Kurse
		9	Dr. Uma Reddy N V
		10	Dr. S P Manikandan
		11	Dr. Revathi V

		12	Dr. Anusuya Devi V S
		13	Dr. Srinivasa G
		14	Dr. Asha V
		15	Dr. Sujitha S
		16	Dr. Sowmya Narayanan
		17	Dr.Jaysheelan
III	Controller of Examination	1	Dr. Vijilius H Raj
IV	Teachers of the College representing different level of teaching staff	1	Dr. Nagendra.J, Associate Professor
		2	Dr. Srinath M K , Associate Professor
		3	Dr. Prashanth K S, Associate Professor
		4	Ms. Asha Rani Borah, Sr Assistant Professor
		5	Dr. Swathi B, Sr. Assistant Professor
		6	Dr. Vandana C P, Sr. Assistant Professor
		7	Mr. Surendra B V, Associate Professor
		8	Dr. A R Sainath, Professor
		9	Dr. B Meenakshi Sundaram, Professor
V	Experts from outside the college representing areas such as industry, R&D, Tech. Edn	1	Mr. Sandeep Jain, Founder & CEO, GeeksforGeeks
		2	Mr. Ananthamani, Vice President – PLM & Mech/Elec Capgemini Engineering
		3	Dr. K N Subramanya, Principal, R V College of Engineering
VI	Nominees of University (VTU)	1	Dr. Shadashive Gowda, Principal-Vidya Vardhaka College of Engineering, Mysuru
		2	Dr. Shivyogimath, Prof., Dept. of Civil Engineering, Basaveswara Engineering College, Bagalkot
VII	Dean Academics – Member Secretary	1	Dr. R. J.Anandhi

Meetings:

Academic Year	Date of Meeting	No. of Members Attended	No. of Members Absent
CAY(2022-23)	07-12-2022 27-08-2022 17-06-2022	24 36 30	
CAY m1(2021-22)	25-02-2022 15-02-2021	30 34	
CAY m2(2020-21)	05-11-2020 24-07-2020	34 29	
CAY m2(2020-21)	21-09-2019 29-06-2019	21 24	3

Statutory Committees

A number of committees are present in the college that are formed taking into the considerations of the students and faculties. There is diversification that ensures that the committees address any issues faced by the stake holders and also aims for the improvements under the purview of the respective committees. The various committees and their in-charges are as follows:

Table 10.1.3.3 Statutory Committees

Sl No	Committees	In-Charge	Designation
1.	Accreditation Committee	Dr. Sanjeev Sharma	Dean -QASDC
2.	Admission Committee	Ms. Aruna Machani	Executive Director - Admissions
3.	Alumni Committee	Dr. Anitha S. Rai	Director – Library & Alumin Relations
4.	Anti- Ragging Committee	Mr. Tarun Batra	Chief Operating Officer
5.	College Internal Complaints Committee (CICC)	Dr. R.J. Anandhi	Dean Academics
6.	Co- Curricular Committee	Dr. Piruthviraj	Associate Professor,Electronics & Communication Engineering

7.	College Internal Grievance Redressal Committee	Ms. Manjula V.	Executive Director-Human Resources
8.	Community Development Center (Public Welfare Committee)	Ms. Aruna Machani	Executive Director – Admissions
9.	Counselling Committee	Dr. Sanjeev Sharma	Dean QASDC
10.	Cultural Committee	Dr. Anitha S. Rai	Director-Library & Alumni Relations
11.	Disciplinary Committee	Mr. Tarun Batra	Chief Operating Officer
12.	Energy Conversion Audit Committee	Dr. Sujitha S	Associate Professor & HoD - Electrical & Electronics Engineering
		Mr. Karthik	Chief Electrical Manager
13.	Equal Opportunities Cell	Dr. Anusuya Devi V S	Professor & Head Department of Chemistry
14.	Examination Committee	Dr. Vijilius Helena Raj	Controller of Examinations
15.	Finance Committee	Mrs. Malathi Madhusudan	Sr. Executive Director-Accounts & Finance
16.	Girls Hostel Development & Welfare Committee	Ms. Aruna Machani	Executive Director – Admissions
17.	Hostel (Boys) Development & Welfare Committee	Mr. H N Suryaprakash	Registrar
18.	Infrastructure Development Committee	Dr. P S Niranjan	Professor & Head- Civil Engineering
		Mr. L N Rao	Director of Program Management-Construction
19.	In-Plant Training/ Industrial/ Career Guidance/ Placement Committee	Prof. Gurucharan Singh	Sr. Executive Director
20.	Instrumentation Cell	Dr. Aravinda K	Professor & Head
			Electronics & Communication Engineering
21.	Internal Quality Assessment &	Dr. Sanjeev Sharma	Dean QASDC

	Assurance Cell		
22.	Library Committee	Dr. Anitha S. Rai	Director-Library & Alumni Relations
23.	NCC Committee	Mr. Ravi Kumar. M	Sr. Assistant Professor-Mechanical Engineering
24.	News Letter Committee	Dr. K G Madhwaraj	Professor, Department of MCA
25.	NSS Committee	Dr. Anitha S. Rai	Director-Library & Alumni Relations
		Mr. Hanamantha Y	Sr. Assistant Professor, Mechanical Engineering
26.	Physical Education & Sports Committee	Hari Kumar K C	HOD-Physical Education and Sports
27.	Public Relations & Marketing Committee	Ms. Aruna Machani	Executive Director-Admissions
28.	Purchase Committee	Mrs. Malathi Madhusudan	Senior Executive Director – Accounts & Finance
29.	Recruitment Cell	Ms. Manjula V.	Executive Director-Human Resources
30.	Research & Development Committee	Dr. Sanjeev Sharma	Dean QASDC
31.	SC/ST Welfare Cell	Mr. H N Suryaprakash	Registrar
32.	Software / Hardware Training Committee	Dr. B. Rajalakshmi	Professor & Head
33.	Staff Welfare Committee	Ms. Manjula V.	Executive Director-Human Resources
34.	Student Mentoring Committee	Dr. Sanjeev Sharma	Dean QASDC
34.	Student Mentoring Committee	Dr. Piruthviraj	Associate Professor, Electronics & Communication Engineering
35.	Students Grievances Redressal Committee	Mr. H N Suryaprakash	Registrar
36.	Universal Human Values Committee	Dr. Anusuya Devi V S	Professor & Head
36.	Universal Human Values Committee	Dr. Anusuya Devi V S	Department of Chemistry
37.	Value Added Programs Committee	Dr. R.J. Anandhi	Dean-Academics
37.	Value Added Programs Committee	Dr. Niranjan P S	Professor & HoD- Civil Engineering

38.	Women Empowerment Committee	Dr. R.J. Anandhi	Dean-Academics

Accreditation Committee

As an upcoming engineering college in Bangalore as well as in Karnataka, the college which is already recognised by accreditation councils has formed this committee to look into the requirements for upcoming state and national level accreditations.

Table 10.1.3.3.1 Accreditation Committee

Sl. No.	Name	Designation	Position
1	Dr. Manjunatha	Principal	Chairman
2	Mr. H N Suryaprakash	Registrar	Member
3	Dr.B. Rajalakshmi	HoD-CSE	Member
4	Dr.Sainath	HOD– MBA	Member
5	Dr. R.J.Anandhi	Dean-Academics	Member
6	Dr. Sanjeev Sharma	Dean QASDC	Member Secretary

Frequency of Meetings : Twice in a Year

Admission Committee:

This is an integral committee of the institute that deals with the admission of the students into the various undergraduate and postgraduate programs. Based on the students' qualifications and rankings in entrance exams, this committee provides admissions to the students to pursue their course of choice.

Table 10.1.3.3.2 Admission Committee

Sl. No.	Name	Designation	Position
1	Dr. Manjunatha	Principal	Chairman

2	Mr. H N Suryaprakash	Registrar	Member
3	Dr.B. Rajalakshmi	HoD-CSE	Member
4	Dr.Sainath	HOD– MBA	Member
5	Dr. R.J.Anandhi	Dean-Academics	Member
6	Dr. Sanjeev Sharma	Dean QASDC	Member Secretary

Frequency of Meetings : Once in a Year

Alumni Committee

Alumina of an educational institute contributes a lot to the growth of the organization. Besides being a major stakeholder of the institute, they give guidance and feedback to their juniors with respect to their career opportunities. This committee was constituted to keep constant rapport with the alumni.

Table 10.1.3.3.3 Alumni Committee

Sl. No.	Name	Designation	Position
1	Mr. CHETHAN R , 1NH13EC717	Software Engineer	President
2	Mr. ASAD SHARIFF, 1NH12ME732	Entrepreneur	Vice President
3	Mr. B ACHAL , 1NH15EC003	Software Engineer	Secretary
4	Mr. D N PRADEEP 1NH15EE712	Software Engineer	Treasurer
5	Mr. KUWAR KESHAV 1NH16CS053	Software Engineer	Board Member
6	Mr. KUSHAGRA SHETTY 1NH15AU025	IT Sales	Board Member
7	Mr. HEMANTH KUMAR RP 1NH17MCA43	Software Engineer	Board Member
8	Mr. ABHISHEK N 1NH14EC400	Software Developer	Board Member
9	Dr. MANJUNATHA	Principal-NHCE	Member
10	Mr. GURUCHARAN SINGH	Sr. Executive Director-HRD	Member
11	Mr. SURYAPRAKASH	Registrar	Member
12	Prof. MANJESH B C, 1NH03ME023	Sr. Asst. Professor & Alumni Officer and Alumni	Member
13	Dr. ANITHA S RAI	Director-Library & Alumni Relations	Member `Secretary

Frequency of Meetings : Twice in a Year

Anti-Ragging Committee

Ragging is a very common problem faced by students in the campus during and after college hours. The consequences of the students who faced ragging are very serious and shocking. Thus, this committee was constituted to control ragging and provide relief to students who come under this shadow. The committee has the powers to take stringent action on students involving in such activities. The Committee comprise of the following members.

Table 10.1.3.3.4 Anti-Ragging Committee

Sl. No.	Name	Designation	Position
1	Dr. Manjunatha	Principal	Chairman
2	Ms. Aruna Machani	Executive Director - Admissions	Member
3	Shri. H.N.Suryaprakash,	Registrar	Member
4	Dr. R.J. Anandhi,	Prof & Dean – Academics	Member
5	Dr. Sanjeev Sharma	Prof & Dean QASDC	Member
6	Dr. Revathi Shankar,	HOD – Applied Science - Physics	Member
7	Police Inspector	Marathalli	Member
8	Ms. Karthik	Parent	Member
9	Mr. Nanjundaiah	Retired BEO	Member
10	Ms. Shanthy P	Girls Hostel Warden	Member
11	Mr. Ramesh Babu	Boys Hostel Warden	Member
12	Mr. Basi Reddy Chandra Mouliswar Reddy	(1NH19CV021) – Student	Member
13	Ms. Shaik Anju Minayar	(1NH19IS143) – Student	Member
14	Mr. Tarun Batra,	Chief Operating Officer	Member Secretary

Frequency of Meetings : Twice in a Year

College Internal Complaints Committee (CICC)

Complaints against sensitive issues like sexual harassment and the students facing such problems will not be in a mind-set to address these issues. Thus this committee was constituted to tackle such problems and help the students. Powers are vested in the hands of the committee to take stringent action on students involving in such activities. The committee is constituted as follows..

Table 10.1.3.3.5 Anti-Sexual Harassment Committee

Sl.No.	Name	Designation	Role
1	Dr. Manjunatha	Principal NHCE	Chairman
2	Ms. Manjula V	Executive Director-Human Resources	Member
3	Ms. Aruna	Executive Director - Admissions	Member
4	Dr Revathi	HOD – Applied Science - Physics	Member
5	Ms. Sowmya H K	Ph.D Scholar	Member
6	Ms. Nihal Baba	PG Student	Member
7	Ms Ayesha Siddiqua A	Student Representative	Member
8	Dr. Ashok	General Surgery & Laparoscopic Surgeon	Member from NGO
9	Dr R J Anandhi	Dean – Academics	Member Secretary

Frequency of Meetings : Twice in a Year

Co-curricular Committee

The committee of the college is constituted to look into the likes of the students, besides academics. Aimed at ensuring an overall development of the young ester, the committee promotes various activities by forming clubs involving students, helping them excel in competitions.

Table 10.1.3.3.6 Co-curricular Committee

Sl. No.	Name	Designation	Position
1	Dr. Manjunatha	Principal	Chairman
2	Dr. Rajalakshmi	HoD-CSE	Member
3	Dr. Niranjan	HoD- Civil	Member
4	Dr. Anitha S Rai	Director-Library & Alumni Relations	Member

5	Mr.Kushal Kulandaivelu	Student Member – 1NH20AI051	Member
6	Mr.Bharatdeep Hazarika	Student Member – 1NH19EC129	Member
7	Dr. Piruthiviraj P	Associate Professor – ECE Dept	Member Secretary

Frequency of Meetings : Twice in a Year

College Internal Grievance Redressal Committee (CIGRC)

Table 10.1.3.3.7 College Internal Grievance Redressal Committee

S.No	Name & Designation	Committee Members
1	Dr. Manjunatha – Principal	Chairman
2	Shri. H. N. Suryaprakash – Registrar	Member
3	Dr. Anandhi R J – Professor & Dean Academics	Member
4	Dr. Sanjeev Sharma – Dean – QASDC	Member
5	Ms. V. Manjula – Executive Director- Human Resources	Convener

Frequency of Meetings : Twice in a Year & As and when required.

Counselling Committee

An essential committee in the college addressing issues of students. This committeewas constituted to help distracted, diverted and students who lack concerntrationin studies to getback to studying. The committee includes the counselors who assist and guide the students to get back to the curriculum.

Table 10.1.3.3.8 Counselling Committee

Sl. No.	Name	Designation	Position
1	Dr. Manjunatha	Principal	Chairman
2	Ms Manasa T.J	Student Counselor	Member
3	Ms.Rajina.R	Student Counselor	Member
4	Ms.Prachi Bhavsar	Student Counselor	Member
5	Ms.Pallavi	Student Counselor	Member
6	Dr.Sanjeev Sharma	Dean-QASDC	Member Secretary

Frequency of Meetings : Twice in a Year & As and when required.

Cultural Committee

Based on the lines of the co-curricular committee, the cultural committee helps the students to distinguish themselves apart from their curriculum. Students are encouraged to take part in various cultural events in college and other colleges and showcase their talents.

Table 10.1.3.3.9 Cultural Committee

Sl. No.	Name	Designation	Position
1	Dr. Manjunatha	Principal	Chairman
2	Ms. Aruna M	Executive Director - Admissions	Member
3	Dr. Rajalakshmi	HoD- CSE	Member
4	Dr. Uma Reddy	HOD-AIML	Member
5	Mr. Shreyas L	1NH19AU053	Member
6	Ms. Charisma	1NH19EE023	Member
7	Dr. Anitha S Rai	Director-Library & Alumni Relations	Member- Secretary

Frequency of Meetings : Twice in a Year.

Disciplinary Committee

Indiscipline is a serious aspect of concern amongst students owing to peer pressure and other kinds of distractions around them. Their behavior changes and they react differently to various situations. This committee monitors the students and ensures that no indiscipline happens. Also, in the event of any indiscipline activities, action is taken by the committee.

Table 10.1.3.3.10 Disciplinary Committee

Sl. No.	Name	Designation	Position
1	Dr. Manjunatha	Principal	Chairman
2	Shri. H. N. Surya Prakash	Registrar	Member
3	Dr. Anandhi R J	Dean Academics	Member
4	Dr. Sanjeev Sharma	Dean QASDC	Member
5	Dr. Revathi	HOD Applied Science – Physics	Member
6	Mr. Tarun Batra	Chief Operation Officer	Member Secretary

Frequency of Meetings : Twice in a Year & As and when required.

Energy Conservation Audit Committee

This committee constituted by the Electrical department, is responsible of an eco-friendly campus. They are responsible for conservation of electricity in the college campus buildings and ensure that there is no wastage for power, thus saving it for the future.

Table 10.1.3.3.11 Energy Conversation Committee

Sl. No.	Name	Designation	Position
1	Dr. Manjunatha	Principal	Chairman
2	Mr. Karthik	Estate Manager	Member
3	Prof. Kavitha Chenna Reddy	Sr. Asst. Prof	Member
4	Dr. Joshua Daniel Raj	Sr. Asst.Prof	Member
5	Prof. Vinod Kumar S	Sr. Asst.Prof	Member
6	Prof. Sangeetha C N	Asst.Prof	Member
7	Dr. S Sujitha	HOD – EEE	Member Secretary

Frequency of Meetings : Twice in a Year

Equal Opportunity Cell

Table 10.1.3.3.12 Equal Opportunity Cell

Sl No	Name	Designation	Post
1	Dr Manjunatha	Principal	Chairman
2	Gp.Capt.tarun Batra	Chief Operating Officer	Member
3	Ms Vijaya	Advocate	Member
4	Mr.Girihas Reddy	Student	Member
5	Mr.Hari Kumar Karnati	Parent	Member
6	Dr. Anusuya Devi V S	HoD & Professor – Applied Science - Chemistry	Member – Secretary

Frequency of Meetings : Twice in a Year

Examination Committee

The committee monitors the autonomous examinations conducted in the college. Starting from the notification of the exam till the declaration of the results, the committee manages all the activities in coordination with the heads of the departments ensuring smooth running of the entire process.

Table 10.1.3.3.13 Examination Committee

Sl. No.	Name	Designation	Position
1	Dr. Manjunatha	Principal	Chairman
2	Dr. Vijilius Helena Raj	Professor & Controller of Examination	Member-Secretary
3	Mr. Aravinda	Professor & HOD-ECE	Member
4	Dr. Revathi V	HOD Applied Science – Physics	Member
5	Dr. Prashanth K.S	Asso.professor-PHY	Member

Note: All HoDs of various Departments are Ex-officio Members of Examination Committee

Frequency of Meetings : Every Quarter of the Academic year.

Finance Committee

The committee is responsible for all the monetary activities in the institution. Students' fee collection, funds for procurement of equipment, dispatching salaries and remuneration are under the purview of this committee.

Table 10.1.3.3.14 Finance Committee

Sl. No.	Name	Designation	Position
1	Dr. Manjunatha	Principal	Chairman
2	Shri. H. N. Suryaprakash	Registrar	Member
3	Dr. Revathi Shankar	HOD Applied Science – Physics	Member
4	Ms. Geetha	Sr. Accounts Executive	Member
5	Mrs. Malathi Madhusudan	Sr.Ex. Director – A/c's & Finance	Member-Secretary

Frequency of Meetings : Twice in a Financial year

Hostel(Boys) Development & Welfare Committee

The committee looks into the requirement of the students(boys) staying on the campus, in the hostel. The committee monitor with regard to hostel food, accommodation, Maintenance, and discipline in the Hostel.

Table 10.1.3.3.15 Hostel (Boys) Development & Welfare Committee

Sl. No.	Name	Designation	Position
1	Dr. Manjunatha	Principal	Chairman
2	Ms. Malathi Madhusudan	Sr. Exe. Director A/c's & Finance	Member
3	Mr. Ramesh Babu	Warden	Member
4	Mr. Pankajakshan	Warden	Member
5	Mr. Sambasiva Rao	Warden	Member
6	Shri. H. N. Suryaprakash	Registrar	Member Secretary

Frequency of Meetings : Twice in a year

Hostel(Girls) Development & Welfare Committee

The committee looks into the requirement of the students(girls) staying on the campus, in the hostel. The committee monitor with regard to hostel food, accommodation, Maintenance , and discipline in the Hostel.

Table 10.1.3.3.16 Hostel (Girls) Development & Welfare Committee

Sl. No.	Name	Designation	Position
1	Dr. Manjunatha	Principal	Chairman
2	Shri. H. N. Suryaprakash	Registrar	Member
3	Ms. Malathi Madhusudan	Sr. Exe. Director A/c's & Finance	Member
4	Ms. Shanthy	Warden	Member
5	Ms. Yogita	Warden	Member
6	Ms. Aruna Machani	Executive Director - Admissions	Member Secretary

Frequency of Meetings : Twice in a year

Infrastructure Development Committee

All hardware infrastructure requirements of the college are taken care by this committee. Furniture and furnishings, lights & fans, other essential infrastructure in the buildings and on the campus are provided by this committee**.**

Table 10.1.3.3.17 Infrastructure Development Committee

Sl. No.	Name	Designation	Position
1	Dr. Manjunatha	Principal	Chairman
2	Mr. L.N. Rao	Project Manager	Member
3	Dr. Niranjan P S	Professor & HOD Department of Civil Engineering	Member
4	Ms. Sailee Joshi	Quantity Surveyor	Member – Secretary

Frequency of Meetings : Twice in a year

In-Plant training/Industrial/Career Guidance/placement committee

This committee is very essential for the graduating undergraduate and postgraduate students, aspiring to get placed in companies as well as to start companies of their own. In plant Training and career guidance are given to the students in their pre-final year and pre-final semester respectively, preparing them for the forthcoming campus interviews.

Table 10.1.3.3.18 In-Plant Traing/Industrial/Career Guidance/Placement Committee

Sl. No.	Name	Designation	Position
1	Dr. Manjunatha	Principal	Chairman
2	Prof. Gurucharan Singh	Sr. Executive Director	Member-Secretary
3	Prof. Binod Kumar Singh	Head- IIIC & CR	Member
4	Prof. Anis Mirza	Head- Placements & CR	Member
5	Dr. Sowmya Narayanan	HOD –Lifeskills & Lifelong Learning	Member
6	Ms. Manisha Joshi	Senior HR Manager	Member
7	Mr. Santhosh Kumar BS	Senior HR Manager	Member
8	Ms. Rashmi S Gowda	HR Manager	Member

9	Mr. Santhosh Kumar K	HR Manager	Member
10	Ms. Hemalatha K	Senior Aptitude Trainer	Member
11	Ms. Vijaylakshmi M	Aptitude Trainer	Member
12	Mr. Franco Chris Antony J	Aptitude Trainer	Member
13	Ms. Bhakti Kulkarni	Verbal Trainer	Member
14	Dr. Sainath	MBA – Faculty Placement Coordinator	Member
15	Dr. Ashok	CSE- Faculty Placement Coordinator	Member
16	Dr. Bopanna	MECH- Faculty Placement Coordinator	Member
17	Sr. Asst. Prof. Latha	ISE- Faculty Placement Coordinator	Member
18	Dr. Ratheesh	CE- Faculty Placement Coordinato	Member
19	Sr. Asst. Prof. Rajashree	AI ML- Faculty Placement Coordinator	Member
20	Sr. Asst. Prof. Govindraju	MCA- Faculty Placement Coordinator	Member
21	Asst. Prof. Sabita Bhattacharya	ECE- Faculty Placement Coordinator	Member
22	Sr. Asst. Prof. Sunil	EEE- Faculty Placement Coordinator	Member
23	Mr. Sunil Prashanth	Auto- Faculty Placement Coordinator	Member
24	Asst. Prof. Chennabasava	Asst. Prof. Chennabasava	Member
25	Shiva Shankar L(1NH20EC408)	Student	Student Member
26	Nikhil V Gowda (1NH20EC096)	Student	Student Member
27	Nikhil V Gowda (1NH20EC096)	Student	Student Member
28	Sanjivani (1NH19CS158)	Student	Student Member

Frequency of Meetings : Twice in a year

Instrumentation Cell

This body constituted in the college plays a very important role with respect to the laboratory equipment's. Timely calibrations and preventive maintenance ensures that the machines (electrical) do not come for repairs or come in less numbers. Thus, this cell is responsible for keeping a check on the machines and certifying the same.

Table 10.1.3.3.19Instrument Cell Committee

Sl. No.	Name	Designation	Position
1	Dr. Manjunatha	Principal	Chairman
2	Mr. Rakesh Chandrashekar	Prof.& HOD / Mechanical	Member
3	Dr.Sujitha S	Prof. HOD – EEE	Member
4	Dr.Revathi	Prof HOD Applied Science – Physics	Member
5	Dr.Arvinda K	Prof.& HOD-ECE	Member Secretary

Frequency of Meetings : Once in a year

Internal Quality Assessment and Assurance Cell

The committee was constituted to ensure that all the standards with regard to curriculum are met. Any discrepancies with respect to internal valauation, methods of teaching-learning are addressed by this committee. The Principal is the Chairman of the committee and it is constituted as follows.

Table 10.1.3.3.20 Internal Quality Assessment & Assurance Cell Committee

Sl. No.	Name	Designation	Position
1	Dr. Manjunatha	Principal	Chairman
2	Prof. S.B. Kandagal	Professor, Department of Aerospace Engineering, IISC Bangalore	Expert Member
3	Prof.Chandramouli P.	Professor, IIT Madras, Chennai	Expert Member
4	Prof. BalajiPrathasarathy	Professor, International Institute of Information Technology – IIIT Bangalo	Expert Member
5	Mr.H.N. Surya Praksh	Registrar	Member
6	Dr.Anandhi R.J.	Dean -Academics	Member

7	Dr.Anitha S. Rai	Director – Library & Alumni Relation	Member
8	Dr.Revathi V.	HOD Applied Science – Physics	Member
9	Dr.B.Rajalakshmi	HoD – CSE	Member
10	Dr.Aravinda K.	HoD – ECE	Member
11	Dr.Sainath	HoD – MBA	Member
12	Dr.Sowmya Narayanan	HoD – Center for Life Skills and Lifelong Learning	Member
13	Dr.Niranjan P.S.	HoD – Civil Engineering	Member
14	Dr.Gurulakshmi A.B.	Associate Professor, ECE	Member
15	Dr.Sanjeev Sharma	Dean – QASDC	Member Secretary
16	Mr. SouravNaryan Biswas	Program Manager, Talent Acquisition, Capgemini India	Stakeholder & Employer
17	Mr.Sijio Mathew Varghese	Co – Founder, Overnight Ventures	Alumni
18	Mr.Bharathdeep	Department of ECE, NHCE	Student Nominee

Frequency of Meetings : Twice in a year

Library Committee

Books and other e-learning media are very essential for gaining knowledge as learning is a continuous process. Faculties and students require resources to attain knowledge of the day-to-day requirements. The Library Advisory committee headed by the Principalensures all these requirements are fulfilled through the member secretary and the inputs from the other members. Procuring books, technical journals, technical magazines, applying for access to e-journals, providing food reference books and adequate reading spaces are provided by this committee, which comprises the following members.

Table 10.1.3.3.21 Library Committee

Sl. No.	Name	Designation	Position
1	Dr. Manjunatha	Principal	Chairman
2	Mr. H N Suryaprakash	Registrar	Member
3	Dr. Anandhi R J	Dean- Academics	Member
4	Dr. Rajalakshmi	HoD-CSE	Member
5	Dr. Anusuya V	HOD Applied Science – Chemistry	Member

6	Dr. Asha V	HoD-MCA	Member
7	Dr. Siddamallaiah	Principal Librarian(Retd.) , NIMHANS	Member
8	Mr. Aditya Raj	1NH19CS005	Student Member
9	Ms. Ms. Amulya Choudhary	1NH19ME013	Student Member
10	Dr. Anitha S Rai	Director – Library & Alumin Relations	Member Secretary

Frequency of Meetings : Twice in a year

NCC Committee

The committee in the college is constituted to look into the students' interests inclined towards National Cadet Corps(NCC) . NCC is the Indian military cadet corps, which is open to school and college students on voluntary basis. National Cadet corps is a Tri-services organization, comprising the Army, Navy and Air Force, engaged in grooming the youth of the country into disciplined and patriotic citizens. The National Cadet Corps in India is a voluntary organization which recruits cadets from high schools, colleges and universities all over India. The committee in college has the same motto.

Table 10.1.3.3.22 NCC Committee

Sl. No.	Name	Designation	Position
1	Dr. Manjunatha	Principal	Chairman
2	Shri. H N Suryaprakash	Registrar	Member
3	Mr. Rakesh Chandrashekar	HOD-Mechanical Engg	Member
4	Dr. P S Niranjan	HOD Civil Engineering	Member
5	Dr. B. Rajalakshmi	HOD Computer Science &Engg	Member
6	Dr. Mohan H S	HOD Information Science &Engg	Member
7	Dr. Revathi S	HOD Applied Science – Physics	Member
8	Dr. Sujitha	HOD Electrical and Electronics Engineering	Member
9	Mr. Hari Kumar N	Physical Education Director	Member
10	Mr. RaviKumar	Sr.Asst Professor-Mechanical Dept & NCC CTO	Member Secretary

Frequency of Meetings : Twice in a year

NSS Committee

The National Service Scheme is an Indian government-sponsored public service program conducted by the Department of Youth Affairs and Sports of the Government of India. Popularly known as NSS, the scheme was launched in 1969. Aimed at developing student's personality through community service, NSS is a voluntary association of young people in Colleges, Universities and at +2 level working for a campus-community linkage. The committee in college aims at moulding interested students on the same lines.

Table 10.1.3.3.23 NSS Committee

Sl. No.	Name	Designation	Position
1	Dr. Manjunatha	Principal	Chairman
2	Mr. H N Suryaprakash	Registrar	Member
3	Dr. Anitha S Rai	Director – Library & Alumni Relations	Member
4	Dr.Aravinda K	HOD – Department of ECE	Member
5	Dr.N.V.Uma Reddy	HOD – Department of AI & ML	Member
6	Dr.Mohan H S	HOD – Department of ISE	Member
7	Mr.Hanamant Yaragudri	Sr.Asst.Professor, Department of ME	Member convenor

Frequency of Meetings : Twice in a year

News Letter Committee

Events and other happenings on the campus and off the campus with regard to the students and college is brought out in the college newsletter . The committee constituted helps to achieve this. Besides getting articles and covering the relevant issues; compiling, editing, printing and publishing of the newsletter is taken care by this committee.

Table 10.1.3.3.24 News Letter Committee

Sl. No.	Name	Designation	Position
1	Dr. Manjunatha	Principal	Chairman
2	Mr. Geluvaraj B	Assistant Professor, CSE Dept	Member
3	Dr. Priyameet Kaur Keer	Associate Professor, MBA Dept	Member
4	Mr. T. A. Sudharshan	Senior Assistant Professor, MECH Dept	Member

5	Dr. K.G. Madhwaraj	Professor, MCA Dept	Member Secretary

Frequency of Meetings : Twice in a year

Physical Education and Sports Committee

Parallel to studies, in order to give motivation and an opportunity to excel in sports to interested stdents, this committee looks into the needs of budding sports persons. The college campus has facilities and equipment for a number of sports, for which there is good participation & boys and girls, pursuing undergraduates and postgraduates programs. Students participate in the sports, helping them to perform well in college event at state and national levels.

Table 10.1.3.3.25 Physical Education and Sports Committee

Sl. No.	Name	Designation	Position
1	Dr. Manjunatha	Principal	Chairman
2	Shri. H.N.Suryaprakash	Registrar	Member
3	Dr. Uma Reddy N V	HoD-AIML	Member
4	Mr. Rakesh Chandrashekar	HoD – ME	Member
5	Dr. Niranjan P S	HoD-CIV	Member
6	Dr. Rajalakshmi	HoD-CSE	Member
7	Dr. S P Manikandan	HoD-CE	Member
8	Dr. Aravinda K.	HoD-ECE	Member
9	Dr. Sujitha	HoD-EEE	Member
10	Dr. Mohan Kumar	HoD-ISE	Member
11	Dr. Revathi Sankar	HOD Applied Science – Physics	Member
12	Dr. V.S. Anusuya Devi	HOD Applied Science – Chemistry	Member
13	Mr. Hari Kumar K C	HOD-Physical Education and Sports	Member

Frequency of Meetings : Twice in a year

Public Relation Committee

An essential committee in the running of the organization, this committee is a preface for the admission committee. This committee is required to have a constant rapport with the public and must ensure that people know about the institution so as to help students who want to pursue undergraduate and post graduate programs to get admission to the college.

Table 10.1.3.3.26 Public Relation Committee

Sl. No.	Name	Designation	Position
1	Dr. Manjunatha	Principal	Chairman
2	Shri. H. N. Suryaprakash	Registrar	Member
3	Dr. R.J. Anandhi,	Prof & Dean Academics	Member
4	Dr. Rajalakshmi	HoD-CSE	Member
5	Dr. Anitha S Rai	Director – Library & Alumin Relations	Member
6	Ms. Aruna Machani	Executive Director - Admissions	Member Secretary

Frequency of Meetings : Twice in a year

Purchase Committee

This committee of the college is constituted to meet all the hardware requirements for the smooth running of the institute. Requisions given by all the departments for its running are provided by this committee.

Table 10.1.3.3.27 Purchase Committee

Sl. No.	Name	Designation	Position
1	Dr. Manjunatha	Principal	Chairman
2	Shri.H. N. Suryaprakash	Registrar	Member
3	Mr. Umesh	Purchase Officer	Member
4	Mr. Tarun Batra	Chief Operating Officer	Member
5	Ms. Malathi Madhusudan	Sr. Ex. Dr. Accounts & Finance	Member Secretary

Frequency of Meetings : Twice in a year

Recruitment committee

This committee of the college is responsible for the recruitment of staff for the college, which includes the non-teaching faculty also. The preliminary interview takes place at the department level under the HoD. The final round and selection comes under the purview of this committee.

Table 10.1.3.3.28 Recruitment Committee

Sl. No.	Name	Designation	Position
1	Dr. Mohan Manghnani	Chairman-NHEI	Chairman
2	Dr. Manjunatha	Principal	Member
3	Dr. Anandhi R J	Dean-Academics	Member
4	Ms. V. Manjula	Executive Director- Human Resources	Member Secretary
5	Dr. Gowrishankar	VTU Nominee	Two Subject Externals
6	Respective Department HoD		
7	Two Subject Externals		

Frequency of Meetings : Twice in a year

Research and Development Committee

Research and development plays a major role in the development of any organization, which also includes educational institutions. The research committee headed by the Principal was constituted for the same reason. The committee encourages faculties and students to publish technical paers and articles, write textbooks, apply for support for project work, get grants for research, apply for patents, etc.,. The committee co-ordinator oversees all the activities. The members of this committee are as follows.

Table 10.1.3.3.29 Research & Development Committee

Sl. No.	Name	Designation	Position
1	Dr. Manjunatha	Principal	Chairman
2	Dr. Priyabrata Adhikary	Professor and Associate Head(R&D)	Member
3	Dr. Agalya V	Professor and Associate Head(R&D)	Member
4	Dr. Hemantha Raju	Assoc. Professor- ME	Member
5	Dr. Nagendra Prabhu	Assoc. Professor – CSE	Member
6	Dr. Jagadeesh.C.B.	Professor – CV	Member

7	Dr. Sujitha.S.	Assoc. Professor – EEE	Member
8	Dr. Sivarama Krsihnan	Assoc. Professor – ISE	Member
9	Dr. Gurulakashmi	Assoc. Professor – ECE	Member
10	Dr. Sujin Jose	Assoc. Professor – AUT	Member
11	Dr. Priyameet Kaur		Member
12	Dr. Madhwaraj.K.G.	Professor – MCA	Member
13	Dr. Madhumohana Raju. A B (Mathematics)	Assoc. Professor– Maths	Member
14	Dr. M S Raghu (Chemistry)	Assoc. Professor –Chemistry	Member
15	Dr. Rama Chandra Naik (Physics)	Assoc. Professor – Physics	Member
16	Dr. Sanjeev Sharma	Dean-QASDC	Member Secretary

Frequency of Meetings : Every Quarter of the Year

SC/ST Welfare Cell

This committee in the college is set up to look into the welfare of the SC/ST students admitted for the various courses. Besides this, the committee allocates monetary assistance to the students in the form of scholarship so as to help them pursue their education**.**

Table 10.1.3.3.30 SC/ST Welfare Committee

Sl. No.	Name	Designation	Position
1	Dr. Manjunatha	Principal	Chairman
2	Mr. Ravikumar	Professor – ME	Member
3	Mr. Manjunatha Swamy	Professor – CSE	Member
4	Dr. G Rajesh	Professor – ECE	Member
5	Ms. Kalaivani	Professor – ISE	Member
6	Shri. H.N.Suryaprakash	Registrar	Member Secretary

Frequency of Meetings : Twice in a year

Software/Hardware Training Committee

This committee is responsible for given training to the staff (technical) who have been newly recruited on using the laboratory equipment in the respective departments. Besides, training is also given to them on operating any newly procured machines, so as to facilitate the smooth running of the laboratory sessions.

Table 10.1.3.3.31 Software/Hardware Training Committee

Sl. No.	Name	Designation	Position
1	Dr. Manjunatha	Principal	Chairman
2	Dr. R.J. Anandhi	Dean – Academics	Member
3	Dr. Sanjeev Sharma	Dean-QASDC and Professor- ECE	Member
4	Dr. Asha. V	Dr. Asha. V	Member
5	Dr. B. Rajalakshmi	HOD-CSE	Member Secretary

Frequency of Meetings : Twice in a year

Staff Welfare Committee

This committee constituted on the similar lines of the Staff Grievances Redressal Committeelooks into providing welfare schemes to all the staff of the college. The committee addressesthe requirements of the staff and takes necessary steps of action.

Table 10.1.3.3.32 Staff Welfare Committee

Sl. No.	Name	Designation	Position
1	Dr. Mohan Manghnani	Chairman	Chairman
2	Dr. Manjunatha	Principal	Member
3	Ms. Malathi Madhusudan	Sr. Executive Director – Accounts & Finance	Member
4	Shri. H. N. Suryaprakash	Registrar	Member
5	Ms. V. Manjula	Executive Director- Human Resources	Member Secretary

Frequency of Meetings : Twice in a year

Student Mentoring Committee

Student Grievances Redressal Committee

Adolescence students who come from various backgrounds to study face a lot of problems. Besides a number of distractions are available to take them off their path of leraning. Thus to address the numerous problems of the diverse students from varied backgrounds, the students grievance redressal cell was formed to resolve the issues of the students. The committee is as follows.

Table 10.1.3.3.34 Student Grievances Redressal Committee

Sl. No.	Name	Designation	Position
1	Dr. Manjunatha	Principal	Chairman
2	Ms. Malathi Madhusudan	Sr.Ex. Director-A/c's & Finance	Member
3	Ms. Aruna Machani	Executive Director - Admissions	Director of Admission, Branding & Marketing
4	Shri. H. N. Suryaprakash	Registrar	Member
5	Mr. Tarun Batra	Chief Operating Officer	Member Secretary

Frequency of Meetings : Twice in a year & As and when required.

Universal Human Values committee

The objective of this committee is to build a strong connection between faculty and students to create holistic awareness about Universal Human Values and create holistic awareness about Universal Human Values. It will help students in the right development of their world-view, mindset, perspective and values.

Table 10.1.3.3.35 Universal Human Values Committee

Sl. No.	Name	Designation	Position
1	Dr Manjunatha	Principal	Chairman
2	Dr. Sowmya Narayanan	HoD- Life skills & Lifelong learning	Member
3	Mr.Aravinda. K	HoD- ECE	Member

4	Dr. Anitha S. Rai	Director – Library & Alumin Relations	Member
5	Ms Vijaya	Advocate	Member
6	Dr. Anusuya Devi V S	HoD & Professor– Chemistry	Member Secretary

Frequency of Meetings : Twice in a year.

Value Added Programs Committee

The college has a number of streams of study-Global, Professional & executive. The streams are distinct and provide exclusive training to help in the overall development of the students. Organizing industrial trips at International and National levels, providing industry enriched training are some of the responsibilities of this committee.

Table 10.1.3.3.36 Universal Human Values Committee

Sl. No.	Name	Designation	Position
1	Dr. Manjunatha	Principal	Chairman
2	Dr. Jayasheel	HoD – AU	Member
4	Dr. Niranjan	HoD – Civil	Member
5	Dr. Rajalakshmi	HoD – CSE	Member
6	Dr. Aravinda K	HoD – ECE	Member
7	Dr. Sujitha S	HoD – EEE	Member
8	Dr. Mohan K	HoD – ISE	Member
9	Dr. Sheelan Mishra	HoD – MBA	Member
10	Dr. Asha V	HoD – MCA	Member
11	Dr. Revathi V	HoD – BSH (Physics Cycle)	Member
12	Dr. V S Anusuya Devi	HoD – BSH(Chemistry Cycle)	Member
13	Ms. Malathi Madhusudhan	Senior Executive Director – Accounts & Finance	Member Secretary
14	Dr. R J Anandhi	Dean-Academics	Member Secretary

Frequency of Meetings : Twice in a year.

Women Empowerment Committee

This committee of the college addresses issues regarding to the empowerment of the women staff on the campus. The committees role is in ensuring that the powers are also vested in the hands of the women.

Table 10.1.3.3.37 Universal Human Values Committee

Sl. No.	Name	Designation	Position
1	Dr. Manjunatha	Principal	Chairman
2	Dr. Anitha S Rai	Director-Library and Alumni Relations	Member
3	Dr. Sainath	HOD-MBA	Member
4	Dr. V. S. Anusuya	HOD Applied Science – Chemistry	Member
5	Dr. D Kaliavani	Associate Professor	Member
6	Ms. Lipsa Dash	Sr. Assistant Professor	Member
7	Ms . Rajina	Student Counselor	Member
8	Ms. Shanthi	Girls Hostel Warden	Member
9	Ms. Chayanika	Student Representative	Member
10	Dr. R.J. Anandhi	Dean-Academics	Member-Secretary

Frequency of Meetings : Twice in a year.

10.1.4. Decentralization in working and grievance redressal mechanism (5)

List the names of the faculty members who have been delegated powers for taking administrative decisions. Mention details in respect of decentralization in working. Specify the mechanism and composition of grievance redressal cell including Anti Ragging Committee & Sexual Harassment Committee.

Table 10.1.4.1: Delegation of Powers

Sl No	Department	Delegation Of Power To	Common Responsibility	Exclusive Responsibility
1	Mechanical Engineering	HoD & Professor	Administrative work	Sports Activities
2	Civil Engineering	HoD & Professor	Administrative work	Global Trips, GPE Program
3	Electronics & Communication	HoD & Professor	Administrative work	Professional body Activities(IEEE)

4	Computer Science & Engineering	HoD & Professor	Administrative work	IT infrastructure
5	Electrical & Electronics Engineering	HoD & Professor	Administrative work	Energy Management
6	Information Science & Engineering	HoD & Professor	Administrative work	Professional body activities(CSI) Anti Sexual harassment committee(ICCC)
7	Automobile Engineering	HoD & Professor	Administrative work	Ek Bharath Shresta Bharath
8	Applied Science & Humanities	HoD & Professor	Administrative work	
9	Library and Information Centre	Director	Administrative work in the Library	Student Extra curricular Club activities Cultural Coordinator Students Feedback Alumni

Composition of Grievance Redressal Cell, Anti Ragging Committee & Anti- Sexual Harassment Committee has been mentioned in 10.1.3

10.1.5 Delegation of financial powers (5)

Institution should explicitly mention financial powers delegated to the Principal, Heads of Departments and relevant in-charges. Demonstrate the utilization of financial powers for each year of the assessment years.

Budgets for running the department are very essential. These are prepared by every department before the commencement of the academic year. In this regard, Heads of the Departments, with senior faculties give the requisition to the Principal with regard to stationery, lab requirements, etc, for which budget allocations are approved by the Principal in discussion with the Management.

On the same lines, proposals are sent to the Principal for procuring new equipment for the labs, interactive technologies in the classrooms, conduction of workshops/ conferences/ seminars by the Heads of Departments for which fund allocations are made.

Table 10.1.5.1: Financial Powers

Sl No	Designation	Financial Power(Rs.)
1	Principal	50,000/-
2	Registrar	10,000/-
3	HoDs of Engineering Departments	10,000/-
4	HoDs of Basic Sciences	10,000/-
5	HoDs of PG Programs	10,000
6	Head-Library and Informaiton Centre	10,000
7	Dean- R & D	50,000
8	Executive Director- Accounts & Finance	5,00,000

- The Finance Committee has the power to approve bills worth Rs. 10,00,000/- (Rupees Ten Lakh only)
- Further, bills worth more than Rs. 10,00,000/- (Rupees Ten Lakhs) will be approved by the NEW HORIZON EDUCATIONAL & CULTURAL TRUST (NHCET)

10.1.6. Transparency and availability of correct/unambiguous information in public Domain (5)

(Information on policies, rules, processes and dissemination of this information to Stakeholders is to be made available on the web site)

HR Policies: http://newhorizonindia.edu/nhengineering/wp-content/uploads/2020/07/HR-POLICIES-2019-NHCE-10-Copy.pdf

Students: http://newhorizonindia.edu/nhengineering/academic-guidelines/

Antiragging rules: http://newhorizonindia.edu/nhengineering/ragging-free-campus-2/ (http://newhorizonindia.edu/nhengineering/wpcontent/ uploads/2020/07/HR-POLICIES-2019-NHCE-10-Copy.pdf) (http://newhorizonindia.edu/nhengineering/academic-guidelines/)

Department BOS/BOE Procedures:

- https://newhorizoncollegeofengineering.in/information-science-engineering/wp-content/uploads/2021/06/BOS-MOM-11.05.2019.pdf
- https://newhorizoncollegeofengineering.in/information-science-engineering/wp-content/uploads/2021/03/5th-BOS-Meeting.pdf

- https://newhorizoncollegeofengineering.in/information-science-engineering/wp-content/uploads/2021/09/BOS-Meeting_ISE-2.pdf
- https://information-science-engineering.newhorizoncollegeofengineering.in/wp-content/uploads/2023/02/7th-BOS-Meeting_merged.pdf
- https://information-science-engineering.newhorizoncollegeofengineering.in/wp-content/uploads/2022/12/Updated-BOS-MOM-28.11.2022.pdf

10.2. Budget Allocation, Utilization, and Public Accounting at Institute Level (15)

Summary of current financial year's budget and actual expenditure incurred (for the institution exclusively) in the three previous financial years.

Total Income at Institute level: For CFY, CFYm1, CFYm2, & CFYm3

CFY: Current Financial Year, CFYm1 (Current Financial Year minus 1), CFYm2 (Current Financial Year minus 2) and CFYm3 (Current Financial Year minus 3)

Table 10.2a:Institute Income and Expenditure for CFY 2022-2023

Total Income 1102000000				**Actual expenditure(till…): 639500000**			**Total No. Of Students 5552**
Fee	Govt.	Grant (S)	Other Sources (Placement Training, Bus Fees, etc.,)	Recurring Including Salaries	Non-recurring	Special Projects (Land, Building, WIP)	Expenditure per student
950000000	0	2000000	150000000	570000000	42000000	27500000	115183.72

Table 10.2a1:Institute Income and Expenditure for CFYm1 2021-22

Total Income 1091904383				**Actual expenditure(till…): 621868093**			**Total No. Of Students 5575**
Fee	Govt.	Grant (S)	Other Sources (Placement Training,	Recurring Including Salaries	Non-recurring	Special Projects (Land, Building, WIP)	Expenditure per student

			Bus Fees, etc.,)				
948528728	0	2678555	140697100	554032082	41222000	26614011	111545.85

Table 10.2a2: Institute Income and Expenditure for CFYm2 2019-20

Total Income : 1123895595				**Actual Expenditure : 639296425**			**Total No. of Students: 5654**
Fee	Govt.	Grant (S)	Other Sources (Placement Training, Bus Fees, etc.,)	Recurring Including Salaries	Non-recurring	Special Projects (Land, Building, WIP)	Expenditure per student
874854134	0	4345598	244695863	564611227	12942579	61742619	113069.76

Table 10.2a3:Institute Income and Expenditure for CFYm3 2018-19

Total Income 861810316				**Actual expenditure(till…): 587518237**			**Total No. Of Students 5301**
Fee	Govt.	Grants	Other sources(specify) (Placement Tra	Recurring including salaries	Non Recurring	Special Projects/Another, specify (Land, Building	Expenditure per student
700108874	0	5741147	155960295	540542224	18570033	28405980	110831.59

Table 10.2b: Institute Budget and Expenditure for assessment years 2022-2023,2021-22, 2020-21,2019-20

Items	Budgeted in 2022-2023	Actual Expenses in 2022-2023 till	Budgeted in 2021-2022	Actual Expenses in 2021-2022 till	Budgeted in 2020-2021	Actual Expenses in 2020-2021 till	Budgeted in 2019-2020	Actual Expenses in 2019-2020 till
Infrastructure Built-up	3700000	3600000	3500000	3542186	1000000	7122322	4000000	3266887
Library	6200000	6000000	6000000	5715715	2700000	2531367	4000000	3816878
Laboratory Equipment	3500000	3350000	3000000	3262996	4000000	3706977	1500000	1465099
Laboratory Consumables	6000000	5500000	5000000	4840960	3000000	2937829	6000000	6420770
Teaching & Non Teaching Staff Salary	4500000	4000000	4000000	3836839	3500000	3354161	3800000	3780872
Maintenance and Spares	3000000	3600000	3600000	3538390	3500000	2547021	3750000	3836299
Research & Development	5000000	5000000	4000000	4282178	7000000	6937699	1000000	9780824
Training & Travel	2000000	2500000	2500000	2316216	3000000	2788771	3250000	3196585
Others (Global & Professional Training)	8500000	8500000	8000000	8007769	1000000	1535648	5000000	5011372
Misc	1700000	1750000	1650000	1666966	1000000	9620388	2150000	2165003
Total	**691200000**	**649500000**	**637500000**	**621868095**	**641700000**	**639296425**	**596500000**	**587518237**

10.2.1. Adequacy of budget allocation (5)

(The institution needs to justify that the budget allocated during assessment years was adequate)

Table 10.2.1: Institute planned budget and expenditure

Sl No.	Assessment Year	Budget Allocated in Rs.	Actual Expenditure in Rs.	Adequate/ Non Adequate
1	CFY	691200000	649500000	Adequate
2	CFYm1	637500000	621868095	Adequate
3	CFYm2	641700000	639296425	Adequate
4	CFYm3	596500000	587518237	Adequate

Table 10.2.2.: Utilisation of allocated funds (5)

(The institution needs to state how the budget was utilised during assessment years)

Table 10.2.2.: Utilisation of funds

Sl No.	Assessment Year	Budget Allocated in Rs.	Actual Expenditure in Rs.	Percentage of Utilisation
1	CFY	691200000	649500000	93.97
2	CFYm1	637500000	621868095	97.55
3	CFYm2	641700000	639296425	99.63
4	CFYm3	596500000	587518237	98.49

10.2.3.: Availability of the audited statements on the institute's website (5)

The audited statements is available on the institution website and the link is as follows:

1. https://newhorizoncollegeofengineering.in/wp-content/uploads/2023/05/Financial-Statements-2021-22.pdf (https://newhorizoncollegeofengineering.in/wp-content/uploads/2023/05/Financial-Statements-2021-22.pdf)
2. https://newhorizoncollegeofengineering.in/wp-content/uploads/2023/05/Financial-Statements-2020-21.pdf (https://newhorizoncollegeofengineering.in/wp-content/uploads/2023/05/Financial-Statements-2020-21.pdf)
3. https://newhorizoncollegeofengineering.in/wp-content/uploads/2022/05/Financial-Statements-2019-20.pdf (https://newhorizoncollegeofengineering.in/wp-content/uploads/2022/05/Financial-Statements-2019-20.pdf)

10.3: Program Specific Budget Allocation, Utilisation (30)

Total Budget at program level: for CFY, CFYm1, CFYm2 & CFYm3

CFY: Current Financial Year, CFYm1 (Current Financial Year minus 1), CFYm2 (Current Financial Year minus 2) and CFYm3 (Current Financial Year minus 3).

Table 10.3a.1: Income and Expenditure for CFY 2022-2023 -EEE

Total Budget 48384000		Actual expenditure (till…): 45465000		Total No. Of Students 448
Non Recurring	Recurring	Non Recurring	Recurring	Expenditure per student
5040000	43344000	4865000	40600000	101484.38

Table 10.3a.2: Income and Expenditure for CFY 2022-2023 -ISE

Total Budget 103680000		Actual expenditure (till…): 97425000		Total No. Of Students 878
Non Recurring	Recurring	Non Recurring	Recurring	Expenditure per student
10800000	92880000	10425000	87000000	110962.41

Table 10.3. b.1: Income and Expenditure for CFYm1 2021-22 -EEE

Total Budget 51000000		Actual expenditure (till…): 49749448		Total No. Of Students 466
Non Recurring	Recurring	Non Recurring	Recurring	Expenditure per student
5200000	45800000	5444146	44305302	106758.47

Table 10.3.b.2: Income and Expenditure for CFYm1 2021-22 -ISE

Total Budget 91800000		Actual expenditure (till…): 89549006		Total No. Of Students 804
Non Recurring	Recurring	Non Recurring	Recurring	Expenditure per student
82440000	9360000	79749543	9799463	111379.36

Table 10.3.c.1 : Income and Expenditure for CFYm2 2019-20 -EEE

Total Budget 51336000		Actual expenditure (till…): 51143714		Total No. Of Students 487
Non Recurring	Recurring	Non Recurring	Recurring	Expenditure per student
8320000	43016000	5994416	45149298	105017.89

Table 10.3.c.2 : Income and Expenditure for CFYm2 2019-20 -ISE

Total Budget 83421000		Actual expenditure (till…): 83590443		Total No. Of Students 741
Non Recurring	Recurring	Non Recurring	Recurring	Expenditure per student
69901000	13520000	73849517	9740926	112807.62

Table 10.3.d.1: Income and Expenditure for CFYm3 2018-19 -EEE

Total Budget 53685000		Actual expenditure (till…): 52876642		Total No. Of Students 495
Non Recurring	Recurring	Non Recurring	Recurring	Expenditure per student
4950000	48735000	4258789	48617853	106821.5

Table 10.3.d.2: Income and Expenditure for CFYm3 2018-19 -ISE

Total Budget 68597500		Actual expenditure (till…): 67564597		Total No. Of Students 613
Non Recurring	Recurring	Non Recurring	Recurring	Expenditure per student
62272500	6325000	62122812	5441785	110219.57

Table 10.3.e.1 b: EEE- Budget and Expenditure for assessment years 2022-2023,2021-22, 2020-21,2019-20

Items	**Budgeted in 2022-2023**	**Actual Expenses in 2022-2023 till**	**Budgeted in 2021-2022**	**Actual Expenses in 2021-2022 till**	**Budgeted in 2020-2021**	**Actual Expenses in 2020-2021 till**	**Budgeted in 2019-2020**	**Actual Expenses in 2019-2020 till**
Laboratory equipment	2590000	2520000	2400000	2610397	320000	296558	1350000	1318590
Software	84000	77000	80000	77455	48000	47005	108000	115574
Laboratory consumable	336000	308000	320000	309821	192000	188021	432000	462295
Maintenance and spares	2100000	2520000	2880000	2830712	2800000	2037617	3375000	3452669
R & D	350000	350000	320000	342574	560000	555016	900000	880274
Training and Travel	1400000	1750000	2000000	1852973	2400000	2231017	2925000	2876927
Miscellaneous Expenses*	5950000	5950000	6400000	6406216	8000000	1228518	4500000	4510235
Total	**12810000**	**13475000**	**14400000**	**14430148**	**14320000**	**17640421**	**13590000**	**13616564**

Table 10.3.e.1 b: ISE- Budget and Expenditure for assessment years 2022-2023,2021-22, 2020-21,2019-20

Items	Budgeted in 2022-2023	Actual Expenses in 2022-2023 till	Budgeted in 2021-2022	Actual Expenses in 2021-2022 till	Budgeted in 2020-2021	Actual Expenses in 2020-2021 till	Budgeted in 2019-2020	Actual Expenses in 2019-2020 till
Laboratory equipment	5250000	5025000	4320000	4698714	520000	4819070	1725000	1684864
Software	810000	742500	648000	6273884	351000	3437259	621000	6645496
Laboratory consumable	90000	82500	72000	6970982	39000	3819177	69000	7383885
Maintenance and spares	4500000	5400000	5184000	5095282	4550000	3311127	4312500	4411744
R & D	750000	750000	576000	6166336	910000	9019008	1150000	1124794
Training and Travel	3000000	3750000	3600000	3335351	3900000	3625403	3737500	3676073
Miscellaneous Expenses*	1275000	1275000	1152000	1153118	1300000	1996342	5750000	5763078
Total	**15675000**	28500000	**15552000**	**33693667**	**11570000**	**30027386**	**17365000**	**30689934**

10.3.1.: Adequacy of Budget allocation (10)

(Program needs to justify that the budget allocated over the assessment years was adequate for the program)

Table 10.3.1.a: Program budget and expenditure -EEE

Sl No	Assessment Year	Budget Allocated in Rs.	Actual Expenditure in Rs.	Adequate/ Non Adequate
1	CFY	48384000	45465000	Adequate
2	CFYm1	51000000	49749448	Adequate
3	CFYm2	51336000	51143714	Adequate
4	CFYm3	53685000	52876641	Adequate

Table 10.3.1.a: Program budget and expenditure -ISE

Sl No	Assessment Year	Budget Allocated in Rs.	Actual Expenditure in Rs.	Adequate/ Non Adequate
1	CFY	109209600	102621000	Adequate
2	CFYm1	91800000	89549006	Adequate
3	CFYm2	83421000	83108535	Adequate
4	CFYm3	68597500	67564597	Adequate

10.3.2.: Utilisation of allocated funds (20)

(Program needs to state how the budget was utilised during the last three assessment years)

10.3.2.a: Utilisation of allocated funds – EEE

Sl No	Assessment Year	Budget Allocated in Rs.	Actual Expenditure in Rs.	Percentage of Utilisation
1	CFY	48384000	45465000	93.97
2	CFYm1	51000000	49749448	97.55
3	CFYm2	51336000	51143714	99.63
4	CFYm3	53685000	52876641	98.49

10.3.2.b: Utilisation of allocated funds – ISE

Sl No	Assessment Year	Budget Allocated in Rs.	Actual Expenditure in Rs.	Percentage of Utilisation
1	CFY	109209600	102621000	93.97
2	CFYm1	91800000	89549006	97.55
3	CFYm2	83421000	83108535	99.63
4	CFYm3	68597500	67564597	98.49

10.4. Library and Internet (20)

(Indicate whether zero deficiency report was received by the Institution for all the assessment years. Effective availability/purchase records and utilization of facilities/equipment etc. to be documented and demonstrated).

Library Services	Yes
Carpet Area of library (in m2)	4018 m2
Reading Space (in m2)	2500 m2
Nymber of seats Reading Space	605
Number users issue book per day	389
Number of users visits per day	515 (Physical Access)
Timings : Ground Floor Lower Level	24/7, 365 days 8.00am – 6.30pm
Number of Library Staff	11
Number of Library staff with degree in Library	7
Management computerization for search, Indexing, Issue return record, Bar-coded	Yes

Library Additional Services	◦ Institutional Repository ◦ Electronic Resources ◦ E-Portals ◦ Online Course (E-shikshana) ◦ Remote Access of e-resources (Mapmy Access) ◦ NDLI Club Activities ◦ Online Reservation ◦ Circulation Service ◦ Reference Service ◦ Reprographic Service ◦ Document Scanning ◦ Document Printing ◦ OPAC (Online Public Access Catalog) ◦ NPTEL ◦ Overnight Circulation ◦ E-mail Reminder ◦ Online Q & A ◦ Grammar Tool – Lanquill ◦ Online Lecture ◦ Organising Book Exhibition ◦ News Paper Clippings ◦ Similarity or Plagiarism Checking Service ◦ Orientation Program ◦ Awareness of Reference Manager Tool – "Mendeley Desktop" ◦ Social Media alert service

10.4.1. Quality of Learning resources (hard/soft) (10)

Digital Library Services	**Yes**
Availability of Digital Library Contents	Yes
Number of Courses	13
Number of eBooks	27439
Availability of Exclusive Server	Yes
Availability of Intranet /Internet	Yes
Availability of Exclusive Space/Room	Yes
Number of users per day	992 (e-access)

Digital Library is provided in the Central Library where students can access all kinds of e-journals	**E-Journals Links** Elsevier (https://www.sciencedirect.com/) - https://www.sciencedirect.com/ (https://www.sciencedirect.com/) Taylor & Francis (http://www.tandfonline.com/) - http://www.tandfonline.com/ (http://www.tandfonline.com/) Springer Nature (http://link.springer.com/) - http://link.springer.com/ (http://link.springer.com/) Emerald (https://www.emeraldinsight.com/) - https://www.emeraldinsight.com/ (https://www.emeraldinsight.com/) ProQuest - https://www.proquest.com/165290 (https://www.proquest.com/165290) E-Conference Proceedings- IEEE https://ieeexplore.ieee.org/Xplore/home.jsp (https://ieeexplore.ieee.org/Xplore/home.jsp) E-Case Studies – Emerald https://www.emerald.com/insight/content/case-studies (https://www.emerald.com/insight/content/case- studies) **E-Books Links** Elsevier (https://www.sciencedirect.com/) - https://www.sciencedirect.com/ (https://www.sciencedirect.com/) Taylor & Francis (http://www.crcnetbase.com/) - https://www.taylorfrancis.com/ (https://www.taylorfrancis.com/) Springer Nature (http://link.springer.com/) http://link.springer.com/ (http://link.springer.com/) Mint Books - https://nhce.mintbook.in/ (https://nhce.mintbook.in/) New Age Publishers (https://digital.elib4u.com/) https://digital-elib4u-com.vtuconsortium.mapmyaccess.com/ (https://digital-elib4u-com.vtuconsortium.mapmyaccess.com/) Packt (https://prod.packtpub.com/in) - https://videeya-in.nhce.mapmyaccess.com/ (https://videeya- in.nhce.mapmyaccess.com/) McGraw Hill Education - https://www-expresslibrary-mheducation-com.vtuconsortium.mapmyaccess.com/ (https://www- expresslibrary-mheducation-com.vtuconsortium.mapmyaccess.com/)
Video Course online	NPTEL NDLI GIAN SarvajanikaGranthalaya SWAYAM SWAYAM PRABHA PM eVIDYA Virtual Labs E-PG Pathshala

Students can access eBooks/journals using internet in the Library.

Ground Floor section of the Library is open 24 hours a day for utilization. They are spacious, well ventilated, having power sockets, lights & fans and Wi-Fi connectivity.

The Digital Library, Video Conference Room, Reading Rooms are all located here. Lower level contains the Main Books Stock, Reference Section, Library Office and Photocopier Room.

Library has resources for Undergraduate, Postgraduate and PhD students.

Textbooks, Journals, Bound Volumes, Conference Proceedings, General Reference Material, Technical Magazines, Newspapers and CDs-DVDs are available for reference.

1. Name of the Internet provider:BSNL and Jio Communication

2. Available bandwidth:300 Mbps

3. Wi-Fi availability: Yes

- Campus is Wi-Fi enabled
- About 40 access points are available in the campus

4. Internet access in labs, classrooms, library and offices of all Departments: Yes

- Internet can be accessed in labs through Wi-Fi. Few systems provided with internet connection.
- Wi-Fi at the corridors gives access to internet in the classrooms.
- Library has a designated browsing centre with about 50 systems having internet connection. Wi-Fi accessibility also available
- Departments have designated systems with internet connection. Wi-Fi accessibility as well as Ethernet available.

5. Security arrangements: Yes

Declaration

• I undertake that, the institution is well aware about the provisions in the NBA's accreditation manual concerned for this application, rules, regulations, notifications and NBA expert visit guidelines in force as on date and the institutes hall fully abide by them.

• It is submitted that information provided in this Self-Assessment Report is factually correct.

• I understand and agree that an appropriate disciplinary action against the Institute will be initiated by the NBA. In case, any false statement/information is observed during pre-visit, visit, post visit and subsequent to grant of accreditation.

Head of the Institute Name : MANJUNATHA

Designation : PRINCIPAL

NEW HORIZON COLLEGE OF ENGINEERING BANGALORE 560 103

Signature :

Seal of The Institution :

Principal
New Horizon College of Engineering
Ring Road, Bellandur Post
Bangalore - 560 103

Place : BANGALURU

Date : 10-06-2023 14:54:1

Annexure I

(A) PROGRAM OUTCOME (POs)

Engineering Graduates will be able to:

1. Engineering knowledge: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.

2. Problem analysis: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.

3. Design/development of solutions: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal,

and environmental considerations.

4. Conduct investigations of complex problems: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.

5. Modern tool usage: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.

6. The engineer and society: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.

7. Environment and sustainability: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.

8. Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

9. Individual and team work: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.

10. Communication: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective

presentations, and give and receive clear instructions.

11. Project management and finance: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary

environments.

12. Life-long learning: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

(B) PROGRAM SPECIFIC OUTCOME (PSOs)

Program should specify 2-4 program specific outcomes.

PSO1: Graduates will be able to solve real life problems of Power system and Power Electronics using Mi Power, PSPICE and MATLAB software tools and hardware

PSO2: Graduates will be able to develop and support systems based on renewable and sustainable Energy sources.