

PROGRAM EDUCATIONAL OBJECTIVE (PEOs)

The educational objectives of an engineering degree program are the statements that describe the expected achievements of graduates in their career, and what the graduates are expected to perform and achieve during the first few years after graduation. Program Educational Objectives Essentially Answer the Question: Why does the Program exist in the first place?

PEOs are:

- Statement of areas or fields where the graduates find employment
- Preparedness of graduates to take up higher studies

- **PEO I:** Graduates shall be professionals with expertise in the fields of Software Engineering, Networking, Data Mining and Cloud computing and shall undertake Software Development, Teaching and Research.
- **PEO II:** Graduates will analyze problems, design solutions and develop programs with sound domain knowledge.
- **PEO III:** Graduates shall have professional ethics, team spirit, life-long learning, good oral and written communication skills and adopt corporate culture, core values and leadership skills.

PROGRAM SPECIFIC OUTCOMES (PSOs)

These are what the students should be able to do at the time of graduation. The PSOs are program specific. PSOs are written by the department offering the program. There usually are two to four PSOs for a department.

Program Specific Outcomes (PSOs) are decided by the head of the institution with the help of HoDs and department experts.

- **PSO1: Professional skills:** Students shall understand, analyze and develop computer applications in the field of Data Mining/Analytics, Cloud Computing, Networking, to meet the requirements of industry and society.
- **PSO2: Competency:** Students shall qualify at the State, National and International level competitive examinations for employment, higher studies and research.

PROGRAM OUTCOMES (POs)

Programme Outcomes are narrow statements that describe what the students are expected to know and would be able to do upon the graduation. These relate to the skills, knowledge, and behaviour that students acquire through the programme.

Engineering Graduates will be able to:

- **Engineering knowledge:** Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
- **Problem analysis:** Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
- **Design/development of solutions:** Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.

- **Conduct investigations of complex problems:** Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.
- **Modern tool usage:** Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.
- **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.
- **Environment and sustainability:** Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
- **Ethics:** Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
- **Individual and team work:** Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
- **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.
- **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.
- **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.

Course Outcomes are narrower statements that describe what students are expected to know, and be able to do at the end of each course/subject. While the POs define the departmental outcomes, the COs are more oriented towards the subjects and are mostly defined by the faculties consulting higher authorities. The COs are more like statements that relate to the skills, knowledge, and behaviour the students acquire as they go through a specific course within a program. They collectively contribute to the program outcomes. They are to be mapped to the POs, and not necessarily to a single one.

Two or more COs can be mapped to a PO and a CO can be mapped to one or more PO(s). COs are mapped to different POs based on their influence on them.

Department of Electronics and Communication Engineering

Programme Educational Objectives (PEOs) for UG Programme

The graduates will be able:

- PEO 1** : To pursue their career successfully in the field of Electronics & Communication Engineering and advance in their profession.
- PEO 2** : To excel in pursuing higher education and life-long learning.
- PEO 3** : To hold high ethical standards and work effectively in multidisciplinary teams with strong management and team work skills.

Programme Outcomes (POs) for UG Programme

After completion of UG programme students will be able to:

Engineering Knowledge: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.

PO1 : **Problem Analysis:** Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.

PO2 : **Design/development of solutions:** Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.

PO3 : **Conduct investigations of complex problems:** Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.

PO4 : **Modern tool usage:** Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modelling to complex engineering activities with an understanding of the limitations.

PO5 : **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.

PO6 : **Environment and sustainability:** Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.

PO7 : **Ethics:** Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

PO8 : **Individual and team work:** Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.

PO9 : **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.

PO10 : **Project management and finance:** Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

PO11 : **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.

Programme Specific Outcomes (PSOs) for UG Programme

After the completion of the UG programme students will be able to:

PSO 1 : Understand principles and applications of electronic components, circuits and devices.

PSO 2 : Develop proficiency in Electronics and Communication Engineering to enhance employability skills.

PEOs, PSOs and POscivil engineering

Program Educational Objectives (PEOs):

The Graduate students will, after completion of 3 to 5 years of B. Tech. Civil Engineering Program,

- **PEO1: Have successful career in the diversified sectors of the engineering Industry and/ or higher studies by acquiring knowledge in mathematical, scientific and engineering fundamentals.**
- **PEO2: Analyze and design Civil engineering systems with social awareness and responsibility.**
- **PEO3: Exhibit professionalism, ethical approach, communication skills, team work in their profession and adapt to modern trends by engaging in lifelong learning.**

Program Outcomes:

At the time of graduation, student will be able to:

- PO1: Apply knowledge of mathematics, science and engineering to Civil engineering problems.
- PO2: Identify, formulate, research literature and solve complex Civil engineering problems.
- PO3: Design various structures or particular system that meets desired specifications and requirements.
- PO4: Design and conduct experiments, interpret and analyzedata, synthesizetheinformation to provide conclusion.
- PO5: Select and use appropriate engineering techniques and software tools to analyzeCivil engineering problems with understanding of limitations.
- PO6: Assess local and global impact of societal issues on Civil engineering profession.
- PO7: Able to understand the impact of engineering solutions on society anddemonstrate the knowledge of, and need for sustainable development.
- PO8: Demonstrate their professional and ethical responsibilities.
- PO9: Able to function as a member or a leader on engineering and science laboratoryteams, as well as on multidisciplinary teams.
- PO10: Communicate effectively in both verbal and written forms.
- PO11: Understand engineering and management principles and apply to their work asa member and/ or leader in a team to manage projects.
- PO12: Adapt transform in industry by understanding the need of independent and lifelong learning.

Program Specific Outcomes (PSOs):

At the time of graduation, student will be able to:

- **PSO1: Survey, map, plan and mark layouts for buildings and other structures.**
- **PSO2: Specify, analyze, design, test and assess different structures with quality and safety aspect.**
- **PSO3: Plan, analyze, and design water resources systems with effectiveness and sustainable environmental considerations.**

PEOs, PSOs and POs for computer engineering

Program Outcomes

Engineering Graduates will be able to:

1. Computer engineering knowledge: Apply the knowledge of mathematics, science, computer engineering fundamentals, and emerging fields of computer engineering to the solution of complex real-life problems.
2. Problem analysis: Identify, formulate, review research literature, and analyze complex computer engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and computer engineering sciences.
3. Design/development of solutions: Design solutions for complex computer engineering problems and design system components or processes that meet the specified needs considering public health and safety, and the cultural, societal, and environmental considerations.
4. Conduct investigations of complex problems: Use knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.
5. Modern tool usage: Create, select, and apply appropriate techniques, resources, and modern computer engineering and IT tools including FOSS tools.
6. Social responsibility: Apply reasoning informed by the contextual knowledge to assess social, health, safety, legal and cultural issues and the consequent responsibilities.
7. Environment and sustainability: Understand the impact of the professional computer engineering solutions in socio-environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
8. Ethics: Demonstrate knowledge and practice of engineering ethics.
9. Individual and teamwork: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary, multi-cultural settings.
10. Communication: Communicate effectively with engineering community and with society at large, demonstrating ability to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.
11. Project management and finance: Demonstrate knowledge and understanding of the computer engineering, finance and management principles.
12. Life-long learning: Recognize the need for, and ability to engage in independent and life-long learning.

PSOs: Program Specific Outcomes

PSO1: Demonstrate competence in Programming Technologies.

PSO2: Design, implement, test software solutions in core Computer Engineering areas including Computer Networks, Databases, Systems Software, Computer Architecture, Artificial Intelligence, Software Engineering

PSO3: Acquire and demonstrate skills in emerging area like Information Security, Data Science, Natural Language Processing, Cloud Computing, etc.

PEO's and PO's for UG Electrical engineering

List of Programme Educational Objectives (PEOs)

1. Electrical Engineering graduates will be employable in the diversified sectors of the industry, government organizations, public sector and multinational corporations and/or pursue higher education in electrical engineering or other fields of their interests, at institutes of repute and high standard.
2. Graduates will demonstrate measurable progress in the fields they choose to pursue.
3. Graduates will be able to communicate effectively, adopt lifelong learning, act with Integrity and have inter-personal skills needed to engage in, lead and nurture diverse teams, with commitment to their ethical and social responsibilities.

Program Outcomes (POs)

The program outcomes describe what students expected to know or be able to do by the time of graduation from the program. After completing the Electrical Engineering course the students will gain -

1. Knowledge of science, mathematics, and engineering principles.
2. Ability to apply this knowledge of science, mathematics, and engineering principles for solving problems.
3. Ability to identify, formulate and solve Electrical Engineering problems in the broad areas like electrical machines, analog and digital electronics, power systems and control systems.
4. Ability to understand and use different software tools in the domain of circuit, field, power system, control system simulations.
5. Ability to design and conduct experiments and analyze and interpret data.
6. Ability to exhibit management principles and function as a member of a multidisciplinary team.
7. Sensitivity towards professional and ethical responsibility.
8. Ability to communicate effectively in writing as well as through public speaking.
9. Ability to appreciate and engage in lifelong learning.
10. Knowledge of contemporary issues.
11. An ability to use the techniques, skills, and modern engineering tools necessary for engineering practice.

PEO's & PO's electronics

Program Education Objectives (PEOs)

Graduates will demonstrate ability to:

1. Solve real-life engineering problems, design and development of innovative and cost-effective products exhibiting a solid foundation in Electronics and Communication Engineering fundamentals to cater needs of society.
2. Excel in Industry/technical profession, higher studies, and entrepreneurship exhibiting global competitiveness.
3. Exhibit professional ethics and values, effective communication, teamwork, multidisciplinary approach, and ability to relate engineering issues to broader social context.

Program Outcomes (POs)

Graduates of Electronics & Telecommunication Engineering by the time of graduation will

Demonstrate:

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

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

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

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

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

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.

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

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.

Program specific outcomes

PSO 1: Development of Hardware/Software Co-designs: An ability to apply electronic design principles in the development of hardware/software prototypes and systems with progressive depth of complexity.

PSO 2: Development of Electronics Communication Systems: An ability to deploy conventional & next-gen. techniques/tools for analysis & design of Information and Communication systems.

PSO 3: Development of Signal Processing Applications: An ability to apply algorithmic knowledge of signal processing towards analysis, Recognition, and synthesis of multi-dimensional data.

PEOs, PSOs and POs of Mechanical engineering

Programme Educational Objectives (PEOs)

1. Cater to the needs of Indian as well as multinational industries.
2. Be competent with strong technological background to analyze data, formulate and undertake industrial problems and obtain viable solutions
3. Make successful career in industry / research / higher Studies.
4. Be life-long learning and should be able to work on multi-disciplinary projects.
5. Be Competent for effective communication, in management and in professional skills and ethics.

Programme Outcomes

Programme Outcomes of Engineering program as per norms (common to all UG/PGprogrammes)

PO1. Engineering knowledge: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialisation for the solution of complex engineering problems.

PO2. Problem analysis: Identify, formulate, research literature, and analyse complex engineering problems 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 that meet the specified needs with appropriate consideration for public health and safety, and cultural, societal, and environmental considerations.

PO4. Conduct investigations of complex problems: The problems: • that cannot be solved by straightforward application of knowledge, theories and techniques applicable to the engineering discipline. • that may not have a unique solution. For example, a design problem can be solved in

many ways and lead to multiple possible solutions. • that require consideration of appropriate constraints/requirements not explicitly given in the problem statement. (like: cost, power requirement, durability, product life, etc.). • which need to be defined (modeled) within appropriate mathematical frame work. • that often require use of modern computational concepts and tools.

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, 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.

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

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

Programme Specific Objectives (PSOs)

1. Apply concepts of Design, Production and Thermal-fluid sciences to solve engineering problems utilizing advanced technology.
2. Use mechanical engineering software for the design and analysis of mechanical engineering systems/processes.
3. Extend and implement new thoughts on product design and development with the aids of modern CFD and CAD/CAM/CAE tools, while ensuring best manufacturing practices.