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Volume 1

Self Assessment Report (SAR)

B.E. - Electrical & Electronics Engineering



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



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,
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 | <input type="checkbox"/> |
| University | <input type="checkbox"/> |
| Deemed University | <input type="checkbox"/> |
| Autonomous | <input checked="" type="checkbox"/> |
| Any other (Please specify) | <input type="checkbox"/> |

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:

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

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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 Ponnudiy, 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-and-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.

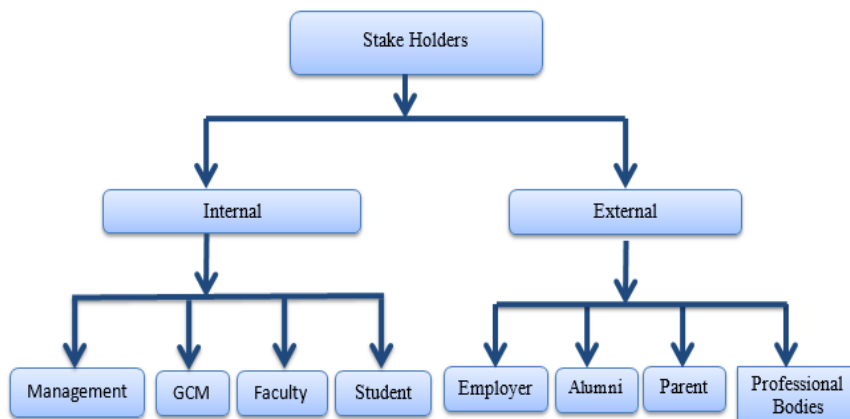


Figure 1.3.1: Stakeholders

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.

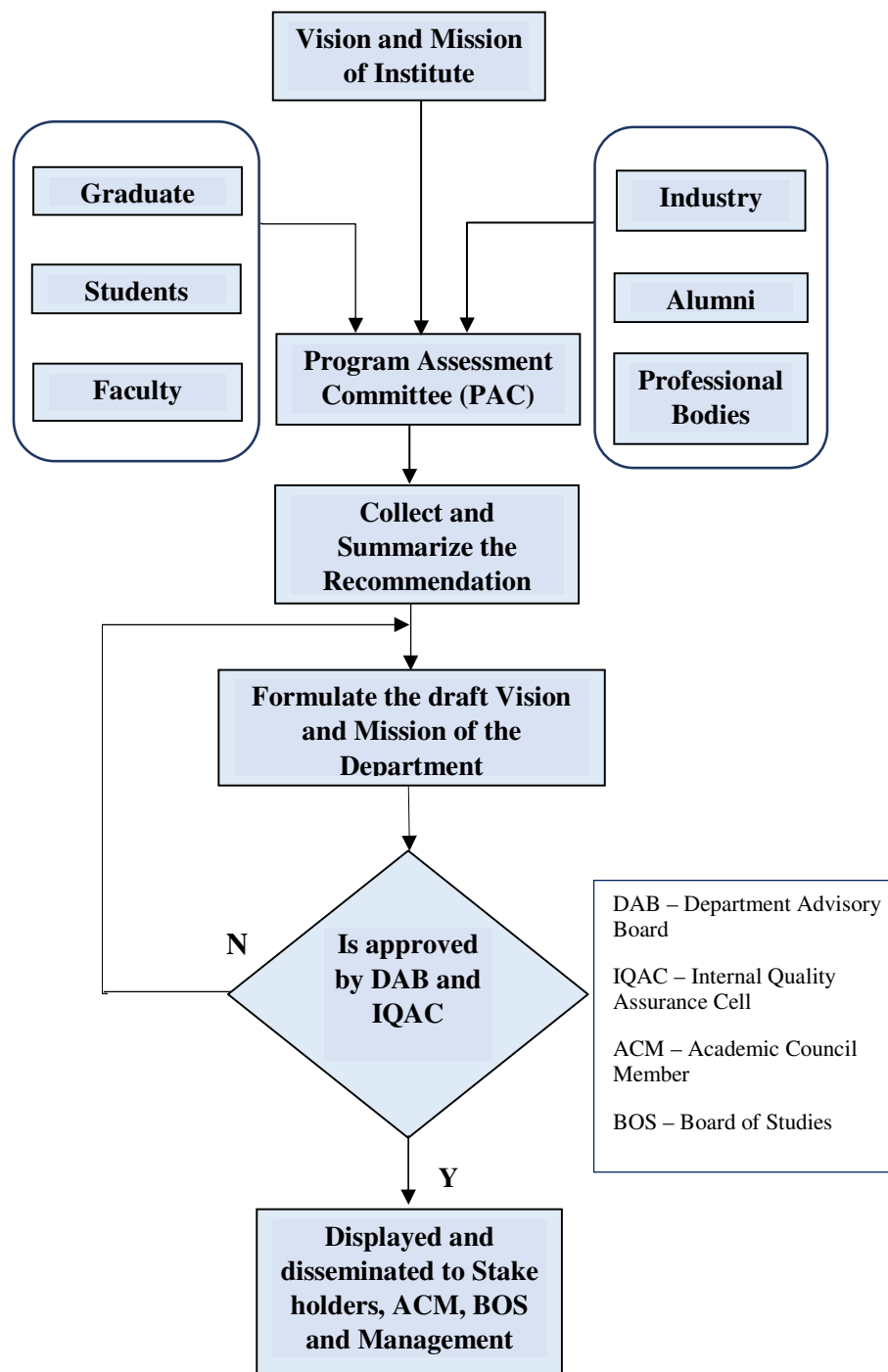


Figure 1.4.1: Process for defining Vision and Mission of the department

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.

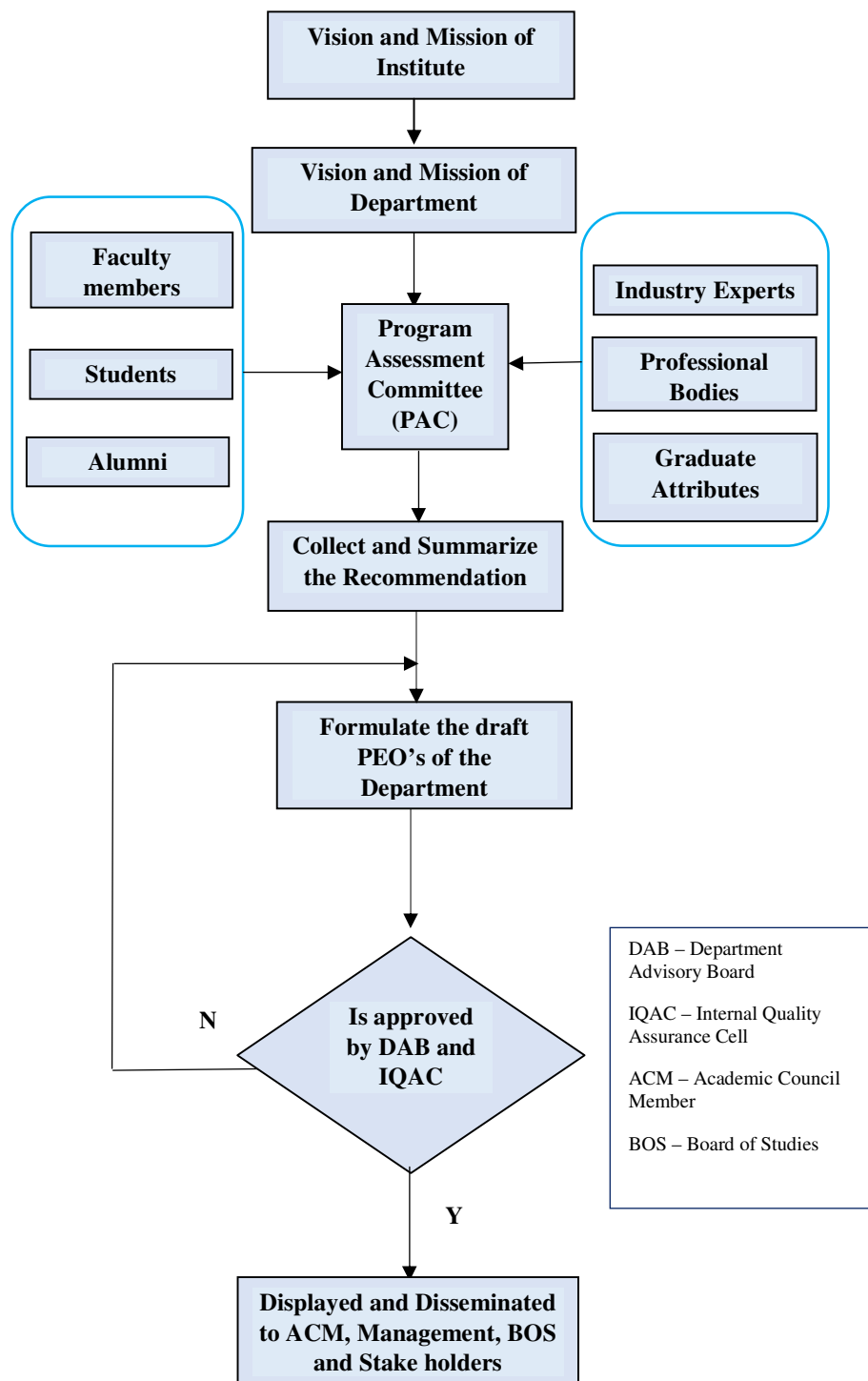


Figure 1.4.2: Illustration of the process for establishing the PEOs

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.

Table I.5.2: Representation of mapping of PEOs with the Mission of the Department

PEOs	Mission	Levels	Justification
<p>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.</p>	<p>M1: To provide suitable forums to enhance the teaching-learning, research and development activities</p>	3	<p>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.</p>
	<p>M2: Framing and continuously updating the curriculum to bridge the gap between industry and academia in the contemporary world and serve society.</p>	3	<p>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</p>
	<p>M3: To inculcate awareness and responsibility towards the environment and ethical values.</p>	2	<p>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.</p>
<p>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.</p>	<p>M1: To provide suitable forums to enhance the teaching-learning, research and development activities</p>	3	<p>Fostering research and innovation in both academic and industry skill sets in engineering, prepares students for a modern technical environment</p>
	<p>M2: Framing and continuously updating the curriculum to bridge the gap between industry and academia in the contemporary world and serve society.</p>	3	<p>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.</p>
	<p>M3: To inculcate awareness and responsibility towards the environment and ethical values.</p>	2	<p>Students are encouraged to participate in co-curricular and extracurricular activities as well to develop moral and ethical values</p>
<p>PEO3: To create high standards of moral and ethical values among the graduates to transform them as responsible citizens of the nation.</p>	<p>M1: To provide suitable forums to enhance the teaching-learning, research and development activities</p>	2	<p>The department encourages the students to gain moral ethical values along with the technical knowledge during lectures and R & D activities</p>
	<p>M2: Framing and continuously updating the curriculum to bridge the gap between industry and academia in the contemporary world and serve society.</p>	2	<p>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.</p>
	<p>M3: To inculcate awareness and responsibility towards the environment and ethical values.</p>	3	<p>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.</p>

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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
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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)

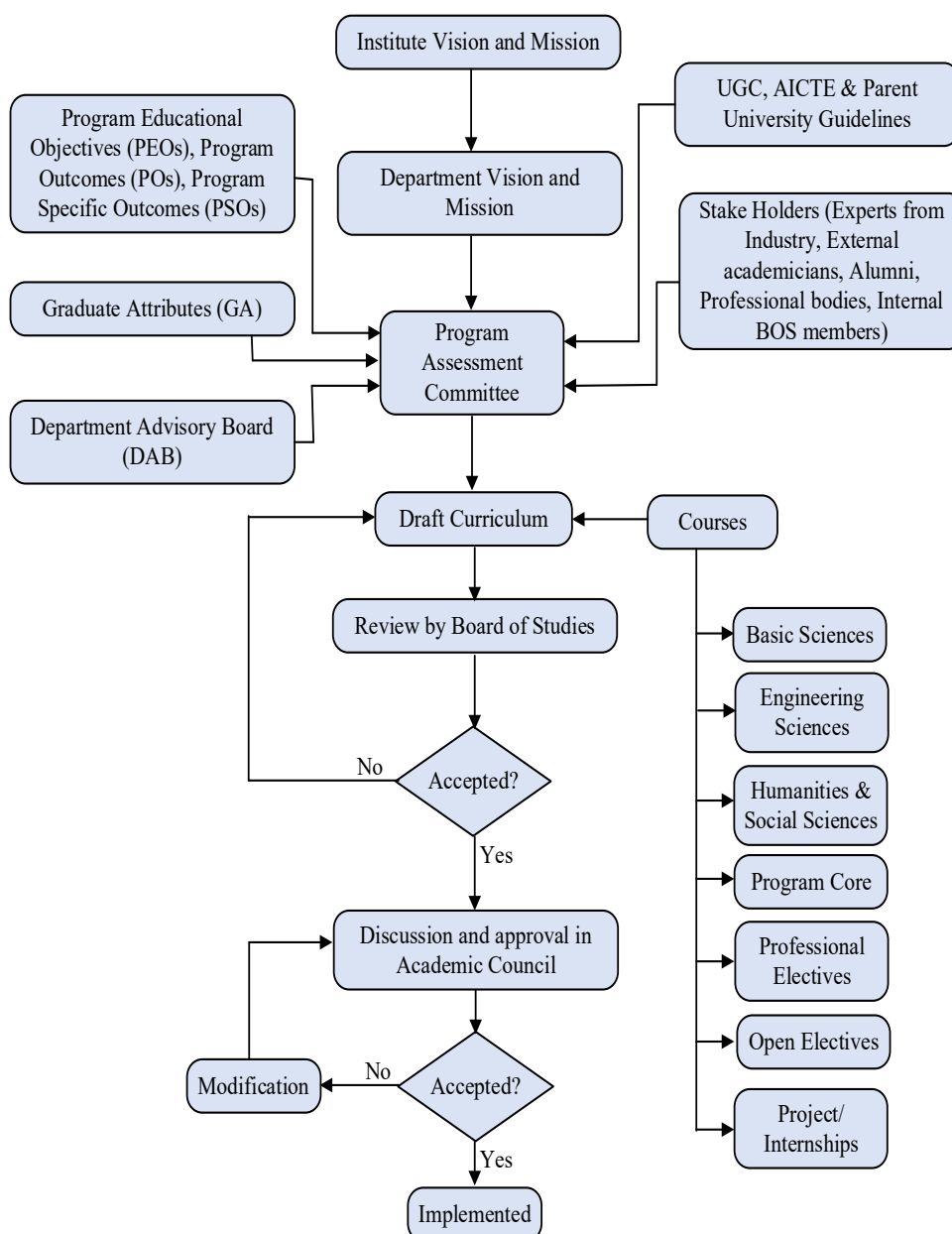


Figure 2.1.1: Process for designing/ revision of Program Curriculum

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

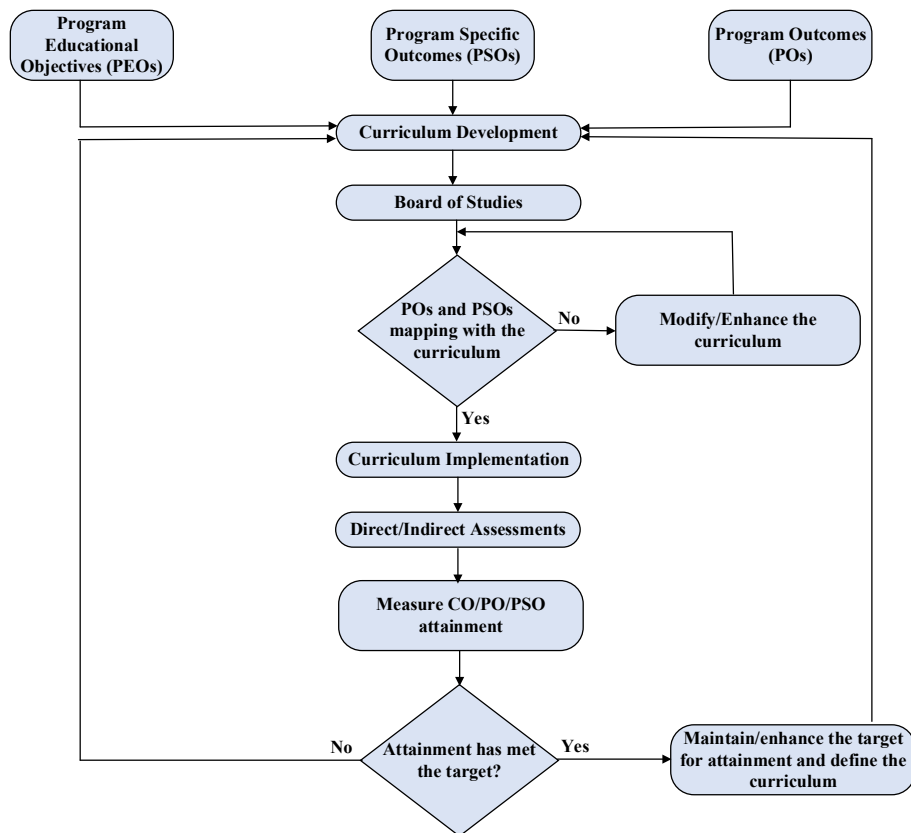


Figure 2.1.4.a: Process to ensure the compliance and attainment of POs & PSOs

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

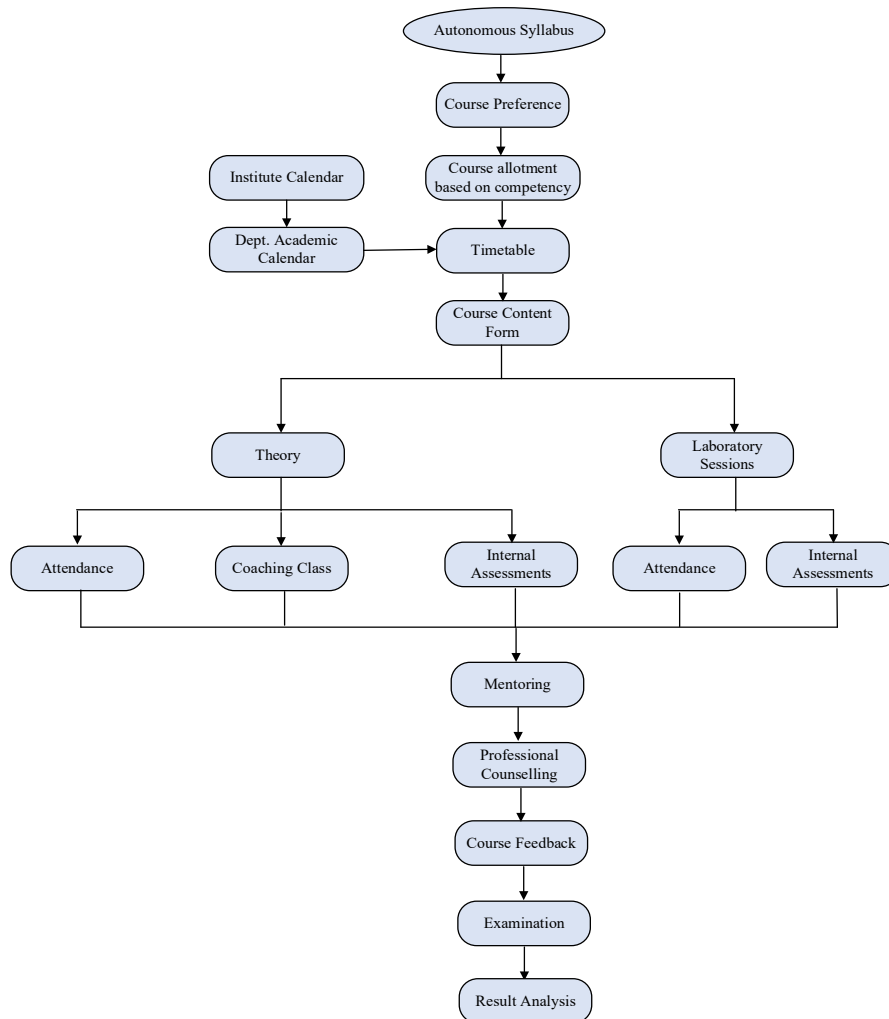


Figure 2.2.1.a: Teaching Learning Process

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.b2 and 2.2.1.b3.**

- The academic calendar is prepared as per university (VTU) guidelines in consideration with the public holidays listed by parent university (VTU)
- Dates for continuous internal evaluation (IA Test, Assignment, Quiz) are well planned in the calendar.
- With prior consultation of the expert's dates of guest lecture, workshops and industrial visits are planned in the calendar.
- 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	3	*	1	2	3	4	5	6	1st Nov- Kannada Rajyotsava	
	4	7	8	9	10	11	12	13		Industrial Visit - 1
	5	14	15	16	17	18	19	20		25th and 26th -Sargam Fest
	6	21	22	23	24	25	26	27		Quiz - 1,Mini project Review-1, club event - 2, BoE
	7	28	29	30	*	*	*	*		30th(Nov),1st and 2nd Dec-I Internal Test, Assignment - 1,Mentoring-1
DEC	8	*	*	*	1	2	3	4		CCM - 1
	9	5	6	7	8	9	10	11		Guest Lecture / Motivational Talk - 1
	10	12	13	14	15	16	17	18		19th, 20th, 21st Dec- II Internal Tests
	11	19	20	21	22	23	24	25		Industrial visit - 2, club event - 2, CCM - 2
JAN	12	26	27	28	29	30	31	*		Assignment 2, Mentoring - 2
	13	*	*	*	*	*	*	1		QUIZ-2, Mini project Review-2
	14	2	3	4	5	6	7	8	14th January- Makara Sankranti	Guest/Motivational talk 2
	15	9	10	11	12	13	14	15		Parent-Teacher Meeting
	16	16	17	18	19	20	21	22	26th January- Republic Day	23rd, 24th, 25th Jan- III Internal Tests
	17	23	24	25	26	27	28	29		CCM - 3, Mentoring - 3
	18	30	31	*	*	*	*	*		3rd Feb - Last Working Day
FEB	15	*	*	1	2	3	4	5		

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 / Quizzes / 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

[Signatures]
HOD-EEE: Head of the Department, Department of Electrical and Electronics Engineering, New Horizon College of Engineering, Ring Road, Kadusasanahalli, Bellandur Post, Bangalore - 560103, Karnataka, India.
Dr R J Anand: DEAN ACADEMICS, New Horizon College of Engineering, Ring Road, Bellandur Post, Bangalore.
Principal: Principal

NOTE	Internal Tests
Commencement / Closing Dates	
Holidays	
SEE	

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	24	25	26	27	28	29	30	24th to 26th Oct- Deepavali Holidays	
	4	31	*	*	*	*	*	*		Club Event - 1
NOV	5	*	2	3	4	5	6	7	1st Nov- Kannada Rajyotsava	
	6	7	8	9	10	11	12	13		10th, 11th, 12th Nov- I Internal Tests
	7	14	15	16	17	18	19	20		Industrial Visit - 1, Mentoring - 1
	8	21	22	23	24	25	26	27		Quiz - 1, CCM - 1, Sargam Fest-25th & 26th
	9	28	29	30	*	*	*	*		Assignment 1, Mini project Review 1, club event - 2
DEC	10	*	*	*	1	2	3	4		Guest Lecture / Motivational Talk - 1
	11	5	6	7	8	9	10	11		
	12	12	13	14	15	16	17	18		12th, 13th, 14th Dec- II Internal Tests
	13	19	20	21	22	23	24	25		Assignment 2, CCM - 2, Mentoring - 2
JAN	14	26	27	28	29	30	31	*		QUIZ-2, Industrial visit - 2, Mini project Review-2
	15	*	*	*	*	*	*	1		
	16	2	3	4	5	6	7	8		Guest/Motivational talk 2/Parent-Teacher Meeting
	17	9	10	11	12	13	14	15	14th January- Makara Sankranti	9th, 10th, 11th Jan- III Internal Tests, CCM - 3
	18	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 / Quizzes / 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.

[Signatures]
HOD-EEE: Head of the Department, Department of Electrical and Electronics Engineering, New Horizon College of Engineering, Ring Road, Kadusasanahalli, Bellandur Post, Bangalore - 560103, Karnataka, India.
Dr R J Anand: DEAN ACADEMICS, New Horizon College of Engineering, Ring Road, Bellandur Post, Bangalore.
Principal: Principal

NOTE	Internal Tests
Commencement / Closing Dates	
Holidays	
SEE	

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)

EEE

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							
OCT	6	*	*	*	*	*	1	2		28th, 29th, 30th Sept- I Internal Tests Assignment 1, Mentoring-1
	7	3	4	5	6	7	8	9	4th Oct- Ayudha Puja, 5th Oct- Vijaydashami	Industrial Visit - I, Project Review-1
	8	10	11	12	13	14	15	16		Quiz - 1, CCM - 1
	9	17	18	19	20	21	22	23		Guest Lecture / Motivational Talk - 1
	10	24	25	26	27	28	29	30	24th to 26th Oct- Deepavali Holidays	
	11	31	*	*	*	*	*	*		Club Event - 1
NOV	12						5	6	1st Nov- Kannada Rajyotsava	2nd, 3rd, 4th Nov- II Internal Tests
	13	7	8	9	10	11	12	13		Assignment 2, CCM - 2, Mentoring-2
	14	14	15	16	17	18	19	20		QUIZ-2, Project Review-2
	15	21	22	23	24	25	26	27		Guest/Motivational talk-2
	16	28	29	30	*	*	*	*		club event - 2 - Parent-Teacher Meeting
DEC	17				1	2	3	4		5th, 6th, 7th Dec- III Internal Tests, CCM - 3
	18				8	9	10			10th Dec- Last Working Day, Mentoring -3, BoE Meeting

Notes:
 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

HOD, EEE
 Head of the Department
 Department of Electrical and Electronics Engineering
 New Horizon College of Engineering
 Ring Road, Kadhisasanahalli, Bellandur Post,
 Bangalore - 560103, Karnataka, India

DEAN, ACADEMICS
 Dr. R. J. Anandhi
 Professor and Deputy Vice-Chancellor
 New Horizon College of Engineering
 Ring Road, Bellandur Post
 Bangalore - 560103

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.**

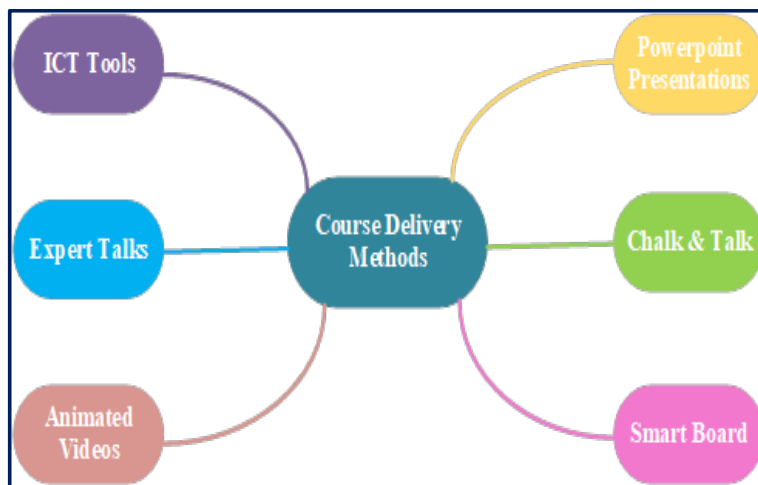


Figure 2.2.1.c: Course delivery methods

Pedagogical initiatives

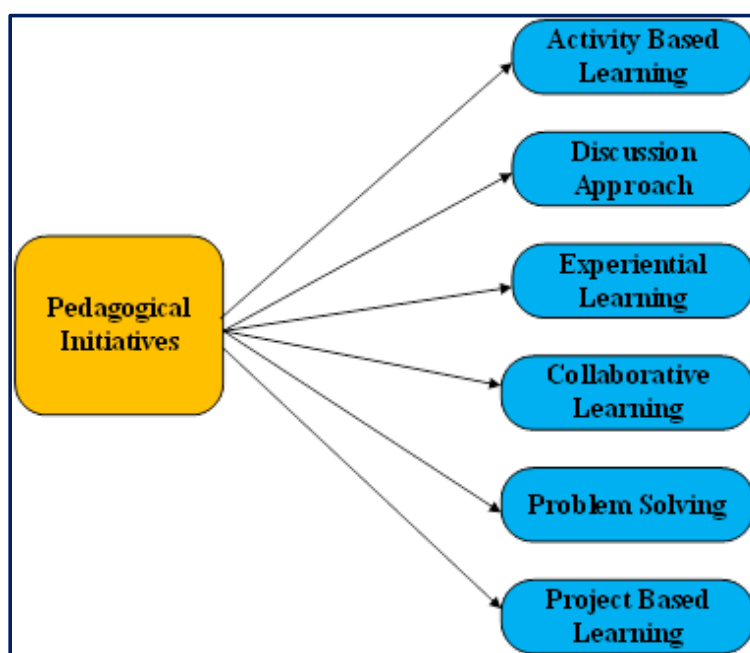


Figure 2.2.1.d: Pedagogical Initiatives

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.

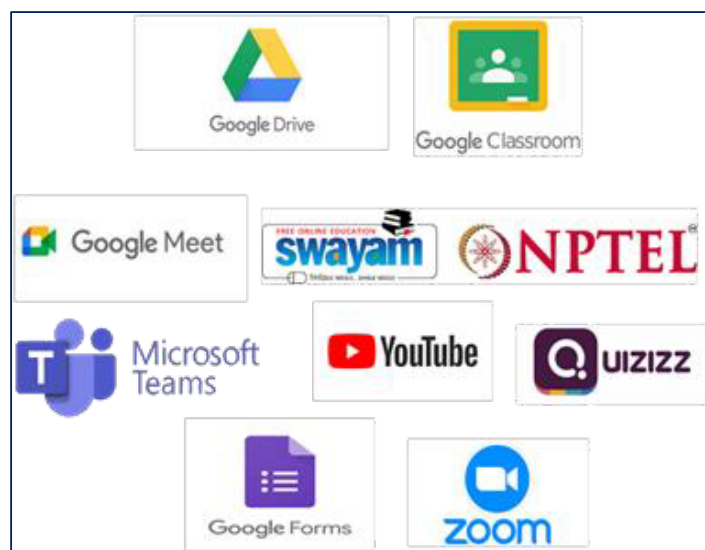


Figure 2.2.1.e: ICT Tools incorporated in teaching learning process

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

Criterion-2 Self Assessment Report (SAR)

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

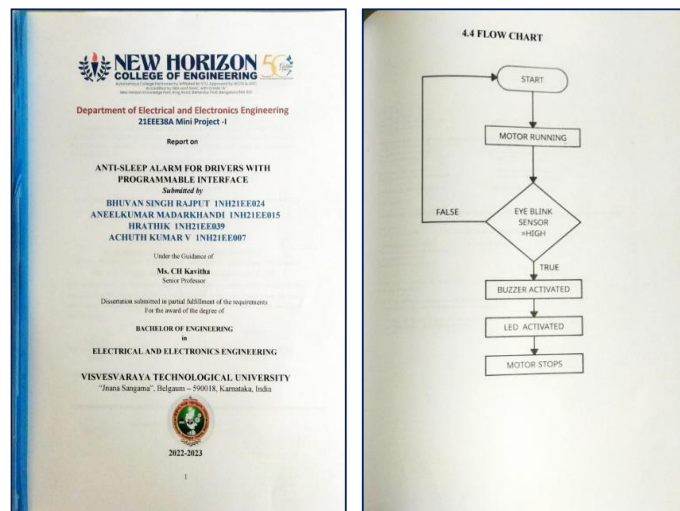


Figure 2.2.1.g: Front page & sample of mini project work conducted by group of students

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	III SEM- A Sec	DC Chargeable Drilling Machine	PO1, PO2, PO3, PO4, PO5, PO8, PO9, PO10, PO11, PSO1, PSO2
9.	1NH22EE409	S.Suhel Ahmed			
10.	1NH22EE402	Jayasourya U			
11.	1NH22EE400	Akshata Pandit Sutar			
12.	1NH22EE406	Likhith R	VI SEM- B Sec	Accident Prevention by Locking the Engine using MQ3	PO1, PO2, PO3, PO4, PO5, PO8, PO9, PO10, PO11, PSO1, PSO2
13.	1NH20EE064	Meghana I K			
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 Tiruchirappalli	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://newhorizoncollegeengineering.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/research-perspective/

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 (ICRPHGRES-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-icrphgres-2021/

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

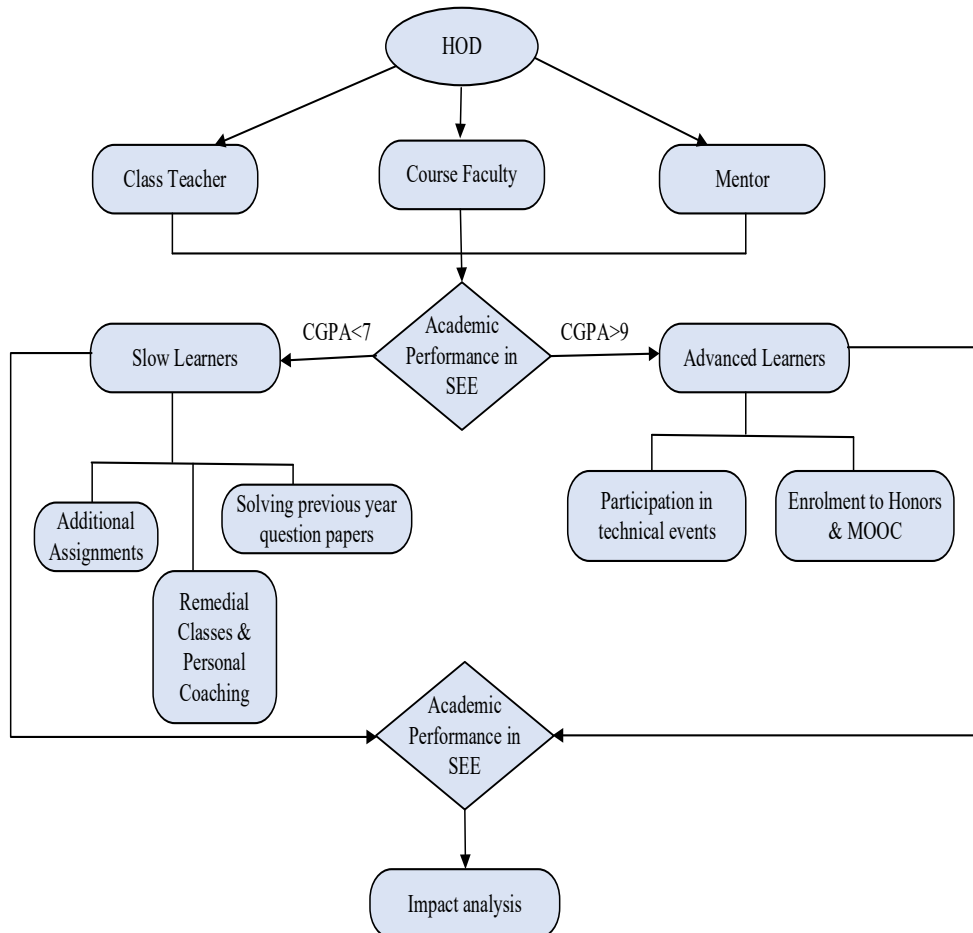


Figure 2.2.1.h: Process to identify and support weak students and encourage bright students

➤ 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, PG CET 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

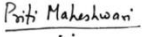
with a consolidated score of **62** %


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



Roll No: NPTEL23CS08553231178


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

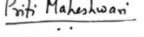
with a consolidated score of **55** %


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



Roll No: NPTEL23CS08523231744

To validate the certificate 

No. of credits recommended: 3 or 4

Figure 2.2.1.j: NPTEL Course completion certificates

Criterion-2 Self Assessment Report (SAR)

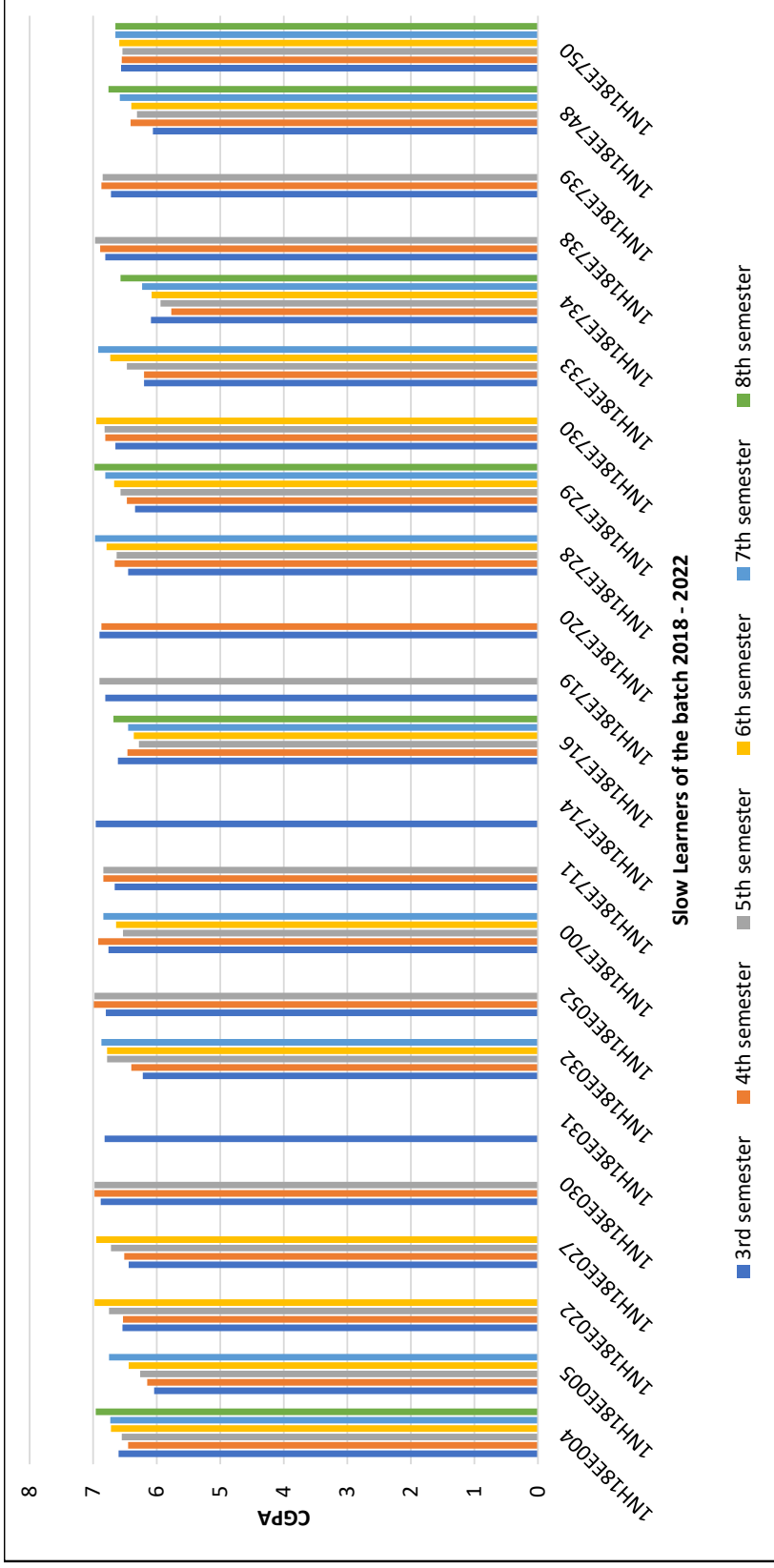


Figure 2.2.1.k: Impact observed on slow learners

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 2.2.1.1: 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

Criterion-2 Self Assessment Report (SAR)

New Horizon College of Engineering														
Department : Electrical and Electronics Engineering														
Teacher : Dr. S. Sujitha														
Course Name : SIMULATION TOOLS FOR ELECTRICAL ENGINEERING LAB		Section : Section A		Max Marks : 25					Total					
Course Code : 20EEL77A		USN		RECORD	Wriiteup	Execution	Viva	CIE 1	RECORD	Writeup	Execution	Viva	CIE 2	AVG
S.No		Student Name		Max Marks										
1	FARAZ AHMED MULLA	1NH18EE014		15	10	10	5	25	15	10	10	5	25	25
2	ABDUL SAMED	1NH19EE001		15	6	6	4	22	15	2	6	2	19	21
3	ABHISHEK	1NH19EE003		15	10	10	5	25	15	10	10	4	24	25
4	ABHISEK BEDANT	1NH19EE004		15	10	10	4	24	15	10	10	4	24	24
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 HEGDHF 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

Criterion-2 Self Assessment Report (SAR)

New Horizon College of Engineering													
Department : Electrical and Electronics Engineering													
Course Name : SIMULATION TOOLS FOR ELECTRICAL ENGINEERING LAB													
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													
1	FARAZ AHMED MULLA	1NH18EE014	15	10	10	5	25	15	10	10	5	25	25
2	ABDUL-SAMED	1NH19EE001	15	6	6	4	22	15	2	6	2	19	21
3	ABHISHEK	1NH19EE003	15	10	10	5	25	15	10	10	4	24	25
4	ABHISEK BEDANT	1NH19EE004	15	10	10	4	24	15	10	10	4	24	24
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.

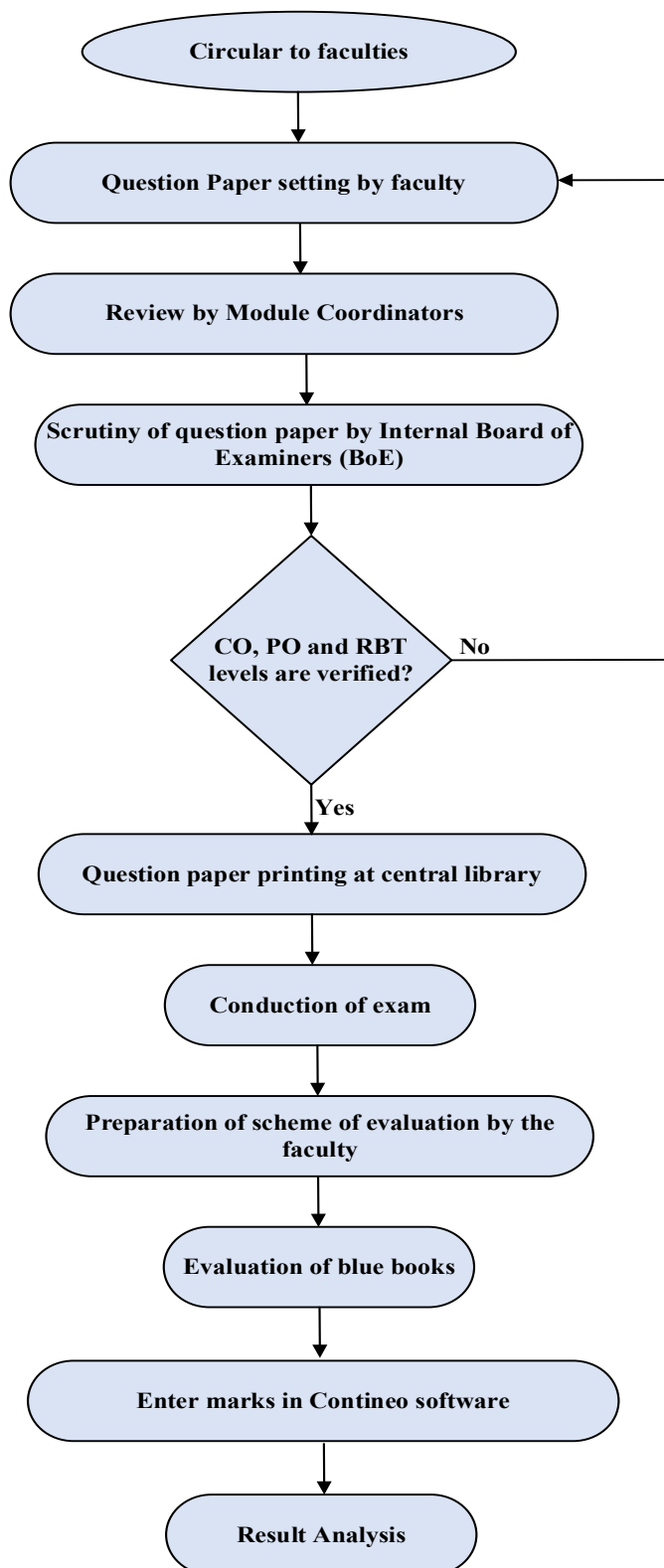


Figure 2.2.2.a: Process for internal semester question paper setting and evaluation and effective process implementation

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																			
Q#	Question	RBT Level	COs	POs & PSOs	Marks														
Q1	Describe the working of buchholz relay transformer protection																		
Q2	List the difference between IDMT overcurrent relay and extremely inverse-time over current relay characteristics.	L1	CO2	PO1, PO2, PSO1	5														
Q3	Explain Merz-price protection of alternator stator windings with neat sketch.																		
Q4	Explain differential scheme for bus bar protection with neat sketch.	L2	CO2	PO1, PO2, PSO1	5														
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 earthing 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.																		
Q6	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 for a TMS=0.4 at TMS=1, the operating time at various PSM are: <table border="1" style="width: 100px; margin: 5px;"> <tr> <td>PSM</td> <td>2</td> <td>4</td> <td>5</td> <td>8</td> <td>10</td> <td>20</td> </tr> <tr> <td>Operating time in s</td> <td>10</td> <td>5</td> <td>4</td> <td>3</td> <td>2.8</td> <td>2.4</td> </tr> </table>	PSM	2	4	5	8	10	20	Operating time in s	10	5	4	3	2.8	2.4	L3	CO3	PO1, PO2, PO3, PSO1	5
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.																		
Q8	Explain briefly about the load shedding and conditions under which load shedding is done.	L5	CO3	PO1, PO2, PO3, PSO1	5														
Q9	What are the factors to be considered for installing lightning arrestor on the transformer terminal?																		
Q10	Identify the necessary conditions of insulation	L4	CO5	PO1, PO2, PO3, PSO1	5														

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	Test 2	Test 3	Assignment 1	Assignment 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	21EEE322A	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		25	
8	21EEL37A	DC machines and transformers Laboratory	3									25		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	20EFE54	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	20ELE71A	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	20EFE78A	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.

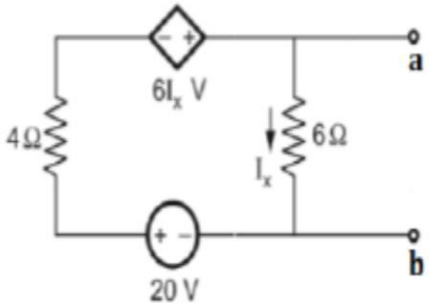


DEPARTMENT OF ELECTRICAL & ELECTRONICS ENGINEERING

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

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 Thevenin's Theorem.	L2	CO2	PO2, PO3, PS01	1.5
2.	Two coupled coils have self-inductances $L_1=50\text{mH}$ and $L_2=200\text{mH}$, and a coefficient of coupling $k=0.50$. If coil 2 has 1000 turns and $i_1=5.0\sin 400t(\text{A})$, solve to find the voltage at coil 2 and the flux Φ_1	L3	CO2	PO2, PO3, PS01	2.5
3.	Determine the Norton's equivalent circuit across the terminals a-b in the network shown. 	L4	CO3	PO2, PO3, PS01	2.5
4.	Justify with proper equations the response which occurs in a source free series RC circuit.	L5	CO4	PO2, PO3, PS01	1

NHCE/AQP/016

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

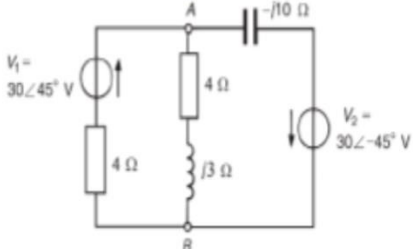
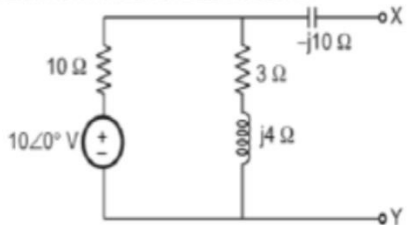


DEPARTMENT OF ELECTRICAL & ELECTRONICS ENGINEERING

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 $(4+j3)\Omega$ 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

NHCE/AQP/016

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



DEPARTMENT OF ELECTRICAL & ELECTRONICS ENGINEERING

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

Course : ELECTRIC CIRCUIT THEORY

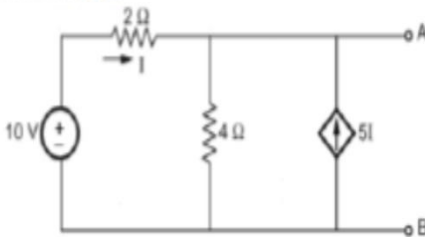
Course code :21EEE36A/19EEE35

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 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.

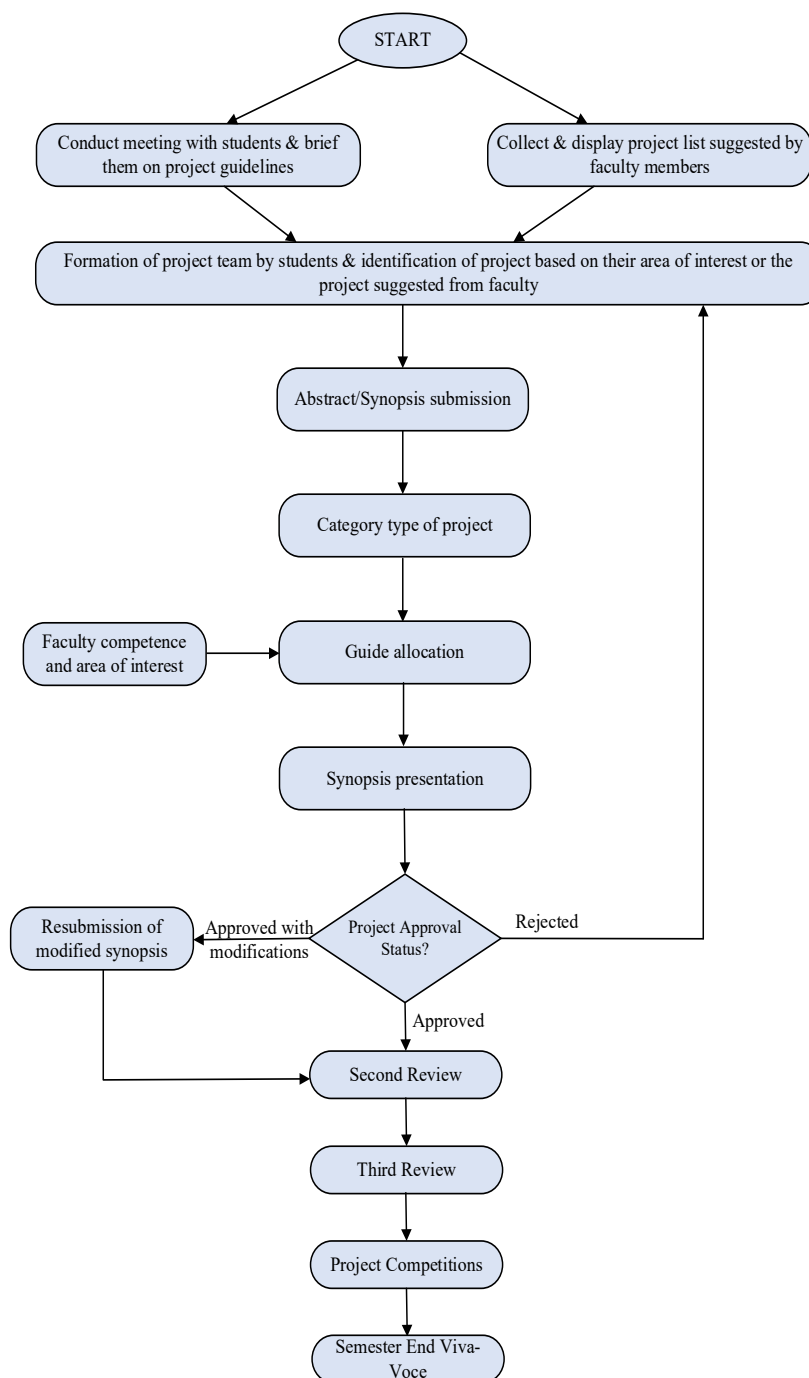


Figure 2.2.3.a: Process Flow of BE Final Year Project

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.

Criterion-2 Self Assessment Report (SAR)

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, Gautamnee 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	Abbar 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 evaluation 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

Criterion-2 Self Assessment Report (SAR)

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	Pramav R Naik, Rahul Vijay, Lingadhair 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, Rameshrajauru K R, Abhimanuyiur, 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 Chemma 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, Shivvan Tiwary	Automatic Speed control of an Electric Vehicle Using Raspberry -pi	Application		✓	PO1, PO2, PO3, PO4, PO5, PO8, PO9, O10, PO11, PSO1, PSO2

Criterion-2 Self Assessment Report (SAR)

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, Momisha 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

Criterion-2 Self Assessment Report (SAR)



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 assess individual and team performance

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

Parameter	Rubrics for Major Project First Review		
	>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 21 st Century Technological Challenges	Problem statement clear, NOT feasible for implementation, and does NOT address the 21 st 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.

Criterion-2 Self Assessment Report (SAR)

Rubrics for Major Project Second Review		
Parameter	>70%	40 to 70%
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
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
Progress/ Intermediate Results	Proper demonstration of intermediate results	Limited 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
		<40%
		Incomplete details of the block diagram and algorithm used
		Incomplete description of intermediate results obtained in second phase of the project
		Incomplete demonstration of intermediate results
		No distribution of proper workload among team members and no Gantt chart.

Rubrics for Major Project Third Review		
Parameter	>70%	40 to 70%
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
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
Project Report	Submission of report on time as per the report guidelines	Submission of report on time but guidelines are 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
		<40%
		No justification of output obtained in the final phase of project
		No working model/simulation results of output of the project during final phase
		No timely submission of report and guidelines are also not followed properly
		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)

Parameter	Rubrics for Major Project First Review		
	>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.

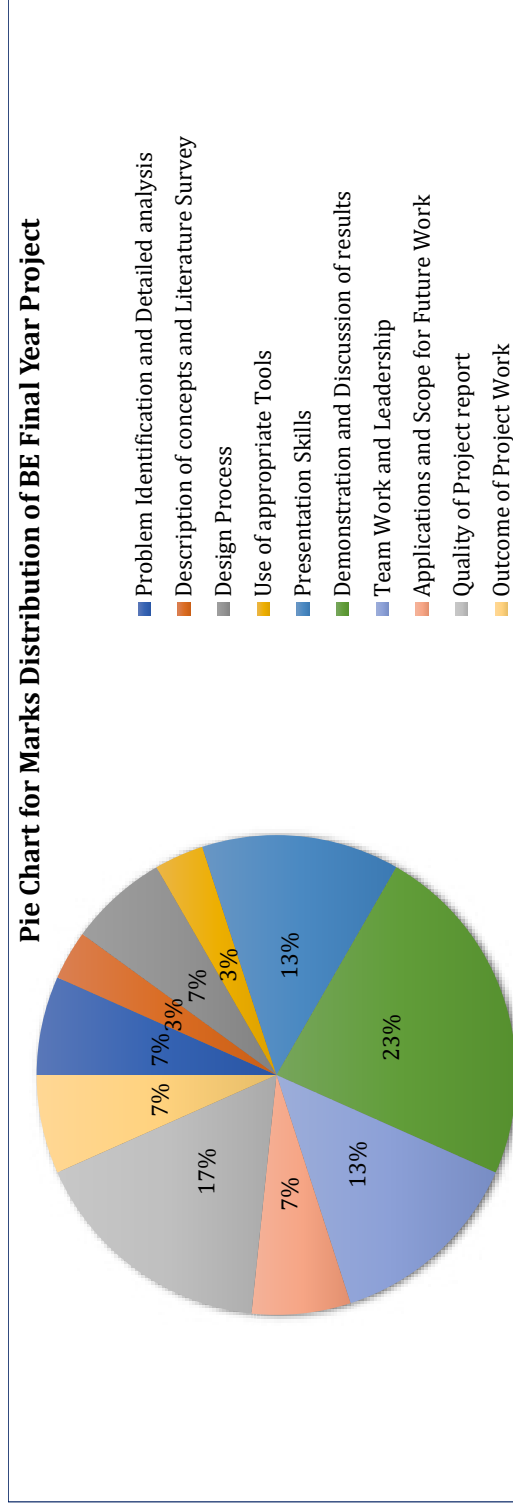


Figure 2.2.3.c: Mark Distribution for Internal Evaluation- Major Projects

Criterion-2 Self Assessment Report (SAR)

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	<ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> 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		
Allotted marks: 5		
1	Problem Statement	Fair (0 - 1)
	<p>Excellent (4 - 5)</p> <p>4 - Problem statement is excellent & scope for future enhancement 5 - Problem statement is excellent</p>	<p>Good (2 - 3)</p> <p>3 - Concept is clear & able to frame the problem statement 2 - Able to frame the problem statement</p>
	<p>Excellent (3)</p> <p>Identifying the proper requirements with sufficient information. (Both functional & nonfunctional).</p>	<p>Fair (0 - 1)</p> <p>Few requirements are specified.</p>
	<p>Methodology</p> <p>2 - Well defined</p>	<p>Allotted marks: 2</p> <p>1 - Moderately defined 0 - Not defined properly</p>
	<p>Presentation Skill</p> <p>5- Interactive Presentation well aligned with problem statement and proper template 4 - Presentation aligned with problem statement and proper template.</p>	<p>Good (2-3)</p> <p>3- Engaging Presentation, moderately aligned with problem statement and proper template 2- Engaging Presentation &insufficient information</p>
	<p>Q & A</p>	<p>Marks Allotted: 5</p>
PART-B: Meeting Guide/Deadline/Individual Contribution- 05 Marks		
Allotted marks: 5		
1	Meeting Guide	Fair (0-1)
	<p>Excellent (4 - 5)</p> <p>5- Regular, Progress in Work is excellent & Timeline followed 4 -Regular, progress in work is excellent & Timeline not followed</p>	<p>Good (2 - 3)</p> <p>3 - Regular, progress in work satisfactory & Timeline followed 2 - Regular, progress in work satisfactory &Timeline not followed</p>
	<p>1- Presentation was not aligned with problem statement and less information.</p>	<p>1- Not Regular, progress in work not satisfactory & Timeline not followed</p>

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

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

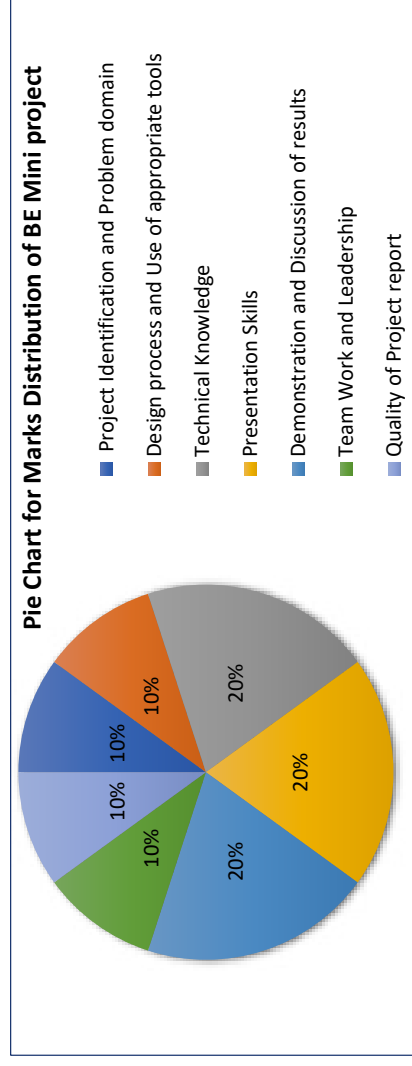


Figure 2.2.3.d. Mark Distribution for Internal Evaluation- Mini Projects

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, Sheha 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, Bhagavantaray Yaragall, 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.

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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	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
	Siddhartha Sunil Singh			
	Tahoora Imtiyaz			
2	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-Dec-22
	Siddhartha Sunil Singh			
	Tahoora Imtiyaz			
3	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-Nov-22
	Sagar Kulkarni			
	Lavin Ponnappa M M			
4	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-Nov-22
	Chitra S			
	Kavipriya E			
5	Sahana B	An Accident Identification and Alerting System by Using Raspberry Pi	2022 IEEE 2nd Mysore Sub Section International Conference (MysuruCon)	13-Dec-22
	Vishwanath Patil			
	P.MD.Muthahir Khan			
6	Bharaateshshiradomi	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
	Venkan gouda			
	Vishwanath Patil			
7	P.MD.Muthahir Khan	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
	Bharaateshshiradomi			
	Venkan gouda			
8	Sayanth PV	Data Analytics for Parameter Estimation of an Electric Bicycle using IoT	2022 7th International Conference on Communication and Electronics Systems (ICCES)	29-Jul-22
	Vishal Suresh			
	Adithya Hegde			
9	Nahush S	A review of remote health monitoring system for patients using IoT	International Conference on Automation, Computing and Renewable Systems (ICACRS-2022)	7-Feb-23
	C Bhavana Singh			
	Bhavana YC			
10	Bindhu V	A Review of Theft Diagnosis from Smart Energy Meter Using IoT	2022 6th International Conference on Electronics, Communication and Aerospace Technology	16-Jan-23
	Abhishek			
	ANIL HEGDE H			

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11	Kesamreddy Deepthi	Design and fabrication of Quad Bike for physically Challenged person	International Conference on Smart Generation Computing, Communication and Networking (Smart Gencon)	6-Apr-23
	M Rohith Kumar Reddy Harshitha R			
12	Anoopkumar H S	Herbs Ailment Diagnosis using AI Techniques for Sustainable Innovation in Agriculture	2023 4th International Conference on Innovative Trends in Information Technology (ICITIT)	20-Mar-23
	Chethan D R			
	Deekshith More B			
	Kushal A Y			
13	Dechamma V S	Study of Interfacing PLC With HMI for Industrial Applications	2023 Second International Conference on Electronics and Renewable Systems (ICEARS)	5-Apr-23
	J Likitha			
	Jayanth R			
	Prajwal R M			
14	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)	1-Mar-23
	Hemanth G N			
	J Prajwal			
	M Gopal			
15	Shiva Shankara M	A Review of Sequential Control & Monitoring of Distribution Lines in Substations	2022 International Conference on Automation, Computing and Renewable Systems (ICACRS)	7-Feb-23
	Binay Kumar Yadav			
	P. Sindhu			
	Ravi Nandan			
16	Roopeshwar Reddy	Artificial Intelligence based Self-Driving Car using Robotic Model	2023 Third International Conference on Artificial Intelligence and Smart Energy (ICAIS)	27-Mar-23
	Vinod Kumar R			
	W Y Jhansipriya			
	Manoj kumar H V			
17	Manoj kumar P	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
	Naveen R N			
	Sandeep Naik R			
	Maruthi B			
18	Rahul	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
	Santhosh Melvin D			
	Sathish			
	Meghana N T			
19	Vandana R	Solar Powered Multi-functional agricultural robot	International Conference on Knowledge Engineering and Communication Systems (ICKECS-2022)	17-Mar-23
	Vidya G R			
	Rachna Palli			
20	Sowmya Shree	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
	Jeshwanth V			
	Aishwarya P			
	Charishma A			
21	Gautamnee KK	IoT detection based energy meter integrated with smart devices	2023 Second International Conference on Electronics and Renewable Systems (ICEARS)	5-Apr-23
	Kesamreddy Deepthi			

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

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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	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
	Prajwal			
	Sarthak Das			
2	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
	Nischal Dinesh			
	Prajwal			
3	Sarthak Das	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
	Ashu Anand			
	Darshini Machamma M S			
4	Appaji	An IoT based Data Analytics for Electric Bicycle using OpenModelica Simulation Tool	2022 International Conference for Advancement in Technology (ICONAT)	10-Mar-22
	Mohammed Tauqueer Ali			
	Mohammed Omer Ali			
5	Siddhartha Sumil Singh	A Review on Triboelectric Nanogenerators (TENGs) using Internet of Things	2021 International Conference on Forensics, Analytics, Big Data, Security (FABS)	09-Feb-22
	Tahoora Imtiyaz			
	Nayrah M A			
6	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
	Sagar Kulkarni			
	Lavin Ponnappa M M			
7	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
	Chitra S			
	Kavipriya E			
8	Sahana B	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
	Jibran Zaidi			
	Vikram			
9	Nirupavardhan	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
	Jaffer			
	Pranav R Naik			
	Rahul Vijay Lingadhal			
	R Puneeth Venkat Sai Varma			

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10	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
	Pranav R Naik			
	Rahul Vijay Lingadhal			
	R Puneeth Venkat Sai Varma			
11	R Supraja	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
	C Bhavana Singh			
	Bhavana YC			
	Bindhu V			
12	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
	Deepthi D			
	Shawin Krishna			
	Bellam Sreekanth reddy			
13	Karthik N	A survey on Smart Traffic Control System for Emerging vehicles	2022 International Conference on Computer Communication and Informatics (ICCCI)	31-Mar-22
	Lakshmiipathi C			
	Anirudh			
	Sanjay G			

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

Sl. No.	Title of the Project	Name of the Student	Guide Name
1	Design and fabrication of Quad Bike for physically Challenged	INH19EE010 - Aisiri M Urs INH19EE046 - Harshitha R INH19EE066 - M Rohit Kumar Reddy INH19EE403 - Koushik P	Dr. Sujitha S
2	Artificial Intelligence based SRLF-Driving car using Robotic Model	INH19EE125 - W Y Jhansipriya INH19EE123 - Vinod Kumar R INH19EE085 - P Ravi Nandan INH19EE127 - YannamRoopeswar Reddy	Ms. Surat Pyari Atti Dr. Sujitha S
3	Design and Implementation of solar fed food alert system using Bolt Wi-Fi Module	INH19EE005 - Abrar Altaf Dar INH19EE016 - Ankit Kumar INH19EE033 - Ezra James DCunha INH19EE040 - Gaurav P Kumar	Ms. Karthika M Dr. Mohan Das R
4	Silent surveillance autonomous drone for disaster management and military security using artificial intelligence	INH19EE106 - Sharmi Kanaujia INH19EE097 - Sanskriti Agarwalla INH19EE103 - Shaik Sameer INH19EE114 - Tabasum Manzoor	Ms.Soumya K V Dr. Sujitha S
5	Prepaid Energy Meter with Theft detection using IoT	INH19EE008 - Aishwarya P INH19EE023 - Charishma A INH19EE042 - Gautamnee K K INH19EE055 - Kesamreddy Deepthi	Dr. Vinoth Kumar K

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Table 2.2.3.g2: List of Projects funded by KSCST 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	INH18EE026 - Kiran U INH18EE035 - Naveen Kumar K R INH18EE046 - Rohan N INH18EE056 - Shreysh Babu	Dr. Sujitha S Mr. Lithesh J
2	Optimization of Battery Performance in Electric Vehicle	INH18EE736 - R Puneeth Venkat Sai Varma INH18EE735 - Pranav R Naik INH18EE738 - Rahul Vijay Lingadhal INH18EE737 - 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	INH18EE708 - Bhavana YC INH18EE709 - Bindhu V INH18EE710 - C Bhavana Singh	Dr. Vinoth Kumar K
4	Solar Driven Vaccine Refrigerator using environment-friendly refrigerants for Off-Grid locations	INH18EE017 - Greeshma Chemmareddy INH18EE010 - Chitra S INH18EE013 - Kavipriya E INH18EE050 - Sahana B	Dr. Vinoth Kumar K Dr. Gunapriya B
5	Implementation and design of cobots in floriculture	INH18EE731 - Niranjan C INH19EE407 - Ramesharaja Ursu K R INH18EE700 - Abhimanyu Iyer INH18EE716 - Dhanush L	Dr. Singaravelan A
6	Solar based energy efficient hybrid SLBLDC motor for agriculture	INH18EE727 - Md Sagar Khan INH18EE725 - L Ashwini B INH18EE724 - K Utkarsh Alok INH18EE069 - Vivek Ranjan	Mrs. Karthika M Dr. Mohan Das R
7	LORA based smart cities and home automation using IoT	INH18EE722 - K Prasanna INH18EE702 - Ananda M A INH18EE723 - Kiran P Gowda INH18EE734 - 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

Sl. No.	Title of the Project	Name of the Student	Guide Name
1	Solar Refrigerator for Portable Refrigerator	INH17EE025 - K Shriya Reddy INH17EE027 - K Sai Hemanth Reddy INH17EE030 - M Sai Raghuram Amough INH17EE058 - Thamimulla	Dr. Vinoth Kumar K
2	Implementation of Smart E-Vehicle Charging Station powered by Renewable Energy	INH17EE756 - Vmith G A INH17EE733 - Pragathi Prakash INH17EE724 - Meghana I L INH17EE713 - Divya S V	Dr. Vinoth Kumar K
3	A collaborative robot to serve patients and to collect infectious wastage at the isolation ward	INH17EE037 - Sridaran P INH17EE039 - Pooja V INH17EE048 - Sriram SP INH17EE049 - Sarika M	Dr. Singaravelan A
4	A Novel fault tolerant solution for underground transmission system monitoring by GSM	INH17EE755 - Vandita Manohar INH17EE725 - Muahmmad Maaz	Ms. Roopa C
5	AI based Smart Mirror using Raspberry PI	INH17EE706 - Bharath Surya INH17EE718 - Kavitha SAH INH17EE745 - Raksha S INH17EE748 - Shaun Philipose John	Dr. Gunapriya B Mr. Vinod Kumar S
6	Recycled UVC Sterilizer	INH17EE701 - Abhilash Mithare INH17EE754 - Thomas Allwin Anto	Dr. Gunapriya B

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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. Bharatesh Shiradoni	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

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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 Mr. Vinod Kumar S	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	Dr. Mahesh M Dr. Mohan Das R Mr. Mckala 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. Manjunatha Dr. Mahesh M Mr. Satish Kumar D Mr. Advaith Madhavan	Published in AY 2022-23

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				Mr. Khadim Hussain Mr. K Javed Ajmal Mr. M P Jawahar Mr. Vinod Kumar S Dr. Vinoth Kumar K Dr. Mahesh M Mr. Shivashankara M Mr. Abdul Samed Mr. Darshan R		
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		Dr. Vinoth Kumar K Ms. Sangeetha C N Mr. Baba Fakharuddin	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		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	
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. 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	
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		Dr. Vinoth Kumar K Ms. Gautamnee K K Ms. Aishwarya P Ms. Kesamreddy Deepthi	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		Ms. Pooja Jose , Dr. Vinoth Kumar K Ms. Aamna Nafiza Ms. Disha M Ms. Harshika Ms. Hemavathi V	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. Kavitha Chenna Reddy Ms. Manasa G Reddy	Published in AY 2022-23	
18.	Design of wind solar hybrid system Application Number: 202341007561 A	India 08/2023 Dated			Published in AY 2022-23	

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	Dt 06/02/2023		24/02/2023	Ms. Neha R Haritha Ms. Tejashree T	Ms. Tantapureddi	
19.	Design of smart segregation bin Application Number: 202341007563 A Dt 06/02/2023	India 08/2023 Dated 24/02/2023		Mr. Kartheek Vankadara Bharath T Mr. Dayas A Dixen Mr. Dony Snehit P Ms. Infancia Pragna	Mr.	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 Ms. Rithika Kapoor Mr. Varun R	Mr. Tejas 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. Santhosh Melvin D Mr. Sathish S	Mr. Rahul R	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. Dishu 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

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	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. Vmay Kumar Ms. Manochitra G Ms. Janhavi G Ms. Keerthi M Ms. Lavanya N Ms. Deepika	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. Soumya K V Dr. Sujitha S Ms. Jayanth CK Mr. Ramakant H Dollu Mr. Sharath Kumar M Mr. Vignesh M	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 Mr. Manu K Mr. Ponde Sumanth Mr. Raghavendra Mr. Yeshwanth 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		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
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		Ms. Karthika M Dr. Sujitha S	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			Published in AY 2022-23

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	Application Number: 202341020457 A Dt 23/03/2023			Mr. Ezra James D'cunha Mr. Abrar Aliaf 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

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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 imbues 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 of the Company	Objective	Outcome
1.	 Schneider Electric India Private Limited	<ul style="list-style-type: none"> 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. <ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> 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 <ul style="list-style-type: none"> 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 <ul style="list-style-type: none"> 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






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4.	 <p>CISCO Networking Academy</p>	<p>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.</p>	<p>PO1,PO2,PO3,PO4,PO5,PO6,PO9,PO10, PO11,PO12 PSO1, PSO2</p> <ul style="list-style-type: none"> 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.	 <p>HP Vertica</p>	<ul style="list-style-type: none"> 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. 	<p>PO1,PO2,PO3,PO4,PO5,PO6,PO9,PO10, PO11,PO12 PSO1, PSO2</p> <ul style="list-style-type: none"> 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.	 <p>SAP Next Generation Lab</p>	<p>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</p>	<p>PO1,PO2,PO3,PO4,PO5,PO6,PO9,PO10, PO11,PO12 PSO1, PSO2</p> <ul style="list-style-type: none"> 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.	 <p>Amazon</p>	<p>To inculcate the students to Build, Deploy and Manage sites, Apps or Processes as services in Cloud environments.</p>	<p>PO1,PO2,PO3,PO4,PO5,PO6,PO9,PO10, PO11,PO12 PSO1, PSO2</p> <ul style="list-style-type: none"> All branches of Engineering Students can opt AWS tools as an open elective to earn credit as approved in the curriculum. To enhance the employability quotient of the students across IT industry including Amazon. Students registered under this program a real so provided an opportunity to





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8.	 <p>Capgemini Industry 4.0 Lab</p>	<p>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.</p>	<p>pursue AICTE approved internship With Amazon 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.</p> <ul style="list-style-type: none"> 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.	 <p>IBM Open Power Lab</p>	<p>Artificial enables creation of intelligent machines and through the establishment of COE for AI our endeavor is to create Intelligent humans</p>	<p>PO1,PO2,PO3,PO4,PO5,PO6,PO9,PO10, PO11,PO12 PSO1, PSO2</p> <ul style="list-style-type: none"> 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.	 <p>Robotic Process Automation</p>	<ul style="list-style-type: none"> 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. 	<p>PO1,PO2,PO3,PO4,PO5,PO6,PO9,PO10, PO11,PO12 PSO1, PSO2</p> <ul style="list-style-type: none"> 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.

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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 the promising applications of 5G systems	PO1,PO2,PO3,PO4,PO5,PO6,PO9,PO10, PO11,PO12 PSO1, PSO2 • Faculty members also undergo various certification courses on 5G technology. • 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.

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			<ul style="list-style-type: none"> 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. 	<ul style="list-style-type: none"> 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
16.		<ul style="list-style-type: none"> 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 	<ul style="list-style-type: none"> 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. 	<ul style="list-style-type: none"> 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
17.		<ul style="list-style-type: none"> 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. 	<ul style="list-style-type: none"> 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 	<ul style="list-style-type: none"> 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
18.		<ul style="list-style-type: none"> To make the student industry ready by enabling them to be responsible for configuring and monitoring devices running the Junos OS. 	<ul style="list-style-type: none"> 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 	<ul style="list-style-type: none"> 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.		<ul style="list-style-type: none"> To shape the industry relevant curriculum that includes contextual digital strategy and technology big bets with hands on immersive program enabling engineers to be industry ready. 	<ul style="list-style-type: none"> 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 	<ul style="list-style-type: none"> 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

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.	Industry Associated with Centre of Excellence	Course Code	Course Name	Department
1	MICROFOCUS	20NHOP601	Big Data Analytics using HP Vertical-1	CSE
2	VMWARE IT Academy	20NHOP602	VMWare Virtualization Essentials-1	ISE
3	Sap Labs	20NHOP607	SAP	ME
4	Schneider	20NHOP608	Schneider-Industrial Automation	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 Life Cycle Management	ME
9	Automation Anywhere	20NHOP620A	Robotic Process Automation	CSE
10	Capgemini	20NHOP621A	Industry 4.0	ME
11	Fanuc	20NHOP622A	Programming of Industrial Robot	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 (Vejo 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 SamarjitSengupta.
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	<p>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-Probuss-Subnetting-Subnet Mask-File transfer protocol</p> <p>Practical activities</p> <ul style="list-style-type: none"> • 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	<p>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</p> <p>Practical activities</p> <ul style="list-style-type: none"> • Design of a EMS and BMS • Configuration of a EMS and BMS 	09	CO2, CO6

	<ul style="list-style-type: none"> • Applications with Schneider software 		
3	<p>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</p> <ul style="list-style-type: none"> • Design of a fire alarm system • Configuration of a fire alarm system • Applications with Schneider control panel and software tools. 	09	CO3
4	<p>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</p> <ul style="list-style-type: none"> • 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	<p>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</p> <ul style="list-style-type: none"> • 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)

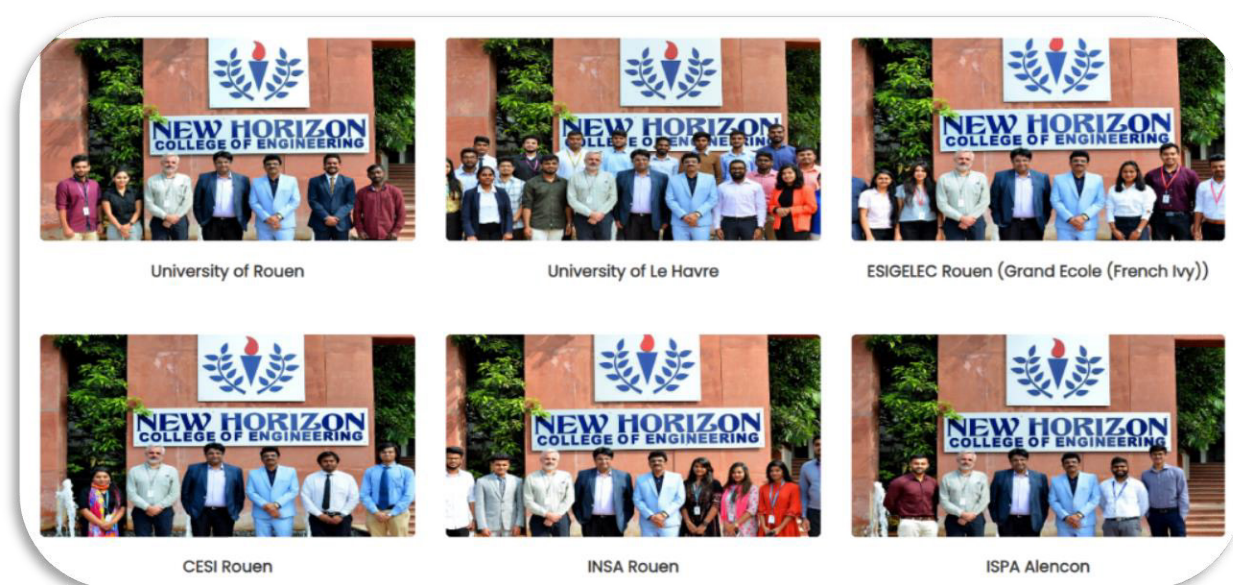


Figure 2.2.4.e: Students studied at different France universities

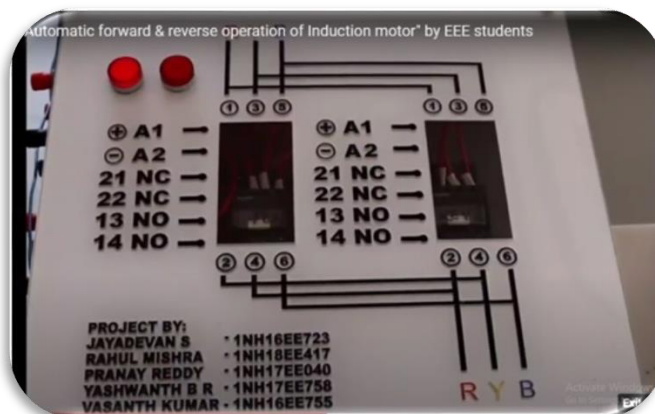


Figure 2.2.4.f: Students project on automatic forward & reverse operation of induction motors in Schneider Electric Indo-French Centre of Excellence

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

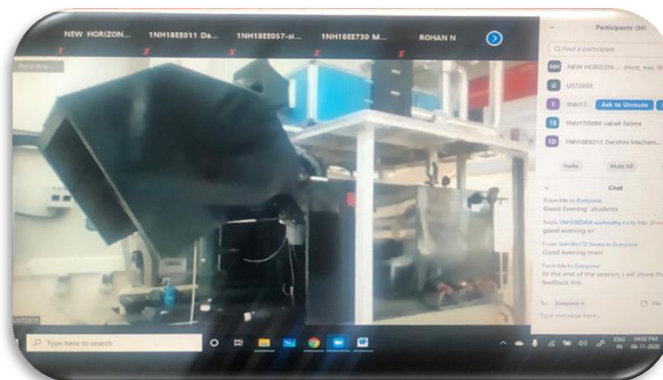


Figure 2.2.5.a3: Virtual industrial visit to Danfoss Industries Pvt. Ltd., Chennai

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	INH18EE014	Faraz Ahmed Mulla	Capgemini
2	INH19EE001	Abdul Samed	Vijay Electric Co.
3	INH19EE003	Abhishek	Cognizant
4	INH19EE004	Abhisek Bedant	Capgemini
5	INH19EE005	Abrar Altaf Dar	Capgemini (Maven Silicon)
6	INH19EE007	Agarwal Rahat Manoj Kumar	Capgemini
7	INH19EE008	Aishwarya P	MCR Technology Pvt. Ltd.
8	INH19EE009	Aishwarya V H	Bangalore Metro Rail Corporation Ltd.
9	INH19EE010	Aisiri	PLM Indishtech Pvt. Ltd.
10	INH19EE011	Akshatha Sree S	Bangalore Metro Rail Corporation Ltd.
11	INH19EE011	Akshatha Sree S	Bangalore Metro Rail Corporation Ltd.
12	INH19EE012	Akshay V	Turno
13	INH19EE013	Anil Hegde H	Cognizant
14	INH19EE015	Anjana Kumari	Mahesh Power Control Instrument System
15	INH19EE016	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	Capgemini
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	INH19EE070	Manoj Kumar P	GstovalleyTechnovations
63	INH19EE071	Maruthi B	EY India
64	INH19EE072	Meghana N T	SEG Automotive India Private Limited
65	INH19EE073	Meghana S	Selco Foundation
66	INH19EE074	Mohammad Shawali	Sobha Limited
67	INH19EE076	Muntazir Abid	STD 2nd
68	INH19EE077	Muntazir Ali Mir	Recieving Station, Budgam
69	INH19EE080	Naveen RN	Cognizant
70	INH19EE083	P Sindhu	Media Ant
71	INH19EE085	P Ravinandan Reddy	GstovalleyTechnovations
72	INH19EE087	Poojith N	K-Aka Technology Services (KTS)
73	INH19EE090	R Varun	Mindtree
74	INH19EE091	Rachna Palli	PLM Indishtech Pvt. Ltd.
75	INH19EE092	Rahul R	K-Aka Technology Services
76	INH19EE093	Ritika Kapoor	BEL (Bharat Electronics Ltd)
77	INH19EE095	Sandeep Naik R	GstovalleyTechnovations
78	INH19EE097	Sanskriti Agarwalla	Polymer Industries
79	INH19EE098	Santhosh Melvin D	Bosch, Bidadi
80	INH19EE099	Santosh S Kummi	Karnataka Power Corporation Limited, Yalahanka
81	INH19EE100	Sarthak Ghorai	K-Aka Technology Services
82	INH19EE101	Sathish S	Aka Technology Services (KTS)
83	INH19EE102	Shaif Alam	Rinac India Limited
84	INH19EE103	Shaik Sameer	Airobotsoft
85	INH19EE104	Shambhavi Bhagat	Dell
86	INH19EE105	Shariq Ahmed	SBEE Cables (India) Limited
87	INH19EE106	Sharmi Kanaujia	South Eastern Railway
88	INH19EE107	Sowmya Shree	Newline Engineers And Designers
89	INH19EE109	Subhajit Das	K-AKA Technology Services
90	INH19EE110	Suraj Raju Jadhav	Kaashiv Infotech
91	INH19EE113	Swastik Shukla	Capgemini
92	INH19EE114	Tabasum Manzoor	Capgemini
93	INH19EE116	Tejas V	Capgemini Engineering
94	INH19EE120	U Mohammed Arshad	YGK Technologies Pvt. Ltd.
95	INH19EE121	Vandana R	Technologies Global Pvt. Ltd.
96	INH19EE122	Vidya G R	Amberroot Systems Private Limited
97	INH19EE123	Vinod Kumar R	Steer Engineering
98	INH19EE124	Vyas Kodge	Sobha Ltd.
99	INH19EE125	W Y Jhansipriya	K-Aka Technology Services
100	INH19EE126	Y.Punith	Dynalektric
101	INH19EE127	YannamRoopeswar Reddy	YGK Technologies
102	INH19EE129	Zahra Goher Sultana	Esigelec
103	INH18EE021	Jeshwanth V	Transcaal Power

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

Sl. No	USN	Name of the Student	Company
1	INH18EE001	Abhishek Kumar	MPCIS
2	INH18EE002	Allen Harish M	Automation Anywhere
3	INH18EE003	Anirudh Ks	Cognizant
4	INH18EE004	Appaji	Taurus power electronics
5	INH18EE005	Ashuanand	Pantech Prolabs India Pvt. Ltd
6	INH18EE006	Bharath B	Verzeo
7	INH18EE008	Bhoomika J Kumar	Automation anywhere
8	INH18EE009	C Lakshmipathi	Cognizant
9	INH18EE010	Chitra S	McAfee Software Private Ltd. (Skyhigh Security)
10	INH18EE011	Darshinimachamma M S	Hindustan Aeronautics Limited and Ernst & Young
11	INH18EE012	Divyashree N	DXC
12	INH18EE013	E Kavipriya	Ernst and Young
13	INH18EE015	Gagana C	CGI
14	INH18EE016	G.Sivakumar	Taurus Powertronics Private Limited
15	INH18EE017	Greeshmachennareddy	SELCO Foundation
16	INH18EE020	Jaffer Sadiq	Taurus Powertronics Private Limited
17	INH18EE022	Jibran Zaidi Hussain	GTTC Electrical
18	INH18EE023	K V Nandeesh	Verzeo
19	INH18EE025	Karthik N	CGI
20	INH18EE026	Kiran U	Cognizant India Pvt. Ltd.
21	INH18EE027	L. Nirupavardhan	Spectra Assistive Private Ltd.
22	INH18EE028	Manoj Kumar. M. B	Wipro
23	INH18EE031	Mohammed Omer Ali	Noor Information for Communication & IT Est.
24	INH18EE032	Mohammed Tauqeer Ali	Technologic Global Pvt. Ltd.
25	INH18EE035	Naveen Kumar K R	Vardhan Consulting Engineers
26	INH18EE036	Nayrah M A	Tickle Brains Software Pvt. Ltd.
27	INH18EE038	Niranjan Kumar	Taurus Powertronics Pvt. Ltd.
28	INH18EE039	Nischal Dinesh	Ticklebrains Software Pvt. Ltd.
29	INH18EE040	Ponnappa Mm	Ticklebrains Software Pvt. Ltd.
30	INH18EE041	Prabhath Raj	Mersen
31	INH18EE044	Rachana R	Sri Shanthaveera Transformers Manufacturing Company
32	INH18EE046	Rohan N	Hexaware
33	INH18EE048	Rutik Laxman Belekar	Take It Smart
34	INH18EE048	Rutikbelekar	Take It Smart
35	INH18EE049	Sagar Kulkarni	Ticklebrains Software Pvt. Ltd.
36	INH18EE050	Sahana B	Selco Foundation
37	INH18EE052	Sanjay G	Technologies Global
38	INH18EE053	Sarthak Das	Ticklebrains Software Pvt. Ltd.
39	INH18EE054	Shekar V	KPTCL (Karnataka Power Transmission Corporation Ltd)
40	INH18EE055	Shiva R V	Ticklebrains Software Pvt. Ltd.
41	INH18EE056	Shreyshbabu	KPTCL
42	INH18EE057	Siddhartha Sunilsingh	Potential Foods Pvt. Ltd.

43	INH18EE061	Vikram.S	KPTCL Hoody
44	INH18EE062	Vinayaka S Dhuleholi	Mersen Electrical Power
45	INH18EE063	Vishwa Deepak Pandey	JSW Steel Ltd.
46	INH18EE063	Vishwa Deepak Pandey	JSW Steel Ltd.
47	INH18EE065	Muhammad Numan Bhat	1) VCE (Vardhan Consultant Engineers) , 2) JKPTCL (Jammu & Kashmir Power Transmission Corporation Limited)
48	INH18EE066	Tahooraimtiyaz	Themathcompany
49	INH18EE417	Rahul Mishra	Automation Anywhere
50	INH19EE400	Kiran K V	CGI Consultant and Management Technology
51	INH19EE402	Manjunath Ganapati Naik	Karnataka Power Transmission Corporation Limited
52	INH19EE403	Sushma. M	Raichur Thermal Power Station (KPCL)
53	INH19EE404	Sushmitha T S	KPTCL
54	INH19EE405	V Sharon	KPTCL
55	INH19EE406	Harisha S N	KPTCL Nimhans
56	INH17EE712	Dheepakbaalajii	Techno Cloud Global
57	INH18EE067	Sayanth PV	IAMPL
58	INH18EE068	Pavan R	Cerner
59	INH18EE069	Vivekranjan	Inventeron Pvt. Ltd.
60	INH18EE700	Abhimanyuiyer	Sri Shanthaveera Transformers Mfg. Co.
61	INH18EE701	Adityahegde	KPTCL
62	INH18EE702	Ananda M A	Taurus Powertronics Pvt. Limited
63	INH18EE704	Ateeq Ur Rahman	Hashedin by Deloitte
64	INH18EE705	B.Saibharath Reddy	R.T.P.P (APGENCO)
65	INH18EE706	Bellamsreekanth Reddy	Cognizant
66	INH18EE707	Bharateshshiradoni	KPTCL
67	INH18EE708	Bhavana YC	KPTCL
68	INH18EE709	Bindhu	HAL
69	INH18EE710	C Bhavana Singh	SolworxS, Hindustan Aeronautics Limited
70	INH18EE711	Chandan N	Technologies
71	INH18EE712	Chandrashekar C	HAL Aerospace Division
72	INH18EE714	Daggupati Siva Prasad	HAL Aerospace Division / GTTC
73	INH18EE715	Deepthi D	Hindustan Aeronautics limited
74	INH18EE716	Dhanush L	Sri Shanthaveera Transformers Mfg. Co.
75	INH18EE718	Joanna Alicia D	Hindustan Aeronautics Limited
76	INH18EE719	K.Abishek	Welkinrim Technologies
77	INH18EE720	K.Ajay	KPTCL
78	INH18EE722	K.Prasanna	Mu Sigma
79	INH18EE723	Kiran. P. Gowda	Power Grid
80	INH18EE724	Kulshresthautkarshalok	BARC (Bhabha Atomic Research Center)
81	INH18EE725	Ashwini B Lokare	Vardhan Consulting Engineers
82	INH18EE727	Mdsagar Khan	Vardhan Consulting Engineers
83	INH18EE728	Mohammad Usman Khan	Jammu and Kashmir Power Department
84	INH18EE729	Md Farhanulla Sharif	Kaa Shiv
85	INH18EE730	Mohammed Sufiyan	Technologies Global Pvt. Ltd.
86	INH18EE731	Niranjan C	KPTCL

87	1NH18EE732	Niranjana 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	Satyavarapukenkatapavan 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	Ramesharajursu K R	Take It Smart (OPC) Pvt. Ltd.
113	1NH19EE408	Sandeshvantagodi	KPTCL

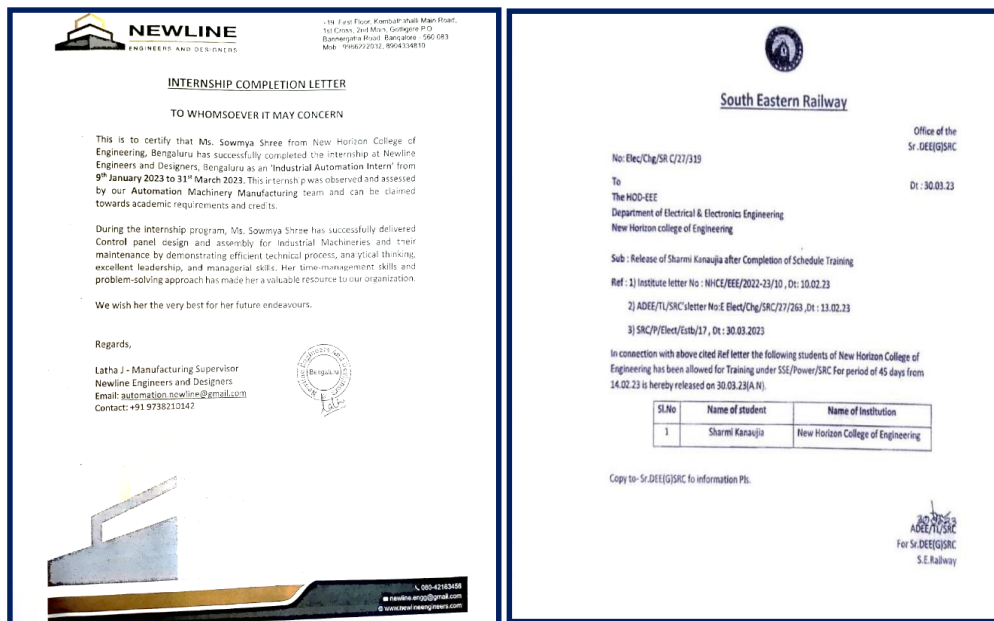


Figure 2.2.5.b: Sample internship completion certificates

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
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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.

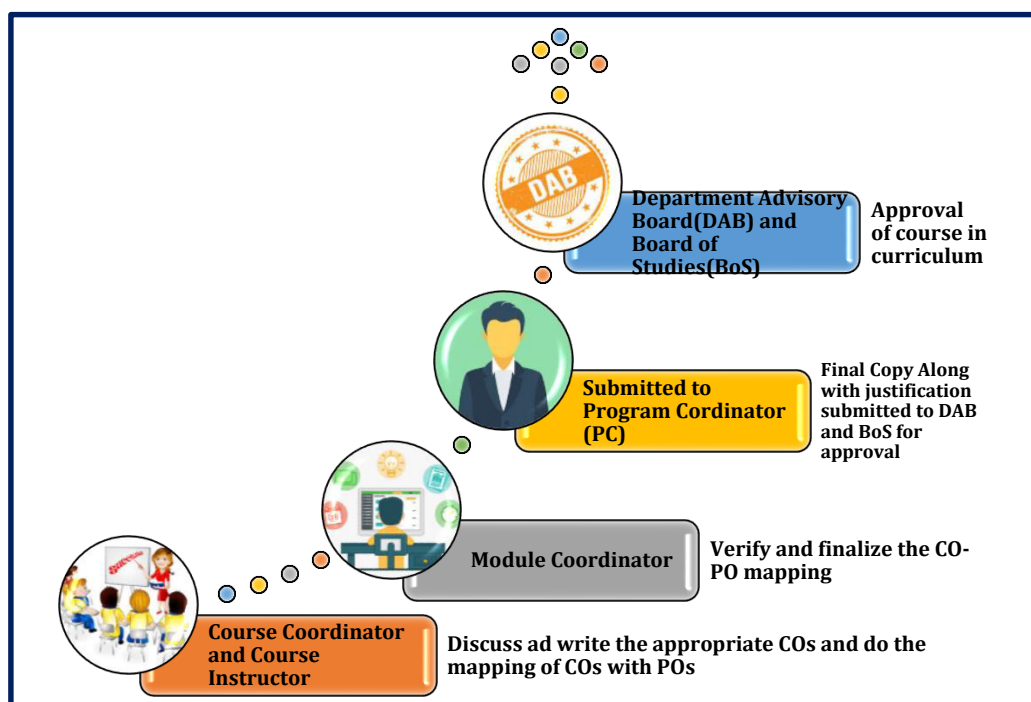


Figure 3.1.1 Hierarchy of faculty involvement in framing CO statement

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 ELECTRONICS
COs	On completion of this course, students will be able to:
20EEE62.1	Analyze 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	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.

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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	-	-	-	-	-	-	-	-	2	2
19EEE33 .2	3	3	2	3	-	-	-	-	-	-	-	-	3	3
19EEE33 .3	3	3	3	3	-	-	-	-	-	-	-	-	2	2
19EEE33 .4	3	3	3	3	-	-	-	-	-	-	-	-	3	3
19EEE33 .5	3	3	3	3	-	-	-	-	-	-	-	-	3	3
19EEE33.6	3	2	2	2	3	-	-	-	-	-	-	-	3	3
Average	3	2.8	2.6	2.8	3	-	-	-	-	-	-	-	2.7	2.7

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	2	Moderately mapped as the students will be able to solve the real time problems related with electronic gadgets.
19EEE33.2	PSO2	2	Moderately mapped as the students will be able to support the systems used for sustainability
	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	3	Strongly mapped as the students will be able to solve the real time problems with the knowledge of biasing circuits.
	PSO2	3	Strongly mapped as the students will be able to support the systems used for sustainability
	PO1	3	Strongly mapped as the students will be able to construct the appropriate circuit for the given application
19EEE33.3	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	2	Moderately mapped as the students will be able to solve the real life problems using software and hardware.
	PSO2	2	Moderately mapped as the students will be able to demonstrate the working of the system developed.

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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
19EEE33.5	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 support the systems used for sustainability
	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	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 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	3	Strongly mapped as the students will be able to solve the real life problems using PSPICE Software tools and hardware
	PSO2	3	Strongly 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.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..

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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.
	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.
20EEE61.3	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.

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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

20EEE61.4

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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

20EEE61.5

Criterion-3 Self Assessment Report (SAR)



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.

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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

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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.	

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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.
	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
20EEE821A.4	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

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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
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

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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: Selected Courses – 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

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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	-	-	-	-	-	-	-	-	3	3
19EEE35.2	3	3	3	3	-	-	-	-	-	-	-	-	3	3
19EEE35.3	3	3	3	3	-	-	-	-	-	-	-	-	3	3
19EEE35.4	3	3	3	3	-	-	-	-	-	-	-	-	3	3
19EEE35.5	3	3	3	3	-	-	-	-	-	-	-	-	3	3
19EEE35.6	3	3	3	3	-	-	-	-	-	-	-	-	3	3
Average	3.0	3.0	3.0	3.0	-	-	-	-	-	-	-	-	3.0	3.0

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

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.

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

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	2	3
19EEE45.2	3	3	2	2	2	2	1	1	2	2	1	1	2	3
19EEE45.3	3	3	2	2	2	1	1	1	2	2	1	1	2	3
19EEE45.4	3	3	2	2	2	1	1	1	2	2	1	1	2	2
19EEE45.5	3	3	2	2	2	1	1	1	2	2	1	1	2	3
19EEE45.6	3	3	2	2	2	2	1	1	2	2	1	1	2	3
Average	3	3	2	2	2	1.5	1	1	2	2	1	1	2	2.83

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

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 INDUCTION MACHINES – 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	2	3
20EEE53.2	2	2	1	1	-	1	1	-	1	-	1	1	3	3
20EEE53.3	2	2	1	1	-	1	1	-	1	-	1	1	2	3
20EEE53.4	2	2	1	1	-	1	1	-	1	-	1	1	2	3
20EEE53.5	2	2	1	1	-	1	1	-	1	-	1	1	2	3
20EEE53.6	2	2	1	1	-	1	1	-	1	-	1	1	2	3
Average	2	2	1	1	-	1	1	-	1	-	1	1	2.17	3

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

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

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

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	-	-	-	-	-	3	3
20EEE62.2	3	2	2	2	1	-	1	-	-	-	-	-	3	3
20EEE62.3	3	3	2	2	2	-	1	-	1	-	-	-	3	3
20EEE62.4	3	3	2	2	2	-	1	-	1	-	-	-	3	3
20EEE62.5	3	3	2	2	2	-	1	-	1	-	-	-	3	3
20EEE62.6	3	3	2	2	3	-	1	-	1	-	-	-	3	3
Average	3	2.67	1.83	1.83	2.00	-	1.00	-	1.00	-	-	-	3	3

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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)

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	2	3	2	1	1	1	1	2	1	1	1	2	2
20EEE73A.2	3	2	3	2	1	1	1	1	2	1	1	1	2	2
20EEE73A.3	3	2	3	2	1	1	1	1	2	1	1	1	2	2
20EEE73A.4	3	2	3	2	1	1	1	1	2	1	1	1	2	2
20EEE73A.5	3	2	3	2	1	1	1	1	2	1	1	1	2	2
20EEE73A.6	3	2	3	3	2	1	2	1	1	1	1	1	2	2
Average	3	2	3	2.17	1.17	1	1.17	1	1.83	1	1	1	2.00	2.00

Program Articulation Matrix: Batch (2018-2022)

POs and PSOs. The strength of correlation of COs with POs and PSOs is indicated as “3” for substantial (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 Pos correlated to these course outcomes are also attained.

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	-	-

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

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19EEL47	Microcontroller and Embedded System Laboratory	3	2.3	2.3	2.5	3	3	3	3	2	2	1	2	3	3	3
19EEL48	DC Machines And Transformers Laboratory	3	3	2	2	2	1	1	1	1	1	1	1	1	3	3
19EEL49	Mini Project II	3	3	3	2	3	-	2	1	3	1	1	3	2	3	3
19DMAT41	Basic Applied Mathematics-II	3	2	3	2	2	-	-	1	1	3	-	-	1	-	1
19HSS322 /422	Life Skills For Engineers	-	-	-	-	-	2	-	3	3	3	3	2	3	-	1
18HSS272	Constitution of India	-	-	-	-	-	1	-	3	1	-	-	-	3	-	-
20EEE51	Transmission and Distribution	3	3	2.6	2.4	1	2	1.5	-	-	-	-	-	-	1.8	3
20EEE52	Control Systems	3	3	2.5	2.5	-	-	-	-	2	-	-	-	-	3	2.6
20EEE53	Synchronous and Induction Machines	2	2	1	1	-	1	1	-	1	-	-	1	1	2.1	3
20EEE54	Signals and Systems	3	2.8	2	3	3	1	1	-	2	2	2	2	1	1.8	2.3
20EEE55	Industrial Automation	3	2	3	2	3	3	1	1	2	2	2	3	3	3	3
20EEE561	Data Structures and Algorithms	3	3	2	3	3	-	3	-	-	-	-	-	3	3	1.3
20EEL57	Control Systems Laboratory	3	3	2.5	2.5	2.7	-	-	-	2	1	-	-	-	3	3
20EEL58	Synchronous and Induction Machines Laboratory	3	3	2	2	-	1	1	-	1	1	1	1	1	3	3
20EEL59	Mini project III	3	3	3	2	3	-	1.25	1	3	1	3	2	3	3	3
20EEE61	Power System Analysis	3	2.83	3	2.6	3	1.6	1.75	1	2.5	1	2.67	3	2	2	2
20EEE62	Power Electronics	3	2.67	1.83	1.83	2	-	1	-	1	-	-	-	-	3	3
20EEE63	Power System Protection	3	3	3	3	3	2	-	1	-	-	-	-	3	1.67	2.5
20EEE641	Object Oriented Programming	3	3	3	3	3	-	-	-	-	-	-	-	3	3	1.33

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20EEE653	Advanced Industrial and Building Automation	3	2.67	2.67	3	3	3	2.17	1.67	1	1.67	2.67	2.67	3	3	3
20EEL66	Power System Analysis Laboratory	3	3	1.67	2.5	3	2.25	1.5	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	-	1.5	-	-	-	3	3
20EEL68	Mini project IV	3	3	3	2	3	-	1.25	3	1	3	1	3	2	3	3
20NHOP07	SAP	2.5	1.67	2	2	3	3	1	2	1	2	2	2.67	2	2	2
20NHOP11	Machine Learning	3	1	1	1	3	1	-	1	-	1	1	1	2	1	1
20NHOP13	Industrial IOT -Embedded System	3	3	3	3	3	2	1	3	1	3	3	3	3	3	3
20NHOP15	Product Lifecycle Management	3	2	3	1	3	0	0	1	0	1	0	1	0	3	2
20NHOP01	Big Data Analytics with HP Vertica 1	3	2	2	1	3	-	-	3	-	3	2	-	2	2	2
20NHOP02	VM Ware-Virtualization Essentials 1	2	2	2	2	2	1	-	1	-	1	2	1	1	2	2
20NHOP09	Cisco-Routing and Switching 1	3	3	3	3	3	2	2	3	2	3	3	-	3	3	3
20NHOP10	Data Analytics	3	-	-	-	-	-	-	-	-	-	1	-	-	3	-
20EEE71A	Special Electrical Machines	3	3	3	2	3	2	2	1	1	1	1	1	3	3	3
20EEE72A	Relay and High Voltage Engineering	3	2	3	2.17	1.17	1	1.17	1.83	1	1.83	1	1	1	2	2
20EEE73A	Electrical Drives and Vehicles	3	2	2	1	1.5	3	2.83	1.33	2.17	1.33	1	2	3	2	3
20EEE744A	Energy Auditing and Demand Side Management	3	1.33	1.67	2.67	2.17	1.67	3	-	3	-	-	2.5	2	2	2
20EEE754A	Neural Networks and Fuzzy Logic In Electrical Engineering	3	3	3	3	2	3	1	3	3	3	3	3	2	2	2
20EEE78A	Project Phase 1	3	2.25	2.66	3	2.25	2.5	2.5	3	3	3	3	2.5	3	3	3

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

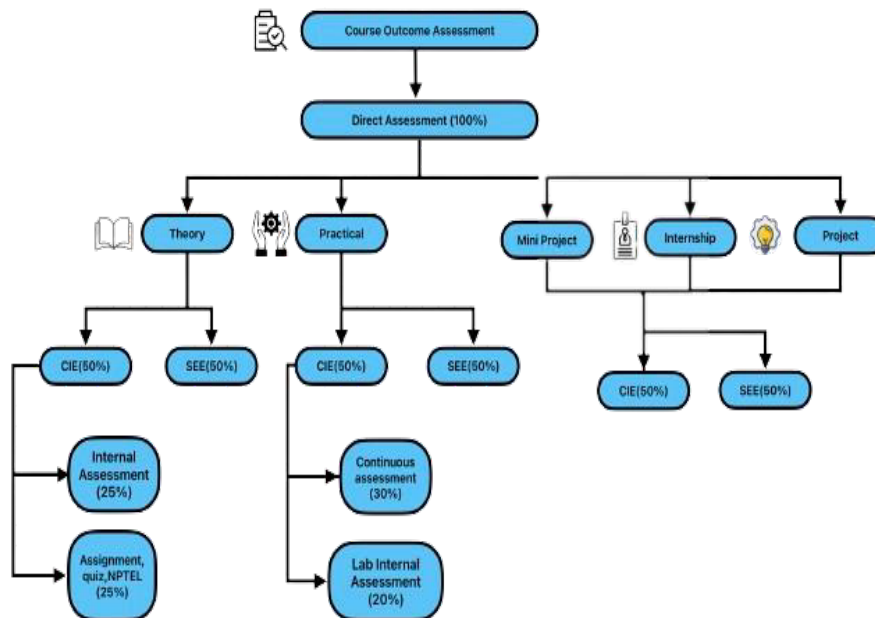


Figure 3.2.1.1 CO Assessment Tools

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.

3.3. 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)	<p>This tool is used to evaluate the attainment of COs through direct and critical Questions related to the specific topics covered during the class.</p> <ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • 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.

Criterion-3 Self Assessment Report (SAR)

Course	Assessment Tools	Description
Lab Courses	Continuous Internal Assessment (Conduction of Experiment, Lab observation and Record)	<p>This assessment is carried out in the day to day evaluation of student performance in the laboratories with respect to conduction of experiments.</p> <ul style="list-style-type: none"> 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)	<ul style="list-style-type: none"> 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	<p>Final exam of 3 hours' duration is conducted for lab courses.</p> <ul style="list-style-type: none"> 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	<p>The student undergoes an internship for the duration of 4 to 6 weeks.</p> <ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> 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.

Criterion-3 Self Assessment Report (SAR)

Course	Assessment Tools	Description
Project/Mini Project	Continuous Internal Evaluation	<p>Project/Mini Project batches are formed as per the instruction given by project Coordinators.</p> <ul style="list-style-type: none"> • 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	<p>Final exam of 3 hours' duration is conducted.</p> <ul style="list-style-type: none"> • 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:

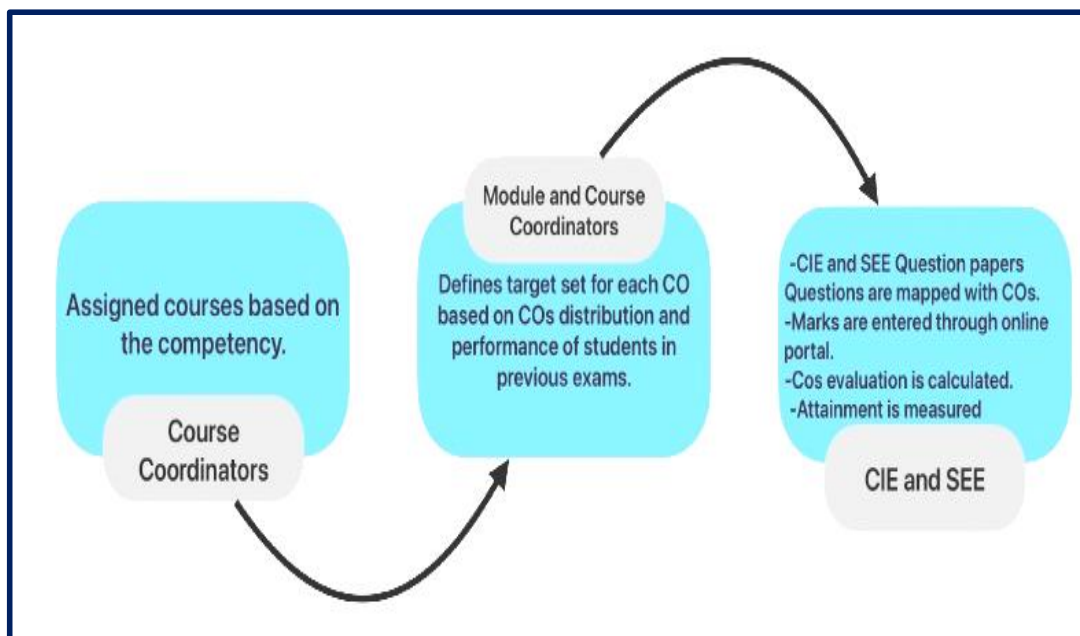



Figure 3.2.1.3: Process of CO Data Collection

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

Criterion-3 Self Assessment Report (SAR)

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. OR	L2	CO1	PO1 to PO12 PSO1,PSO2	5
Q2	Describe concept of resilient and self-healing grid				5
Q3	List the Challenges on implementing the Smart Grid in India. OR	L2	CO1	PO1 to PO12 PSO1,PSO2	5
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 OR	L2	CO2	PO1 to PO12 PSO1,PSO2	5
Q6	Explain working principle of the Plug in Hybrid Electric Vehicles (PHEV)				5
Q7	Explore the concept of geographic information systems in smart grid. OR	L4	CO2	PO1 to PO12 PSO1,PSO2	5
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. OR	L3	CO3	PO1 to PO12 PSO1,PSO2	5
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 Horizons 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

SEM: III – Section A/B/C

COURSE: Smart Grid Technologies/Smart Grid

COURSE CODE: 20EE812A/EE812A

DATE: 18-05-2022

DURATION: 1 Hr.

CIE TEST: II

MAX. MARKS: 25

NOTE: All questions are compulsory.

Q#	Question	RBT Level	COs	POs & PSO's	Marks
Q1	Justify Wind energy and Solar energy contributes major contribution in Distributed generation. OR	L5	CO3	PO1 to PO12 PSO1,PSO2	10
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. OR	L2	CO4	PO1 to PO12 PSO1,PSO2	7
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 OR	L4	CO4	PO1 to PO12 PSO1,PSO2	8
Q6	Interpret the usage of technologies like GPS, Wi-Fi, Wireless Mesh Network, Broad band over Power line (BPL) for AML.				8

NHCE/ICP/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

SEM: 08 – Section A/B/C

COURSE: Smart Grid Technologies/Smart Grid

COURSE CODE: 20EEE812A/EEE812A

DATE: 17-06-2022

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 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	7
Q4	Discuss the EV charging infrastructure, power standards and communication standards.			PSO1,PSO2	7
Q5	Design a framework for stakeholders in smart grid for metropolitan city. OR	L4	CO6	PO1 to PO6 PO9 to PO12	8
Q6	Compose the charging infrastructure of EV in detail			PSO1,PSO2	8

NICE/IQP/M10

USN		20EEE812A
<p>New Horizon College of Engineering, Bangalore Autonomous College affiliated to VTU, Accredited by NAAC with 'A' Grade & NBA</p> <p>Semester End Examinations July 2022</p> <p>SMART GRID TECHNOLOGIES</p>		
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		
7 a)	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. Organize the flow chart of procedure for monitoring power quality and issues of power quality monitoring.	10 L2 CO4
b)		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		
10 a)	Describe the concept of EV charging infrastructure in smart grid.	10 L1 CO5
b)	Examine the challenges associated with VGI 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).

$$\text{Final CO Attainment} = 50\% \text{ of CIE} + 50\% \text{ of SEE.}$$

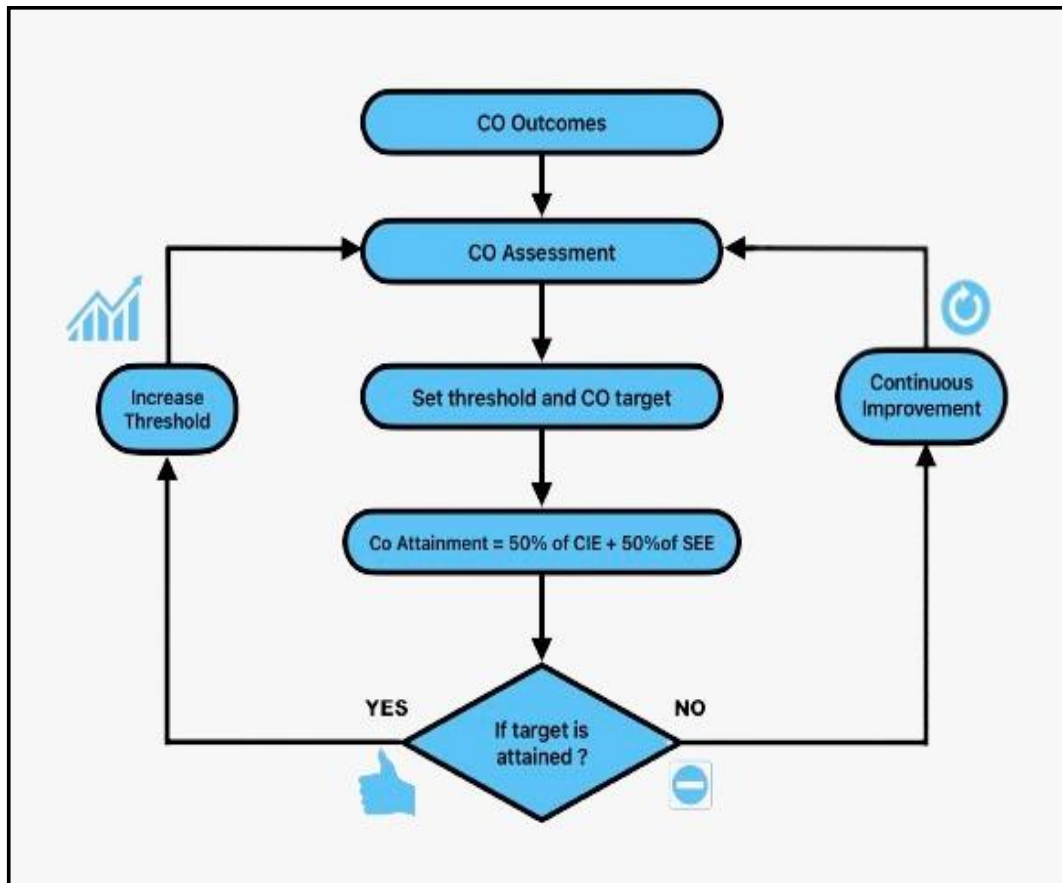


Figure 3.2.1.4 Process on CO Assessment

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. Attainment 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 of a 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.

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

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

$$\text{CO Attainment} = \text{CIE} * 0.5 + \text{SEE} * 0.5$$

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	65.52	2
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 3.2.2.5.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	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	-

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III SEMESTER																
19ECE31/ 19EEE31	65	65	65	65	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	55	55	55	55	98.25	88.39	99.12	97.39	94.74	100
19EEE34	65	65	65	65	65	65	65	65	65	65	74.11	72.07	75	58.93	51.2	81.05
19EEE35	65	65	65	65	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	65	65	65	65	100	100	100	100	100	100
19HSS323/ 423	90	90	90	90	90	90	90	90	90	90	100	100	100	100	100	100
19EEL36	90	90	90	90	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	90	90	90	90	99.93	99.93	99.93	99.93	99.93	99.93
19EEL38	90	90	90	90	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	65	65	65	65	86.6	91.96	86.73	82.73	70.83	70.83
19EEE43	65	65	65	65	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	65	65	65	65	81.36	63.64	97.39	98.33	99.13	99.13
19EEE45	65	65	65	65	65	65	65	65	65	65	91.89	88.18	98.33	100	94.78	100
19EEE46	65	65	65	65	65	65	65	65	65	65	84.96	97.32	100	100	100	100
19EEL47	90	90	90	90	90	90	90	90	90	90	100	100	100	100	100	100
19EEL48	90	90	90	90	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	90	90	90	90	100	100	100	100	100	100
19HSS322/422	90	90	90	90	90	90	90	90	90	90	100	100	100	100	100	100
18HSS272	90	90	90	90	90	90	90	90	90	90	100	100	100	100	100	100

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V SEMESTER													
	70	70	70	70	70	70	70	70	70	70	70	70	70
20EEE51	70	70	70	70	70	70	70	70	70	70	70	70	70
20EEE52	70	70	70	70	70	70	70	70	70	70	70	70	70
20EEE53	70	70	70	70	70	70	70	70	70	70	70	70	70
20EEE54	70	70	70	70	70	70	70	70	70	70	70	70	70
20EEE55	70	70	70	70	70	70	70	70	70	70	70	70	70
20EEE561	70	70	70	70	70	70	70	70	70	70	70	70	70
20EEL57	90	90	90	90	90	90	90	90	90	90	90	90	90
20EEL58	90	90	90	90	90	90	90	90	90	90	90	90	90
20EEL59	90	90	90	90	90	90	90	90	90	90	90	90	90
VI SEMESTER													
	70	70	70	70	70	70	70	70	70	70	70	70	70
20EEE61	70	70	70	70	70	70	70	70	70	70	70	70	70
20EEE62	70	70	70	70	70	70	70	70	70	70	70	70	70
20EEE63	70	70	70	70	70	70	70	70	70	70	70	70	70
20EEE641	70	70	70	70	70	70	70	70	70	70	70	70	70
20EEE653	70	70	70	70	70	70	70	70	70	70	70	70	70
20EEL66	90	90	90	90	90	90	90	90	90	90	90	90	90
20EEL67	90	90	90	90	90	90	90	90	90	90	90	90	90
20EEL68	90	90	90	90	90	90	90	90	90	90	90	90	90
20NHOP07	90	90	90	90	90	90	90	90	90	90	90	90	90
20NHOP11	90	90	90	90	90	90	90	90	90	90	90	90	90
20NHOP13	90	90	90	90	90	90	90	90	90	90	90	90	90
20NHOP15	90	90	90	90	90	90	90	90	90	90	90	90	90
20NHOP01	90	90	90	90	90	90	90	90	90	90	90	90	90
20NHOP02	90	90	90	90	90	90	90	90	90	90	90	90	90
20NHOP09	90	90	90	90	90	90	90	90	90	90	90	90	90
20NHOP10	90	90	90	90	90	90	90	90	90	90	90	90	90

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VII SEMESTER													
	70	70	70	70	70	70	70	70	70	70	70	70	70
20EEE71A	70	70	70	70	70	70	70	70	70	70	70	70	70
20EEE72A	70	70	70	70	70	70	70	70	70	70	70	70	70
20EEE73A	70	70	70	70	70	70	70	70	70	70	70	70	70
20EEE74A	70	70	70	70	70	70	70	70	70	70	70	70	70
20EEE75A	70	70	70	70	70	70	70	70	70	70	70	70	70
20EEE78A	90	90	90	90	90	90	90	90	90	90	90	90	90
20EEL76A	90	90	90	90	90	90	90	90	90	90	90	90	90
20EEL77A	90	90	90	90	90	90	90	90	90	90	90	90	90
20NHOP701	90	90	90	90	90	90	90	90	90	90	90	90	90
20NHOP702	90	90	90	90	90	90	90	90	90	90	90	90	90
20NHOP704	90	90	90	90	90	90	90	90	90	90	90	90	90
20NHOP705	90	90	90	90	90	90	90	90	90	90	90	90	90
20NHOP707	90	90	90	90	90	90	90	90	90	90	90	90	90
20NHOP710	90	90	90	90	90	90	90	90	90	90	90	90	90
20NHOP711	90	90	90	90	90	90	90	90	90	90	90	90	90
20NHOP712	90	90	90	90	90	90	90	90	90	90	90	90	90
20NHOP713	90	90	90	90	90	90	90	90	90	90	90	90	90
20NHOP714	90	90	90	90	90	90	90	90	90	90	90	90	90
20NHOP715	90	90	90	90	90	90	90	90	90	90	90	90	90
VIII SEMESTER													
	70	70	70	70	70	70	70	70	70	70	70	70	70
20EEE812A	70	70	70	70	70	70	70	70	70	70	70	70	70
20EEE821A	70	70	70	70	70	70	70	70	70	70	70	70	70
20EEE83A	90	90	90	90	90	90	90	90	90	90	90	90	90
20EEE84A	90	90	90	90	90	90	90	90	90	90	90	90	90

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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	-

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V SEMESTER															
20EEE51	70	70	70	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	70	70	70	51.76	71.68	50.44	62.75	76.34	67.01
20EEE53	70	70	70	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	70	70	70	79.46	50.08	51.48	51.39	55.91	65.22
20EEE55	70	70	70	70	70	70	70	70	70	100	65.77	62.3	98.23	98.11	98.21
20EEE561	70	70	70	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	90	90	90	99.12	99.12	99.12	99.12	99.12	99.12
20EEL58	90	90	90	90	90	90	90	90	90	100	100	100	100	100	100
20EEL59	90	90	90	90	90	90	90	90	90	100	100	100	100	100	100
VI SEMESTER															
20EEE61	70	70	70	70	70	70	70	70	70	96.4	100	100	100	100	98.1
20EEE62	70	70	70	70	70	70	70	70	70	99.12	100	100	100	100	95.54
20EEE63	70	70	70	70	70	70	70	70	70	100	100	99.12	100	74.47	98.31
20EEE641	70	70	70	70	70	70	70	70	70	100	100	77.78	57.8	99.06	100
20EE653	70	70	70	70	70	70	70	70	70	98.21	99.09	100	100	100	100
20EEL66	90	90	90	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	90	90	90	99.12	99.12	99.12	99.12	99.12	99.12
20EEL68	90	90	90	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	90	90	90	100	100	100	100	100	100
20NHOP11	90	90	90	90	90	90	90	90	90	100	100	100	100	100	100
20NHOP13	90	90	90	90	90	90	90	90	90	100	100	100	100	100	100
20NHOP15	90	90	90	90	90	90	90	90	90	100	100	100	100	100	100
20NHOP01	90	90	90	90	90	90	90	90	90	100	100	100	100	100	100
20NHOP02	90	90	90	90	90	90	90	90	90	100	100	100	100	100	100
20NHOP09	90	90	90	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	90	90	90	87.5	87.5	87.5	87.5	87.5	87.5

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VII SEMESTER													
	70	70	70	70	70	70	70	70	70	70	70	70	70
20EEE71A	70	70	70	70	70	70	70	70	70	70	70	70	70
20EEE72A	70	70	70	70	70	70	70	70	70	70	70	70	70
20EEE73A	70	70	70	70	70	70	70	70	70	70	70	70	70
20EEE74A	70	70	70	70	70	70	70	70	70	70	70	70	70
20EEE75A	70	70	70	70	70	70	70	70	70	70	70	70	70
20EEE78A	90	90	90	90	90	90	90	90	90	90	90	90	90
20EEL76A	90	90	90	90	90	90	90	90	90	90	90	90	90
20EEL77A	90	90	90	90	90	90	90	90	90	90	90	90	90
20NHOP701	90	90	90	90	90	90	90	90	90	90	90	90	90
20NHOP702	90	90	90	90	90	90	90	90	90	90	90	90	90
20NHOP704	90	90	90	90	90	90	90	90	90	90	90	90	90
20NHOP705	90	90	90	90	90	90	90	90	90	90	90	90	90
20NHOP707	90	90	90	90	90	90	90	90	90	90	90	90	90
20NHOP710	90	90	90	90	90	90	90	90	90	90	90	90	90
20NHOP711	90	90	90	90	90	90	90	90	90	90	90	90	90
20NHOP712	90	90	90	90	90	90	90	90	90	90	90	90	90
20NHOP713	90	90	90	90	90	90	90	90	90	90	90	90	90
20NHOP714	90	90	90	90	90	90	90	90	90	90	90	90	90
20NHOP715	90	90	90	90	90	90	90	90	90	90	90	90	90
VIII SEMESTER													
20EEE812A	70	70	70	70	70	70	70	70	70	70	70	70	70
20EEE821A	70	70	70	70	70	70	70	70	70	70	70	70	70
20EEE83A	90	90	90	90	90	90	90	90	90	90	90	90	90
20EEE84A	90	90	90	90	90	90	90	90	90	90	90	90	90

***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.**

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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 to Table 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	-

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V SEMESTER												
	70	70	70	70	70	70	70	70	70	70	70	70
20EEE51	70	70	70	70	70	70	70	70	70	70	70	70
20EEE52	70	70	70	70	70	70	70	70	70	70	70	70
20EEE53	70	70	70	70	70	70	70	70	70	70	70	70
20EEE54	70	70	70	70	70	70	70	70	70	70	70	70
20EEE55	70	70	70	70	70	70	70	70	70	70	70	70
20EEE561	70	70	70	70	70	70	70	70	70	70	70	70
20EEL57	90	90	90	90	90	90	90	90	90	90	90	90
20EEL58	90	90	90	90	90	90	90	90	90	90	90	90
20EEL59	90	90	90	90	90	90	90	90	90	90	90	90
VI SEMESTER												
	70	70	70	70	70	70	70	70	70	70	70	70
20EEE61	70	70	70	70	70	70	70	70	70	70	70	70
20EEE62	70	70	70	70	70	70	70	70	70	70	70	70
20EEE63	70	70	70	70	70	70	70	70	70	70	70	70
20EEE641	70	70	70	70	70	70	70	70	70	70	70	70
20EE653	70	70	70	70	70	70	70	70	70	70	70	70
20EEL66	90	90	90	90	90	90	90	90	90	90	90	90
20EEL67	90	90	90	90	90	90	90	90	90	90	90	90
20EEL68	90	90	90	90	90	90	90	90	90	90	90	90
20NHOP7	90	90	90	90	90	90	90	90	90	90	90	90
20NHOP11	90	90	90	90	90	90	90	90	90	90	90	90
20NHOP13	90	90	90	90	90	90	90	90	90	90	90	90
20NHOP15	90	90	90	90	90	90	90	90	90	90	90	90
20NHOP01	90	90	90	90	90	90	90	90	90	90	90	90
20NHOP02	90	90	90	90	90	90	90	90	90	90	90	90
20NHOP09	90	90	90	90	90	90	90	90	90	90	90	90
20NHOP10	90	90	90	90	90	90	90	90	90	90	90	90

Criterion-3 Self Assessment Report (SAR)

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

Table 3.2.2.5.d Target and Attainment Levels of COs using SEE Semester End Examination (SEE)

Course Code	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	-

Criterion-3 Self Assessment Report (SAR)

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

Criterion-3 Self Assessment Report (SAR)

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

***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

$$\text{CO Attainment} = 50\% \text{ percentage of CIE} + 50\% \text{ percentage of SEE}$$

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.

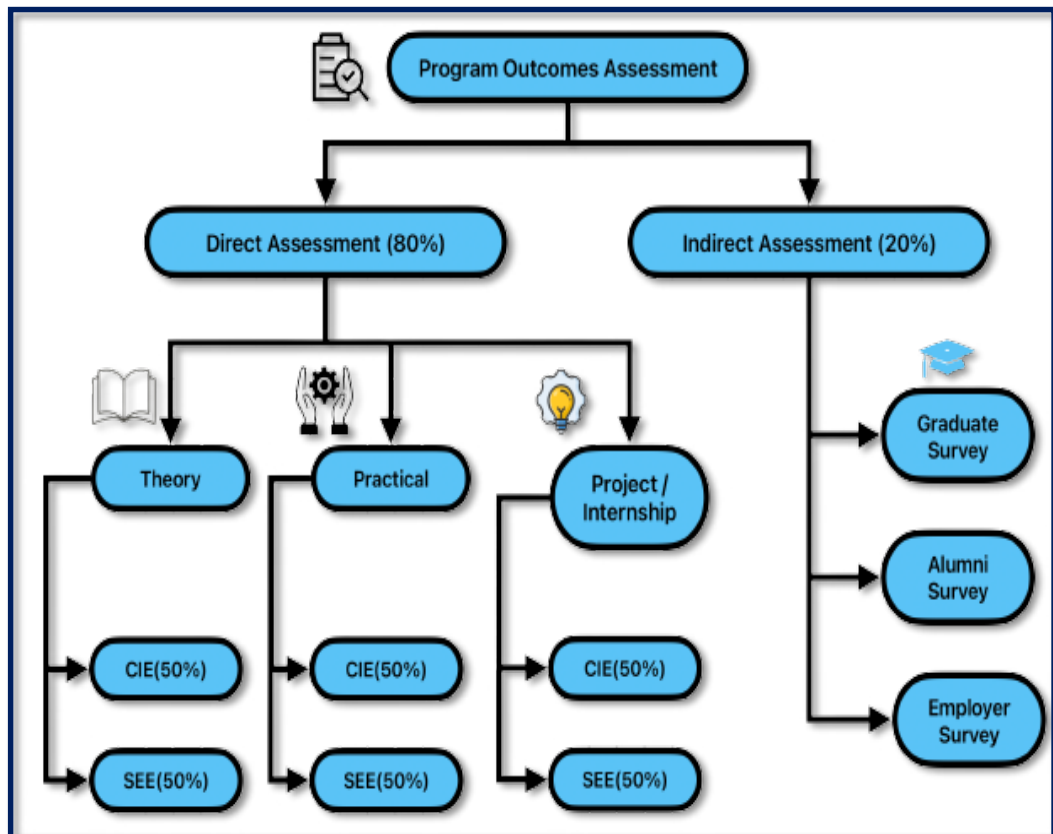


Figure 3.3.1.1 PO attainment process

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 and Mini project coordinator follows the rubrics which is set by the department for evaluation and then submit to the Head of the Department.	PO1-PO12, PSO1-PSO2
Project Phase-1 and Phase-2	Project evaluation is done during 7 th and 8 th semesters to test the student's independent analysis and design skills. Two project reviews for each phase are conducted.	The project guide and project coordinator follows the rubrics which is set by the department for evaluation and then submit to the Head of the Department.	PO1-PO12, PSO1-PSO2
Internship	Internship evaluation is done during 8 th semester. To get the practical exposure from industries, students are encouraged to carry out Internship in reputed industries/public sectors.	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

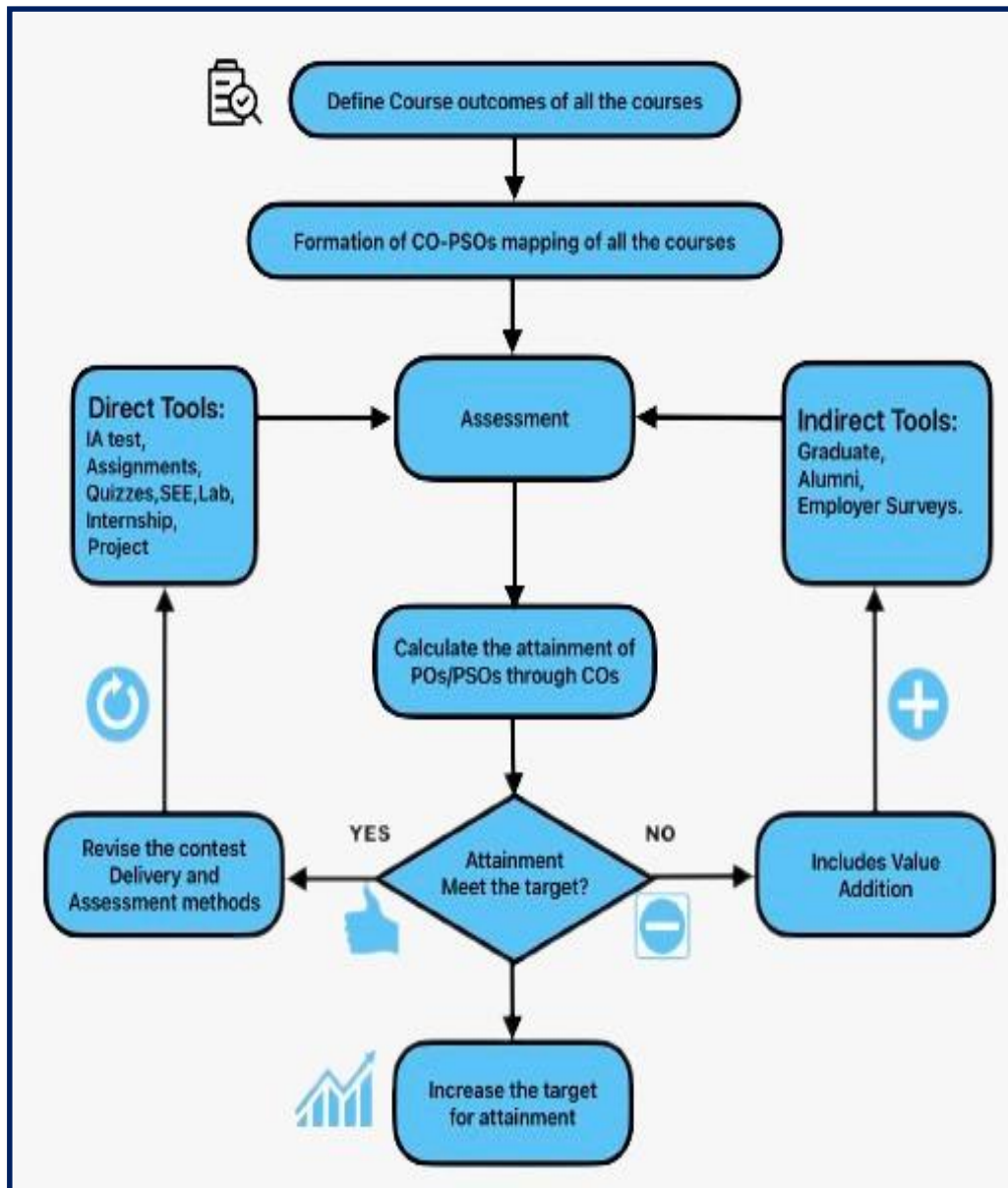


Figure 3.3.1.1.1 PO/PSO Assessment and Attainment Process

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 → 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 = $\frac{[(3 * \text{number of students gave option 3}) + (2 * \text{number of students gave option 2}) + (1 * \text{number of students gave option 1})]}{\text{Total number of responses}}$

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:

$$Po = \frac{\sum (CO \text{ attainment} * CO \text{ PO mapping})}{\sum \text{weight contributed in CO PO mapping}}$$

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

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

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

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

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

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

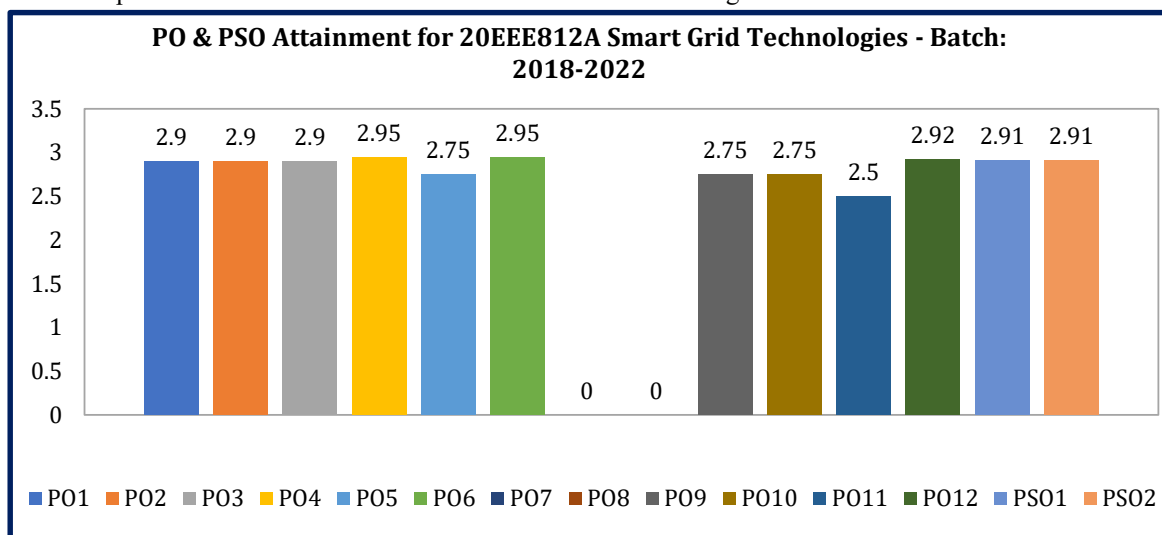


Figure 3.3.1.1.2 PO/PSO Attainment of 20EEE812A- Smart Grid Technologies

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:

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

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	Satisfactory	Poor
		(3)	(2)	(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	Satisfactory	Poor
			(3)	(2)	(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	Satisfactory	Poor
			(3)	(2)	(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 Attainment of PO3

Survey	Attainment level
Graduate Survey	2.42
Alumni Survey	2.82
Employer Survey	2.64
Average Indirect Attainment	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

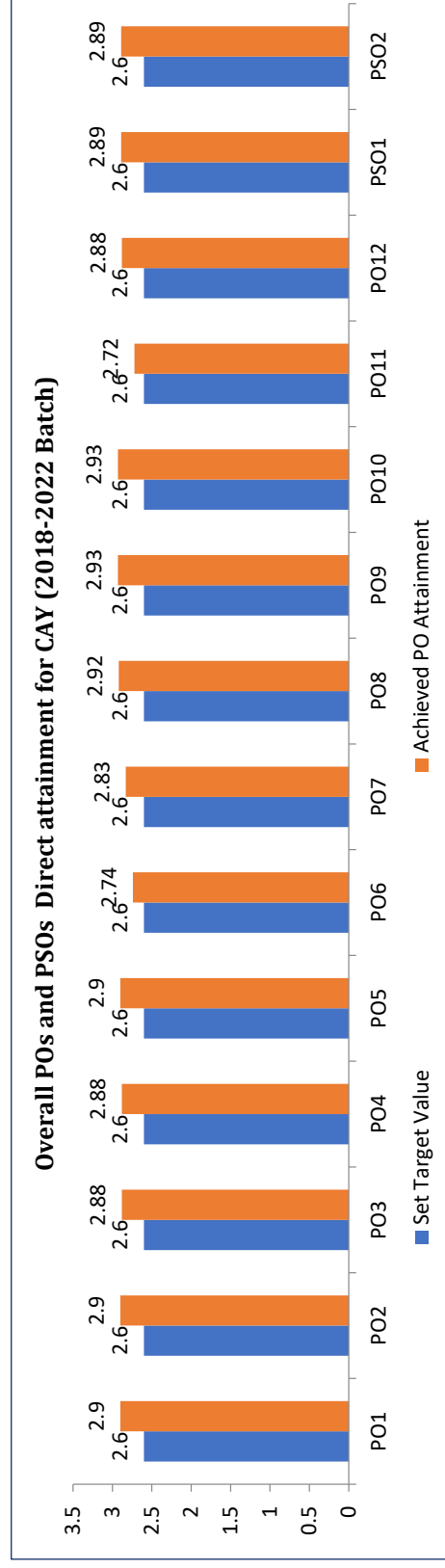
Table 3.3.2.e Set the Target values for technical and non-technical POs and PSOs

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.



Criterion-3 Self Assessment Report (SAR)



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	-	-

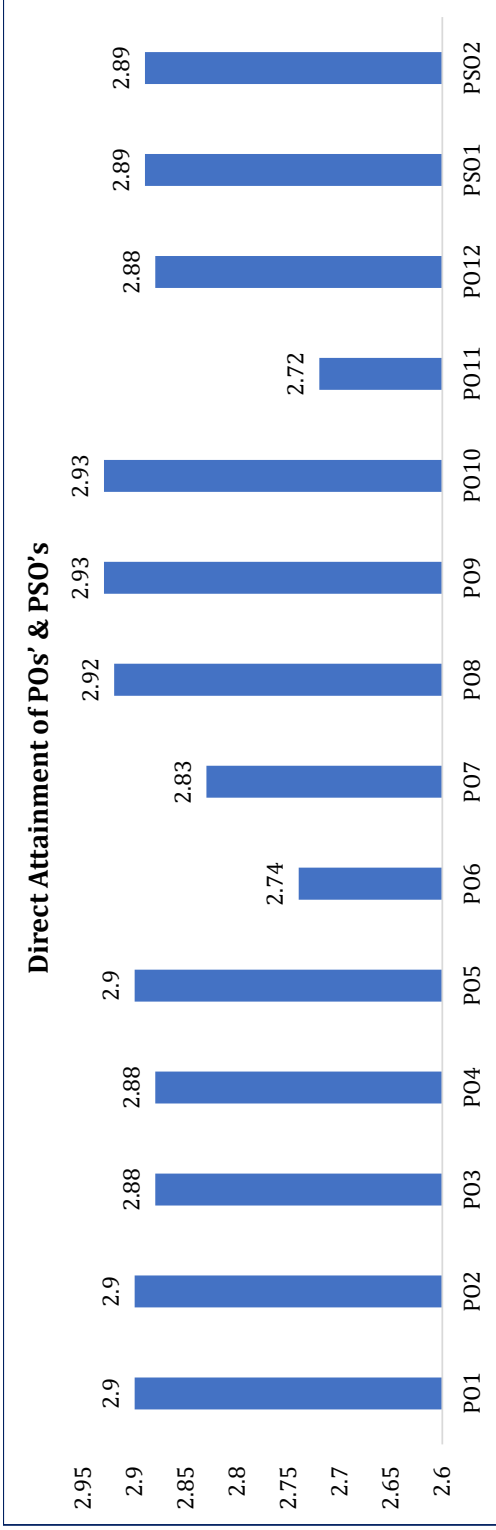


Figure 3.2.2.1 Direct Attainment Level of POs' & PSO's

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.

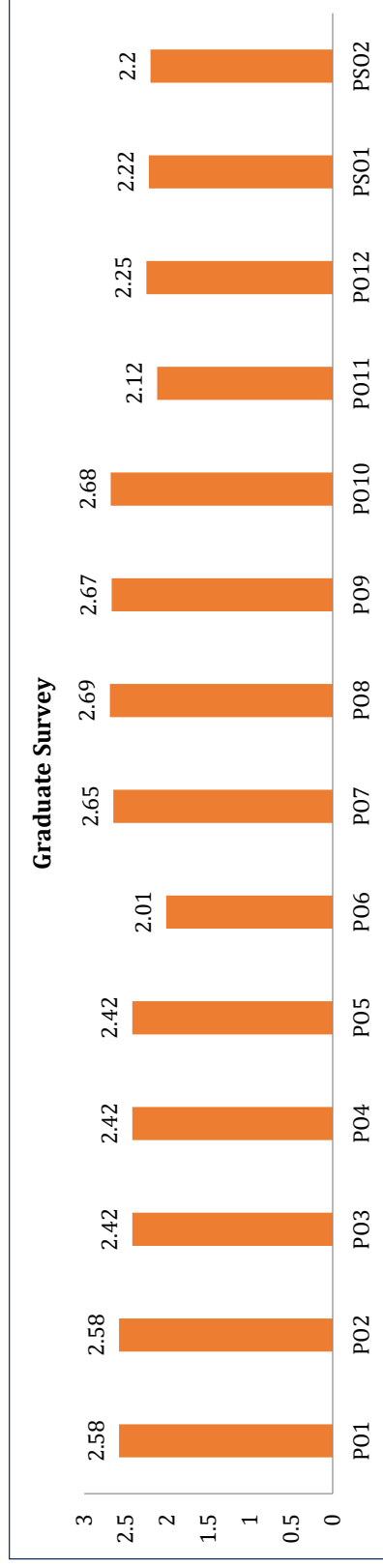
Criterion-3 Self Assessment Report (SAR)



Indirect PO & PSO Attainment of batch 2018-2022

Table-3.3.2.2 Indirect PO & PSO attainment

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



Criterion-3 Self Assessment Report (SAR)

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

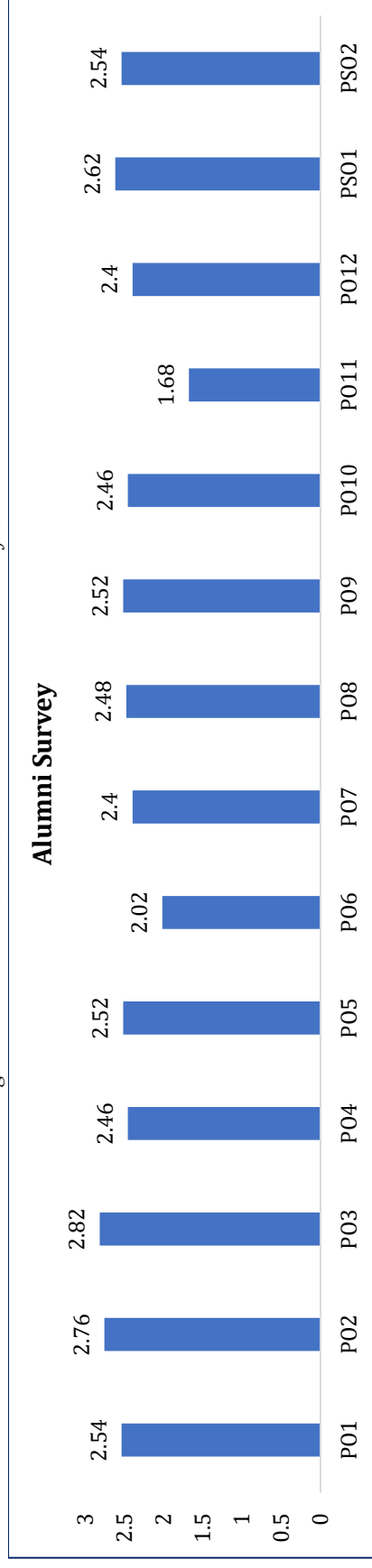


Figure 3.3.2.2.b. POs & PSOs Vs Indirect Attainment Level of Alumni

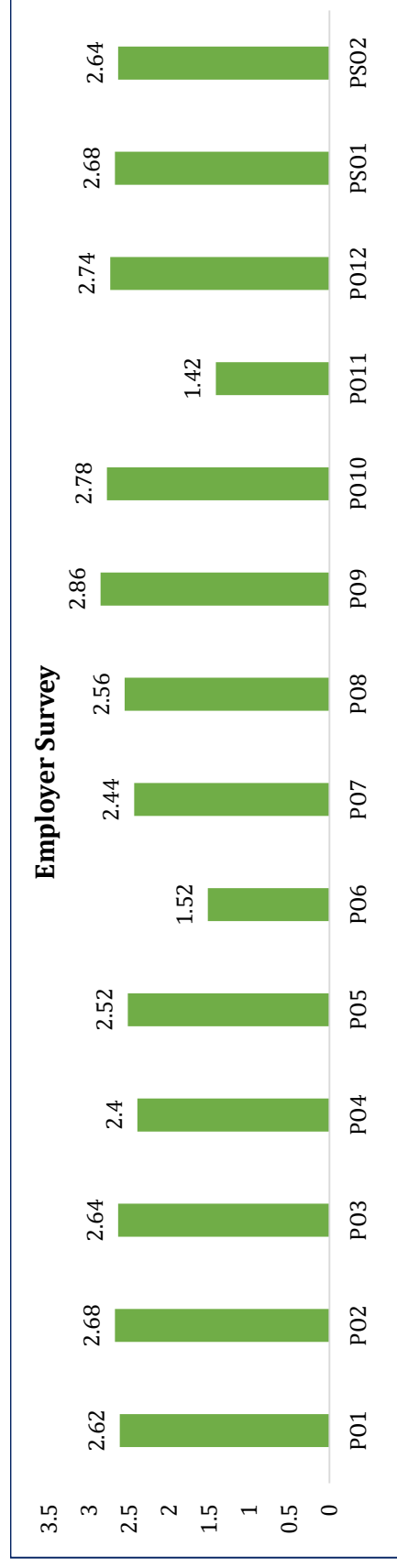


Figure 3.3.2.2.c. POs & PSOs Vs Indirect Attainment Level of Employer

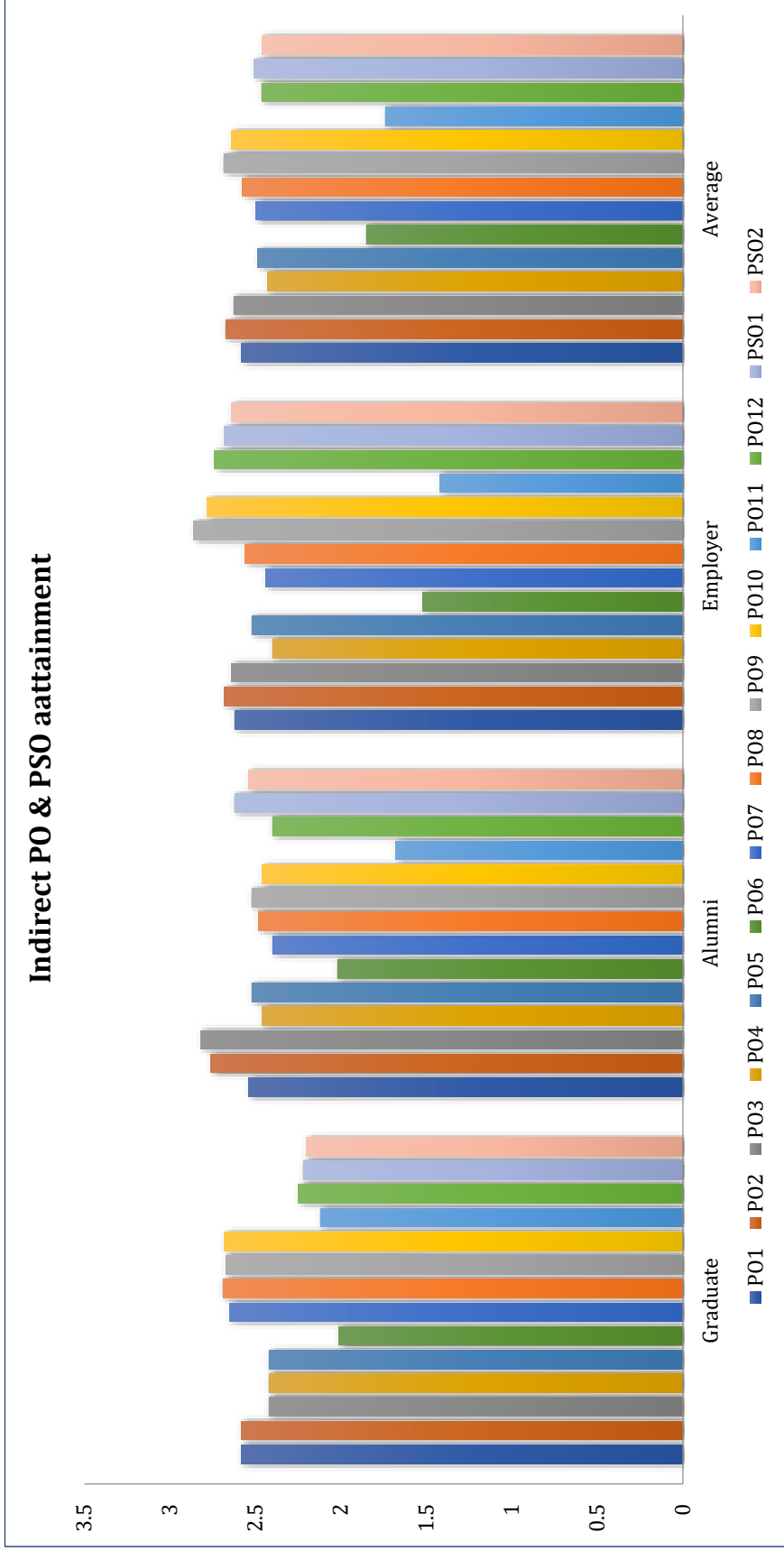


Figure 3.3.2.2.e. POs & PSOs Vs Indirect Attainment Level

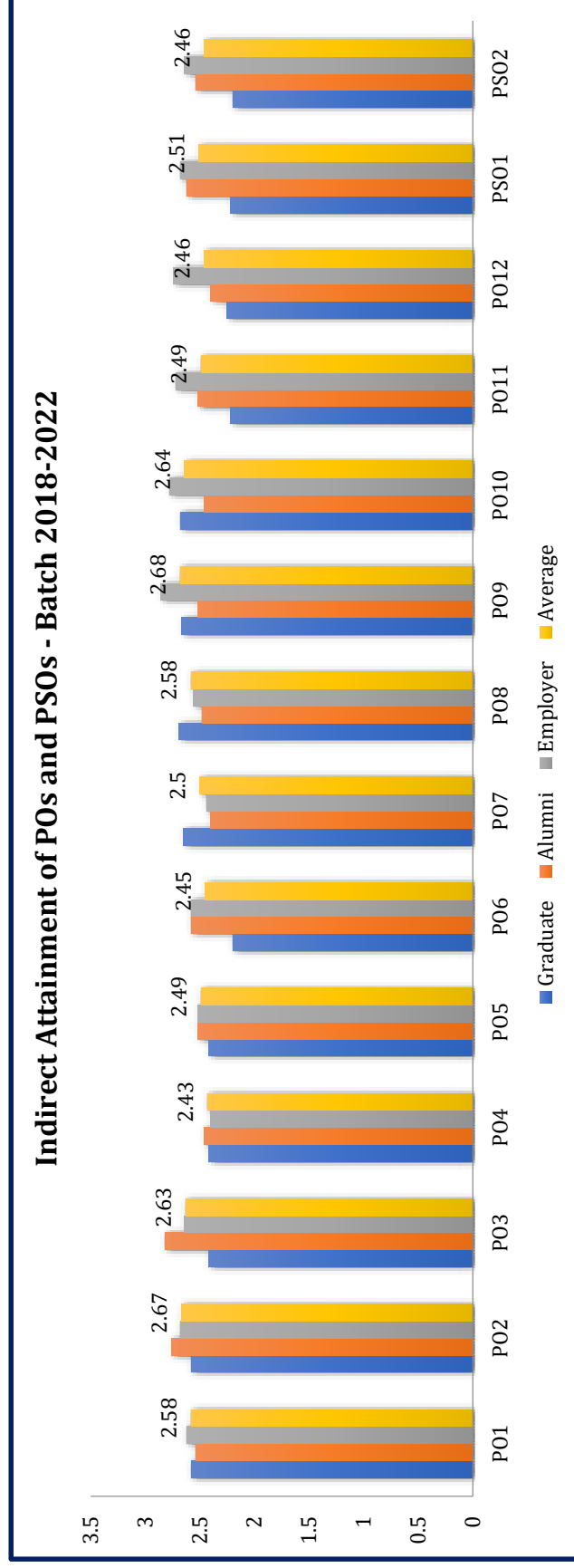


Figure 3.3.2.2.f. POs & PSOs Vs Indirect Attainment Level

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

$$\text{FINAL ATTAINMENT} = 80\% \text{ of DA} + 20\% \text{ of IA.}$$

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 Attainment(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.

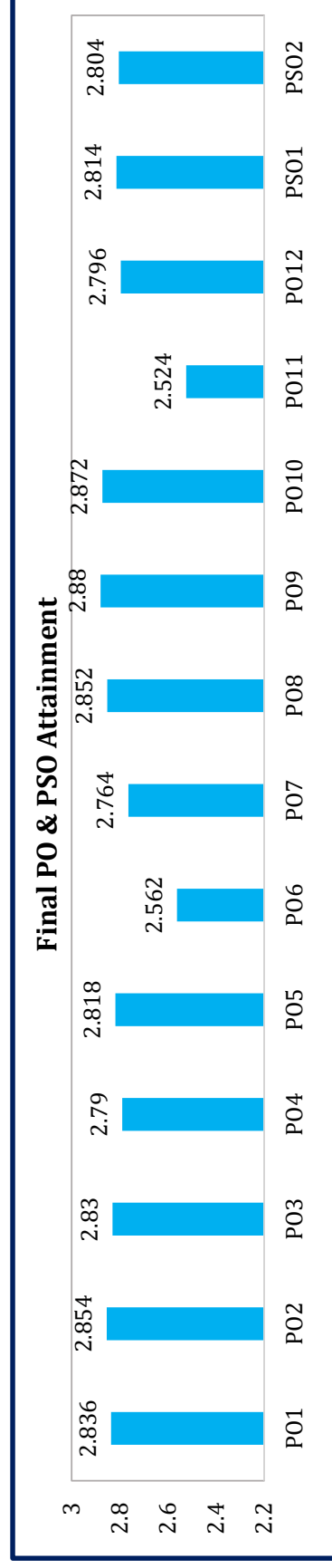


Figure 3.3.2.2.g. POs & PSOs Final Attainment Level (2018-2022)

**Department of
Electrical and Electronics Engineering**

Criterion - 4

STUDENTS' PERFORMANCE

CRITERION 4	STUDENTS' PERFORMANCE	175
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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 other programs/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

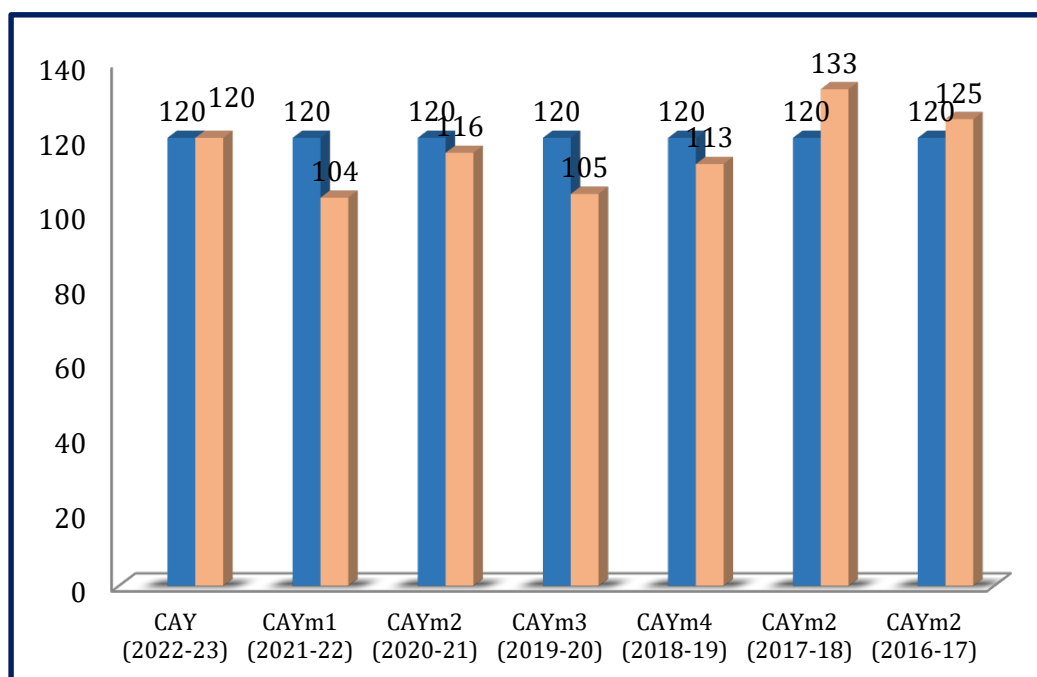


Table 2: Successfully Graduated Students Without Backlogs

Year of entry	N1 + N2 + N3 (As defined above)	Number of students who have successfully graduated without backlogs in any semester/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)

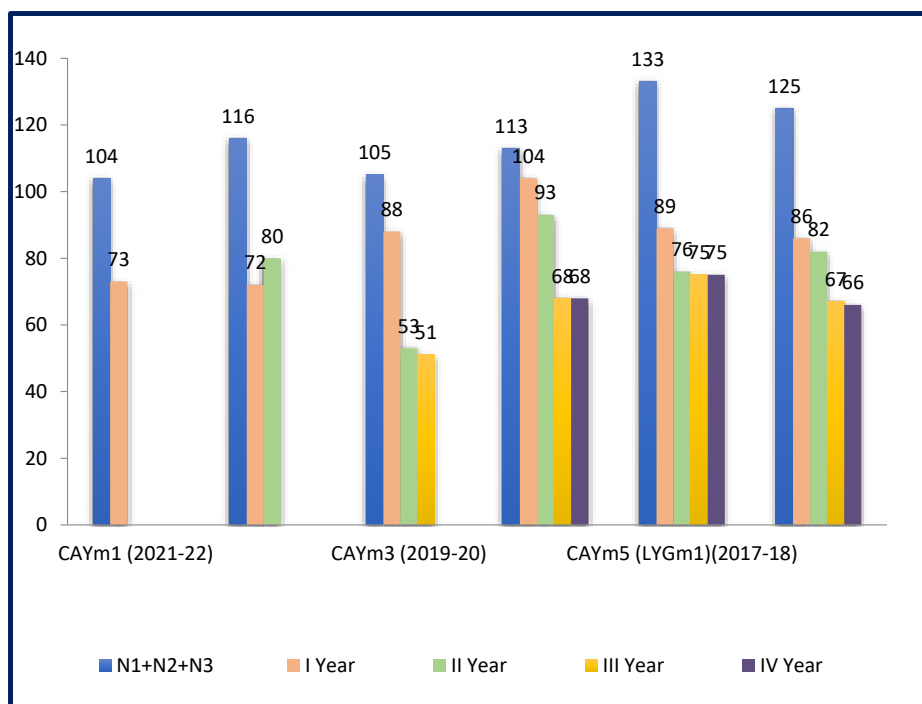
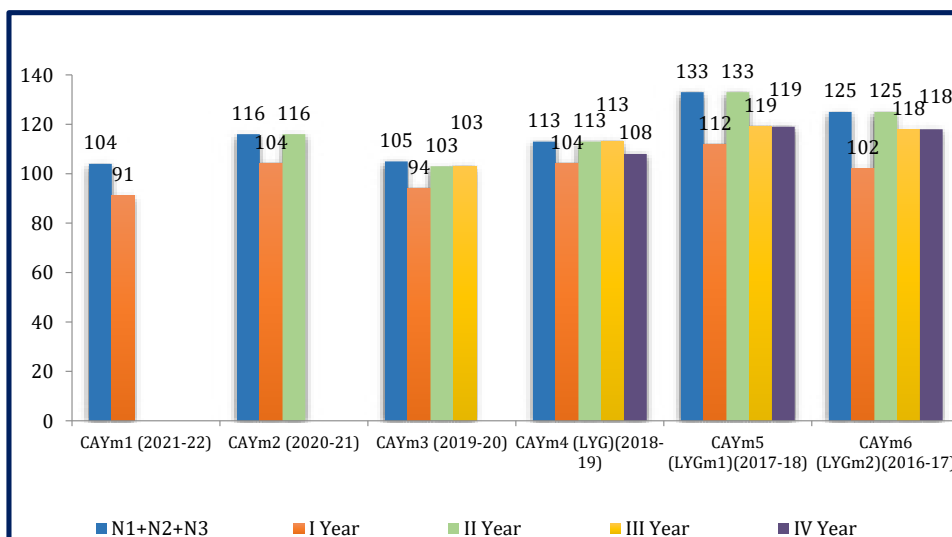


Table 3: Successfully Graduated Students with Backlogs

Year of entry	N1 + N2 + 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)



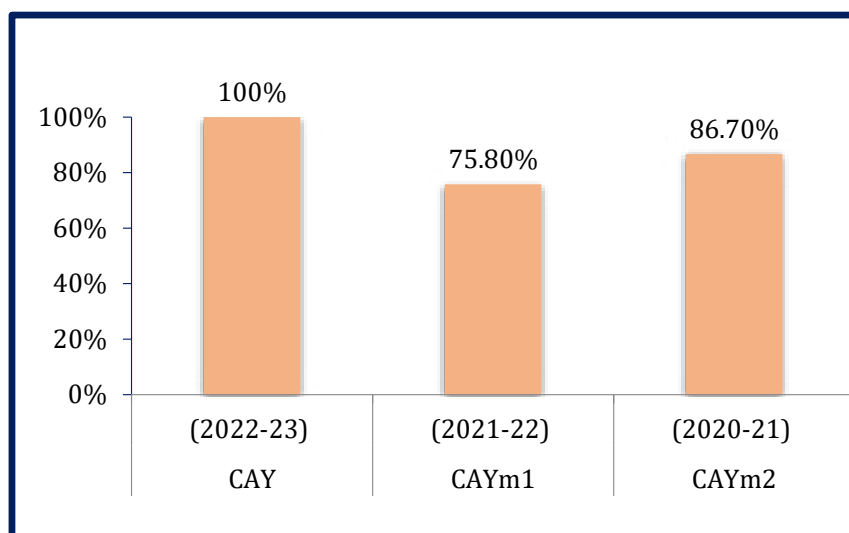
4.1 ENROLMENT RATIO (20)

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)

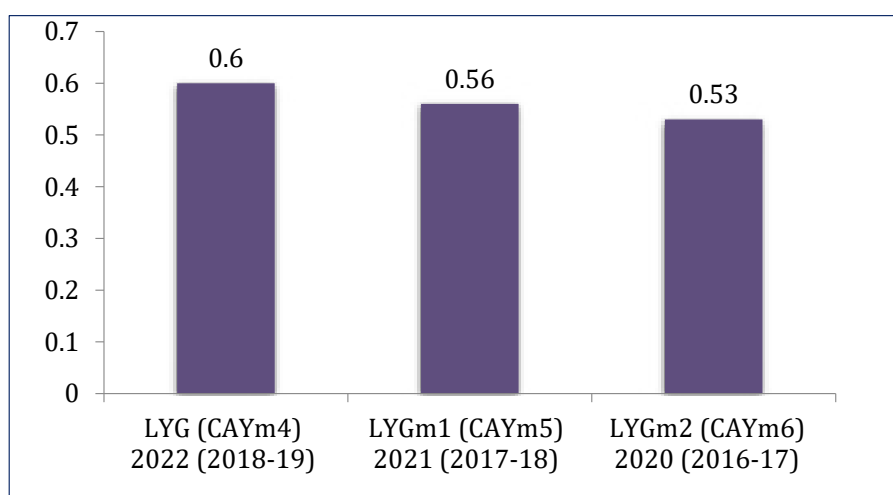
- o $SI = (\text{Number of students who have graduated from the program without backlog}) / (\text{Number of students admitted in the first year of that batch and actually admitted in 2nd year via lateral entry and separate division, if applicable})$
- o Average SI = Mean of Success Index (SI) for past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

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 [$15 * \text{Average SI}$]: 8.5



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

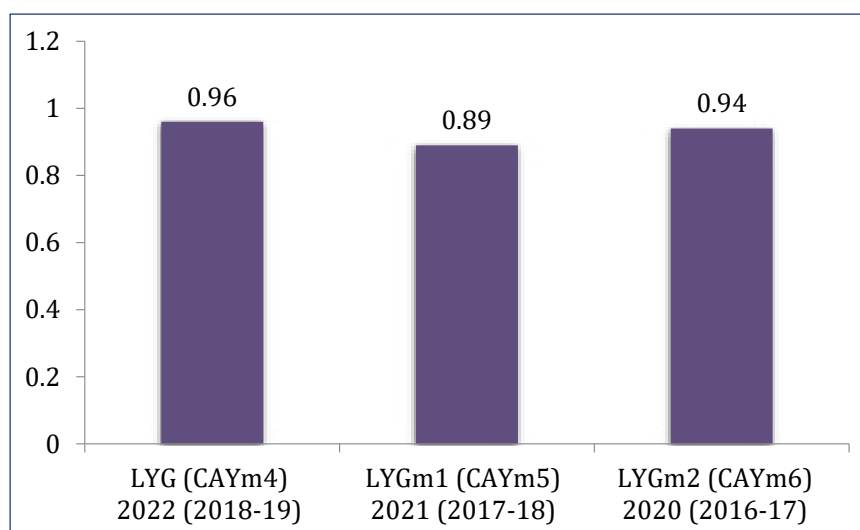
- SI= (Number of students who graduated from the program in the stipulated period of course duration)/ (Number of students admitted in the first year of that batch and actually admitted in 2nd year via lateral entry and separate division, if applicable)
- Average SI = mean of Success Index (SI) for past 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
- $API = ((\text{Mean of 2nd Year Grade Point Average of all successful Students on a 10-point scale}) \text{ or } (\text{Mean of the percentage of marks of all successful students in Second Year}/10)) \times X$ (number of successful students/number of students appeared in the examination)

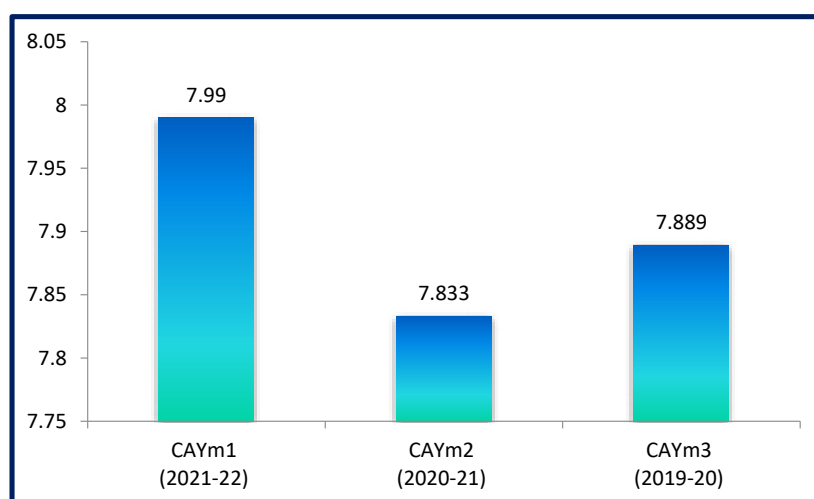
Successful students are those who are permitted to proceed to the Third year.

Table 4.3: Academic Performance

Academic Performance	CAYm1 (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



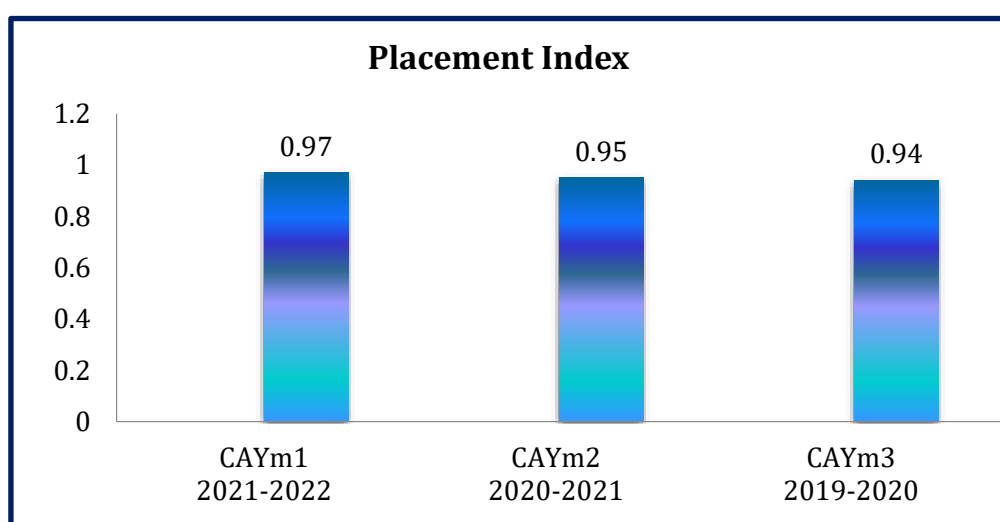
4.4 PLACEMENT, HIGHER STUDIES AND ENTREPRENEURSHIP (30)

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 [$30 * \text{Average Placement}$]: 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.Lakshmi pathi 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	Kavipriya langovan	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	Lingareddy garinirupa vardhanreddy	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	
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	Sridharshinisaravana n	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 Mohammadadil	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	Ramesharajursu 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	1NH18EE005	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 NithishKumar	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	1NH18EE018	Hemanth I	Accenture	NH-EE-HR-ACR-21-005
12	1NH19EE019	Hitish G	Simply Vypar App Pvt Ltd	NH-EE-HR-SVA-21-002
13	1NH18EE021	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	ChitteArunasai	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	1NH1733749	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 ShivagondHanamanna var	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	Capgemini	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	Shamant 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	Capgemini	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	Capgemini	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 Jacob	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 file patents of their own creative ideas.



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	Professional Society chapters	No of Engg Events Organized			
		2020-21	2021-22	2022-23	Total
 <p>Institute of Electrical and Electronics Engineering (IEEE)PELS -Geo-Code: SBC66131</p>	IEEE-PELS	11	5	13	29
 <p>Institute of Electrical and Electronics Engineering (IEEE)IES -Geo-Code: SBC66131B</p>	IEEE-IES	Started in the Year 2022-2023		12	12
 <p>Institute of Electrical and Electronics Engineering (IEEE) PES -Geo-Code: STB66131</p>	IEEE-PES	Started in the Year 2022-2023		2	2
 <p>ISTE- Indian Society for Technical Education</p>	ISTE	4	4	3	11
 <p>IEEE- Women in Engineering Society</p>					

List of Professional Societies/Chapters and Events Organised

Criterion-4 Self Assessment Report (SAR)

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. Ramneek Kalra 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

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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. Mariappan Valikan 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. Thiruvalluvar Marban Manager Vi-Micro Systems, Chennai.	180

GLIMPSES OF SOME OF EVENTS ORGANIZED



Figure 4.3.1: Power Electronics Converters for Smart Micro grid

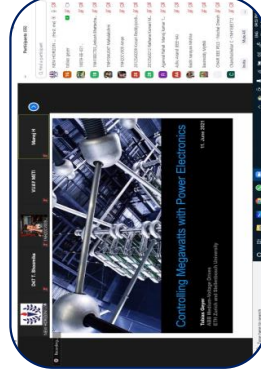


Figure 4.3.2: International Webinar on "Controlling Megawatts with Power Electronics"



Figure 4.3.3: IEEE awareness talk



Figure 4.3.4: Technical Event on "Praudyogeeek 2.0"

GLIMPSES OF SOME OF EVENTS ORGANIZED

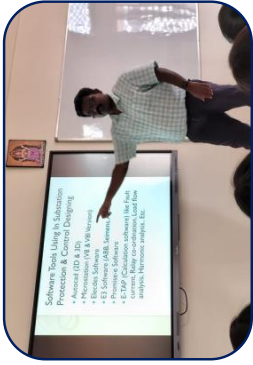


Figure : 4.5.3.5: Expert Lecture on "Modern Trends in Power System Protection



Figure:4.3.3.6: One Cycle Control and its Application for Stabilizing 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. Venkatesa Perumal, 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

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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

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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

Criterion-4 Self Assessment Report (SAR)



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.	WEBin HOUR	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	Mr.ArunanshuCharaborty, 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

Criterion-4 Self Assessment Report (SAR)

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	Mr Arunanshu Charaborthy, Senior Software Engineer II, Carelon Global Solution India, Bengaluru, Karnataka, India	52
5.	National Workshop on Design Thinking and Innovation	25.03.2023 Saturday	Bhuvanewari 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

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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)

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
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 Dr.Arungalai Vendan Professor/ ECE, Dayanandha Sagar university Bengaluru	20.03.2023 to 24.03.2023	50
2	Workshop	Club Events	Research Paper writing by students	Dr.R.Mohan Das		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 Societies / 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 RCAPCEE-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.Roopaa.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

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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. Aranganjan Dr.Kartikegyan NIT Calicut Dr.Bharatiraja SRM University 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 AlberEinstein 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 Faculty Development Programme Implementation and Challenges 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

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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 Programme – 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

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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

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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	14.1.1.2022	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”	25.1.1.2021	---	--
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

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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

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Academic Year 2021-22

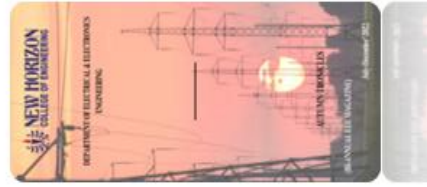
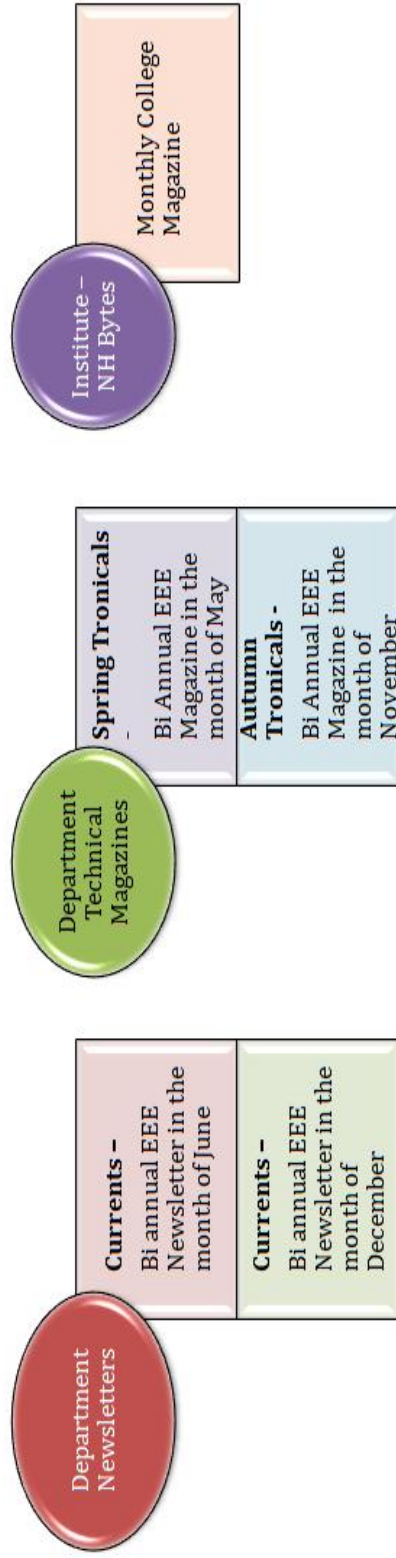
S.No	Name of the Event	Date	Resource Person	No. of Participants
1.	Spare a watt ,save a lot	18.11.2021	NA	37
2.	clealiness drive	08.01.2022	NA	27
3.	Art-quartet	16.01.2022	NA	52
4.	Industrial Visit	08.01.2022	NA	47
5.	Guest talk on Smart drives in mines	18.11.2021	Mr Jaikumar Dgm R&D Dept,AndMr Ankith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

Criterion-4 Self Assessment Report (SAR)

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



Criterion-4 Self Assessment Report (SAR)

Table: 4.5.2.1: List of Departmental Technical Magazines, News Letter [2022-23]

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	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)	September 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

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Table : 4.5.2.3 : List of Departmental Technical Magazines, News Letter [2021-22]

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	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 -XXI - Issue 7(Monthly College Magazine)	July 2021
2.	2021-22	NH-Bytes - Volume -XXI - Issue 8(Monthly College Magazine)	August 2021
3.	2021-22	NH-Bytes - Volume -XXI - Issue 9(Monthly College Magazine)	September 2021
4.	2021-22	NH-Bytes - Volume -XXI - Issue 10(Monthly College Magazine)	October 2021
5.	2021-22	NH-Bytes - Volume -XXI - Issue 11(Monthly College Magazine)	November 2021
6.	2021-22	NH-Bytes - Volume -XXI - 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)	February 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

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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.DonyShehit 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 Research 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

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

Sl. No	Year	Name of the Publication of Technical 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)	September 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)	February 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 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 the Student	Institution/Organization	Event	Event Details	Date	Participants/ Prize Winners
1	INH19EE403	Sushma M	Schneider Electric	Seminar	Building Controls	26/06/2021	Participated
2	INH19EE403	Sushma M	Schneider Electric	Seminar	Energy Efficiency With Building Automation Systems	26/06/2021	Participated
3	INH19EE403	Sushma M	Sri krishna Institute of Technology	Seminar	Career Pathway and overseas opportunities	18/06/2021	Participated
4	INH19EE403	Sushma M	Skill Lync	Seminar	Foundation of Artificial Intelligence	06/04/2021	Participated
5	INH19EE403	Sushma M	Cisco	Seminar	Introuction to Cyber Security	01/04/2021	Participated
6	INH19EE405	Jibran Zaidi Husain C	Schneider Electric	Seminar	Boiler Types and opportunities for Energy Efficiency	15/01/2021	Participated
7	INH19EE055	Kesamreddydeepthi	Great Learning	Seminar	Python Project ForBeginers	02/04/2020	Participated
8	INH19EE072	Meghana N T	Sri krishna Institute of Technology	Workshop	Career Pathway and overseas opportunities	18/06/2021	Participated
9	INH19EE121	Vandana R	Sri krishna Institute of Technology	Workshop	Career Pathway and overseas opportunities	18/06/2021	Participated
10	INH19EE120	Umohammed Arshad	Sri krishna Institute of Technology	Workshop	Career Pathway and overseas opportunities	18/06/2021	Participated
11	INH19EE120	Umohammed Arshad	GSSS institute of Engineering and Technology for Women Mysuru	Workshop	How to publish in A grade/SCI indexed journals	14/06/2021	Participated
12	INH19EE120	Umohammed Arshad	GSSS institute of Engineering and Technology for Women Mysuru	Workshop	Evolutionary learning and its engineering applications	21/05/2021	Participated
13	INH20EE007	Advaithmadhavan	Green Energy club	Workshop	Portraying your ideas to us	11/11/2020	Participated

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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	Dheeresh Vijay Devadiga	GSSS Institute of Engineering and Technology For Women	Seminar	6th National Level IEEE Project Compenation	08/06/2022	Participated
3	1NH21EE402	Dheeresh Vijay Devadiga	NIE Mysore	seminar	National Level Project exhibition	27/04/2022	Participated
4	1NH21EE402	Dheeresh Vijay Devadiga	Vidyavardhaka College of Engineering Mysore	seminar	state Level Project exhibition	25/06/2022	Participated
5	1NH21EE402	Dheeresh Vijay Devadiga	Synergy	seminar	state Level Project exhibition	28/06/2022	Participated
6	1NH19EE042	Gautamnee 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	Ponnappa 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

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12	INH19EE072	MEGHANA N T	Skill Lync	seminar	An overview of embedded systems and application	19/12/2021	Participated
13	INH19EE072	MEGHANA N T	Skill Lync	Workshop	Introduction of Electro magnetism	14/12/2021	Participated
14	INH19EE071	Pravan R naik	CMRIT (VTU)	sports	Volley ball (Men)	29/11/2021	Participated
15	INH20EE041	Hemanth BN	HKBK College of Engineering	sports	Kabaddi	14/12/2021	Third Place
16	INH20EE041	Hemanth BN	Dr.T.Thimmaiah Institute of Technology	sports	Kabaddi	16/12/2021	Participated
17	INH20EE117	Hemanth GN	Great Learning	seminar	introduction to Data Science	17/03/2022	Participated
18	INH20EE403	Koushik P	Great Learning	seminar	introduction to Machine Learning	21/03/2022	Participated
19	INH19EE126	Y Punith	Great Learning	seminar	introduction to Machine Learning	05/03/22	Participated
20	INH19EE121	Vandana R	Sri Krishna Institute of Technology	webinar	Career Pathway and Overseas Opportunities	29/10/2021	Participated
21	INH19EE121	Vandana R	Advanced	Seminar	Data Structure & Algorithms	29/10/2021	Participated
22	INH19EE121	Vandana R	Core Technologies	Seminar	Filter design using Xilinx vitis high level Synthesis	29/10/2021	Participated
23	INH19EE121	Vandana R	Advanced	seminar	Data Structure & Algorithms	18/10/2021	Participated
24	INH19EE121	Vandana R	Sri Krishna Institute of Technology	Seminar	Career Pathway and Overseas Opportunities	25/11/2021	Third Place
25	INH19EE121	Vandana R	Green Energy Club	seminar	smart drives used in	05/11/2021	Participated

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26	INH19EE121	Vandana R	Skill Lync	seminar	mining field introduction to electromagnetism	14/12/2021	Participated
27	INH20EE080	Prajwal J Mustagi	Green Energy Club	Event	Spare of Watt Save a Lot	18/11/2021	Participated
28	INH20EE007	AdvaithMadhavan	Green Energy Club	Event	Spare of Watt Save a Lot	18/11/2021	Participated
29	INH20EE007	AdvaithMadhavan	Certificate of Achievement	seminar	Guide to Startup	15/02/2022	Participated
30	INH20EE007	AdvaithMadhavan	Green Energy Club	Social Service	Spare of Watt Save a Lot	16/11/2021	Participated
31	INH20EE007	AdvaithMadhavan	certificate of participation	seminar	Hybrid Electric Vehicles	01/06/2022	Participated
32	INH20EE037	Harshitha K	Green Energy Club	Event	Spare of Watt Save a Lot	18/11/2021	Participated
33	INH20EE049	Keerthi M	Green Energy Club	Event	Spare of Watt Save a Lot	18/11/2021	Participated
34	INH20EE064	Meghana I K	Green Energy Club	Event	Spare of Watt Save a Lot	18/11/2021	Participated
35	INH20EE403	Koushik P	U-create club	Seminar	Think Like An Entrepreneur	25/11/2021	Participated
36	INH19EE099	Sharon V	Schneider Electric	seminar	Energy Audits	15/03/2022	Participated
37	INH19EE099	Sharon V	Schneider Electric	seminar	Alternative Power Generation Technologies	15/03/2022	Participated
38	INH19EE099	Sharon V	Schneider Electric	seminar	Battery Technology	15/03/2022	Participated
39	INH19EE099	Sharon V	Schneider Electric	seminar	Efficient Motor Control with Power Drives Systems	15/03/2022	Participated
40	INH19EE099	Sharon V	Schneider Electric	seminar	Calculating Total	15/03/2022	Participated

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41	INH19EE081	Suddep MK	Skill UP	seminar	Power Requirement Introduction to IOT	11/01/2022	Participated				
42	INH19EE099	Sharon V	Schneider Electric	seminar	Commissioning For Energy Efficiency	15/03/2022	Participated				
43	INH19EE046	Harshitha R	Great Learning	seminar	introduction to Data Science	17/03/2022	Participated				
44	INH19EE046	Harshitha R	Great Learning	seminar	introduction to Management	21/03/2022	Participated				
45	INH19EE046	Harshitha R	Great Learning	seminar	introduction to Machine Learning	17/03/2022	Participated				
46	INH19EE050	Jayanth R	BBMP	Social Service	Bangalore City Promote Clean and Green Bangalore	10/08/2021	Participated				
47	INH19EE073	Meghana s	BHEL	seminar	Idea Generation Challenge	10/01/2022	Participated				
48	INH19EE073	Meghana s	Department of Agriculture and Farmers welfare	seminar	Quiz on Natural Farming	29/10/2021	Participated				
49	INH19EE073	Meghana s	Ministry of Women's and Child Development	seminar	Women's Day Quiz	29/10/2021	Runner				
50	INH19EE107	Sowmyashree	VTU	sports	Volley ball (women)	29/10/2021	Fourth Place				
51	INH19EE107	Sowmyashree	VTU	sports	Volley ball (women)	09/12/2021	Participated				
52	INH19EE107	Sowmyashree	Jeevarathni Foundation	Social Service	Donation to Children	13/10/2021	Gold Medal				
53	INH19EE066	Rohith Kumar Reddy	Bangalore District weightlifters Association	Sports	weight Lifting (Gold)	16/10/2021	Silver Medal				
54	INH19EE066	Rohith Kumar Reddy	Bangalore District weightlifters Association	Sports	weight Lifting (Silver)	16/10/2021	Winner				
55	INH19EE066	Rohith Kumar Reddy	VTU	Sports	Wrusting 65kg	16/12/2021	Winner				
56	INH19EE066	Rohith Kumar Reddy	VTU	Sports	Wrusting 47kg	16/12/2021	Runner				
57	INH19EE083	Sindhu P	VTU	Sports	Volley ball	29/11/2021	Fourth Place				

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58	1NH19EE083	Sindhu P	VTU	Sports	(woMen) 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 Competation	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

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76	1NH19EE120	U Mohammed Arshad	BHEL	Event	Best Physical 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

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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	INH21EE402	Dheeresh Vijay Devadiga	Jain Deemed to be university	fest	Infinity Techno Cultural Fest	06/08/2023	Participated
2	INH21EE402	Dheeresh Vijay Devadiga	Evalanche Club	Social Service	Electrothon 2023	18/04/2023	Participated
3	INH19EE066	Rohith Kumar Reddy	Jyothi institute of Technology	Sports	weight Lifting and best Physique (men)	22/02/2022	Participated
4	INH19EE066	Rohith Kumar Reddy	VTU	Sports	wrestling	03/07/2022	Participated
5	INH18EE107	Yashwanth	Green Energy Club	Sports	3rd Place in Chess	16/01/2022	Third Place
6	INH19EE072	Meghana NT	Sri Ramakrishna Engineering College	Seminar	Simulation of Electrical circuits using MATLAB	15/12/2022	Participated
7	INH21EE100	SalankeAnni Rao	NPTEL	Exam	Introduction to Programming in C	05/01/2023	Participated
8	INH21EE101	Samuel W S	NPTEL	Exam	Introduction To Programming In C	05/01/2023	Participated
9	INH20EE117	T Haritha	Evalanche Club	Social Service	Electrothon 2023	18/04/2023	Participated
10	INH20EE117	T Haritha	Jain Deemed to be university	fest	Infinity Techno Cultural Fest	06/08/2023	Participated
11	INH21EE402	Dheeresh Vijay devadiga	Jain Deemed to be university	fest	Infinity Techno Cultural Fest	06/08/2023	Participated
12	INH21EE402	Dheeresh Vijay devadiga	Jain Deemed to be university	Electrothon 2023	Infinity Techno Cultural Fest	18/06/2023	Participated
13	INH21EE402	Dheeresh Vijay devadiga	Christ University	Fest	Intercollege Fest	06/03/2022	Participated
14	INH20EE034	DonySnethi P	Jain Deemed to be university	fest	Infinity Techno Cultural Fest	06/08/2023	Third Place
15	INH20EE034	DonySnethi P	Jain Deemed to be university	fest	Infinity Techno Cultural Fest	06/08/2023	Participated
16	INH20EE034	DonySnethi P	Jain Deemed to be university	Electrothon 2023	Infinity Techno Cultural Fest	18/06/2023	Participated

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18	INH19EE038	Krishna Chaitanya	IBM	Seminar	getting started with enterprise Data Science	27/04/2023	Participated
19	INH19EE038	Krishna Chaitanya	IBM	Seminar	Watson Machine Learning Essentials	05/07/2023	Participated
20	INH20EE410	Vijay Meti	IBM	Seminar	getting started with enterprise Data Science	20/04/2023	Participated
21	INH19EE038	Krishna Chaitanya	IBM	Seminar	Watson Machine Learning Essentials	27/04/2023	Third Place
22	INH20EE406	Nandan D Salanke	IBM	Seminar	getting started with enterprise Data Science	21/04/2023	Participated
23	INH20EE406	Nandan D Salanke	IBM	Seminar	Watson Machine Learning Essentials	27/04/2023	Participated
24	INH19EE037	Hemanth GN	IBM	Seminar	getting started with enterprise Data Science	20/04/2023	Participated
25	INH19EE037	Hemanth GN	IBM	Seminar	Watson Machine Learning Essentials	27/04/2023	Participated
26	INH20EE407	Prajwal R M	IBM	Seminar	getting started with enterprise Data Science	21/04/2023	Participated
27	INH20EE407	Prajwal R M	IBM	Seminar	Watson Machine Learning Essentials	08/05/2023	Participated
28	INH20EE028	Darshan Suresh Shetty	VTU	Sports	Judo 60kg Runners	12/12/2022	Winner
29	INH21EE118	Syeda Mehak Fathima	Jala Poshan	Social Service	Cleaning At Jakkur Lake	28/11/2022	Participated
30	INH20EE083	Prathvi Gaonkar	IDSSC/TSC/CATC-2022-23	NCC	SW	17/05/2022	Participated
31	INH20EE083	Prathvi Gaonkar	Christ University Kengeri	NCC	NCC	08/06/2022	Participated
32	INH21EE035	Harish Kumar A N	Government Senior Primary School	Social service	Social welfare	05/11/2022	Participated
33	INH21EE123	Vaishnavi D	I am Neo	Seminar	Neo codeathan	12/01/2023	Participated
34	INH20EE026	D Shrenik	SEA College of Engineering And Technology Bangalore	Sports	Runners (Cricket)	03/03/2023	Runner

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35	INH20EE120	Vikash Rawat	SJC Institute of Technology	Sports	Long Jump (1 st Place)	27/06/2022	1 st Place
36	INH21EE068	NS Meghana	Jala Poshan	Social Service	Cleaning At Jakkur Lake	28/11/2022	Participated
37	INH20EE029	Dayas A Dixen	Christ Deemed University	Magnovite	OHM-Azing Buildathon (2 nd Place)	02/03/2023	Participated
38	INH21EE059	Meghana PV	Kruoanidhi Group of Institutions	Fest	National Level Cultural Fest	03/03/2023	Participated
39	INH21EE051	Likhitha M	Verzeo	Seminar	Marketing Management	01/05/2022	Participated

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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	INH19EE042	Gautamnee K K	VIT Chennai	Seminar	A techno-Management carnival	04/07/2020	Participated
2	INH19EE403	Sushma M	Sengunthar Engineering College	Seminar	Cyber Security	27/05/2021	Participated
3	INH19EE403	Sushma M	AWS	Seminar	AWS Machine Learning	27/05/2021	Participated
4	INH19EE038	Gadhamssetti Krishna Chaitanya	VIT Chennai	Seminar	Online Laboratory Class Using open Source Software	04/09/2020	Participated
5	INH20EE406	Nandan D Salanke	Sinhgad Institute of Technology Lonavala	Seminar	Electrical Measurements & instruments	04/02/2021	Participated
6	INH20EE406	Nandan D Salanke	Sigma Institute of Engineering	Seminar	Ntional Level Quiz on Python Programming	05/04/2021	Participated
7	INH19EE403	Sushma M	Pantech E learning	Seminar	AI based Obkect Detection	06/12/2021	Participated
8	INH19EE042	Gautamnee K K	VIT Chennai	Seminar	A Techno-Management Carnival	01/04/2021	Participated
9	INH19EE055	Kesamreddy Deepthi	Bhumi	Seminar	Lifestyle Eco warrior carrier campaign	27/05/2021	Participated
10	INH19EE403	Sushma M	Mandsaur University	Seminar	Introduction To Natural Language Processing	23/04/2021	Participated
11	INH19EE403	Sushma M	Pantech E learning	Seminar	Solar power Inverter	12/06/2021	Participated
12	INH19EE055	KesamreddyDeepthi	VIT Chennai	Seminar	A Techno-Management Carnival	04/01/2021	Participated
13	INH19EE403	Sushma M	Nehru Institute of Engineering and Technology	Seminar	STEM	04/05/2021	Participated
14	INH19EE038	Gadhamssetti Krishna Chaitanya	VIT Chennai	Seminar	Online Laboratory Class Using open Source Software	04/09/2020	Participated
15	INH19EE038	Gadhamssetti Krishna Chaitanya	International college (UK)	Seminar	Data science and Cyber security	01/08/2020	Participated
16	INH19EE038	Gadhamssetti Krishna Chaitanya	BRISTOL International College	Seminar	Python Programming	01/08/2020	Participated
17	INH20EE007	Advaith	Vishakapatnamindia	Event	Climate Action Project	4/11/2020	Participated

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18	INH21EE402	Dheeresh v Devadiga	VIT Chennai	Seminar	Electrical Mountain Board	8/06/2022	Participated
19	INH19EE085	Mohammed Taugeer Ali	BCIC	webinar	Atmanirdhar Bharat	15/10/2020	Participated
20	INH20EE406	Nandan D Salanke	Ninthsem	seminar	Onlinequiz	05/08/2021	Participated
21	INH19EE403	Sushma M	Sengunthar Engineering College	Seminar	Cyber Security	27/05/2021	Participated
22	INH19EE403	Sushma. M	AWS	Seminar	AWS Machine Learning	27/05/2021	Participated
23	INH20EE406	Nandan D Salanke	Ninthsem	Seminar	Electrical Engineering Online Quiz	05/08/2021	Participated
24	INH20EE406	Nandan D Salanke	Sigma Institute of Engineering	Seminar	Ntional Level Quiz on Python Programming	05/04/2021	Participated
25	INH20EE406	Nandan D Salanke	WhiteHat	Seminar	Python Basics	05/04/2021	Participated
26	INH19EE403	Sushma M	Pantech E. learning	Seminar	AI based Obkect Detection	05/03/2021	Participated
27	INH19EE042	Gautamnee K K	Bhumi	Seminar	Liestyle Eco warrior carrier campaign	21/05/2021	Participated
28	INH19EE055	KesamreddyDeepthi	Bhumi	Seminar	Liestyle Eco warrior carrier campaign	21/05/2021	Participated
29	INH19EE403	Sushma M	Mandsaur University	Seminar	Introduction To Natural Language Processing	23/04/2021	Participated
30	INH19EE403	Sushma M	Pantech E. learning	Seminar	Solar power Inverter	04/03/2021	Participated
31	INH20EE406	Nandan D Salanke	Singhad Institute of Technology Lonavala	Seminar	Electrical Measurement & Instruments	09/06/2020	Participated
32	INH19EE038	Gadhamssetti Krishna Chaitanya	VIT Chennai	Seminar	Online Laboratory Class Using open Source Software	09/06/2020	Participated
33	INH19EE038	Gadhamssetti Krishna Chaitanya	BRISTOL International College	Seminar	Cyber Security using Python Programming	01/08/2020	Participated
34	INH19EE403	Sushma M	Pantech E. learning	Seminar	Solar power Inverter	04/03/2021	Participated
35	INH20EE406	Nandan D Salanke	Singhad Institute of Technology Lonavala	Seminar	Electrical Measurement & Instruments	09/06/2020	Participated
36	INH19EE038	Gadhamssetti Krishna Chaitanya	BRISTOL International College	Seminar	Cyber Security using Python Programming	01/08/2020	Participated
37	INH19EE038	Gadhamssetti Krishna Chaitanya	BRISTOL International College	Seminar	Python Programming	01/08/2020	Participated
38	INH20EE007	AdvaithMadhavan	Vishakapatnam india	Event	Climate Action Project	4/11/2020	Participated

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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	INH19EE028	Deekshith More B	Bharat institute of Engineering and Technology	Workshop	National Level Online Quiz	15/03/2022	Participated
2	INH19EE072	Meghana N T	Mandsaur University	seminar	Importance and Relevance of Class mathematics and physics in engineering field	18/04/2022	Participated
3	INH19EE072	Meghana N T	Advanced	Seminar	Data Structure & Algorithms	02/03/2022	Participated
4	INH19EE072	Meghana N T	VIT Chennai	Seminar	Cyber security standards for Energy utility industry	17/12/2021	Participated
5	INH19EE038	Krishna Chaitanya	Perfect Plan B Elearning Pvt Ltd	seminar	Google Colab Machine Learning App	31/08/2021	Participated
6	INH19EE038	Krishna Chaitanya	RINEX	Hackthon	Hackmarcon	31/01/2022	Participated
7	INH19EE126	Y Punith	Proudhadevaraya institute of technology	Seminar	Electronics E-Quiz	15/03/2022	Participated
8	INH19EE126	Y Punith	Collcom	seminar	cyber crime Awareness	15/03/2022	Participated
9	INH19EE121	Vandana R	VIT Chennai	Workshop	Cyber security standards for Energy utility industry	17/12/2021	Participated
10	INH19EE121	Vandana R	VIT Chennai	seminar	Cyber security standards for Energy utility industry		Participated
11	INH19EE121	Vandana R	Green Energy Club	Industrial Visit	Mithradham Renewable Energy centre at Aluva Kerala	17/12/2021	Participated
12	INH20EE406	Nandan D Salanke	College of Engineering Kashti	seminar	Electrical Substation	25/07/2021	Participated
13	INH20EE007	AdvaithMadhavan	Green Energy Club	Industrial Visit	Mithradham Renewable Energy centre at Aluva Kerala		Participated
14	INH20EE403	Koushik P	Collcom	Seminar	cyber crime Awareness	22/04/2022	Participated
						10/12/2022	Participated

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15	INH19EEE018	Anoopkumar HS	Bharat institute of Engineering and Technology	Seminar	National Level Online Quiz	15/03/2022	Participated
16	INH19EEE014	Vinay Kumar	BMST	Social Service	Donating Blood	11/10/2021	Participated
17	INH19EEE015	Ramesharajauru K R	SCAD College Of Engineering and Technology	seminar	My story Motivation Session By Young Startup Founder	11/11/2021	Participated
18	INH19EEE015	Ramesharajauru K R	SCAD College Of Engineering and Technology	seminar	Design Thinking Innovation	22/10/2021	Participated
19	INH19EEE015	Ramesharajauru K R	LathaMathavan Engineering College	Seminar	Industry oriented energy auditing	03/12/2021	Participated
20	INH19EEE013	Anil Hedge H	J.P.Morgon	Seminar	Investment banking virtual Experience	14/07/2021	Participated
21	INH19EEE013	Anil Hedge H	Bharat institute of Engineering and Technology	Seminar	Online Quiz on Engineering Workshop	15/03/2022	Participated
22	INH19EEE050	Jayanth R	Ninthsem	seminar	Electrical Engineering Online Quiz	26/07/2021	Participated
23	INH19EEE050	Jayanth R	Proudhavevaraya institute of technology	seminar	Electronics E-Quiz	26/07/2021	Participated
24	INH19EEE073	Meghana s	Jagrabhakjago	seminar	Quiz on Consumer	15/03/2022	Participated
25	INH19EEE073	Meghana s	MOFPI	seminar	Anna Devo Bhava	15/03/2022	Participated
26	INH19EEE080	Sagar Kulkarni	Certificate of Appreciation	Hackthon	BIAL	15/03/2022	Participated
27	INH20EEE034	Disha M	BMST	Social Service	Donating Blood	10/11/2021	Participated
28	INH20EEE022	Bharath T	Green Energy Club	Industrial Visit	Mithradham Renewable Energy centre at Aluva Kerala	22/04/2022	Participated
29	INH20EEE029	Days A Dixen	Green Energy Club	Industrial Visit	Mithradham Renewable Energy centre at Aluva Kerala	22/04/2022	Participated
30	INH18EE706	BellamSreekanth Reddy	DECIBELS	seminar	Electric Vehicle Motor Sizing Calculation using Microsoft Excel	25/10/2021	Participated
31	INH21EE402	Dheeresh Vijay	Synergy	seminar	State level Project Exhibition	28/06/2022	Participated

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	Devadiga		saylor.org						
32	INH19EE042	Gautamnee K K	saylor.org	seminar	operating system	02/01/2022	Participated		
33	INH19EE028	Deekshith More B	Udemy	seminar	Python Introduction to Data science	14/07/2021	Participated		
34	INH19EE028	Deekshith More B	Udemy	Seminar	Front end Web Development	14/07/2021	Participated		
35	INH20EE401	Binay Kumar Yadav	LM	Seminar	Machine Learning Algorithms	20/11/2021	Participated		
36	INH20EE401	Binay Kumar Yadav	Pandeteens Youth Community	event	Kids Impart Creativity	05/12/2021	Participated		
37	INH20EE401	Binay Kumar Yadav	LM	seminar	Machine Learning Algorithms	20/11/2021	Participated		
38	INH20EE401	Binay Kumar Yadav	Lm	Seminar	Machine Learning Bootcamp For Beginner	20/11/2021	Participated		
39	INH19EE126	Y Punith	saylor.org	seminar	operating system	02/01/2022	Participated		
40	INH19EE126	Y Punith	Certificate of Achievement	Club	Waste segregation	20/08/2021	Participated		
41	INH19EE042	Gautamnee K K	Great Learning	seminar	introduction to Machine Learning	17/03/2022	Participated		
42	INH19EE042	Gautamnee K K	saylor.org	seminar	operating system	02/01/2022	Participated		
43	INH19EE042	Gautamnee K K	Internshala	Club	Green Revolution Program	04/03/2022	Participated		
44	INH19EE041	Chairanthana M Reddy	Young Researcher Forum	seminar	Basic Of Digital Intergratedckt's	20/08/2022	Participated		
45	INH19EE121	Vandana R	XILINX	webinar	Filter design using Xilinx vitis high level Synthesis	29/10/2021	Participated		
46	INH19EE121	Vandana R	Skill Lync	Workshop	Introduction Of Electromagnetism	14/12/2021	Participated		
47	INH20EE080	Prajwal J Mustagi	Udemy	seminar	Front end Web Development	14/07/2021	Participated		
48	INH20EE080	Prajwal J Mustagi	Udemy	seminar	Python For Beginners	14/07/2021	Participated		
49	INH19EE019	Anusha	saylor.org	seminar	operating system	02/01/2022	Participated		
50	INH19EE018	Anoopkumar HS	Udemy	Seminar	Python Introduction to Data science and ML	14/07/2021	Participated		
51	INH19EE065	M Gopal	Udemy	seminar	Front end Web Development	14/07/2021	Participated		
52	INH19EE065	M Gopal	Udemy	seminar	Python For Beginners	14/07/2021	Participated		
53	INH20EE410	Vijay Meti	Udemy	seminar	Front end Web Development	14/07/2021	Participated		
54	INH19EE065	M Gopal	Udemy	seminar	Front end Web Development	14/07/2021	Participated		
55	INH20EE410	Vijay Meti	Udemy	seminar	Python For Beginners	14/07/2021	Participated		
56	INH19EE013	Anil Hedge H	AWS training and Certification	Seminar	Aws Cloud Practitioner Essentials	03/10/2022	Participated		
57	INH19EE013	Anil Hedge H	Sigma Group	seminar	National Level Quiz on Python Programming	02/04/2022	Participated		

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58	INH19EE025	SyedaMehakFathima	JalaPoshan	Social Service	Volunteering at Jakkur Lake	28/11/2022	Participated
59	INH21EE016	HemanthGn	Institution innovation council	seminar	intellectual Property Rights Protect your creativity with Patent	14/05/2022	Participated
60	INH19EE025	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	Participation
1	1NH20EE034	Disha	NIPAM	Seminar	National Intellectual Property Awareness Mission	05/09/2023	Participated

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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	INH18EE031	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
	INH18EE057	Siddhartha Sunil Singh					
	INH18EE066	TahooralIntiyaz					
	INH18EE036	Nayrah M A					
2	INH18EE031	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
	INH18EE057	Siddhartha Sunil Singh					
	INH18EE066	TahooralIntiyaz					
	INH18EE036	Nayrah M A					
3	INH18EE055	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
	INH18EE049	Sagar Kulkarni					
	INH18EE040	Lavin Ponnappa M M					
	INH18EE017	GreeshmaChennareddy					
4	INH18EE010	Chitra S	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
	INH18EE013	Kavipriya E					
	INH18EE050	Sahana B					
	INH18EE758	VishwanathPatil					
5	INH18EE733	P.MD.Muthahir Khan	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
	INH18EE707	Bharateshshiradoni					
	INH18EE754	Venkan gouda					
	INH18EE758	VishwanathPatil					
6	INH18EE733	P.MD.Muthahir Khan	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
	INH18EE707	Bharateshshiradoni					
	INH18EE754	Venkan gouda					
	INH18EE754	Venkan gouda					

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7	INH18EE067	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 (ICECA)	10.1109/ICECA A5415.2022.99 36061	08/11/2022	Scopus
	INH18EE756	Vishal Suresh					
	INH18EE701	Adithya Hegde					
	INH18EE739	Nahush S					
8	INH18EE710	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/ICCES 4183.2022.98358 83	29/07/2022	Scopus
	INH18EE708	Bhavana YC					
	INH18EE709	Bindhu V					
	INH19EE003	Abhishek					
9	INH19EE013	ANIL HEGDE H	A review of remote health monitoring system for patients using IoT	International Conference on Automation, Computing and Renewable Systems (ICACRS-2022)	10.1109/ICACR S55517.2022.10 028995	07/02/2023	Scopus
	INH19EE032	Dhruva S Srinivas					
	INH19EE038	Krishna Chaitanya					
	INH19EE008	Aishwarya P					
10	INH19EE023	Charishma A	A Review of Theft Diagnosis from Smart Energy Meter Using IoT	2022 6th International Conference on Electronics, Communication and Aerospace Technology	10.1109/ICECA 55336.2022.1000 9567	16/01/2023	Scopus
	INH19EE042	Gautamnee KK					
	INH19EE055	Kesamreddy Deepthi					
	INH19EE066	M Rohith Kumar					
11	INH19EE046	Harshitha R	Design and fabrication of Quad Bike for physically Challenged person	International Conference on Smart Generation Computing, Communication and Networking	10.1109/SMART GENCON56628. 2022.10084305	06/04/2023	Scopus
	INH19EE018	Anoopkumar H S					
12	INH19EE024	Chethan DR	Herbs Ailment Diagnosis using AI Techniques for Sustainable Innovation in Agriculture	2023 4th International Conference on Innovative Trends in Information Technology (ICITIT)	10.1109/ICITIT 57246.2023.1006 8575	20/03/2023	Scopus
	INH19EE028	Deekshith More B					
	INH19EE062	KUSHAL A Y					
	INH19EE027	Dechamma V S					
13	INH19EE047	J Likitha	Study of Interfacing PLC With HMI for Industrial Applications	2023 Second International Conference on Electronics and Renewable Systems (ICEARS)	10.1109/ICEAR S56392.2023.10 084927	05/04/2023	Scopus
	INH19EE050	Jayanth R					
	INH20EE407	Prajwal R M					
	INH18EE014	Faraz Ahmed Mullah					
14	INH19EE037	Hemanth G N	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/IDCIoT 56793.2023.1005 3395	01/03/2023	Scopus
	INH19EE048	J Prajwal					
	INH19EE065	M Gopal					
15	INH20EE408	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/ICACR S55517.2022.10 029006	07/02/2023	Scopus
	INH20EE401	Binay Kumar Yadav					
	INH19EE083	P. Sindhu					

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16	INH19EE085	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
	INH19EE127	Roopeshwar Reddy					
	INH19EE123	Vinod Kumar R					
17	INH19EE125	W Y Jhansipriya	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
	INH19EE069	Manojkumar H V					
	INH19EE070	Manojkumar P					
	INH19EE080	Naveen R N					
	INH19EE095	Sandeep Naik R					
18	INH19EE071	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
	INH19EE092	Rahul					
	INH19EE098	Santhosh Melvin D					
	INH19EE101	Sathish					
19	INH19EE072	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
	INH19EE121	Vandana R					
	INH19EE122	Vidya G R					
	INH19EE091	RachnaPalli					
20	INH19EE107	Sowmya Shree	Study of Stepper motor control using programmable 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
	INH18EE021	Jeshwanth V					
	INH18EE060	Vernon Victor					
	INH19EE008	Aishwarya P					
21	INH19EE023	Charishma A	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
	INH19EE042	Gautamnee KK					
	INH19EE055	KesamreddyDeepthi					
	INH19EE010	Aisiri M Urs					
22	INH19EE046	Harshitha R	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
	INH19EE066	M Rohith Kumar					
	INH20EE403	Koushik P					
	INH19EE072	Meghana N T					
23	INH19EE121	Vandana R	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
	INH19EE122	Vidya G R					

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24	INH19EE004	Abhishek Bedant	Non-Invasive Method of Detecting Anemia using AI &IoT	2023 International Conference on Innovative Data Communication Technologies and Application (ICIDCA)	10.1109/ICIDCA 56705.2023.1009 9915	20/04/2023	Scopus
	INH19EE061	Kumar Abhishek					
	INH19EE067	Madhav Reddy C					
	INH19EE060	Kota Vikramaadhitya					
25	INH19EE068	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/ICIPTM 57143.2023.1011 7831	10/05/2023	Scopus
	INH19EE100	SARTHAK GHORAI					
	INH19EE105	SHARIQ AHMED					
	INH19EE109	SUBHAJIT DAS					
26	INH19EE073	Meghana S	A Novel EV Charging Using Stationary Bike	2023 3rd International Conference on Innovative Practices in Technology and Management (ICIPTM)	10.1109/ICIPTM 57143.2023.1011 7886	10/05/2023	Scopus
	INH19EE099	Santhosh kummi					
	INH19EE110	Suraj Raju Jadhav					
	INH19EE120	U Mohammed Arshad					
27	INH19EE097	SanskritiAgarwala	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/ICIPTM 57143.2023.1011 8136	10/05/2023	Scopus
	INH19EE106	SharmiKanaujia					
	INH19EE103	Sheikh Sameer					
	INH19EE114	TabasumManzoor					
28	INH19EE102	ShaifAlam	Study of Battery Management System using Watchdog Software	2023 3rd International Conference on Innovative Practices in Technology and Management (ICIPTM)	10.1109/ICIPTM 57143.2023.1011 8136	10/05/2023	Scopus
	INH19EE113	Swastik Shukla					
	INH19EE129	Zahra goher sultana					
	INH19EE001	ABDUL SAMEDH					
29	INH19EE030	DARSHAN R	Automated Tumbler Cleaner	2023 3rd International Conference on Innovative Practices in Technology and Management (ICIPTM)	10.1109/ICIPTM 57143.2023.1011 8176	10/05/2023	Scopus
	INH19EE034	FAIZ UR Rahman					
	INH19EE009	AISHWARYA V H					
	INH19EE011	AKSHATHA SHREE					
30	INH19EE019	ANUSHA S	Implementation of Accident Detection and Reporting System Using IOT	2023 3rd International Conference on Innovative Practices in Technology and Management (ICIPTM)	10.1109/ICIPTM 57143.2023.1011 8329	10/05/2023	Scopus
	INH19EE057	KHUSHI J VIBHUTHI					
	INH19EE090	R. Varun					
	INH19EE093	Ritikakapoor					
31	INH19EE116	Tejas V	Analysis Of Electrical Parameters For Formula Style Electric Vehicle	2023 3rd International Conference on Innovative Practices in Technology and Management (ICIPTM)	10.1109/ICIPTM 57143.2023.1011 8279	10/05/2023	Scopus
	INH19EE104	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	INH18EE039	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
	INH18EE042	Prajwal					
	INH18EE053	Sarthak Das					
	INH18EE005	Ashu Anand					
2	INH18EE039	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
	INH18EE042	Prajwal					
	INH18EE053	Sarthak Das					
	INH18EE005	Ashu Anand					
3	INH18EE011	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
	INH18EE004	APPAJI					
	INH18EE032	MOHAMMED TAUQEER ALI					
	INH18EE011	DarshiniMachamma M S					
4	INH18EE011	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
	INH18EE004	Appaji					
	INH18EE032	MOHAMMED TAUQEER ALI					
	INH18EE031	Mohammed Omer Ali					
5	INH18EE057	Siddhartha Sunil Singh	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
	INH18EE066	TahooralImtiyaz					
	INH18EE036	Nayrah M A					
	INH18EE055	Shiva R V					
6	INH18EE049	Sagar Kulkarni	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
	INH18EE040	Lavin Ponnappa M M					

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7	INHI18EE017	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
	INHI18EE010	Chitra S					
	INHI18EE013	Kavipriya E					
	INHI18EE050	Sahana B					
	INHI18EE022	Jibran Zaidi					
8	INHI18EE061	Vikram	A review of Arduino based 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
	INHI18EE027	Nirupavardhan					
	INHI18EE020	Jaffer					
	INHI18EE735	Pranav R Naik					
	INHI18EE738	Rahul Vijay Lingadhal					
9	INHI18EE736	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)	10.1109/ICAIS53314.2022.9743126	30/03/2022	Scopus
	INHI18EE737	R Supraja					
	INHI18EE735	Pranav R Naik					
	INHI18EE738	Rahul Vijay Lingadhal					
	INHI18EE736	R PUNEETH VENKAT SAI VARMA					
10	INHI18EE737	R Supraja	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
	INHI18EE710	C Bhavana Singh					
	INHI18EE708	Bhavana YC					
	INHI18EE709	Bindhu V					
	INHI18EE718	Joanna Alicia D					
11	INHI18EE715	Deepthi D	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
	INHI18EE740	Shawin Krishna					
	INHI18EE706	BellamSreekanthreddy					
	INHI18EE025	Karthik N					
	INHI18EE009	Lakshmi pathi C					
12	INHI18EE706	BellamSreekanthreddy	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
	INHI18EE025	Karthik N					
13	INHI18EE009	Lakshmi pathi C					
	INHI18EE003	Anirudh					
	INHI18EE052	Sanjay G	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

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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

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	202241040767 dated 16.07.2022	Mr. Muni Prakash T Mr. Pranav R Naik Mr. R Puneeth Venkat 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. Vishwanath Patil Mr. Venkan Gouda Mr. Bharatesh Shiradoni	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. Mekala Rohith Kumar Reddy Mr. Koushik P	Design of therapeutic thread mill and footrest for differently abled children Application Number: 202241047176 dated 19.08.2022
9	Application Number: 202241047180 dated 19.08.2022	Dr. Manjunatha Dr. Mahesh M Dr. Vinoth Kumar K Mr. Satish Kumar D Mr. Advait Madhavan 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	Weight Lifting Hockey Wrestling & Judo	28 th & 29 th Oct 2022 9 th & 10 th Nov 2022 12 th & 13 th Dec 2022	Vtu(Gat) Vtu(Cmrit) Vtu(Vvce)	02 02 02	Participation Participation Silver Medal
2	Aneelkumar N M	1NH21EE015	III	Best Physique Taekwondo	28 th & 29 th Oct 2022 20 th & 21 st Dec 2022	Vtu(Gat) Vtu(Sit)	02 02	Participation Participation
3	Hemanth B N	1NH20EE041	V	Kabaddi Volleyball Tug Of War	19 th To 21 st Oct 2022 4 th & 5 th Nov 2022 9 th & 10 th Nov 2022 17 th & 18 th Nov 2022	Infini Vtu(Vit) Vtu Selections Vtu(Atria)	02 02 02 02 02	Participation Participation Participation Runners
4	Pramod G	1NH20EE081	V	Hockey	9 th & 10 th Nov 2022	Vtu(Cmrit)	02	Participation
5	Shrinik	1NH20EE026	V	Cricket	19 th To 22 nd Nov 2022	Pes	04	Participation
6	Yeshwanth S	1NH20EE127	V	Chess	1 st & 2 nd Dec 2022 5 th To 7 th Dec 2022	Vtu(Vit) Vtu(Nmamit)	02 03	8 th Place Participation
7	Rakshan L	1NH21EE093	III	Basketball(M)	28 th & 29 th Nov 2022 3 rd Dec 2022 14 th To 17 th Dec 2022	Vtu(Nhce) VtuSelectons Spardha	02 01 04	Participation Participation Participation
8	Simran	1NH20EE110	V	Basketball(W)	29 th Nov 2022 5 th & 6 th Dec 2022 7 th To 9 th Dec 2022 14 th To 17 th Dec 2022	Volunteer Vtu(Dr-Ait) Vtu(Atme) Spardha	01 02 03 04	Participation 4 th Place Participation Participation
9	M Rohith Kumar Reddy	1NH19EE066	VII	Weight Lifting	28 th & 29 th Oct 2022	Vtu(Gat)	02	Bronze Medal
10	Dechmma Vs	1NH19EE027	VII	Weight Lifting	28 th & 29 th Oct 2022	Vtu(Gat)	02	Participation
11	Deepak Kumar Sah	1NH19EE029	VII	Best Physique	28 th & 29 th Oct 2022	Vtu(Gat)	02	Participation
12	Manoj Kumar P	1NH19EE070	VII	Kabaddi	19 th To 21 st Oct 2022 4 th & 5 th Nov 2022	Infini Vtu(Vit)	03 02	Participation Participation

Summary of achievement in sports activities (2021 – 22)

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Sl.No	Name	USN	SEM	Event	Date	Tournament	No. Of Days	Achievements
1	Pranav R Naik	1NH18EE735	VII	Volleyball(M)	13 th And 14 th May 2022 2 nd &3 rd June 2022 24 th June 2022 25 th To 26 th June 2022	Nmit Rvce Cit Iisc	02 02 01 02	Participation Participation Participation Participation
2	Kushal Naik K	1NH20EE056	III	Volleyball(M)	19 th To 22 nd April 2022 26 th To 29 th April 2022 28 th To 30 th April 2022	Chri-Spo Athlos Devadan Cup	04 04 03	Runners Participation Participation
3	Dhanush L	1NH18EE716	VIII	Baasketball(M)	26 th To 29 th April 2022 28 th To 30 th April 2022 10 th &11 th May 2022 1 st & 2 nd June 2022	Athlos Devadan Cup Nmit Momentum 22	04 03 02 02	Participation Participation Participation Participation
4	Simran Kanwar	1NH20EE110	IV	Basketball(W)	26 th To 29 th April 2022 1 st & 2 nd June 2022	Athlos Momentum 22	04 02	Participation Participation
5	Manoj Kumar P	1NH19EE070	VI	Kabaddi	26 th To 29 th April 2022 13 th &14 th May 2022 26 th May 2022	Athlos Nmit Abhiyantan 22	04 02 01	Participation Participation Runners
6	Hemanth B N	1NH20EE041	IV	Kabaddi Tug Of War Handball	26 th To 29 th April 2022 13 th &14 th May 2022 26 th May 2022 6 th & 7 th June 2022 23 rd June	Athlos Nmit Abhiyantan 22 Vtu(Bmsce) Volunteer	04 02 01 02 01	Participation Participation Runners Winners Participation
7	R Puneeth	1NH18EE736	VIII	Football	26 th To 29 th April 2022 28 th To 30 th April 2022 1 st & 2 nd June 2022	Athlos Devadan Cup Momentum 22	04 03 02	Participation Participation Participation
8	Mohan P	1NH20EE405	VI	Handball	19 th To 21 st April 2022 28 th To 30 th April 2022 23 rd June 2022 25 th &26 th June 2022	Chri-Spo Devadan Cup Vtu(Nhce) Vtu(IzMit)	03 03 01 02	Participation Participation Winners Participation
9	Ponnappa Mm	1NH18EE040	VIII	Cricket	18 th To 25 th April	Devadan Cup	08	Participation

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							26 th To 29 th April 2022 26 th To 30 th May 2022 17 th To 20 th June 2022	Athlos Momentum 22 Seacet	04 05 04	Participation Participation Participation
10	Chandan N	INH18EE711	VIII	Cricket	Cricket		18 th To 25 th April 26 th To 29 th April 2022 26 th To 30 th May 2022 17 th To 20 th June 2022	Devadan Cup Athlos Momentum 22 Seacet	08 04 05 04	Participation Participation Participation Participation
11	D Shrenik	INH20EE026	IV	Cricket	Cricket		18 th To 25 th April 26 th To 29 th April 2022 26 th To 30 th May 2022 17 th To 20 th June 2022	Devadan Cup Athlos Momentum 22 Seacet	08 04 05 04	Participation Participation Participation Participation
12	M Rohith Kumar Reddy	INH19EE066	VI	Wrestling	Wrestling		7 th To 13 th March 2022	Aiu	07	Participation
13	Sharath N	INH20EE100	IV	Tug Of War	Tug Of War		6 th & 7 th June 2022	Vtu(Bmsce)	02	Winners
14	Vijay Meti	INH20EE410	VI	Tug Of War	Tug Of War		6 th & 7 th June 2022	Vtu(Bmsce)	02	Winners
15	Varan Sham Kumar K S	INH18EE753	VIII	Chess	Chess		22 nd & 23 rd June 2022	Vtu (Toce)	02	Participation
16	Yashwanth S	INH20EE127	IV	Chess	Chess		22 nd & 23 rd June 2022	Vtu (Toce)	02	Participation
17	Darshan Suresh Shetty	INH20EE028	IV	Kho-Kho Athletics	Kho-Kho Athletics		17 th & 18 th June 2022 27 th To 30 th June 2022	Vtu(Bmsce) Vtu(Sjcit)	02 04	Participation Participation
18	Vikash Rawat	INH20EE120	IV	Athletics (Long Jump)	Athletics (Long Jump)		27 th To 30 th June 2022	Vtu(Sjcit)	04	Gold Medal

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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)	25 th Jan To 3 rd Feb 2020 10 th To 15 th Feb 2020 22 nd To 24 th Feb 2020 28 th & 29 th Feb 2020	Malleswaram Cup Spiel Rvce Devadan Cup	10 06 03 02	Participation Participation Participation Winners
2	Monideepa Rana	1NH16EE034	VIII	Basketball (W)	25 th Jan To 3 rd Feb 2020 10 th To 15 th Feb 2020 22 nd To 24 th Feb 2020	Malleswaram Cup Spiel Rvce	10 06 03	3 rd Place Runners Winners
3	Himagani Mishra	1NH17EE715	VI	Basketball (W)	25 th Jan To 3 rd Feb 2020 10 th To 15 th Feb 2020 22 nd To 24 th Feb 2020	Malleswaram Cup Spiel Rvce	10 06 03	3 rd Place Runners Winners
4	Pranav R	1NH18EE735	IV	Volleyball (M)	1 st And 2 nd Feb 2020 23 rd And 24 th Feb 2020 28 th And 28 th Feb 2020 5 th And 6 th Mar 2020 9 th And 1 st Mar 2020	Umang Rvce Cufee Vtu (Bez) Vtu (Iz)	02 02 02 02 02	Runners Runners Participation Runners Ii Runners
5	Rishabh Yadav	1NH17EE742	VI	Football	22 nd To 24 th Feb 2020 27 th To 29 th Feb 2020	Rvce Cufee	03 03	Participation Participation
6	Chandan N	1NH18EE711	IV	Cricket	14 th , 15 th 20 th 23 rd Feb 2020 16 th To 19 th Feb 2020 11 th To 20 th Mar 2020	Cufee Rvce Vtu	04 04 02	Participation Participation Participation
7	Ponnappa M M	1NH18EE040	IV	Cricket	14 th , 15 th 20 th 23 rd Feb 2020 16 th To 19 th Feb 2020 11 th To 20 th Mar 2020	Cufee Rvce Vtu	04 04 02	Participation Participation Participation

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8	Md Omer Ali	1NH18EE031	IV	Cricket	14 th , 15 th , 20 th , 23 rd Feb 2020 16 th To 19 th Feb 2020 11 th To 20 th Mar 2020	Cufee Rvce Vtu	04 04 02	Participation Participation Participation
9	C Bhavana Singh	1NH18EE710	IV	Volleyball (W)	13 th To 15 th Mar 2020	Vtu(Bcz)	03	2 nd Runner Up
10	Meghanaa I L (Played Nationals)	1NH17EE724	V1	Hockey (W)	16 th To 23 rd Jan 2020 23 rd Jan To 2 nd Feb 2020	Camp Hiswnc	08 11	Participation Participation
11	Girish N	1NH16EE019	VIII	Handball	24 th & 25 th Feb 2020 28 th & 29 th Feb 2020	Basavangudi Cufee	02 02	Participation Runners
12	Nithish V	1NH16EE039	VIII	Handball	24 th & 25 th Feb 2020 28 th & 29 th Feb 2020	Basavangudi Cufee	02 02	Participation Runners

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Glimpses of Extra Curricular Activities



Figure: 4.5.3.4 Glimpses of Extra Curricular Activities

Mr. M Rohith Kumar Reddy with usn: INH19EE066 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 Self Assessment Report (SAR)

CRITERION 5	FACULTY INFORMATION AND CONTRIBUTIONS	200
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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 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

Criterion-5 Self Assessment Report (SAR)

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. Sumil 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

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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

Criterion-5 Self Assessment Report (SAR)

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

Criterion-5 Self Assessment Report (SAR)

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

Criterion-5 Self Assessment Report (SAR)

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

Criterion-5 Self Assessment Report (SAR)



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 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

Criterion-5 Self Assessment Report (SAR)

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. Sumil S K	M.Tech	Visvesvaraya Technological University, Belagavi	2010	No	Sr. Assistant Professor	-	25.7.2016	EEE	Power System Engineering	2	-	-	Y	Regular

Criterion-5 Self Assessment Report (SAR)

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 mentioned below:

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 = $1/9 \times$ 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 = $2/9 \times$ 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 = $6/9 \times$ 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

$$\text{Cadre Ratio} = \left(\left(\frac{AF1}{RF1} + \frac{AF2}{RF2} * 0.6 + \frac{AF3}{RF3} * 0.4 \right) \right) * 10$$

$$\text{Cadre Ratio Marks} = ((2.33/2) + (5.33/4) * 0.6 + (16/12) * 0.4) * 10$$

$$= 24.97 \text{ (limited to 20)}$$

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;

$$\text{Cadre proportion marks} = (1+0.6+0.4) \times 10 = 20$$

- Case 2: AF1/RF1= 1; AF2/RF2 = 3/2; AF3/RF3 = 5/6;

$$\text{Cadre proportion marks} = (1+0.9+0.3) \times 10 = \text{limited to 20}$$

- Case 3: AF1/RF1=0; AF2/RF2=1/2; AF3/RF3=8/6;

$$\text{Cadre proportion marks} = (0+0.3+0.53) \times 10 = 8.3$$

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 CAYm2 as base year	10
>=75% of required Faculty members retained during the period of assessment keeping CAYm2 as base year	08
>= 60% of required Faculty members retained during the period of assessment keeping CAYm2 as base year	06
>= 50% of required Faculty members retained during the period of assessment keeping CAYm2 as base year	04
< 50% of required Faculty members retained during the period of assessment keeping CAYm2 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 and competencies.)

- 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.

FACULTY COMPETENCIES IN CORRELATION TO SPECIALIZATION

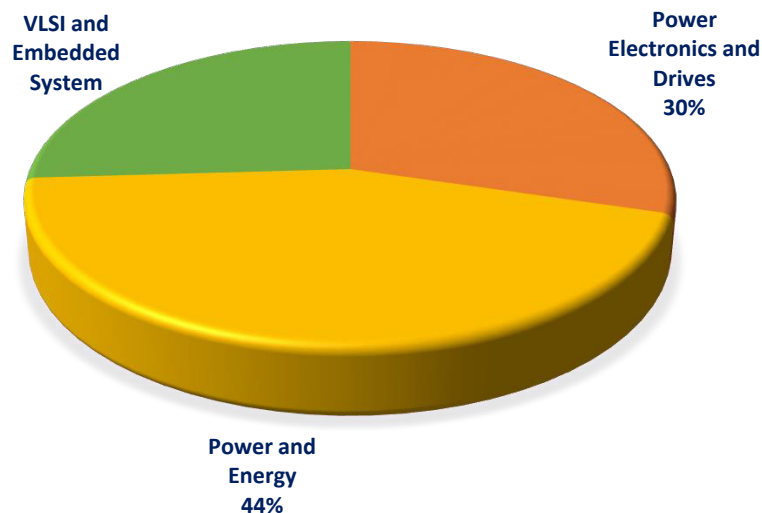


Figure B. 5.5.1 Faculty competencies in correlation to Specialization

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	<ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> 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

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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	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	-	-	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 PMLDC motor drive for electric vehicle applications	January 2022	-	-	1	25	Scopus & SCI	Journal
9	Ms. Karthika M	A comparative analysis of torque ripple reduction techniques for sensor BLDC drive	March 2022	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	13	2	783	791	Scopus	Journal

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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	1175 24	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	1014 70	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	1072 94	1	16	Scopus & SCI	Journal
14	Dr. Agalya V	CPRO: Competitive Poor and Rich Optimizer-Enabled Deep Learning Model and Holocentropy 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

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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

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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

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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 2022 2nd	-	-	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	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

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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 (TEENGs) 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

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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

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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. Vinod 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 scrutiny	July 2021	Design, Applications, and Maintenance of Cyber-Physical Systems	-	-	219	243	Scopus	Book Chapter

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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

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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 to ionic 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

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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

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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

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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

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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 encryption	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

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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

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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.Re s.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 (FFA)	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

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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 tapdole 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

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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

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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

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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

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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

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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 Explorer	-	-	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 Explorer	-	-	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

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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

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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 scrutiny Artificial Intelligence-Based Energy Management and Real-Time Optimization in Electric and Hybrid Electric Vehicles	2021	9781799867210	IGI Global
6	Dr. Vinoth Kumar K	EAI/Springer Innovations in Communication and Computing	Management and Real-Time Optimization in Electric and Hybrid Electric Vehicles	2022	978-3-030-85423-2	Springer

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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 (ICCT 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

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Table B. 5.5.4 Faculty competencies in correlation to the courses

Sl. No	Name of the Faculty	Competency	E- Content Web Links
1.	Mr. Vinod Kumar S	Industrial Automation	https://youtu.be/77MjwF1xOVM
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/19Fd8JoTSwE
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_sbOEpmk
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/77MjwF1xOVM
13.	Ms. Karthika M	DC Machines and Transformers	https://youtu.be/yInLTGkYVfI
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/202016 1728 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 Dollu 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- 1/16618/202 3-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 Beginners 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 Beginners	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 (ICPCS-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 (ICPCS-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 (ICPCS-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 (ICPCS-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

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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

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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. Sumil 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 (ICMNNWC)	03.12.2021 to 04.12.2021	Sri Siddhartha Institute of Technology, Tumkur

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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

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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

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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

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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	<p>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.</p>  <p style="text-align: center;">Fig. 5.6.1 Smart Board</p>  <p style="text-align: center;">Fig.5.6.2 Sample image of classroom with smart board</p>
2.	Theory cum laboratory courses	<p>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.</p>
3.	Online courses	<p>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.</p>
4.	Google classroom	<p>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</p>

		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	<ul style="list-style-type: none"> • Schneider Electric Indo-French Centre of Excellence in Electricity, Automation and Energy • Capgemini 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

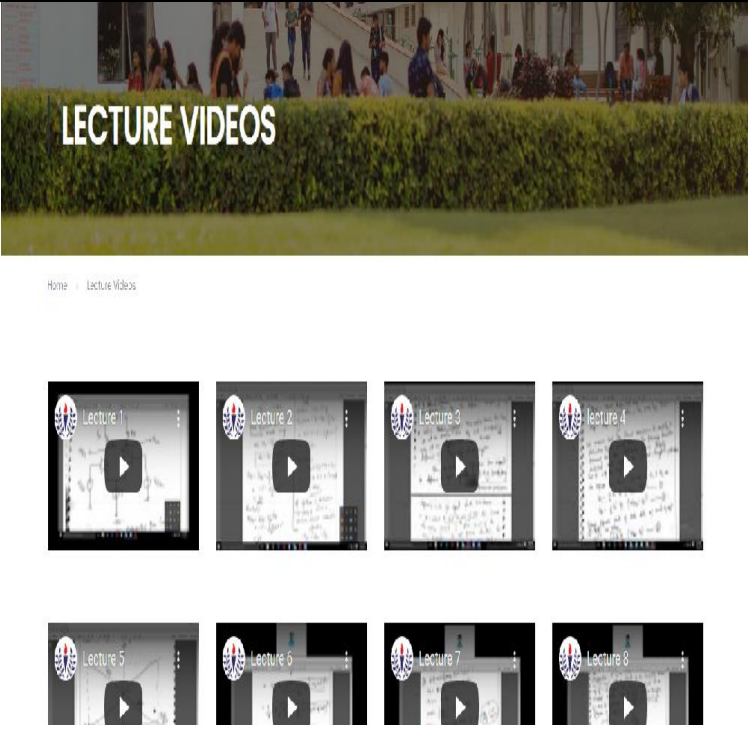

13.	Nodal centre for E-Learning	IIRS Outreach Programme, MHRD-IIC
14.	Lecture Videos	 <p>Home - Lecture Videos</p> <p>Fig. 5.6.3 Sample screen shot of the Lecture Videos in the website</p>
15.	Digital Library	 <p>Fig 5.6.4 A sample screen shot of the Digital Library link</p>

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 for participation
- 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	CAY m2	CAY m3
		(21-22)	(20-21)	(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

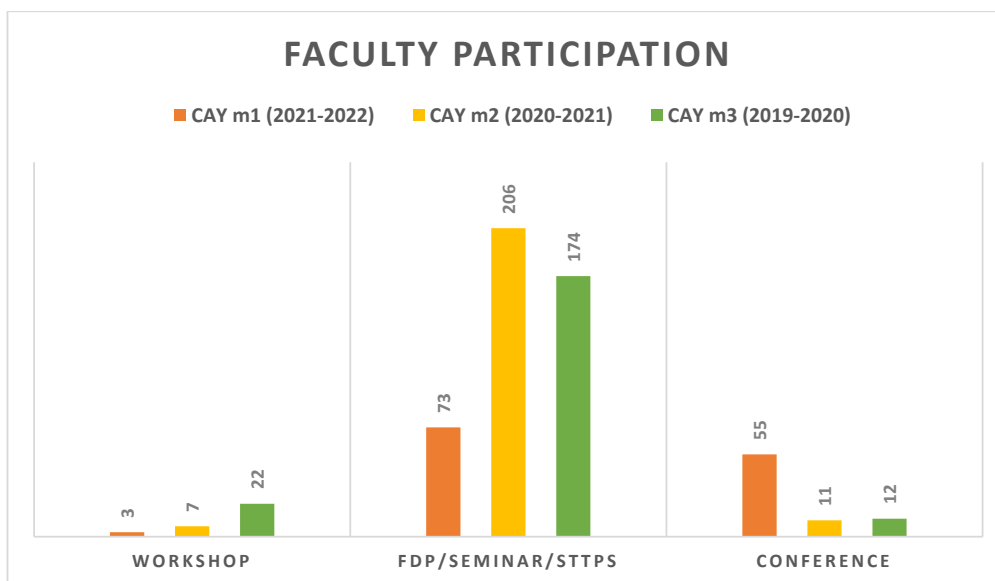


Figure B.5.7.1 Consolidated Count of Faculty Participations

5.8 Research and Development:

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 Chapters etc. (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

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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	11033	1	20	Scopus & SCI	Journal	https://doi.org/10.1016/j.measurement.2021.110333

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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

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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	11752 ₄	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	10147 ₀	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	10729 ₄	1	16	Scopus & SCI	Journal	https://doi.org/10.1016/j.asoc.2021.107294

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		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

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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

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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	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

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28	Dr. Vinoth Kumar K Mr. Muniaprakash T	A Review on Optimization Techniques of Charging the Battery in EV	March 2022	International Conference on Artificial Intelligence and Smart Systems 2022 2nd	-	-	1	5	Scopus	Conference	https://doi.org/10.1109/ICAIS53314.2022.9743126
29	Dr. Vinoth Kumar K Mr. Muniaprakash T	A review on optimization techniques of battery charging in electric vehicles	April 2022	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

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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 2021	-	-	1	5	Scopus	Conference	https://doi.org/10.1109/iPACT52855.2021.9696545
35	Dr. Vinoth Kumar K	A Review on Triboelectric Nanogenerators (TENGs) using Internet of Things	December 2021	International Conference on Forensics, Big Analytics, Big Data, Security (FABS) 2021	-	-	1	5	Scopus	Conference	https://doi.org/10.1109/FABS52071.2021.9702612

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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/iPACT52855.2021.9696545
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 2022	-	-	1	6	Scopus	Conference	https://doi.org/10.1109/iPACT52855.2021.9696752
39	Dr. Prabhakaran N	A survey on smart traffic control system for emerging vehicles	January 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

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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/ICES54183.2022.9835883
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/TECCON54414.2022.9854819

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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 scrutiny	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

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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 CA1m2 (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	Impress	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	Impress	NA	1	5	Scopus & SCI	Journal	https://doi.org/10.1080/01430750.2021.1953591
3	Dr. Arangarajan Vinayagam	The Effect of Interfacial Zone Due to ionic 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

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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	Inpres	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

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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 Engineering and Technology	9	1	53	60	Refereed	Journal	https://ijrset.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://ijrset.com/paper/6995.pdf

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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

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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. Sumil 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

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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 encryption	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

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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 An Overview and Advancement of Electricity Peak Load Saving Methods: A Review	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 CAIYm3 (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_Control_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/jetpg.2018.5053

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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.ijitce.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.jardes.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.jardes.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.ijitce.org/portfolioitem/K16040981119/

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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 sky scraper 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.ijgenng.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

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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://ijcdps.com/wp-content/uploads/2019/07/Speed-Control-of-Single-Phase-Induction-Motor-Using-ACChopper-by-Asymmetrical-PWM-.pdf
17	Dr. Gunapriya B Mr. Litesh J	Lab View 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 Computer Science, Engineering and Information Technology	7	2	223	232	Refereed	Journal	https://doi.org/10.32628/IJSRSET207241

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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	-	-	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	Refereed	Journal	https://ikpress.org/index.php/AJOER/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	Refereed	Journal	http://ijiset.com/vol6/v6s10/IJISSET_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	Refereed	Journal	https://ijsrcseit.com/paper/CSEIT1949192.pdf

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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

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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

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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.ikpress.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 Explorer	-	-	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 Explorer	-	-	1	6	Scopus	Conference	https://doi.org/10.1109/iPACT44901.2019.8960185

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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 scrutiny	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

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7	Dr. Singaravelan A Dr. Gunapriya B	Lecture Notes on Data Engineering and Communications Technologies	Sensorless Speed Control of BLDC Motor for EV Applications Smart Home Technologies Toward SMART (Specific, Measurable, Achievable, Realistic, and Timely) Outlook	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.lapublishing.com/catalog/details/store/tr/book/978-620-2-68039-4/model-based-design-of-power-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-electronicsinstrumentationengeneering/basic-electrical-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 data	2014	Visvesvaraya Technological University, Belagavi	2020
2.	Dr. Mohan Das R	Dr.E.Chandrasekaran 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 2023 International 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

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					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	Siddhartha Institute of Engineering and Technology, Puttur

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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 (VICFNT-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

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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

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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 ICRPHIGRES – 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 College 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, Vellore
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

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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	BEHII0gAAAAJ	3	1	0
6	Dr. Gunapriya B	ABC-4746-2020	4fxtOlcAAAAJ	232	9	9
7	Dr. Mohan Das R	ABB-6048-	rKWa-flAAAAJ	44	2	1

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		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	8JLQFAAAAAJ	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

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	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

Sl. 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 YannamRoopeeswar 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 Gautam 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



Sl. 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

Sl. 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	<p>Adjustable Antifall Multipurpose Table</p> <p>Design Number: 380114-001</p> <p>Date of Registration: 25/02/2023</p> <p>Design Patent The Patent Office Journal No. 16/2023 Dated 21/04/2023</p>	Dr. Agalya V Professor	
4	<p>A foldable television remote</p> <p>Design Number: 33043-001</p> <p>Date of Registration: 13.02.2021</p> <p>Design Patent The Patent Office Journal No. 03/2023 Dated 20/01/2023</p>	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

<p>Digital Library is provided in the Central Library where students can access all kinds of e-journals</p>	<p>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/</p>
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- 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 Energy



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

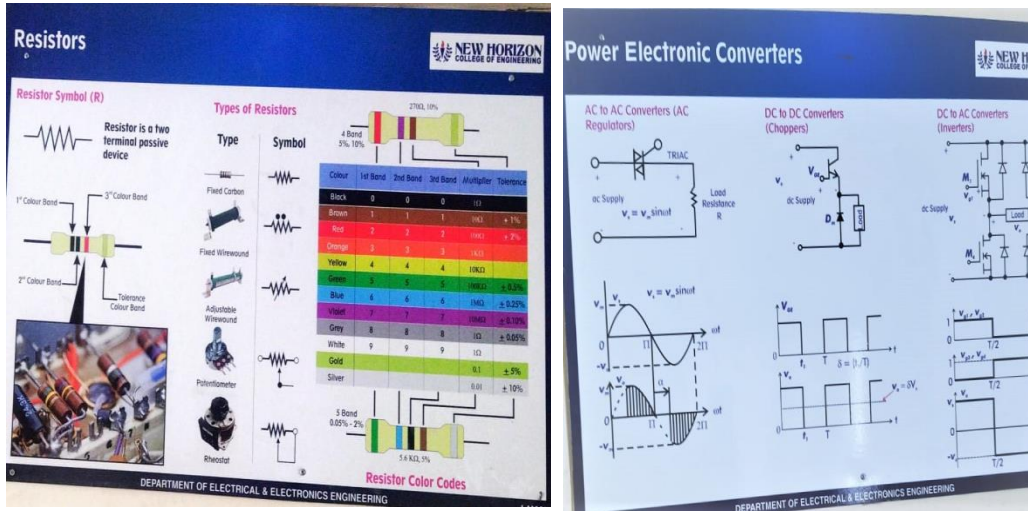


Figure 5.8.3 iv).a Analog Electronics Circuits Laboratory Charts

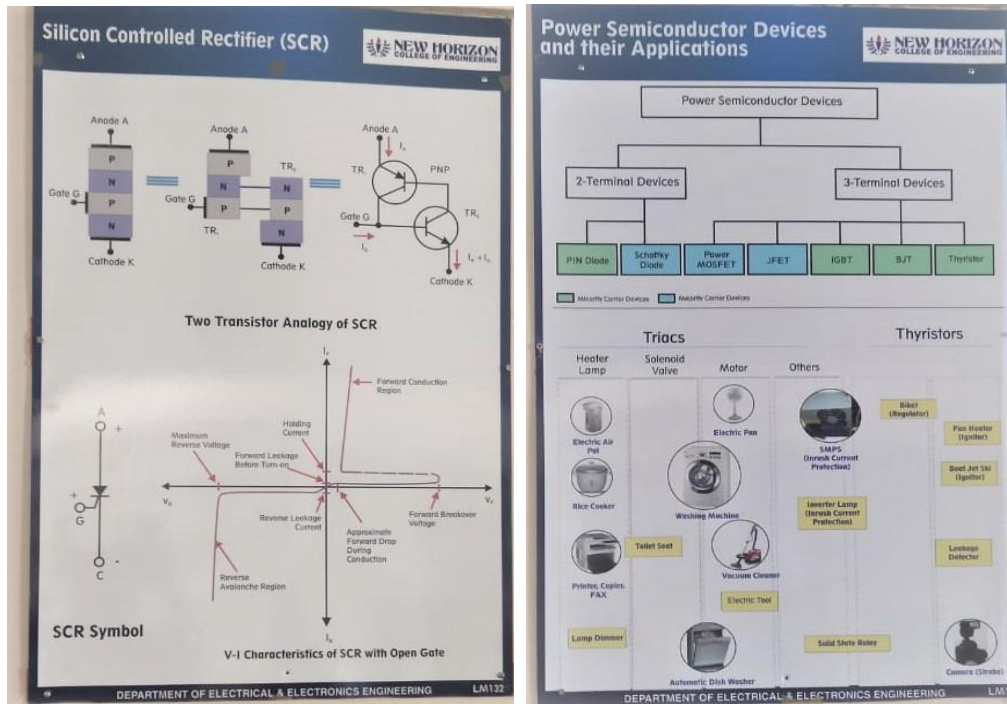


Figure 5.8.3 iv).b Power Electronics Laboratory Charts

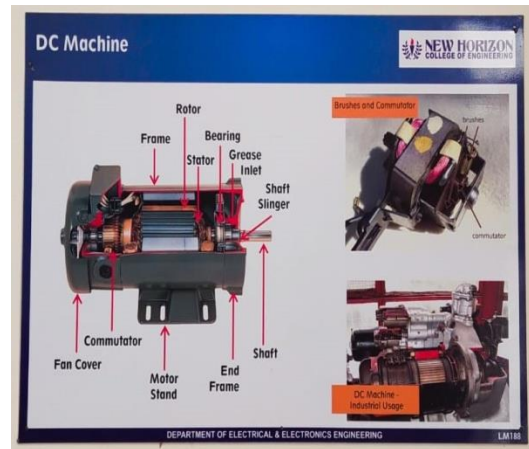


Figure 5.8.3 iv).c Electrical Machines Laboratory Charts

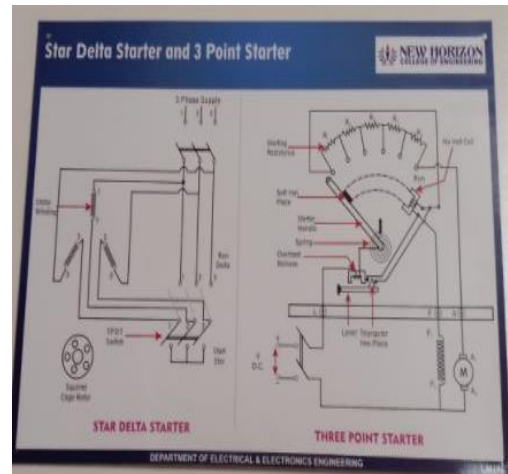
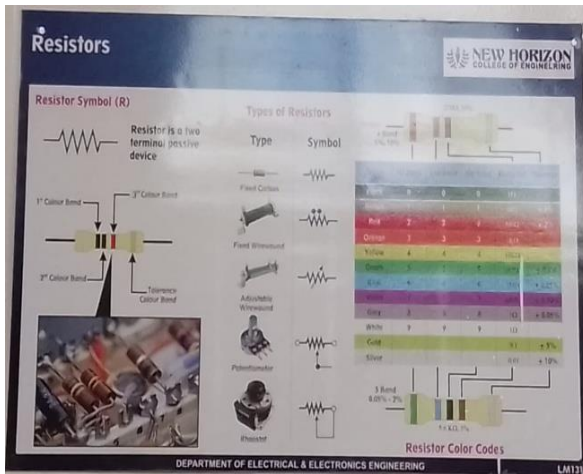


Figure 5.8.3 iv).d Basic Electrical and Electronics Engineering Laboratory Charts

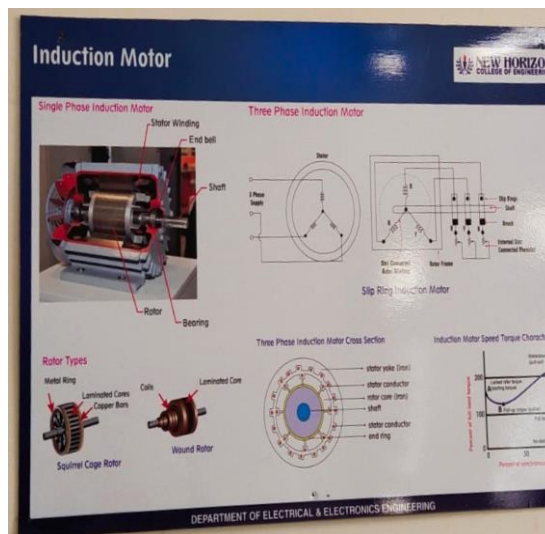
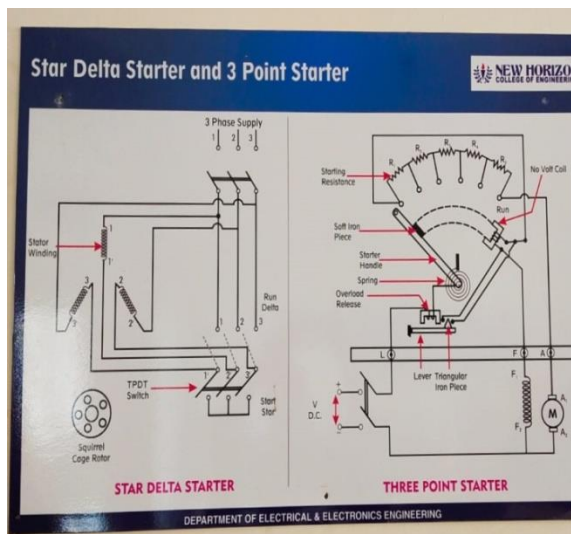


Figure 5.8.3 iv).e Electrical Machines Laboratory Charts

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 are following:

- a. Assess and promote excellence in the teaching/learning process.
- b. Meet the educational needs of students and community by continually
- 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 growth and development.

Criterion-5 Self Assessment Report (SAR)

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 as 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 APPRAISAL: TEACHING 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: <input type="text"/>
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: <input type="text"/>

(PART 'B')

Academic Duties and responsibilities assigned				
	Subject Assigned	No. of Classes Planned	No. of Classes Conducted	Remarks
ODD Semester Theory				

Criterion-5 Self Assessment Report (SAR)



	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 No file chosen

Attach Document 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 on 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, 6 th 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, 6 th 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
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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 μ Vision, 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	<ul style="list-style-type: none"> ➤ 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	<ul style="list-style-type: none"> ➤ 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	<ul style="list-style-type: none"> ➤ 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

Criterion-5 Self Assessment Report (SAR)

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	<ul style="list-style-type: none"> ➤ Desktop Computers ➤ 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	<ul style="list-style-type: none"> ➤ 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

Criterion-5 Self Assessment Report (SAR)

Table 6.1b: Adequate and well equipped laboratories, and technical manpower (Odd 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) 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	<ul style="list-style-type: none"> ➤ 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	<ul style="list-style-type: none"> ➤ 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	<ul style="list-style-type: none"> ➤ 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	<ul style="list-style-type: none"> ➤ 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	<ul style="list-style-type: none"> ➤ 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	<ul style="list-style-type: none"> ➤ 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

Table 6.1.1c 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	<ol style="list-style-type: none"> MATLAB Mi Power Unity Pro Vijeo Designer Building Automation 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	<ol style="list-style-type: none"> Unity Pro Vijeo Designer Building Expert SCADA FX-Net DNS 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	<ol style="list-style-type: none"> Solar PV Installation Electrical AutoCAD Certificate Course in Management & Leadership Training and certification programme on Robotics based Automation ORCAD 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

Criterion-5 Self Assessment Report (SAR)

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

Criterion-5 Self Assessment Report (SAR)

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

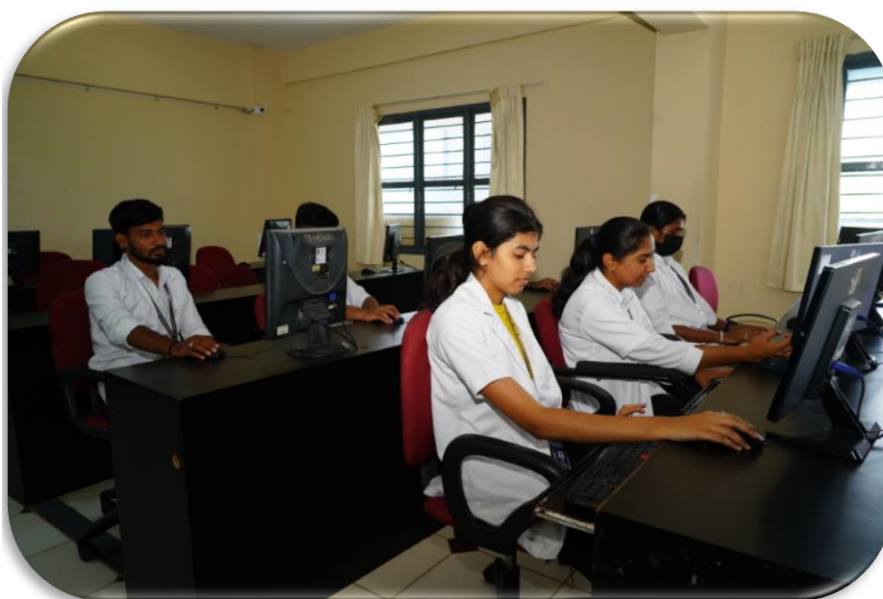


Figure 6.4 –Power System Analysis Laboratory



Figure 6.5 –Power Electronics Laboratory



Figure 6.6 – Analog & Linear Integrated Circuit Laboratory



Figure 6.7 –DC Machines and Transformers Laboratory

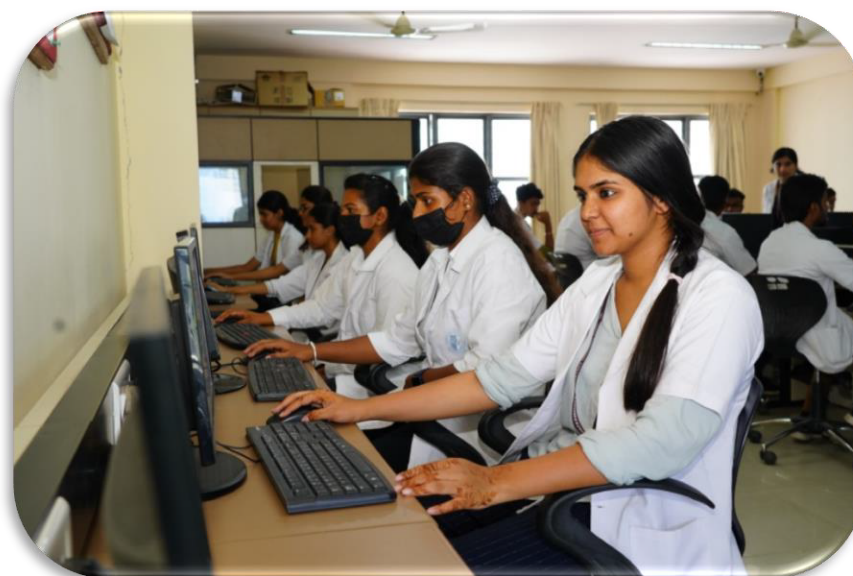


Figure 6.8 – Electric Circuit Theory Laboratory

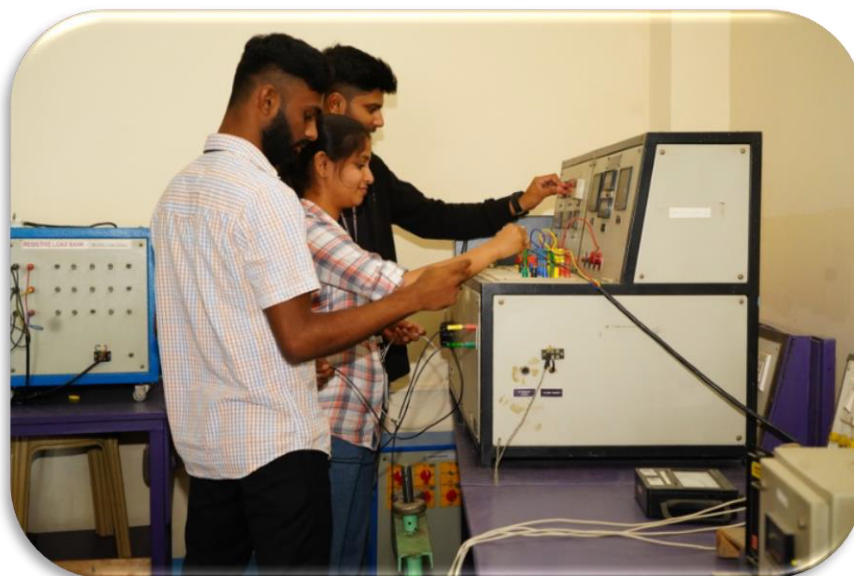


Figure 6.9 - Relay and HVE Laboratory



Figure 6.10: Simulation tools for Electrical Engineering Laboratory



Figure 6.11: Basic Industrial Laboratory



Figure 6.12: Advanced Industrial and Building Automation Laboratory

Criterion-5 Self Assessment Report (SAR)

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.
2	Mr. G.S. Siddalingeswara Swamy	Lab Instructor	I.T.I, (Diploma)	Exclusive	Synchronous and Induction Machines Laboratory & DC Machines and Transformers Laboratory	3. Maintaining log books & Attendance register with lab manuals. 4. Initiating necessary steps to maintain cleanliness in the lab.
3	Mr. Venkatesha.S	Lab Instructor	Diploma, B.E	Exclusive	Analog and Linear Integrated Circuits Laboratory & Microcontroller and Embedded Systems Laboratory	5. Guiding of students regarding the proper usage of equipment. 6. Ensuring safety rules in the labs.
4	Mr. Megha Sandesh.B.P	Lab Instructor	Diploma, B.E	Exclusive	Simulation tools for Electrical Engineering Laboratory & Power System Analysis Laboratory	7. To maintain discipline in the lab including checking of Identity cards of the students.
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.

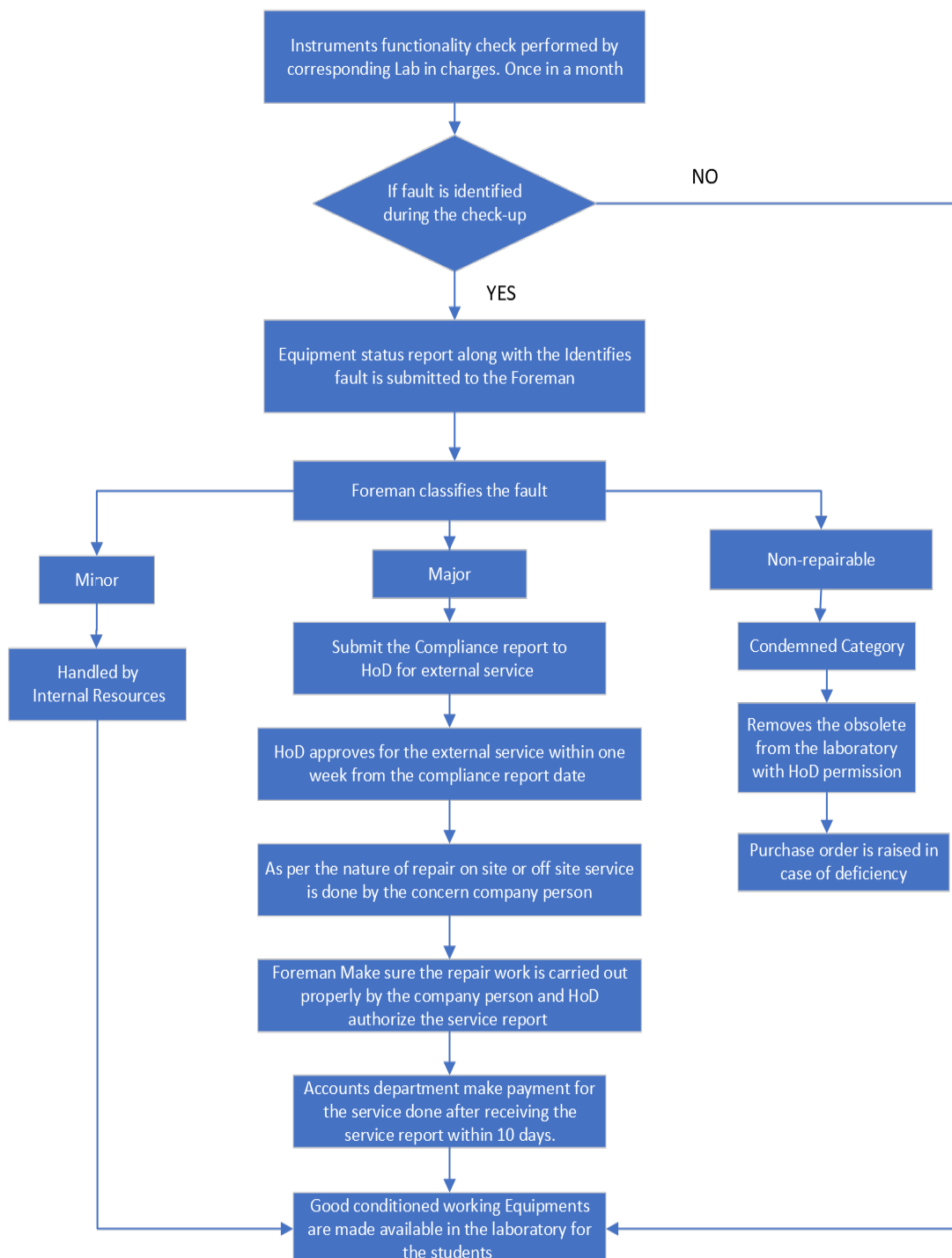
Breakdown Maintenance

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

Criterion-5 Self Assessment Report (SAR)

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
2	Synchronous and Induction Machines Laboratory/ DC Machines and Transformers Laboratory	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
		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

Criterion-5 Self Assessment Report (SAR)

5	Power Electronics Laboratory	<p>First Aid Box and Fire Extinguisher are available in the laboratory</p> <p>All electrical wires are protected by MCB, RCBO and Fuses</p> <p>Periodical servicing of the lab equipment.</p> <p>The laboratory instructions/guidelines are displayed in the laboratory</p> <p>Do's and Don'ts board</p> <p>Maintain a clean and organized laboratory.</p> <p>Suitable storage area</p>
6	Electric Circuit Theory Laboratory	<p>First Aid Box and Fire Extinguisher are available in the laboratory</p> <p>All electrical wires are protected by MCB, RCBO and Fuses</p> <p>Computer systems are configured with the latest updates of software</p> <p>Periodical servicing of the lab equipment and computers</p> <p>Trainer kits are equipped with correct fuses ratings and are calibrated.</p> <p>The laboratory instructions/guidelines are displayed in the laboratory</p> <p>Maintain a clean and organized laboratory.</p> <p>Do's and Don'ts board</p> <p>Suitable storage area</p>
7	Relay and High Voltage Engineering Laboratory	<p>First Aid Box and Fire Extinguisher are available in the laboratory</p> <p>All electrical wires are protected by MCB, RCBO and Fuses</p> <p>Periodical servicing of the lab equipment and computers</p> <p>Interfacing modules are calibrated.</p> <p>The laboratory instructions/guidelines are displayed in the laboratory</p> <p>Do's and Don'ts board, Maintain a clean and organized laboratory and Suitable storage area</p> <p>First Aid Box and Fire Extinguisher are available in the laboratory</p> <p>All electrical wires are protected by MCB, RCBO and Fuses</p> <p>Computer systems are configured with the latest updates of software.</p>
8	Basic Industrial Automation Laboratory / Advanced Industrial and Building Automation Laboratory	<p>Periodical servicing of the lab equipment and computers</p> <p>Do's and Don'ts board</p> <p>Cell phones usages are prohibited.</p> <p>Maintain a clean and organized laboratory.</p> <p>Suitable storage area</p>

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 (10)

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

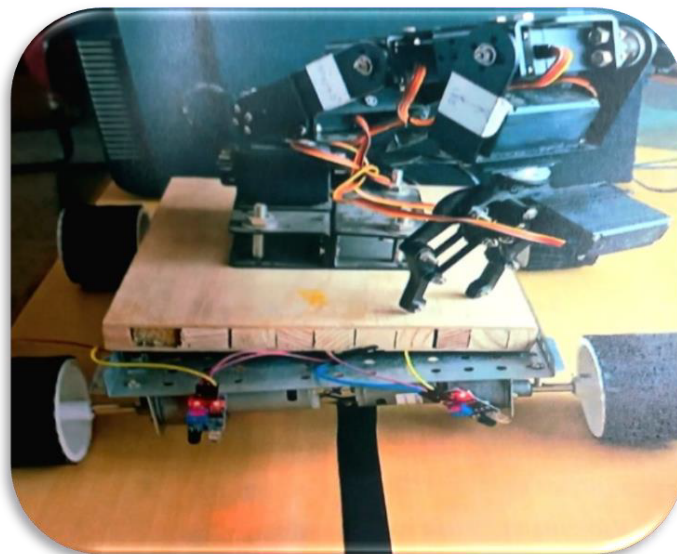


Figure – 6.23- Implementation and design of Cobots in Floriculture

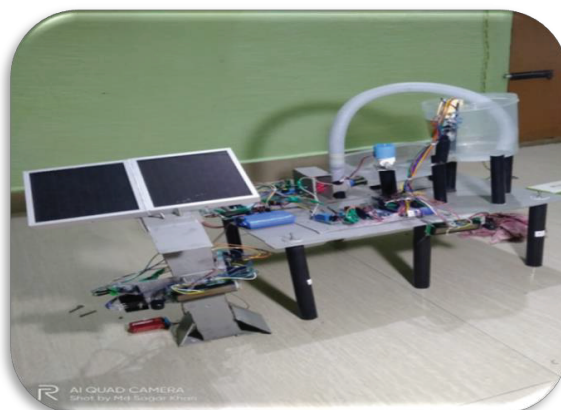


Figure – 6.24- Solar based energy efficient hybrid SLBLDC motor for Agriculture



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
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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	<ul style="list-style-type: none"> ➤ 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.			

<p>Action 2: Bridge courses were conducted before the semester beginning for 1st year subjects.</p> <p>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.</p> <p>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.</p>			
<p>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.</p>			
PO2	2.6	2.85	<ul style="list-style-type: none"> ➤ Target is achieved. ➤ Enhanced ability to analyse the assigned problems is desirable ➤ The following actions were taken to enhance the target level.
<p>Action 1: Incorporation of more numerical problems during their regular lectures</p> <p>Action 2: Coaching classes were conducted for numerical subjects beyond the regular planned classes</p> <p>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.</p> <p>Action 4: In Signal and Systems (20EEE54) tutorial sessions were taken for the application of theory to real life problem.</p>			
<p>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.</p>			
PO3	2.6	2.83	<ul style="list-style-type: none"> ➤ Target is achieved. ➤ Design solutions for Engineering problems ➤ The following actions were taken to enhance the target level.
<p>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.</p> <p>Action 2: In Electronics devices and Circuit (19EEE33) and Linear Integrated circuits (19EEE46), Assignments were given to students to solve real field design problems.</p> <p>Action 3: The remedial sessions were arranged to enhance the performance of the students in Signals & Systems (20EEE54) and Control Systems (20EEE52) courses.</p>			
<p>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.</p>			

PO4	2.6	2.79	<ul style="list-style-type: none"> ➤ Target is achieved. ➤ Better exposure on Complex problem analysis ➤ The following actions were taken to enhance the target level.
<p>Action 1: Several workshops were conducted on the Embedded system and microcontroller lab experiments.</p> <p>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</p> <p>Action 3: Research based complex problems were given as assignment in Power Electronics (20EEE62), Signals & System (20EEE54), to improve practical skills of the students.</p> <p>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.</p>			
<p>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.</p>			
PO5	2.6	2.82	<ul style="list-style-type: none"> ➤ Target is achieved. ➤ Usage of additional software’s latest testing equipment ➤ The following actions were taken to enhance the target level.
<p>Action 1: Complex design problem using modern tool were given as assignment to the students in Power System analysis (20EEE61).</p> <p>Action 2: Workshops were conducted on several Electrical and Electronics engineering software like MATLAB, MI POWER.</p> <p>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.</p> <p>Action 4: ECOSTRUXURE TRANSFORMER an Expert lecture from Schneider Electric has been conducted.</p>			
<p>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.</p>			
PO6	2.6	2.56	<p>Target is not achieved. The following actions were taken to enhance the target level.</p>
<p>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</p>			

<p>through clubs to inculcate a strong sense of responsibility among the budding student engineers.</p> <p>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.</p>			
<p>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.</p>			
PO7	2.6	2.76	Target is achieved. The following actions were taken to enhance the target level.
<p>Action 1: Short video were presented to instil sense of responsibility among the students and also to promote sustainable environment.</p> <p>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.</p> <p>Action 3: Proper guidance were given to the students to implement renewable energy projects using optimized material that would guarantee sustainable development.</p>			
<p>PO8: Ethics: Apply ethical principles and commit to professional ethics, responsibilities and norms of the engineering practice.</p>			
PO8	2.6	2.85	Target is achieved. The following actions were taken to enhance the target level.
<p>Action 1: Guest Lectures were arranged on topics related to professional ethics / value based education.</p> <p>Action 2: Online video links on ethical principles in Electrical subjects were shared to students.</p> <p>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.</p>			
<p>PO9: Individual and teamwork: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.</p>			
PO9	2.6	2.88	Target is achieved. The following actions were taken to enhance the target level.
<p>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.</p> <p>Action 2: Several students' professional chapter activities were organized to demonstrate their abilities as team members in a group.</p> <p>Action 3: Students were motivated to work in a team in project work/Internship.</p>			
<p>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.</p>			
PO10	2.6	2.87	Target is achieved. The following actions were taken to enhance the target level.

<p>Action 1: Students were given training to write effective reports and make effective presentations on projects undertaken.</p> <p>Action 2: Students were encouraged to participate in class room presentations and national/international conferences/seminars/symposia/Hackathon/Cisco Ideathon.</p> <p>Action 3: In Open Elective and professional elective courses, Students were encouraged to give effective self-study presentation on the given topic.</p> <p>Action 4: Guest Lectures were organized on personality development/Life skills/public speaking of the students.</p>			
<p>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.</p>			
PO11	2.6	2.52	<p>Target is not attained.</p> <p>Following actions were taken to enhance the target level.</p>
<p>Action 1: Students were encouraged to do multidisciplinary project involving allied departments.</p> <p>Action 2: Students were motivated to handle financial management during mini project, major project and club activities.</p> <p>Action 3: The importance of project and management is disseminated through awareness programs</p>			
<p>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.</p>			
PO12	2.6	2.80	<p>Target is achieved. The following actions were taken to enhance the target level.</p>
<p>Action 1: The recent technology like Electric Vehicle, Battery Management system in electric vehicle will be introduced to the students.</p> <p>Action 2: Students were motivated to take up NPTEL Certification on Python, VLSI related subjects.</p> <p>Action 3: Students were motivated to take up Industry oriented certification like MATLAB, Python.</p> <p>Action 4: Students were motivated to pursue higher studies in areas of Renewable energy, Electric Vehicle Technology in premier institution.</p>			

❖ PSOs Attainment Levels and Actions for improvement – CAY (2021-22)

PSOs	Target Level	Attainment Level	Observation
<p>PSO1: To demonstrate the ability to design and develop complex systems in the areas of Power system and Power electronics</p>			
PSO1	2.6	2.81	<p>Target is achieved. The following actions were taken to enhance the target level.</p>
<p>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.</p> <p>Action 2: Students were given design oriented activities in emerging fields of Electrical and Electronics engineering.</p> <p>Action 3: Students were encouraged to take up MOOC courses as part of Co-curricular activities.</p>			

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.
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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.

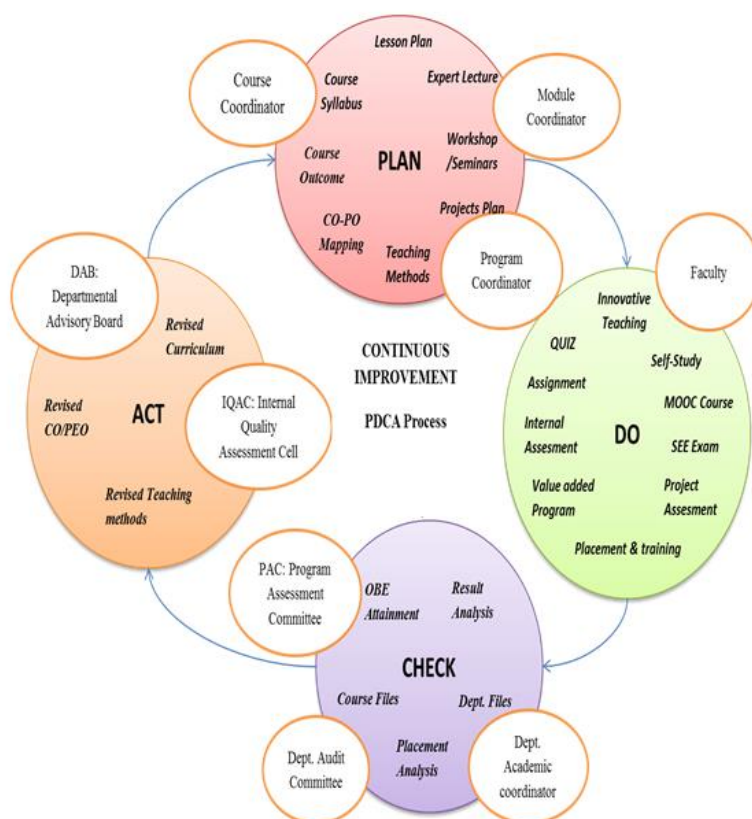


Fig 7.2.1 Academic Audit Process followed in EEE Department

Criterion-5 Self Assessment Report (SAR)

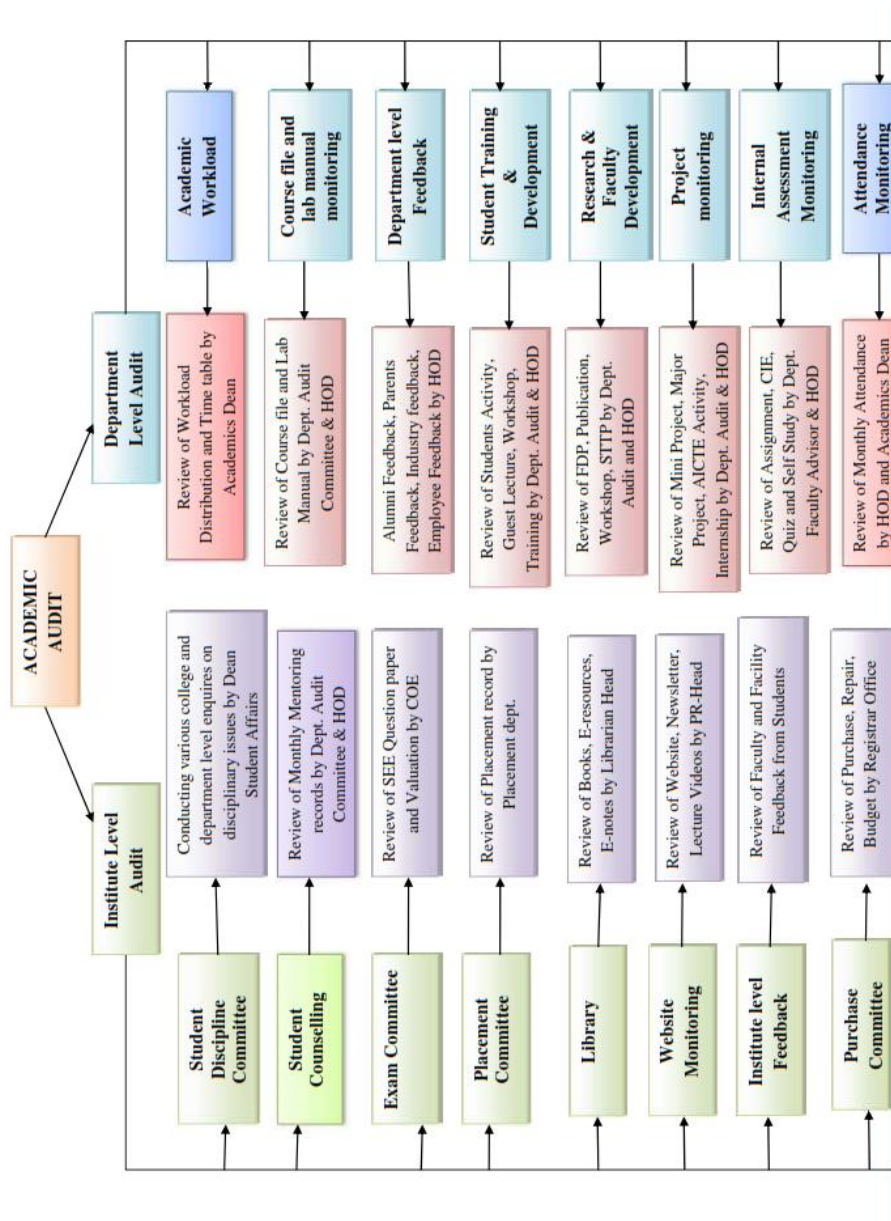


Fig 7.2.2 Audit Committee and Assessment Parameter Flow chart

Criterion-5 Self Assessment Report (SAR)

Department audit process flow chart is shown in the fig 7.2.3

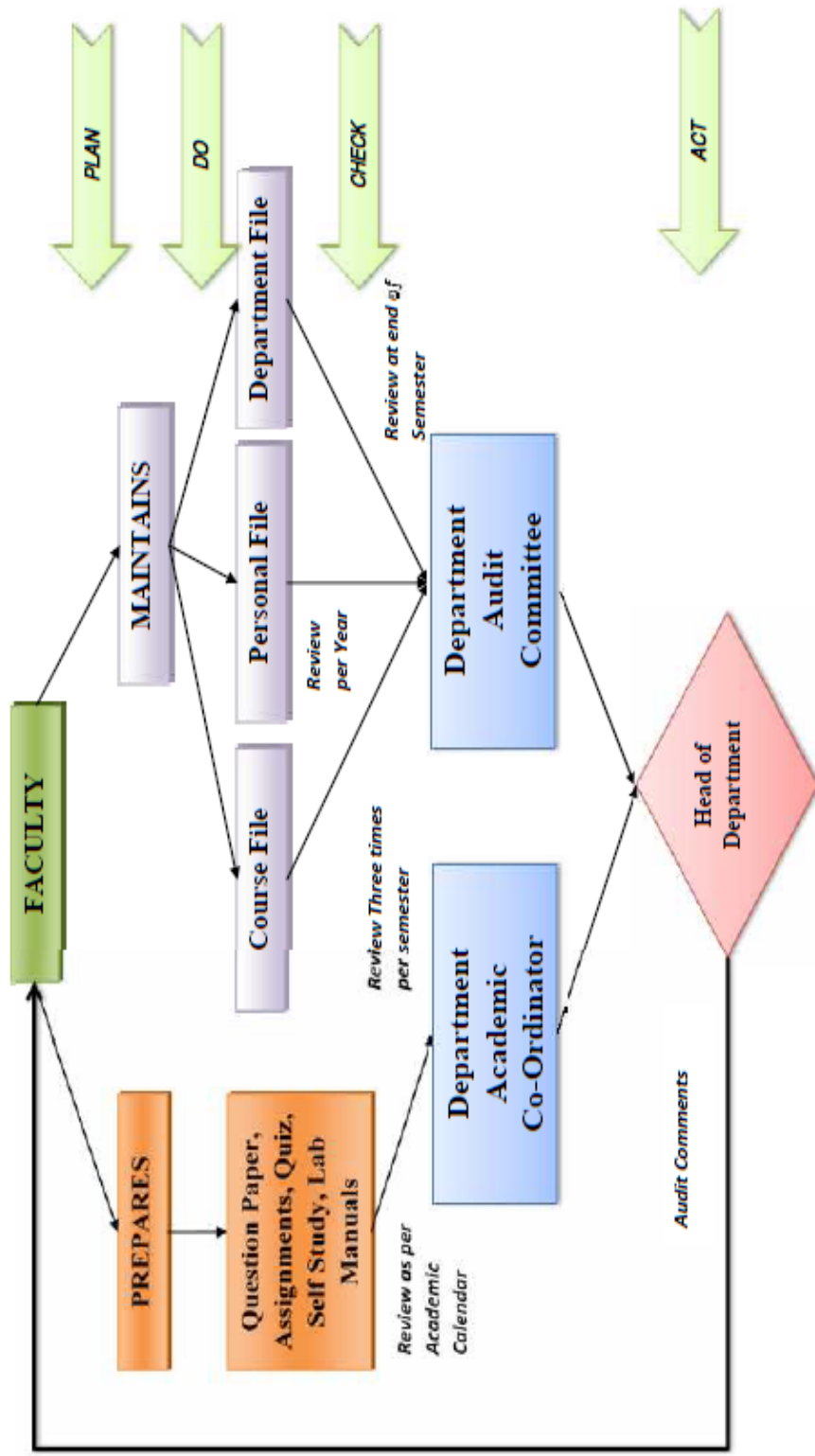


Fig 7.2.3 Department Audit Process flow chart

Criterion-5 Self Assessment Report (SAR)

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	<ol style="list-style-type: none"> 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	<ol style="list-style-type: none"> 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, coaching 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	<ol style="list-style-type: none"> 1. Verification of Master Attendance in Automation (Contineco 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

Criterion-5 Self Assessment Report (SAR)

			<p>students.</p> <ol style="list-style-type: none"> 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	<ol style="list-style-type: none"> 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

Criterion-5 Self Assessment Report (SAR)

			<p>10. Verifying CO-PO attainment by the individual subject.</p> <p>11. Listing of failures along with the corrective and actions taken report by subject faculty.</p> <p>12. Submitting of report to the Dean academics in the prescribed format.</p>	
5	Course file and lab manual monitoring	Monthly once	<p>1. Regular verification of course file by department Audit Committee.</p> <p>Course file particulars:</p> <ol style="list-style-type: none"> Calendar of Events Subject Allotment Time Table Syllabus Lesson Plan Attendance Register Assignment Questions Internal Question Paper and Scheme of Evaluation Internal Test Marks IA- Result Analysis & CAPA Report Previous Year Question Papers Special Class Records (if conducted) Teacher- Appraisal Feedback Exam Related Work <p>2. Verification of lab manuals with additional experiments by department Audit Committee. (Open ended.)</p> <p>3. Submission of audit finding report to the HOD in the prescribed format.</p>	Verification of reports by office of Dean Academics and HOD
6	Project monitoring	As per Academic Schedule	<p>1. Verification of All Mini and Major Project Titles and Batches of Students.</p> <p>2. Verification of all Internship and External Projects and their accompanying, progress reports.</p>	Verification of reports by office of Dean Academics and

Criterion-5 Self Assessment Report (SAR)

				HOD
7	Training & development	Monthly once	<ol style="list-style-type: none"> 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. <ol style="list-style-type: none"> 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	<ol style="list-style-type: none"> 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. 	

Criterion-5 Self Assessment Report (SAR)

			<ol style="list-style-type: none"> 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	<ol style="list-style-type: none"> 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	<ol style="list-style-type: none"> 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	<ol style="list-style-type: none"> 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

Criterion-5 Self Assessment Report (SAR)

			<p>4. Counselling the faculty to strengthen their performance.</p> <p>5. Preparing a consolidated department wise report.</p> <p>6. Submitting of report to the HOD in the prescribed format.</p> <p>1. Documenting and submitting of the following to the faculty adviser:</p> <p>a. Examination notices received from Dean Academics</p> <p>b. Circulars for students regarding Exam Fee Collection, the last date of fee collection, modalities of payments of fine</p> <p>c. Examination Time table, Invigilation duty chart, seating plans for the students</p> <p>d. Result analysis</p> <p>e. Disciplinary issues and corrective actions</p> <p>2. Scrutinize the SEE question papers and scheme of valuation, Number of paper set by external and internal examiners by the Board of Examiners.</p> <p>3. Maintaining of all records pertaining to Examinations by the Examination Cell.</p> <p>4. Addressing of grievances of administration, faculty, staff and students on all examination related issues.</p> <p>5. Reporting any issues and suggestions to Controller of Examination (COE) in the prescribed format.</p> <p>1. Recommending any new lab facilities setup to enhance the quality of the labs</p> <p>2. Reviewing the budget proposals for purchase of lab components, lab software, PC, printers and other lab equipment's.</p> <p>3. Updating the In-Out register, device calibration records, Lab components repair records</p> <p>4. Submitting the report to the office of registrar in the prescribed</p>	
4	Exam Committee	As per the academic calendar	<p>Verification by HOD & Controller of Examination (COE)</p>	
5	Purchase Committee	Once in a Year	<p>Verification of reports by HOD and office of registrar, QASDC</p>	

Criterion-5 Self Assessment Report (SAR)

			format	
6	Library	Once in a Year	<ol style="list-style-type: none"> 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. <ol style="list-style-type: none"> 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. 	Verification of reports by Head-Librarian
7	Placement Committee	As Required	<ol style="list-style-type: none"> 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 T&P cell
8	Website Monitoring	As Required	<ol style="list-style-type: none"> 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. Niranjana, 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.

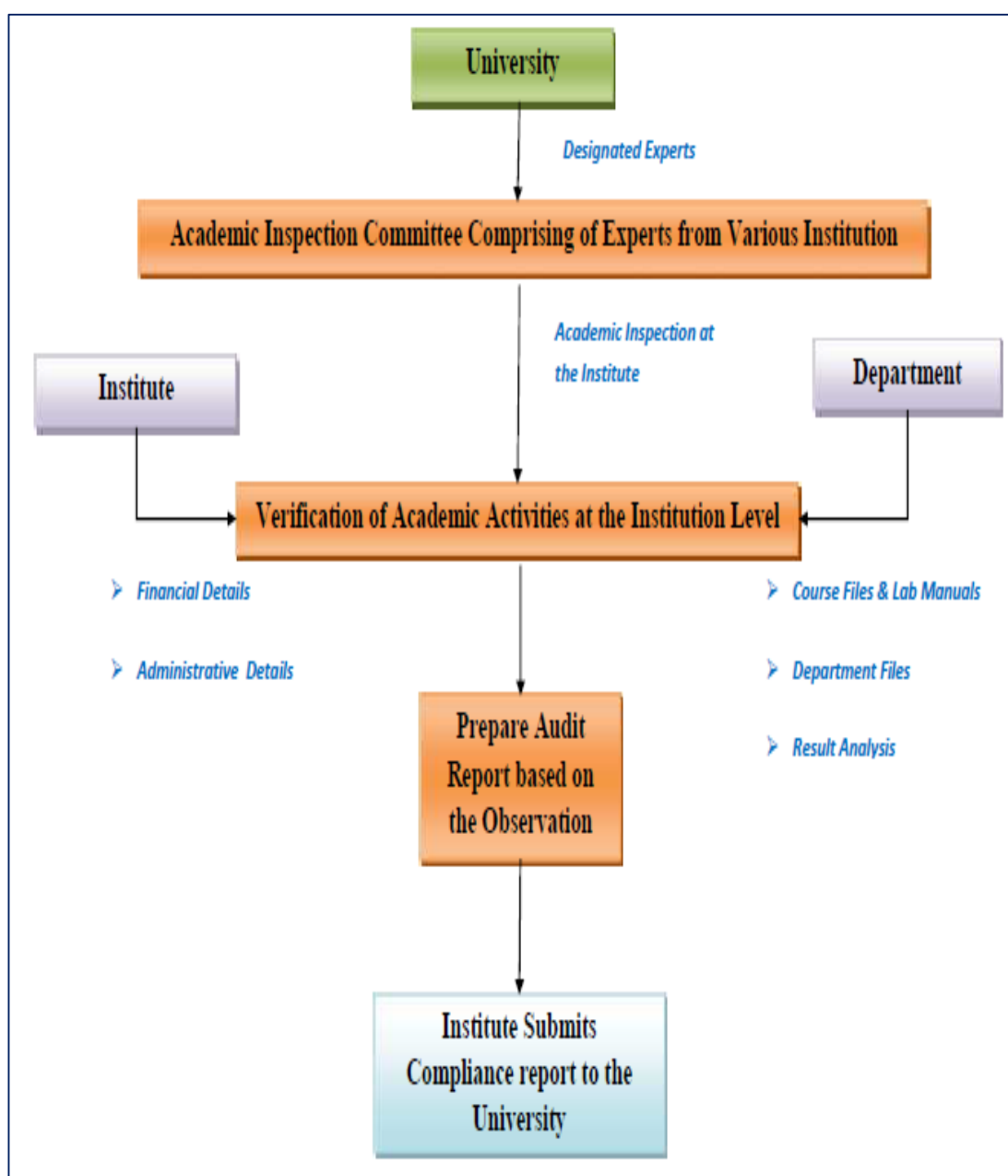


Fig 7.2.4 External Audit Process flow chart

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 data kept 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

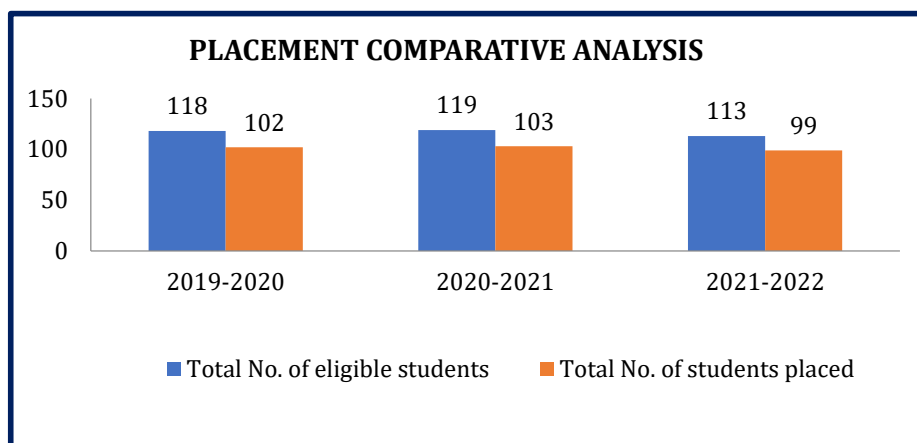


Fig 7.3.1 a. Comparative Analysis of Placement

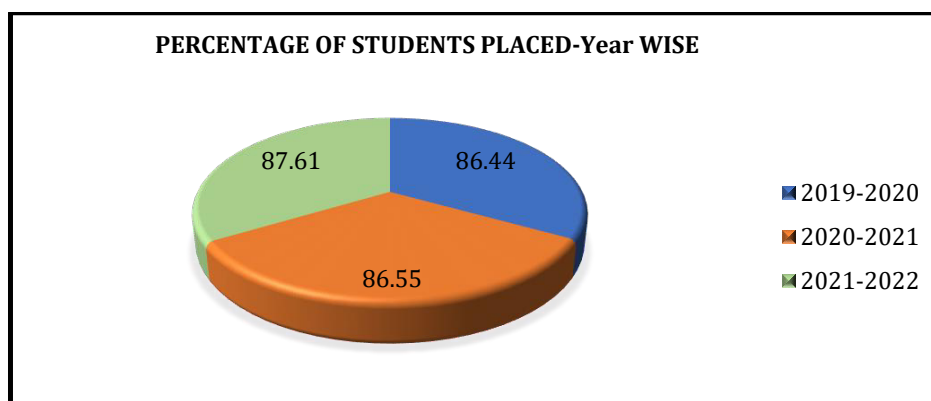


Fig.7.3.1b. Percentage of students Placed-Year wise

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.

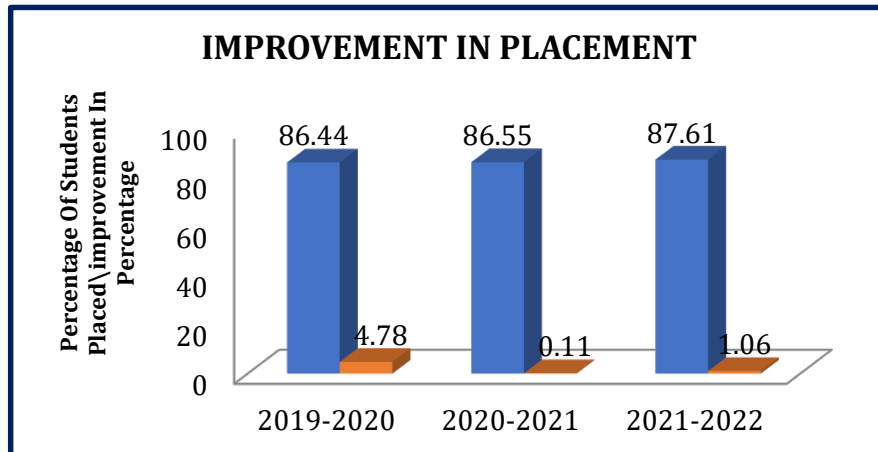


Fig.7.3.1 d. Improvement in placement

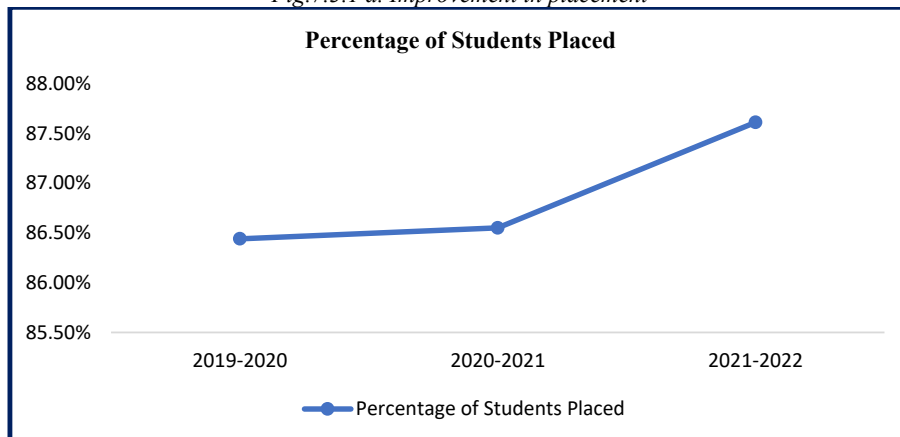


Fig.7.3.1. e. Improvement in placement -Line graph

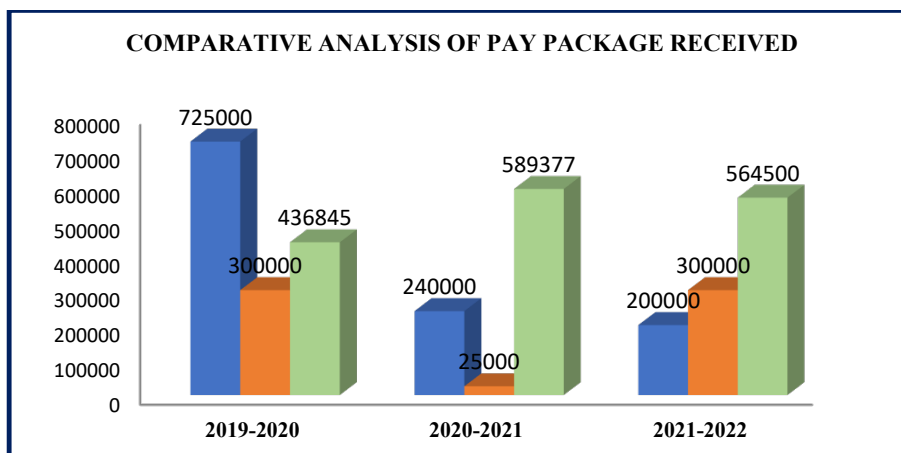


Fig.7.3.1. f. Comparative analysis of packages received

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

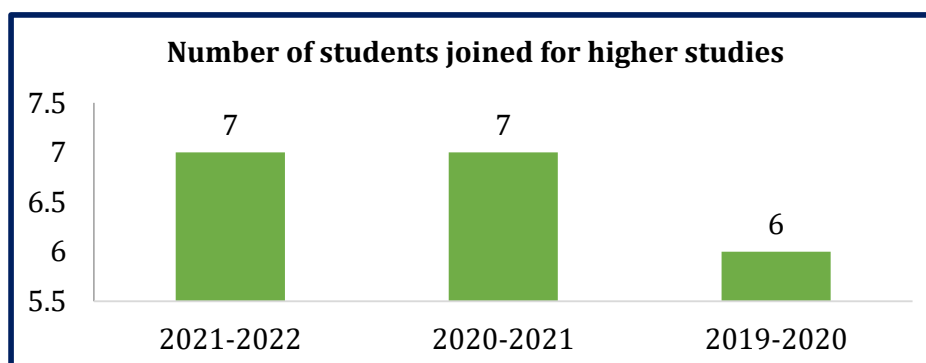


Fig 7.3.2.a Comparative analysis of higher studies

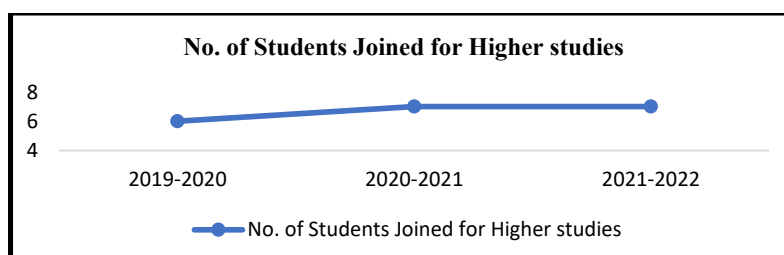


Fig.7.3.2. b Comparative analysis of higher studies -Line graph

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

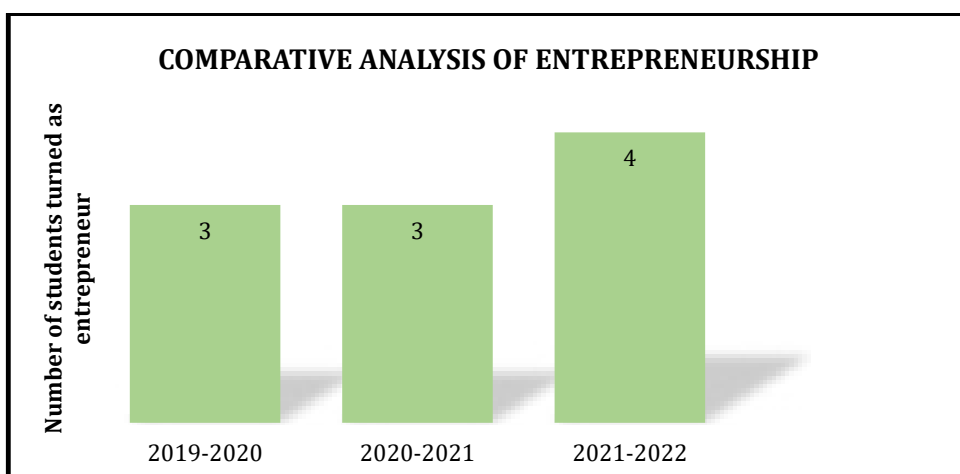


Fig 7.3.3.a Comparative analysis of entrepreneurship

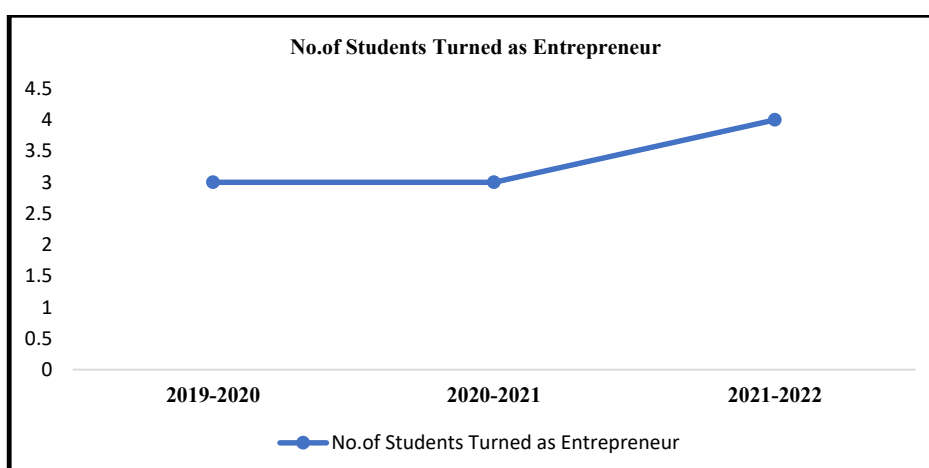


Fig 7.3.3.b Comparative analysis of entrepreneurship- Line graph

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

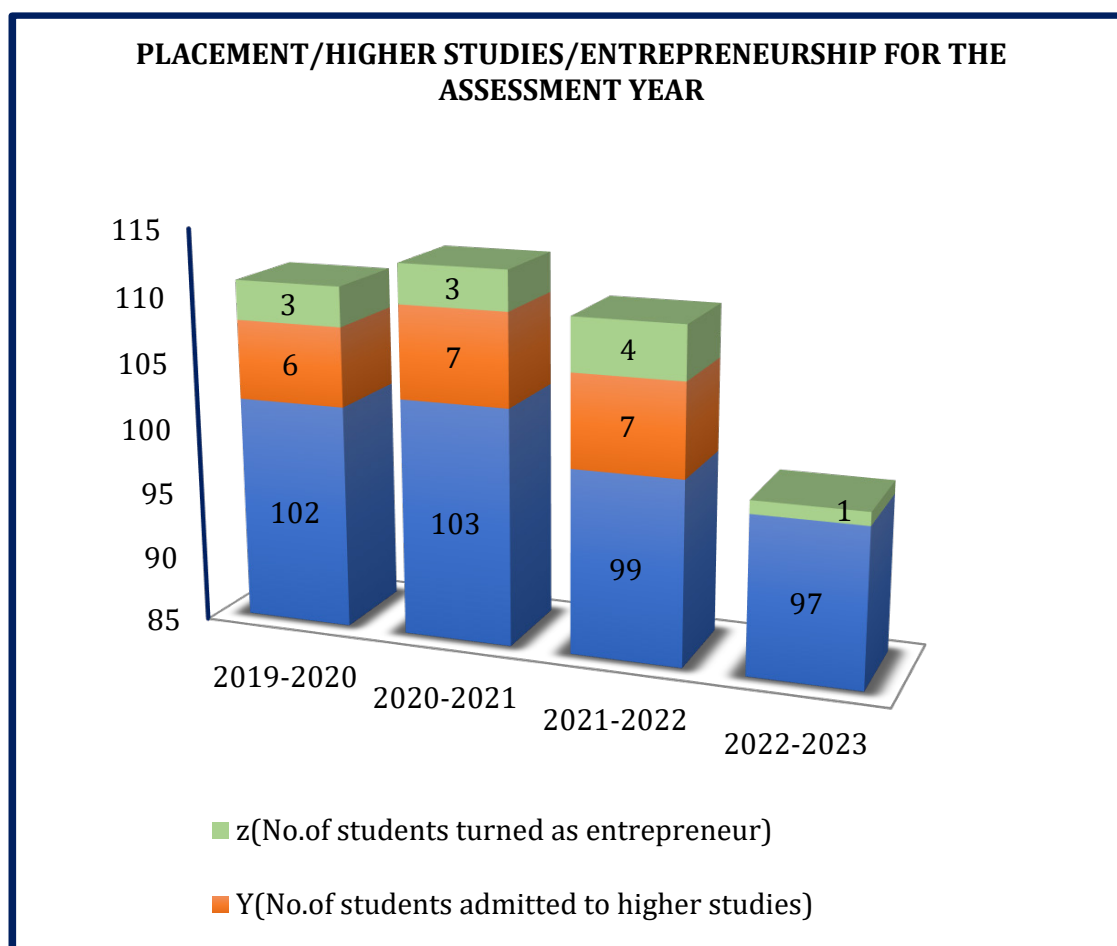


Fig.7.3.3.c. Comparative analysis of placement, higher studies & entrepreneurship

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