NEW HORIZON
COLLEGE OF ENGINEERING

# Department of Electrical and Electronics Engineering
# Academic Year 2025-26

## Scheme (I-VIII)
## BATCH: 2025-2029
## CREDITS: 160

# NEW HORIZON COLLEGE OF ENGINEERING

## 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.

## 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.

## QUALITY POLICY

To provide educational services of the highest quality both curricular and co-curricular to enable students integrate skills and serve the industry and society equally well at global level

## VALUES

- Academic freedom
- Integrity
- Inclusiveness
- Innovation
- Professionalism
- Social Responsibility

# DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

## 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.

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

# PEO TO MISSION STATEMENT MAPPING

| PEOs | MISSION OF THE DEPARTMENT | | |
|---|---|---|---|
| | M1 | M2 | M3 |
| PEO1 | 3 | 3 | 2 |
| PEO2 | 3 | 3 | 2 |
| PEO3 | 2 | 2 | 3 |

# KNOWLEDGE AND ATTITUDE PROFILE (WK)

| S. No | Knowledge and Attitude Profile (WK) |
|---|---|
| 1 | WK1: A systematic, theory-based understanding of the natural sciences applicable to the discipline and awareness of relevant social sciences. |
| 2 | WK2: Conceptually-based mathematics, numerical analysis, data analysis, statistics and formal aspects of computer and information science to support detailed analysis and modelling applicable to the discipline. |
| 3 | WK3: A systematic, theory-based formulation of engineering fundamentals required in the engineering discipline |
| 4 | WK4: Engineering specialist knowledge that provides theoretical frameworks and bodies of knowledge for the accepted practice areas in the engineering discipline; much is at the forefront of the discipline. |
| 5 | WK5: Knowledge, including efficient resource use, environmental impacts, whole-life cost, re use of resources, net zero carbon, and similar concepts, that supports engineering design and operations in a practice area. |
| 6 | WK6: Knowledge of engineering practice (technology) in the practice areas in the engineering discipline. |
| 7 | WK7: Knowledge of the role of engineering in society and identified issues in engineering practice in the discipline, such as the professional responsibility of an engineer to public safety and sustainable development. |
| 8 | WK8: Engagement with selected knowledge in the current research literature of the discipline, awareness of the power of critical thinking and creative approaches to evaluate emerging issues. |
| 9 | WK9: Ethics, inclusive behaviour and conduct. Knowledge of professional ethics, responsibilities, and norms of engineering practice. Awareness of the need for diversity by reason of ethnicity, gender, age, physical ability etc. with mutual understanding and respect, and of inclusive attitudes. |

# PROGRAM OUTCOMES (POs)

| S.No | Graduate Attributes | Program Outcomes (POs) |
|---|---|---|
| 1 | Engineering Knowledge | PO1: Apply knowledge of mathematics, natural science, computing, engineering fundamentals and an engineering specialization as specified in WK1 to WK4 respectively to develop to the solution of complex engineering problems. |
| 2 | Problem Analysis | PO2: Identify, formulate, review research literature and analyze complex engineering problems reaching substantiated conclusions with consideration for sustainable development. (WK1 to WK4) |
| 3 | Design/Development of Solutions | PO3: Design creative solutions for complex engineering problems and design/develop systems/components/processes to meet identified needs with consideration for the public health and safety, whole-life cost, net zero carbon, culture, society and environment as required. (WK5) |
| 4 | Conduct Investigations of Complex Problems | PO4: Conduct investigations of complex engineering problems using research-based knowledge including design of experiments, modelling, analysis & interpretation of data to provide valid conclusions. (WK8). |
| 5 | Engineering Tool Usage | PO5: Create, select and apply appropriate techniques, resources and modern engineering & IT tools, including prediction and modelling recognizing their limitations to solve complex engineering problems. (WK2 and WK6) |
| 6 | The Engineer and The World | PO6: Analyze and evaluate societal and environmental aspects while solving complex engineering problems for its impact on sustainability with reference to economy, health, safety, legal framework, culture and environment. (WK1, WK5, and WK7). |
| 7 | Ethics | PO7: Apply ethical principles and commit to professional ethics, human values, diversity and inclusion; adhere to national & international laws. (WK9) |
| 8 | Individual and Collaborative Team work | PO8: Function effectively as an individual, and as a member or leader in diverse/multi-disciplinary teams. |
| 9 | Communication | PO9: Communicate effectively and inclusively within the engineering community and society at large, such as being able to comprehend and write effective reports and design documentation, make effective presentations considering cultural, language, and learning differences |

| | | |
|---|---|---|
| | | |
| 10 | Project Management and Finance | PO10: Apply knowledge and understanding of engineering management principles and economic decision-making and apply these to one's own work, as a member and leader in a team, and to manage projects and in multidisciplinary environments. |
| 11 | Life-Long Learning | PO11: Recognize the need for, and have the preparation and ability for i) independent and life-long learning ii) adaptability to new and emerging technologies and iii) critical thinking in the broadest context of technological change. (WK8) |

**PEOs to POs mapping**

| | **PO 1** | **PO2** | **PO 3** | **PO 4** | **PO 5** | **PO 6** | **PO 7** | **PO 8** | **PO 9** | **PO1 0** | **PO1 1** | **PSO 1** | **PSO 2** |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **PEO 1** | 3 | 3 | 3 | 3 | 3 | 2 | 2 | 2 | 2 | 2 | 2 | 3 | 3 |
| **PEO 2** | 3 | 3 | 3 | 3 | 3 | 2 | 2 | 2 | 2 | 2 | 2 | 3 | 3 |
| **PEO 3** | 2 | 2 | 2 | 2 | 2 | 3 | 3 | 3 | 3 | 2 | 2 | 2 | 2 |

# PROGRAM SPECIFIC OUTCOMES (PSOs)

**PSO1:** Apply knowledge of electrical machines, circuit analysis, electronics, power systems, control, instrumentation, power electronics, signal processing, and embedded systems to analyse, design, and implement solutions for real-world applications using modern hardware and software tools.

**PSO2:**Design and develop innovative solutions in renewable energy, electric vehicles, smart grids, and automation with focus on environmental sustainability and societal needs.

NEW HORIZON COLLEGE OF ENGINEERING

# First Semester BE-AY 2025-26
# Scheme of Teaching and Examinations (2025 -2029 Batch)

**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 | 25MAT11 | Applied Mathematics for Engineers – I | AS | 3 | 1 | 0 | 0 | 4 | 5 | 50 | 50 | **100** |
| 2 | ASC | 25CHE12 | Applied Chemistry for Engineers | AS | 3 | 0 | 0 | 0 | 3 | 4 | 50 | 50 | **100** |
| 3 | ASC | 25CHL12 | Applied Chemistry Lab for Engineers | AS | 0 | 0 | 1 | 0 | 1 | 2 | 50 | 50 | **100** |
| 4 | ESC -I | 25ESC133 | Introduction to Mechanical Engineering | ME | 3 | 0 | 0 | 0 | 3 | 4 | 50 | 50 | **100** |
| 5 | PSC | 25EEE142 | Elements of Electrical Engineering | EEE | 3 | 0 | 0 | 0 | 3 | 4 | 50 | 50 | **100** |
| 6 | PSC | 25EEL142 | Elements of Electrical Engineering lab | EEE | 0 | 0 | 1 | 0 | 1 | 2 | 50 | 50 | **100** |
| 7 | ESC | 25CAD15 | Computer Aided Engineering Drawing | ME | 2 | 0 | 1 | 0 | 3 | 5 | 50 | 50 | **100** |
| 8 | AEC | 25ENG16 | AI-Powered Communicative English | HSS | 0 | 0 | 1 | 0 | 1 | 2 | 50 | 50 | **100** |
| 9 | NCMC | 25CIP17 | Constitution of India and Professional Ethics | HSS | 0 | 0 | 0 | 0 | PP | 1 | 100 | - | **100** |
| 10 | AEC | 25EDM18 | Environment and Disaster Management | AS | 1 | 0 | 0 | 0 | 1 | 1 | 50 | 50 | **100** |
| Total | | | | | | | | | **20** | **30** | **550** | **450** | **1000** |

NEW HORIZON COLLEGE OF ENGINEERING

## Second Semester BE-AY 2025-26
## Scheme of Teaching and Examinations (2025 -2029 Batch)

| 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 | Tot al |
| 1 | ASC | 25MAT21 | Applied Mathematics for Engineers – II | AS | 3 | 1 | 0 | 0 | 4 | 5 | 50 | 50 | **100** |
| 2 | ASC | 25PHY22 | Applied Physics for Engineers | AS | 3 | 0 | 0 | 0 | 3 | 4 | 50 | 50 | **100** |
| 3 | ASC | 25PHL22 | Applied Physics Lab for Engineers | AS | 0 | 0 | 1 | 0 | 1 | 2 | 50 | 50 | **100** |
| 4 | ESC-II | 25ESC231 | Introduction to Electronics and Communication Engineering | ECE | 3 | 0 | 0 | 0 | 3 | 4 | 50 | 50 | **100** |
| 5 | PLC | 25PLC24 | Programming in C | CS | 3 | 0 | 0 | 0 | 3 | 4 | 50 | 50 | **100** |
| 6 | PLC | 25PCL24 | Programming in C Lab | CS | 0 | 0 | 1 | 0 | 1 | 2 | 50 | 50 | **100** |
| 7 | ETC | 25ETC25 | Introduction to AI and Applications | ME | 3 | 0 | 0 | 0 | 3 | 4 | 50 | 50 | **100** |
| 8 | AEC | 25UHV26 | UHV and Indian Ethos | HSS | 0 | 0 | 0 | 0 | PP | 2 | 100 | - | **100** |
| 9 | HSS | 25KSK27 / 25KBK27 | Samskrithika Kannada/ Balake Kannada | HSS | 1 | 0 | 0 | 0 | 1 | 2 | 50 | 50 | **100** |
| 10 | AEC | 25IPL28 | Inter-Disciplinary Project Based Learning | AS | 0 | 0 | 0 | 1 | 1 | 2 | 50 | 50 | **100** |
| | | | | **Total** | | | | | **20** | **31** | **550** | **450** | **1000** |

**COURSE CODE & COURSE NAME**

| **(ESCI/II) Engineering Science Courses I &II** | | **(PSC) Program specific courses** | | **(PSC)Program specific course Lab** | |
|---|---|---|---|---|---|
| 25ESC131/231 | Introduction to Electronics and Communication Engineering | 25ECE141 | Elements of Electronics and Communication Engineering | 25ECL141/241 | Elements of Electronics and Communication Engineering Lab |
| 25ESC132/232 | Introduction to Electrical Engineering | 25EEE142 | Elements of Electrical Engineering | 25EEL142/242 | Elements of Electrical Engineering Lab |
| 25ESC133/233 | Introduction to Mechanical Engineering | 25MEE143 | Elements of Mechanical Engineering | 25MEL143/243 | Elements of Mechanical Engineering Lab |
| | | 25CSE144 | Problem Solving Using Python | 25CSL144/244 | Problem Solving Using Python Lab |
| **(PLC) Programming Language Course** | | **(PLC) Programming Language Course Lab** | | **(ASC) Applied Science Courses** | |
| 25PLC24 | Programming in C | 25PCL24 | Programming in C lab | 25MAT11 | Applied Mathematics for Engineers I (Stream Specific) |
| **(ETC) Emerging Technology Courses I&II** | | **(ESC) Engineering Science Course** | | 25MAT21 | Applied Mathematics for Engineers II (Stream Specific) |
| 25ETC15/ 25 | Introduction to AI and Applications | 25CAD15/25 | Computer Aided Engineering Drawing | 25PHY12/22 | Applied Physics for Engineers (Stream Specific) |
| **(NCMC) Non-Credit Mandatory Courses** | | **(HSS/AEC) Humanities/ Ability Enhancement Courses** | | 25CHE12/22 | Applied Chemistry for Engineers (Stream Specific) |
| 25UHV16/26 | UHV and Indian Ethos | 25ENG16/26 | AI Powered Communication Skills | **(ASC) Applied Science Course Lab** | |
| 25CIP17/ 27 | Constitution of India and Professional Ethics | 25KBK17/27 | Balake Kannada | 25PHL12/22 | Applied Physics Lab for Engineers |
| | | 25KSK17/27 | Samskrutika Kannada/ | 25CHL12/22 | Applied Chemistry Lab for Engineers |
| | | 25IPL18/28 | Inter Departmental Project Based Learning | | |
| | | 25EDM18/28 | Environment and Disaster Management | | |

# Guidelines for I year BE Scheme

| | |
|---|---|
| **Credit Definition:**<br>**1-hour Lecture (L) per week =1Credit**<br>**2-hoursTutorial(T) per week=1Credit**<br>**2-hours Practical / Drawing (P) per week=1Credit** | 04-Credit courses are designed for 50 hours of Teaching-Learning Session.<br>04-Credit (IC) is designed for 40-45 hours' theory and 10-12 hours of practical sessions.<br>03-Credit courses are designed for 40 hours of Teaching-Learning Session.<br>02- Credit courses are designed for 25 hours of Teaching-Learning Session.<br>01-Credit courses are designed for 12-15 hours of Teaching-Learning sessions. |
| All students admitted to the engineering program have to complete Applied Mathematics-I and Applied Mathematics-II in I and II semesters by selecting the courses prescribed for their stream, viz. ME, EEE or CSE, under the heading Applied Mathematics for Engineers-I and Applied Mathematics for Enginners -II. Those who have completed the physics course under the heading Applied Physics for Engineers in I semester have to select the prescribed stream wise chemistry course under the heading Applied Chemistry for Engineers during II semester. | |
| **Programme Specific Courses (PSC):** Programme Specific Courses (PSC) are a set of core courses tailored to a specific branch of engineering in which a student is enrolled (e.g., Mechanical Engineering, Computer Science and Engineering, Electrical Engineering, etc.). These courses are intended to provide students with in-depth knowledge and specialized skills essential for professional competence in the chosen field. Students must select and complete the course from this group that corresponds to their admitted program stream. | |
| **Engineering Sciences Courses-I/II(ESC-I/II)**: These courses are designed to broaden the technical knowledge of students beyond their core area of study. These courses enable students to gain a foundational understanding of engineering principles from other stream courses. Students are required to select and complete two courses that do not belong to their admitted program stream. For example, a student admitted to Mechanical Engineering should not select Introduction to Mechanical Engineering but any other two. One course shall be selected under ESC-I and another course under ESC-II. The two courses must be different from the other. | |
| **AICTE Activity Points Requirement for BE/B.Tech. Programs -** As per AICTE guidelines in addition to academic requirements, students must earn a specified number of Activity Points to be earned is to be eligible for the award of their degree. • Regular students admitted to a 4-year degree program must earn 100 Activity Points. • Lateral entry students (joining from the second year) must earn 75 Activity Points. • Students transferred from other universities | |

directly into the fifth semester must earn 50 Activity Points from the date of entry into college. These Activity Points are non-credit and will not be considered for the SGPA/CGPA or be used for vertical progression. However, they are mandatory for the award of the degree, and the points earned will be reflected on the eighth semester Grade Card. The hours spent on earning the activity points shall not be counted for regular attendance requirements. Students can accumulate these points at any time during their program, including on weekends, holidays, and vacations starting from the year of admission, provided they meet the minimum hours of engagement prescribed for each activity. If a student fails to earn the required Activity Points, the eighth-semester Grade Card will be withheld until the requirement is fulfilled. Consequently, the degree will be awarded only after the Grade Card has been released.

**OBE:** Outcome Based Education (Outcome-Based Education is a student-centric teaching and learning methodology in which the course delivery, assessment are planned to achieve stated objectives and outcomes.

**CO:** Course outcome (Is a statement that clearly describes what and how much or how well the student will know and be able to do after successfully completing the specified course – the essential knowledge, abilities, and attitudes that constitute the basic learning needed by a graduate of the course.

**PO:** Programme Outcomes (POs are statements about the knowledge, skills and attitudes (attributes) the graduate of a formal engineering program should have. POs deal with the general aspect of graduation for a particular program, and the competencies and expertise a graduate will possess after completion of the program). (Refer POs defined by NBA)

**SGPA -**Semester Grade Point Average (The performance of a student in a semester is indicated by a number called SGPA)

$$SGPA = \frac{\sum [\text{Course Credits x Grade Points}] \text{ for all the Courses in that semester}}{\sum [\text{Course Credits}] \text{ for all the Courses in that Semester}}$$

**CGPA:** Cumulative Grade Point Average (which is the sum of the SGPA's of all semesters or that of an academic year)

$$CGPA = \frac{\sum [\text{Course Credits x Grade Points}] \text{ for all Courses excluding those with F grades until that semester.}}{\sum [\text{Course Credits}] \text{ for all Courses excluding those with F grades until that semester.}}$$

# NEW HORIZON COLLEGE OF ENGINEERING

## B. E. in Electrical and Electronics Engineering

### Scheme of Teaching and Examinations for 2025- 2029 BATCH (2025 Scheme)

| III Semester | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **S. No.** | **Course and Course Code** | | **Course Title** | **BoS** | **Credit Distribution** | | | | **Overall Credits** | **TLP Contact Hours / Sem** | **TW & SL / Sem** | **Total Hours /Sem** | **Exam Hrs** | **Marks** | | |
| | | | | | **L** | **T** | **P** | **S** | | | | | | **CIE** | **SEE** | **Total** |
| 1 | BSC | 25MAE31 | Numerical Methods, Vector Spaces and Transforms | BS | 3 | 0 | 0 | 0 | 3 | 45 | 45 | 90 | 3 | 50 | 50 | **100** |
| 2 | PCC | 25EEE32 | DC Machines and Transformers | EE | 3 | 0 | 0 | 0 | 3 | 45 | 45 | 90 | 3 | 50 | 50 | **100** |
| 3 | PCCL | 25EEL32 | DC Machines and Transformers Laboratory | EE | 0 | 0 | 1 | 0 | 1 | 30 | - | 30 | 3 | 50 | 50 | **100** |
| 4 | PCC | 25EEE33 | Electric Circuit Theory | EE | 3 | 0 | 0 | 0 | 3 | 45 | 45 | 90 | 3 | 50 | 50 | **100** |
| 5 | PCCL | 25EEL33 | Electric Circuit Theory Laboratory | EE | 0 | 0 | 1 | 0 | 1 | 30 | - | 30 | 3 | 50 | 50 | **100** |
| 6 | PCC | 25EEE34 | Measurements and Instrumentation | EE | 3 | 0 | 0 | 0 | 3 | 45 | 45 | 90 | 3 | 50 | 50 | **100** |
| 7 | PCC | 25EEE35 | Digital Logic Design | EE | 3 | 0 | 0 | 0 | 3 | 45 | 45 | 90 | 3 | 50 | 50 | **100** |
| 8 | AEC | 25EEE36X | Ability Enhancement Course – III | EE | If the course is a Theory | | | | | | | 30 | 3 | 50 | 50 | **100** |
| | | | | | 1 | 0 | 0 | 0 | 1 | 15 | 15 | | | | | |
| | | | | | If the course is a Laboratory | | | | | | | | | | | |
| | | | | | 0 | 0 | 1 | 0 | 1 | 30 | - | | | | | |
| 9 | PROJ | 25CPD37 | Community Project using Innovation and Design Thinking | Any Dept | 0 | 0 | 1 | 0 | 1 | - | 30 | 30 | 3 | 50 | 50 | **100** |
| 10 | NCMC | 25NSS30 | National Service Scheme | - | 0 | 0 | 0 | 0 | 0 | - | 30 | 30 | -- | 50 | -- | **50** |
| | | 25PED30 | Physical Education and Sports | - | | | | | | | | | | | | |
| | | 25YOG30 | Yoga | - | | | | | | | | | | | | |
| | | 25MUS30 | Music | - | | | | | | | | | | | | |
| **Total** | | | | | | | | | **19** | 300/ **315** | 300/ **285** | **600** | **27** | **500** | **450** | **950** |

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 11 | Skill Lab* | 25SLC30 | Skill Lab-I | - | 0 | 0 | 1 | 0 | 1 | - | 30 | 30 | -- | 100 | - | **100** |
| 12 | NCMC** | 25DMAT31 | Basic Applied Mathematics -I | BS | 0 | 0 | 0 | 0 | 0 | 15 | 15 | 30 | -- | 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**: Skill Development Activity, **TW & SL-** Term Work & Self Learning, **K:** This letter in the course code indicates common to all the stream of engineering. **ESC:** Engineering Science Course, **CIE**: Continuous Internal Evaluation, **SEE**:Semester End Evaluation.

**25DMAT31*:** This non-credit mandatory course to be offered with only CIE and no SEE to Lateral entry students.

Skill Lab*: Students admitted to the 2025 Scheme of all Undergraduate Engineering programmes through regular admission shall successfully complete five (05) Skill Labs. Students admitted through lateral entry under the 2025 Scheme shall successfully complete four (04) Skill Labs. The prescribed skill labs shall be completed between the 3rd and 7th semesters. Completion of the prescribed number of Skill Labs is mandatory for the award of the degree. However, the additional Skill Lab credits shall not be considered for the award of rank, calculation of the Programme Cumulative Grade Point Average (CGPA), or vertical progression. The successful completion of the prescribed Skill Labs shall, however, be reflected in the Eighth Semester Grade Card.
Students shall attend to these skill Labs during Saturdays, Sundays, general holidays, vacations and Summer Semesters with an aim that students acquire skills of their choice to become industry ready graduates.

| **Ability Enhancement Course – III (1-0-0-0 or 0-0-1-0)** | | | |
|---|---|---|---|
| 25EEE361 | Digital Logic Design Laboratory (0-0-1-0) | 25EEE364 | 555 IC Laboratory (0-0-1-0) |
| 25EEE362 | MATLAB Programming for Problem Solving (0-0-1-0) | 25EEE365 | Bio Inspired Design and Innovation (1-0-0-0) |
| 25EEE363 | Virtual Instrumentation Using LabVIEW (0-0-1-0) | | |

**Community Project using Innovation and Design Thinking:** A community is a social unit or group of people sharing socially-significant characteristics, such as place, set of norms, culture, religion, values, customs, or identity. The Community Project using Innovation and Design Thinking course involves addressing complex issues within such a community through a human-centered lens. By integrating design thinking methodologies, these projects move beyond traditional service to focus on empathy, iterative problem-solving, and the creation of sustainable, innovative solutions. Whether establishing welfare initiatives like orphanages, implementing renewable energy systems, or developing environmental technologies, the process begins with deep community engagement to uncover latent needs before defining specific challenges.
This experiential learning activity encourages students to identify, analyze, and address real-life problems by synthesizing engineering knowledge with creative strategy. The design thinking framework guides students through stages of empathy, ideation, and rapid prototyping, ensuring that the final interventions are not only technically sound but also culturally appropriate and user-validated. This approach promotes social responsibility and civic engagement while fostering interdisciplinary collaboration and the practical application

of theoretical concepts. By navigating the ambiguity of real-world constraints through an innovative mindset, students contribute meaningfully to community welfare and sustainable development. Students may undertake these projects individually or in collaborative groups 2 to 4 members.

**CIE:**
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 rubrics.

**National Service Scheme /Physical Education/Yoga/ Music:** All students have to register for any one of the courses namely National Service Scheme (NSS), Physical Education (PED) (Sports and Athletics), Yoga (YOG), and Music (MUS) with the concerned coordinator of the course during the first week of III semesters. Activities shall be carried out between III semester and IV semester (for 2 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, Yoga and Music 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. Students may opt for different activities/options across semesters. For instance, a student participating in PE during 3rd semester may choose NSS in the 4th semester or Yoga or Music.

# NEW HORIZON COLLEGE OF ENGINEERING

## B. E. in Electrical and Electronics Engineering

### Scheme of Teaching and Examinations for 2025- 2029 BATCH (2025 Scheme)

| IV Semester | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **S. No.** | **Course and Course Code** | | **Course Title** | **BoS** | **Credit Distribution** | | | | **Overall Credits** | **TLP Contact Hours / Sem** | **TW & SL / Sem** | **Total Hours /Sem** | **Exam Hrs** | **Marks** | | |
| | | | | | **L** | **T** | **P** | **S** | | | | | | **CIE** | **SEE** | **Total** |
| 1 | BSC | 25MAE41 | Complex Analysis, Optimization and Probability Distributions | BS | 3 | 0 | 0 | 0 | 3 | 45 | 45 | 90 | 3 | 50 | 50 | **100** |
| 2 | PCC | 25EEE42 | Analog Electronics and Integrated Circuits | EE | 3 | 0 | 0 | 0 | 3 | 45 | 45 | 90 | 3 | 50 | 50 | **100** |
| 3 | PCCL | 25EEL42 | Analog Electronics and Integrated Circuits Laboratory | EE | 0 | 0 | 1 | 0 | 1 | 30 | - | 30 | 3 | 50 | 50 | **100** |
| 4 | PCC | 25EEE43 | Microcontroller and Embedded Systems | EE | 3 | 0 | 0 | 0 | 3 | 45 | 45 | 90 | 3 | 50 | 50 | **100** |
| 5 | PCCL | 25EEL43 | Microcontroller and Embedded Systems Laboratory | EE | 0 | 0 | 1 | 0 | 1 | 30 | - | 30 | 3 | 50 | 50 | **100** |
| 6 | PCC | 25EEE44 | Synchronous and Induction Machines | EE | 3 | 0 | 0 | 0 | 3 | 45 | 45 | 90 | 3 | 50 | 50 | **100** |
| 7 | PCCL | 25EEL44 | Synchronous and Induction Machines Laboratory | EE | 0 | 0 | 1 | 0 | 1 | 30 | - | 30 | 3 | 50 | 50 | **100** |
| 8 | PEC | 25EEE45X | Professional Elective Course-I | EE | If the course is a Theory | | | | | | | 90 | 3 | 50 | 50 | **100** |
| | | | | | 3 | 0 | 0 | 0 | 3 | 45 | 45 | | | | | |
| | | | | | If the course is an Integrated | | | | | | | | | | | |
| | | | | | 2 | 0 | 1 | 0 | 3 | 60 | 30 | | | | | |
| 9 | AEC | 25EEE46X | Ability Enhancement Course – IV | EE | If the course is a Laboratory | | | | | | | 30 | 3 | 50 | 50 | **100** |
| | | | | | 0 | 0 | 1 | 0 | 1 | 30 | - | | | | | |
| 10 | PROJ | 25EPP47 | Environmental Science Project | EE | 0 | 0 | 2 | 0 | 2 | - | 60 | 60 | 3 | 50 | 50 | **100** |

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 11 | NCMC | 25NSS40 | National Service Scheme | - | 0 | 0 | 0 | 0 | 0 | - | 30 | 30 | -- | 50 | -- | **50** |
| | | 25PED40 | Physical Education and Sports | - | | | | | | | | | | | | |
| | | 25YOG40 | Yoga | - | | | | | | | | | | | | |
| | | 25MUS40 | Music | - | | | | | | | | | | | | |
| | | | | | | | | **Total** | **21** | **345** | **315** | **660** | **30** | **550** | **500** | **1050** |

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 12 | NCMC | 25DMAT41* | Basic Applied Mathematics -II | BS | 0 | 0 | 0 | 0 | 0 | 15 | 15 | 30 | -- | 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**: Skill Development Activity, **TW & SL-** Term Work & Self Learning, **K:** This letter in the course code indicates common to all the stream of engineering. **ESC:** Engineering Science Course, **CIE**: Continuous Internal Evaluation, **SEE**:Semester End Evaluation.

**25DMAT41*:** This non-credit mandatory course to be offered with only CIE and no SEE to Lateral entry students.

| **Professional Elective Course-I (3-0-0-0) or (2-0-1-0)** | | | |
|---|---|---|---|
| 25EEE451 | Electromagnetic Field Theory (3-0-0-0) | 25EEE454 | Object Oriented Programming using JAVA (2-0-1-0) |
| 25EEE452 | Principles of Communication Systems (3-0-0-0) | 25EEE455 | Machine Learning Fundamentals (3-0-0-0) |
| 25EEE453 | Utilization of Electrical energy (3-0-0-0) | | |

| **Ability Enhancement Course – IV (0-0-1-0)** | | | |
|---|---|---|---|
| 25EEE461 | AutoCAD for Electrical Engineering | 25EEE464 | PCB Design Laboratory |
| 25EEE462 | Advanced Arduino Programming | 25EEE465 | Scilab for DC Machines and Transformers |
| 25EEE463 | Programming Using RoboDK | | |

**Environmental Science Project**: The Environmental Science Project is an applied learning component designed to develop students' awareness, understanding, and responsibility toward the environment. It provides an opportunity to study real-world environmental issues

and apply scientific and engineering principles to design feasible and sustainable solutions. Central to this course is the alignment with the United Nations Sustainable Development Goals (SDGs), providing a global framework for students to address urgent environmental challenges through localized action.

The topics under environment include, but are not limited to, climate change, biodiversity, air and water pollution, land use, excess use of natural resources, earthquakes, rise in the earth's temperature, power generation, and soil erosion. By exploring these themes, students contribute to the realization of specific global targets, including Clean Water and Sanitation, Affordable and Clean Energy, Climate Action, Life Below Water, and Life on Land.

The project involves problem identification, field surveys, case studies, data collection, environmental audits, analysis, and the proposal of remedial or preventive measures. These interventions are aimed at improving biodiversity, air quality, and thermal comfort while promoting Responsible Consumption and Production and Sustainable Cities and Communities. Students can take up the project individually or in a group not exceeding four members. Participants are also encouraged to opt for Interdisciplinary Projects, fostering the collaborative thinking essential for achieving a sustainable balance between human activity and the natural world.

**CIE:**

**(i) 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.

**(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 project work shall be based on the rubrics. The marks awarded for the project report shall be the same for all the batches mates.

**National Service Scheme /Physical Education/Yoga/ Music:** All students have to register for any one of the courses namely National Service Scheme (NSS), Physical Education (PED) (Sports and Athletics), Yoga (YOG), and Music (MUS) with the concerned coordinator of the course during the first week of III semesters. Activities shall be carried out between III semester and IV semester (for 2 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, Yoga and Music 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. Students may opt for different activities/options across semesters. For instance, a student participating in PE during 3rd semester may choose NSS in the 4th semester or Yoga or Music.