NEW HORIZON
COLLEGE OF ENGINEERING

Department of Electrical and Electronics Engineering

Batch: 2023-2027



Scheme: 2022
Credits: 160

NEW HORIZON
COLLEGE OF ENGINEERING

Department of Electrical and Electronics Engineering

BATCH: 2023-2026

Scheme: 2022

CREDITS: 160

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.

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.

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PROGRAM EDUCATIONAL OBJECTIVES (PEOs)

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.
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.
PEO3	To create high standards of moral and ethical values among the graduates to transform them as responsible citizens of the nation.

PROGRAM SPECIFIC OUTCOMES (PSOs)

PSO 1	Graduateswill be able to solve real life problems of power system and power Electronics using MiPower, PSPICE and MATLAB software tools and hardware.
PSO 2	Graduates will be able to Develop & support systems based on Renewable and sustainable Energy sources.

PEOs TO MISSION STATEMENT MAPPING

Mission Statements	**PEO1**	**PEO2**	**PEO3**
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.	3	3	1
PEO2: To inculcate research capabilities in the areas of Electrical and Electronics Engineering to identify,	2	3	2

comprehend and solve problems and adopt themselves to rapidly evolving technology			
PEO3: To create high standards of moral and ethical values among the graduates to transform them as responsible citizens of the nation.	1	2	3

Correlation: 3- High, 2-Medium, 1-Low

PROGRAM OUTCOMES (POs) WITH GRADUATE ATTRIBUTES

S.No	Graduate Attributes	Program Outcomes (POs)
1	Engineering Knowledge	PO1: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
2	Problem Analysis	PO2: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
3	Design and Development of Solutions	PO3: 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	PO4: 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	PO5: 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	PO6: 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	PO7: 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	PO8: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
9	Individual and team work	PO9: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
10	Communication	PO10: 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	PO11: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
12	Lifelong learning	PO12: 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.

MAPPING OF POs TO PEOs

	PO 1	**PO 2**	**PO 3**	**PO4**	**PO5**	**PO 6**	**PO 7**	**PO 8**	**PO 9**	**PO1 0**	**PO1 1**	**PO1 2**	**PSO 1**	**PSO 2**
PEO1	3	3	3	-	-	-	-	-	-	-	-	-		
PEO2	-	2	-	3	2	-	-	-	-	-	-	-		
PEO3	-	-	-	-	-	2	-	3	-	-	-	2		

Correlation: 3- High, 2-Medium, 1-Low

CREDIT SCHEME FOR I SEMESTER BE

CSE/ECE/EEE			Physics Cycle										
S. No.	Course and Course Code		Course Title	BOS	Credit Distribution				Overall Credits	Contact Hours	Marks		
					L	T	P	S			CIE	SEE	Total
1	ASC	22MAT11	Applied Mathematics for Engineers - I	AS	3	0	1	0	4	4+2	50	50	100
2	ASC	22PHY12	Applied Physics for Engineers	AS	3	0	1	0	4	4+2	50	50	100
3	ESC	22CSE13	Data Structures using C	CS	2	0	0	0	2	3	50	50	100
4	ESC	22CSL13	Data Structures using C Lab	CS	0	0	1	0	1	2	50	50	100
5	ESC-I	22ESC14*	Engineering Science Course	Any Dept.	3	0	0	0	3	4	50	50	100
6	ETC-I	22ETC15*	Emerging Technology Course	Any Dept.	3	0	0	0	3	4	50	50	100
7	AEC	22ENG16	Communicative English	HSS	0	0	1	0	1	2	50	50	100
8	HSS	22KSK17 / 22KBK17	Samskrutika Kannada/ Balake Kannada	HSS	1	0	0	0	1	2	50	50	100
9	AEC	22IDT18	Innovation and Design Thinking	CV	1	0	0	0	1	2	50	50	100
Total									20	31	450	450	900

ENGINEERING SCIENCE COURSE - I			
22ESC141	Basic Electronics	22ESC142	Introduction to Electrical Engineering
22ESC143	Basic Mechanical Engineering		

EMERGING TECHNOLOGY COURSES - I			
22ETC151	Robotics & Automation	22ETC152	Introduction to Electric Vehicle
22ETC153	Introduction to Internet of Things (IoT)		

CREDIT SCHEME FOR II SEMESTER BE

CSE/ECE/EEE			Chemistry Cycle										
S. No.	**Course and Course Code**		**Course Title**	**BOS**	**Credit Distribution**				**Overall Credits**	**Contact Hours**	**Marks**		
					L	**T**	**P**	**S**			**CIE**	**SEE**	**Total**
1	ASC	22MAT21	Applied Mathematics for Engineers – II	AS	3	0	1	0	4	4+2	50	50	100
2	ASC	22CHE22	Applied Chemistry for Engineers	AS	3	0	1	0	4	4+2	50	50	100
3	ESC	22CAD23	Computer Aided Engineering Drawing	ME	1	0	2	0	3	5	50	50	100
4	ESC-II	22ESC24*	Engineering Science Course -1	Any Dept.	3	0	0	0	3	4	50	50	100
5	PLC-II	22PLC25*	Program Language Course -1	CS/ IS	2	0	1	0	3	3+2	50	50	100
6	AEC	22ENG26	Professional writing skills	HSS	0	0	1	0	1	2	50	50	100
7	HSS	22CIP27	Indian Constitution and Professional Ethics	HSS	1	0	0	0	1	2	50	50	100
8	AEC	22SFH28	Scientific Foundation for Health with Yoga	CV	1	0	0	0	1	2	50	50	100
Total									20	32	400	400	800

ENGINEERING SCIENCE COURSE - I			
22ESC241	Basic Electronics	22ESC242	Introduction to Electrical Engineering
22ESC243	Basic Mechanical Engineering		

PROGRAM LANGUAGE COURSE - I			
22PLC251	Problem Solving using Python	22ESC242	Introduction to C++ Programming
22ESC243	Introduction to web Programming		

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III Semester													
S. No.	**Course and Course Code**		**Course Title**	**BoS**	**Credit Distribution**				**Overall Credits**	**Contact Hours**	**Marks**		
					L	**T**	**P**	**S**			**CIE**	**SEE**	**Total**
1	BSC	22MAE31	Numerical Methods and Transforms	BS	3	0	0	0	3	3	50	50	100
2	PCC	22EEE32	DC Machines and Transformers	EE	3	0	0	0	3	3	50	50	100
3	PCCL	22EEL32	DC Machines and Transformers Laboratory	EE	0	0	1	0	1	2	50	50	100
4	PCC	22EEE33	Electric Circuit Theory	EE	3	0	0	0	3	3	50	50	100
5	PCCL	22EEL33	Electric Circuit Theory Laboratory	EE	0	0	1	0	1	2	50	50	100
6	ESC	22EEE34X	ESC/ PLC	EE	If the course is ESC						50	50	100
					3	0	0	0	3	3			
					If the course is PLC								
					2	0	1	0	3	4			
7	AEC	22EEL35X	Ability Enhancement Course–III	EE	0	0	1	0	1	2	50	50	100
8	BSC	22BIK36	Bio Inspired Design and Innovation	EE	3	0	0	0	3	3	50	50	100
9	UHV	22UHK37	Universal Human Values and Life Skills	Life skills	1	0	0	0	1	2	50	50	100
10	NCMC	22NSS30	National Service Scheme	NSS coordinator	0	0	0	0	0	2	50	--	50
		22PED30	Physical Education and Sports	Physical Education Director									
		22YOG33	Yoga	Yoga Teacher									
Total									**19**	**25/26**	**500**	**450**	**950**
11	NCMC	22DMAT31	Basic Applied Mathematics -I	BS	0	0	0	0	0	2	50	--	50

BSC: Basic Science Course, **PCC**: Professional Core Course, **PCCL**: Professional Core Course laboratory, **UHV**: Universal Human Value Course, **NCMC**: Non Credit Mandatory Course, **AEC**: Ability Enhancement Course, **L:** Lecture, **T**: Tutorial, **P**: Practical **S: SDA**: Self Study for Skill Development, **K:** This letter in the course code indicates common to all the stream of engineering. **ESC:** Engineering Science Course, **ETC**: Emerging

Technology Course, **PLC**: Programming Language Course, **CIE**: Continuous Internal Evaluation, **SEE**: Semester End Evaluation.

Programming Language Course (PLC): Credit for PLC is 03 (L : T : P:S) can be considered as(2 : 1 : 0). The theory part of the PLC shall be evaluated both by CIE and SEE. The practical part shall be evaluated by only CIE (no SEE). However, questions from the practical part of P L C shall be included in the SEE question paper.

22DMAT31*: This non-credit mandatory course to be offered with only CIE and no SEE to Lateral entry students.

Engineering Science Course / Programming Language Course (ESC/PLC)			
22EEE341	Object Oriented programming using JAVA (2:0:1:0)	22EEE343	Measurements and Instrumentation (3:0:0:0)
22EEE342	Sensors and Actuators (3:0:0:0)	22EEE344	Signals and Systems (3:0:0:0)

Ability Enhancement Course–III (For EEE, all are Laboratory Courses 0-0-1-0)			
22EEL351	Microcontroller and Embedded Systems	22EEL353	SCI LAB for DC Machines and Transformers
22EEL352	Introduction to MATLAB	22EEL354	555 IC Laboratory

National Service Scheme /Physical Education/Yoga: All students have to register for any one of the courses namely National Service Scheme (NSS), Physical Education (PE) (Sports and Athletics), and Yoga (YOG) with the concerned coordinator of the course during the first week of III semesters. Activities shall be carried out between III semester to the VI semester (for 4 semesters). Successful completion of the registered course and requisite CIE score is mandatory for the award of the degree. The events shall be appropriately scheduled by the colleges and the same shall be reflected in the calendar prepared for the NSS, PEd, and Yoga activities. These courses shall not be considered for vertical progression as well as for the calculation of SGPA and CGPA, but completion of the course is mandatory for the award of degree.

Credit Definition: 1-hour Lecture (L) per week=1Credit 2-hoursTutorial(T) per week=1Credit 2-hours Practical / Drawing (P) per week=1Credit 2-hours Self Study for Skill Development (SDA) per week = 1 Credit	03-Credits courses are to be designed for 40 hours in Teaching-Learning Session 02- Credits courses are to be designed for 25 hours of Teaching-Learning Session 01-Credit courses are to be designed for 15 hours of Teaching-Learning Sessions

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IV Semester														
S. No.	**Course and Course Code**		**Course Title**	**BoS**	**Credit Distribution**				**Overall Credits**	**Contact Hours**	**Marks**		
					L	**T**	**P**	**S**			**CIE**	**SEE**	**Total**
1	BSC	22MAE41	Numerical, Complex Analysis and Probability Theory	EE	3	0	0	0	3	3	50	50	100
2	PCC	22EEE42	Analog Electronics and Integrated Circuits	EE	3	0	0	0	3	3	50	50	100
3	PCCL	22EEL42	Analog Electronics and Integrated Circuits Laboratory	EE	0	0	1	0	1	2	50	50	100
4	PCC	22EEE43	Digital Logic Design	EE	3	0	0	0	3	3	50	50	100
5	PCCL	22EEL43	Digital Logic Design Laboratory	EE	0	0	1	0	1	2	50	50	100
6	PCC	22EEE44	Synchronous and Induction Machines	EE	3	0	0	0	3	3	50	50	100
7	PCCL	22EEL44	Synchronous and Induction Machines Laboratory	EE	0	0	1	0	1	2	50	50	100
8	ESC	22EEE45X	ESC/ PLC	EE	If the course is ESC						50	50	100
					3	0	0	0	3	3			
					If the course is PLC								
					2	0	1	0	3	4			
9	AEC	22EEL46X	Ability Enhancement Course–IV	EE	0	0	1	0	1	2	50	50	100
10	UHV	22SCK47	Social Connect and Responsibility	EE	0	0	1	0	1	2	50	--	50
11	PROJ	22EEE48	Mini Project	EE	0	0	1	0	1	2	50	50	100
12	NCMC	22NSS40	National Service Scheme	NSS	0	0	0	0	0	2	50	--	50
		22PED40	Physical Education	Physical Education									
		22YOG40	Yoga	Yoga Teacher									
Total									**21**	**29/30**	**600**	**500**	**1100**
13	NCMC	22DMAT41	Basic Applied Mathematics -II	BS	0	0	0	0	0	2	50	--	50

BSC: Basic Science Course, **PCC**: Professional Core Course, **PCCL**: Professional Core Course laboratory, **UHV**: Universal Human Value Course, **NCMC**: Non Credit Mandatory Course, **AEC**: Ability Enhancement Course, **PROJ**: Mini Project work, **L:** Lecture, **T**: Tutorial, **P**: Practical **S: SDA**: Self Study for Skill Development, **K:** This letter in the course code indicates common to all the stream of engineering. **ESC :** Engineering Science Course, **ETC**: Emerging Technology Course, **PLC**: Programming Language Course, **IE**: Continuous Internal Evaluation, **SEE**: Semester End Evaluation.

Programming Language Course (PLC): Credit for PLC is 03 (L : T : P:S) can be considered as(2 : 1 : 0). The theory part of the PLC shall be evaluated both by CIE and SEE. The practical part shall be evaluated by only CIE (no SEE).However, questions from the practical part of P L C shall be included in the SEE question paper.

22DMAT41*: This non-credit mandatory course to be offered with only CIE and no SEE to Lateral entry students.

Engineering Science Course / Programming Language Course (ESC/PLC)			
22EEE451	Programming of Internet of Things (2:0:1:0)	22EEE453	Web design Technologies (2:0:1:0)
22EEE452	Advanced Data Structures and Algorithms (2:0:1:0)	22EEE454	Electromagnetic Field Theory (3:0:0:0)

Ability Enhancement Course–IV (For EEE, all are Laboratory Courses 0-0-1-0)			
22EEE461	AUTOCAD for Electrical Engineering	22EEE463	Sci Lab for Electrical Engineering
22EEE462	Advanced Arduino Programming	22EEE464	PCB Design Laboratory

Mini-project work: Mini Project is a laboratory-oriented/hands on course that will provide a platform to students to enhance their practical knowledge and skills by thedevelopmentofsmallsystems/applicationsetc.Basedontheability/abilitiesofthestudent/sandrecommendationsofthementor. A student can do mini project as

(i) A group of 2 if mini project work is single discipline (applicable to all IT allied branches)

(ii) A group of 2-4 if mini project work is single discipline (applicable to all Core Branches)

(iii) A group of 2 -4 students if the Mini Project work is a multidisciplinary (Applicable to all Branches)

CIE procedure for Mini-project:

(i) Single discipline: The CIE marks shall be awarded by a committee consisting of the Head of the concerned Department and two faculty members of the Department, one of them being the Guide. The CIE marks awarded for the Mini-project work shall be based on the evaluation of the project report, project presentation skill, and question and answer session in the ratioof50:25:25.The marks awarded for the project report shall be the same for all the batches mates.

(ii) Interdisciplinary: Continuous Internal Evaluation shall be group-wise at the college level with the participation of all the guides of the project.

The CIE marks awarded for the Mini-project, shall be based on the evaluation of the project report, project presentation skill, and question and answer session in the percentage ratio o f50:25:25.Themarksawarded for the project report shall be the same for all the batch mates

National Service Scheme /Physical Education/Yoga: All students have to register for any one of the courses namely National Service Scheme (NSS), Physical Education (PE) (Sports and Athletics), and Yoga (YOG) with the concerned coordinator of the course during the first week of III semesters. Activities shall be carried out between III semester to the VI semester (for 4 semesters). Successful completion of the registered course and requisite CIE score is mandatory for the award of the degree. The events shall be appropriately scheduled by the colleges and the same shall be reflected in the calendar prepared for the NSS, PE, and Yoga activities. These courses shall not be considered for vertical progression as well as for the calculation of SGPA and CGPA, but completion of the course is mandatory for the award of degree.

Credit Definition:	03-Credits courses are to be designed for 40 hours in Teaching-Learning Session
1-hour Lecture (L) per week=1Credit	02- Credits courses are to be designed for 25 hours of Teaching-Learning Session
2-hoursTutorial(T) per week=1Credit	01-Credit courses are to be designed for 15 hours of Teaching-Learning Sessions
2-hours Practical / Drawing (P) per week=1Credit	
2-hours Self Study for Skill Development (SDA) per week = 1 Credit	

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V Semester													
S. No.	**Course and Course Code**		**Course Title**	**BoS**	**Credit Distribution**				**Overall Credits**	**Contact Hours**	**Marks**		
					L	**T**	**P**	**S**			**CIE**	**SEE**	
1	HSMS	22EEE51	Operations Research and Management	EE	3	0	0	0	3	3	50	50	
2	PCC	22EEE52	CMOS VLSI Design	EE	3	0	0	0	3	3	50	50	
3	PCCL	22EEL52	CMOS VLSI Design Laboratory	EE	0	0	1	0	1	2	50	50	
4	PCC	22EEE53	Control Systems	EE	3	0	0	0	3	3	50	50	
5	PCCL	22EEL53	Control Systems Laboratory	EE	0	0	1	0	1	2	50	50	
6	PEC	22EEE54X	Professional Elective Course-I	EE	3	0	0	0	3	3	50	50	
7	AEC	22RMK55	Research Methodology and IPR	EE	1	1	0	0	2	3	50	50	**100**
8	AEC	22SDK56	Critical and Creative Thinking Skills	EE	0	0	1	0	1	2	50	--	**50**
9	UHV	22ESK57	Environmental Studies	Any Dept	1	0	0	0	1	1	50	50	**100**
10	PROJ	22EEE58	Mini Project-II	EE	0	0	1	0	1	0	50	50	**100**
11	NCMC	22NSS50	National Service Scheme (NSS)	NSS coordinator	0	0	0	0	0	2	50	--	
		22PED50	Physical Education (PE) (Sports and Athletics)	Physical Education Director									
		22YOG50	Yoga	Yoga Teacher									
Total									**19**	**24**	**550**	**450**	**1000**

PCC: Professional Core Course, **PCCL**: Professional Core Course laboratory, **UHV**: Universal Human Value Course, **NCMC**: Non-Credit Mandatory Course, **AEC**: Ability Enhancement Course, **PEC**: Professional Elective Course, **PROJ**: Mini Project work **L:** Lecture, **T**: Tutorial, **P**: Practical **S: SDA**: Self Study for Skill Development, **CIE**: Continuous Internal Evaluation, **SEE**: Semester End Evaluation

Professional Elective Course-I			
22EEE541	Introduction to Cyber Security	22EEE544	Special Electrical Machines
22EEE542	Energy Storage Systems	22EEE545	Competitive Coding
22EEE543	Electrical Machine Design		

22EEE51 (HSMS)- This course must be pertaining to economics and management of the concerned degree program. The course syllabus should have both economics and management topics and the course title should bear the word Management.
For IT allied Branches: Software Product Management
For Core Branches: Engineering Economics and Management / Industrial Management and Entrepreneurship

Mini-project work: Mini Project is a laboratory-oriented/hands on course that will provide a platform to students to enhance their practical knowledge and skills by the development of small systems/applications etc. Based on the ability/abilities of the student/s and recommendations of the mentor. A student can do mini project as

i. A group of 2 if mini project work is single discipline (applicable to all IT allied branches)
ii. A group of 2-4 if mini project work is single discipline (applicable to all Core Branches)
iii. A group of 2 -4 students if the Mini Project work is a multidisciplinary (Applicable to all Branches)

CIE procedure for Mini-project:

(i) Single discipline: The CIE marks shall be awarded by a committee consisting of the Head of the concerned Department and two faculty members of the Department, one of them being the Guide. The CIE marks awarded for the Mini-project work shall be based on the evaluation of the project report, project presentation skill, and question and answer session in the ratio of 50:25:25. The marks awarded for the project report shall be the same for all the batches mates.

(ii) Inter disciplinary: Continuous Internal Evaluation shall be group-wise at the college level with the participation of all the guides of the project.
The CIE marks awarded for the Mini-project, shall be based on the evaluation of the project report, project presentation skill, and question and answer session in the percentage ratio of 50:25:25. The marks awarded for the project report shall be the same for all the batch mates.

Professional Elective Courses (PEC): A professional elective (PEC) course is intended to enhance the depth and breadth of educational experience in the Engineering and Technology curriculum. Multidisciplinary courses that are added supplement the latest trend and advanced technology in the selected stream of engineering.

National Service Scheme /Physical Education/Yoga: All students have to register for any one of the courses namely National Service Scheme (NSS),

Physical Education (PE) (Sports and Athletics), and Yoga (YOG) with the concerned coordinator of the course during the first week of III semesters. Activities shall be carried out between III semester to the VI semester (for 4 semesters). Successful completion of the registered course and requisite CIE score is mandatory for the award of the degree. The events shall be appropriately scheduled by the colleges and the same shall be reflected in the calendar prepared for the NSS, PE, and Yoga activities. These courses shall not be considered for vertical progression as well as for the calculation of SGPA and CGPA, but completion of the course is mandatory for the award of degree.

Credit Definition: 1- hour Lecture (L) per week=1Credit 2-hoursTutorial(T) per week=1Credit 2- hours Practical / Drawing (P) per week=1Credit 2-hours Self Study for Skill Development (SDA) per week = 1 Credit	03-Credits courses are to be designed for 40 hours in Teaching-Learning Session 02- Credits courses are to be designed for 25 hours of Teaching-Learning Session 01-Credit courses are to be designed for 15 hours of Teaching-Learning Sessions

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VI Semester													
S. No.	**Course and Course Code**		**Course Title**	**BoS**	**Credit Distribution**				**Overall Credits**	**Contact Hours**	**Marks**		
					L	**T**	**P**	**S**			**CIE**	**SEE**	**Total**
1	PCC	22EEE61	Power Electronics	EE	3	0	0	0	3	3	50	50	**100**
2	PCCL	22EEL61	Power Electronics Laboratory	EE	0	0	1	0	1	2	50	50	**100**
3	PCC	22EEE62	Electric Vehicles	EE	3	0	0	0	3	3	50	50	**100**
4	PCCL	22EEL62	Electric Vehicles Laboratory	EE	0	0	1	0	1	2	50	50	**100**
5	PCC	22EEE63	Generation, Transmission and Protection	EE	2	1	0	0	3	4	50	50	**100**
6	PEC	22EEE64X	Professional Elective Course-II	EE	3	0	0	0	3	3	50	50	**100**
7	PROJ	22EEE65	Project Phase-I	EE	0	0	2	0	2	0	50	50	**100**
8	AEC	22SDK66	Problem Solving Skills	EE	0	0	1	0	1	2	50	--	**50**
9	AEC	22EEE67X	Ability Enhancement Course – V	EE	0	0	1	0	1	2	50	50	**100**
10	OEC	23NHOP6XX	Industrial Open Elective Course-I	Offering Dept.	3	0	0	0	3	3	50	50	**100**
11	NCMC	22NSS60	National Service Scheme (NSS)	NSS coordinator	0	0	0	0	0	2	50	--	**50**
		22PED60	Physical Education (PE) (Sports and Athletics)	Physical Education Director									
		22YOG60	Yoga	Yoga Teacher									
Total									**21**	**26**	**550**	**450**	**1000**

PCC: Professional Core Course, **PCCL**: Professional Core Course laboratory, **NCMC**: Non-Credit Mandatory Course, **AEC**: Ability Enhancement Course, **PEC**: Professional Elective Course, **OEC**: Open Elective Course, **PROJ**: Project work**, L:** Lecture, **T**: Tutorial, **P**: Practical **S: SDA**: Self Study for Skill Development,

C**IE**: Continuous Internal Evaluation, **SEE**: Semester End Evaluation.

Professional Elective Course-II			
22EEE641	High Voltage Engineering	22EEE644	Advanced Control Systems
22EEE642	Introduction to Communication Systems	22EEE645	Machine learning for Electrical Engineering
22EEE643	Digital Signal Processing		

Ability Enhancement Course–V (For EEE, all are Laboratory Courses 0-0-1-0)			
22EEE671	Power System Protection, ETAP and DIALUX	22EEE674	LATex for Technical Writing
22EEE672	Multisim for Electrical design	22EEE675	Electronics Circuit Design Using Proteus
22EEE673	LAB View for Electrical Applications		

Industrial Open Elective Courses-I:
Credit for OEC is 03 (L: T: P: S) can be considered as (3: 0: 0 : 0). The teaching and learning of these Courses will be based on hands-on. The Course Assessment will be based on CIE and SEE in practical mode. This Courses will be offered by Centre of Excellence to students of all the branches. Registration to Industrial open electives shall be documented and monitored on college level.

Project Phase-I: Students have to discuss with the mentor/guide and with their help he/she has to complete the literature survey and prepare the report and finally define the problem statement for the project work.

Professional Elective Courses (PEC): A professional elective (PEC) course is intended to enhance the depth and breadth of educational experience in the Engineering and Technology curriculum. Multidisciplinary courses that are added supplement the latest trend and advanced technology in the selected stream of engineering.

National Service Scheme /Physical Education/Yoga: All students have to register for any one of the courses namely National Service Scheme (NSS), Physical Education (PE) (Sports and Athletics), and Yoga (YOG) with the concerned coordinator of the course during the first week of III semesters. Activities shall be carried out between III semester to the VI semester (for 4 semesters). Successful completion of the registered course and requisite CIE score is mandatory for the award of the degree.
The events shall be appropriately scheduled by the colleges and the same shall be reflected in the calendar prepared for the NSS, PE, and Yoga activities. These courses shall not be considered for vertical progression as well as for the calculation of SGPA and CGPA, but completion of the course is mandatory for the award of degree.

Credit Definition: 1- hour Lecture (L) per week=1Credit 2-hoursTutorial(T) per week=1Credit 2- hours Practical / Drawing (P) per week=1Credit 2-hours Self Study for Skill Development (SDA) per week = 1 Credit	03-Credits courses are to be designed for 40 hours in Teaching-Learning Session 02- Credits courses are to be designed for 25 hours of Teaching-Learning Session 01-Credit courses are to be designed for 15 hours of Teaching-Learning Sessions

NEW HORIZON COLLEGE OF ENGINEERING

B. E. in Electrical and Electronics Engineering

Scheme of Teaching and Examinations for 2022- 2026 BATCH (2022 Scheme)

VII Semester													
S. No.	Course and Course Code		Course Title	BoS	Credit Distribution				Overall Credits	Contact Hours	Marks		
					L	T	P	S			CIE	SEE	Total
1	PCC	22EEE71	Power System Analysis	EE	3	0	0	0	3	3	50	50	**100**
2	PCCL	22EEL71	Power System Analysis Laboratory	EE	0	0	1	0	1	2	50	50	**100**
3	PCC	22EEE72	Advanced Industrial Automation and Control	EE	3	0	0	0	3	3	50	50	**100**
4	PCCL	22EEL72	Advanced Industrial Automation and Control Laboratory	EE	0	0	1	0	1	2	50	50	**100**
5	PCC	22EEE73	Photovoltaic Systems and Applications	EE	3	0	0	0	3	3	50	50	**100**
6	PROJ	22EEE74	Project Phase - II	EE	0	0	10	0	10	20	100	100	**200**
7	OEC	23NHOP7XX	Industrial Open Elective Course-II	Offering Dept.	3	0	0	0	3	3	50	50	**100**
								Total	**24**	**36**	**400**	**400**	**800**

PCC: Professional Core Course, **PCCL**: Professional Core Course laboratory, **PEC**: Professional Elective Course, **OEC**: Open Elective Course, **PROJ**: Project work**, L:** Lecture, **T**: Tutorial, **P**: Practical **S: SDA**: Self Study for Skill Development, C**IE**: Continuous Internal Evaluation, **SEE**: Semester End Evaluation.

Industrial Open Elective Courses-II:

Credit for OEC is 03 (L: T: P: S) can be considered as (3: 0: 0 : 0). The teaching and learning of these Courses will be based on hands-on. The Course Assessment will be based on CIE and SEE in practical mode. This Courses will be offered by Centre of Excellence to students of all the branches. Registration to Industrial open electives shall be documented and monitored on college level.

Project Phase-II:

The objective of the Project work is

(i) To encourage independent learning and the innovative attitude of the students.

(ii) To develop interactive attitude, communication skills, organization, time management, and presentation skills.

(iii) To impart flexibility and adaptability.

(iv) To inspire team working.

(v) To expand intellectual capacity, credibility, judgment and intuition.

(vi) To adhere to punctuality, setting and meeting deadlines.

(vii) To install responsibilities to oneself and others.

(viii) To train students to present the topic of project work in a seminar without any fear, face the audience confidently, enhance communication skills, involve in group discussion to present and exchange ideas.

CIE procedure for Project Work:

(1) Single discipline: The CIE marks shall be awarded by a committee consisting of the Head of the concerned Department and two senior faculty members of the Department, one of whom shall be the Guide.

The CIE marks awarded for the project work, shall be based on the evaluation of the project work Report, project presentation skill, and question and answer session in the percentage ratio of 50:25:25. The marks awarded for the project report shall be the same for all the batch mates.

(2) Interdisciplinary: Continuous Internal Evaluation shall be group-wise at the college level with the participation of all guides of the college. Participation of external guide/s, if any, is desirable. The CIE marks awarded for the project work, shall be based on the evaluation of project work Report, project presentation skill, and question and answer session in the percentage ratio of 50:25:25. The marks awarded for the project report shall be the same for all the batch mates.

SEE procedure for Project Work: SEE for project work will be conducted by the two examiners appointed by the University. The SEE marks awarded for the project work shall be based on the evaluation of project work Report, project presentation skill, and question and answer session in the percentage ratio of 50:25:25.

Credit Definition: 1- hour Lecture (L) per week=1Credit 2-hoursTutorial(T) per week=1Credit 2- hours Practical / Drawing (P) per week=1Credit 2-hous Self Study for Skill Development (SDA) per week = 1 Credit	03-Credits courses are to be designed for 40 hours in Teaching-Learning Session 02- Credits courses are to be designed for 25 hours of Teaching-Learning Session 01-Credit courses are to be designed for 15 hours of Teaching-Learning Sessions

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VIII Semester													
S. No.	**Course and Course Code**		**Course Title**	**BoS**	**Credit Distribution**				**Overall Credits**	**Contact Hours**	**Marks**		
					L	**T**	**P**	**S**			**CIE**	**SEE**	**Total**
1	PEC*	22EEE81X	Professional Elective Courses -III	EE	3	0	0	0	3	3	50	50	**100**
2	PEC*	22EEE82X	Professional Elective Courses -IV	EE	3	0	0	0	3	3	50	50	**100**
3	INT	22EEE83	Internship	EE	0	0	10	0	10	20	100	100	**200**
4	NCMC	22IKK84	Indian Knowledge Systems	EE	0	0	0	0	0	1	50	-	**50**
Total									**16**	**27**	**250**	**200**	**450**

PEC*: Professional Elective Course (Online/Hybrid), **L:** Lecture, **T**: Tutorial, **P**: Practical **S: SDA**: Self Study for Skill Development, **INT**: Industry Internship / Research Internship / Rural Internship, CIE: Continuous Internal Evaluation, **SEE**:Semester End Evaluation.
NCMC: Online Assessment

Professional Elective Course-III			
22EEE811	Neural Network and Fuzzy Logic in Electrical Engineering	22EEE814	Power System Operation and Control
22EEE812	Machine learning for Electrical Engineering	22EEE815	Power Quality
22EEE813	Quantum Computing		

Professional Elective Course-IV			
22EEE821	FACTS and HVDC transmission	22EEE824	Utilization of Electrical Energy
22EEE822	Testing and Commissioning of Electrical Equipments	22EEE825	Smart Grid Technologies
22EEE823	Energy Auditing and Demand Side Management		

Elucidation:

At the beginning of IV years of the program i.e., after VI semester, VII semester classwork and VIII semester Internship shall be permitted to be operated simultaneously by the University so that students have ample opportunity for an internship. In other words, a good percentage of the class shall attend VII semester classwork and a similar percentage of others shall attend to Internship.

Internship: The mandatory Internship is for **14 to 20 weeks**. The internship shall be considered as a head of passing and shall be considered for the award of a degree. Those, who do not take up/complete the internship shall be declared to fail and shall have to complete it during the subsequent SEE examination after satisfying the internship requirements. For 8th semester students, the following internship options are available:

- Industry Internship
- Research Internship
- Skill Enhancement Courses
- Post-Placement Training as Internship
- Online Internship

Industry internship: It is an extended period of work experience undertaken by students to supplement their degree for professional development. It also helps them learn to overcome unexpected obstacles and successfully navigate organizations, perspectives, and cultures. Dealing with contingencies helps students recognize, appreciate, and adapt to organizational realities by tempering their knowledge with practical constraints. Students undertaking industry internships must ensure the organization is listed on the VTU Internship Portal. If not, request the organization to register on the portal.

Research internship: A research internship is intended to offer the flavor of current research going on in the research field. It helps students get familiarized with the field and imparts the skill required for carrying out research. Research internships must be carried out in recognized research centers. Ensure that these centers are registered on the portal.

Skill Enhancement Courses: Students can take Skill-based courses with credits totalling the same as those of the internship. Students must be taken from registered providers listed on the VTU Internship Portal.

Post-Placement Training as Internship: The post-placement training is also considered an internship. For students placed during their 6th/7th semester and willing to take the training during their final year, colleges must inform the recruiting companies in advance to register on the VTU Internship Portal.

Online Internship: Reputed online internship platforms, including those identified by NSDC, are already listed on the VTU Internship portal. If colleges come across other eligible organizations not yet listed, they are informed to ask the organization to register on the VTU Internship portal.

Credit Definition: 1-hour Lecture (L) per week=1 Credit 2-hoursTutorial(T) per week=1 Credit 2-hours Practical / Drawing (P) per week=1 Credit	03-Credits courses are to be designed for 40 hours in Teaching-Learning Session 02- Credits courses are to be designed for 25 hours of Teaching-Learning Session 01-Credit courses are to be designed for 15 hours of Teaching-Learning Sessions
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