Programme Educational Objectives (PEOs), Programme Outcomes (POs) & Programme Specific Outcomes (PSOs)

2.6.1 DEPARTMENT OF CIVIL ENGINEERING

Programme Educational Objectives (PEOs)

> Analyzing and designing Civil engineering systems with social awareness and responsibility

> Exhibiting professionalism and ethics, communication skills, team work through their profession and adopting to emerging technologies.

Programme Outcomes (POs)

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.

Programme Specific Outcomes (PSOs)

> Applying concepts and solving problems in the branches of Civil Engineering such as Structural, Environmental, Hydraulics, Construction Management and Geotechnical Engineering.

> Enabling students to understand their role as leaders and attitude process and to be effective in professional practice of Civil Engineering.

2.6.1 . DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

Programme Educational Objectives (PEOs)

> To make students as well-equipped computer professionals by providing comprehensive knowledge in Mathematics, Science and Engineering to find the solutions to the real-time computing problems.

> To enhance students to be capable of transforming their gained knowledge into skills in order to work with modern tools and technologies to impart innovative research capabilities.

> To provide all-round development thereby students are motivated to choose their career as entrepreneurs and technocrats with ethical values and to adapt themselves to rapidly changing work environment for benefit of the society.

Programme Outcomes (POs)

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.

Programme Specific Outcomes (PSOs)

> To analyze and develop essential proficiency skills in the areas related to engineering science, communicating the earned knowledge, algorithms and analysis, system software, networking and data science and to apply the knowledge based skill to solve real time problems.

> To ensure programming skills for the software development using modern computer languages, tools and platforms.

> To use the knowledge in research and product development accompanying ethical values as to benefit the society.

2.6.1 . DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

Programme Educational Objectives (PEOs)

> To nourish the students with fundamentals of engineering and technology by excelling in the field of Electronics and Communication to envisage the emerging industrial needs and professional competence.

> To impart skill based training program to design, analyze and create innovative solutions for technical challenges.

> To instill strong zeal and elegant personality by imbibing ethical principles and modeling the prosocial behavior to inculcate values among future generation.

Programme Outcomes (POs)

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.

Programme Specific Outcomes (PSOs)

> Ability to exploit the acquired knowledge of basic skills, mathematical concepts and electronic principles for the design of electronic and communication systems.

> Be acquainted with the continuous learning in the field of Embedded systems, VLSI design, Communication and Signal Processing and hold expertise in the modern tools for quenching the techno-thirsty society.

> Incorporate the socio-responsible electronics and communication engineer with leadership, teamwork skills and exhibit a commitment to the lifelong learning.

2.6.1 . DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

Programme Educational Objectives (PEOs)

> To provide strong foundation in basic science, mathematics and electrical engineering necessary to formulate, solve and analyze electrical and electronics problems.

> To prepare successful career in industry and motivation for higher education.

> To provide awareness among the students for lifelong learning and to inculcate professional ethics.

Programme Outcomes (POs)

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.

Programme Specific Outcomes (PSOs)

> Ability to understand, model, analyze and design of electrical science and apply them to electrical and electronics engineering problems.

> Ability to review, prepare and present technological developments.

> Ability to exhibit a commitment to professional and ethical practices, and prepare themselves for lifelong learning.

2.6.1 . DEPARTMENT OF MECHANICAL ENGINEERING

Programme Educational Objectives (PEOs)

> To acquire the fundamental and technical knowledge in the field of Mechanical Engineering and allied fields.

> To impart skill based training program to design, analyze and create innovative solutions for technical challenges for the emerging industrial needs and higher studies.

> To inculcate students with professional and ethical attitude, effective communication and managerial skills.

Programme Outcomes (POs)

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.

Programme Specific Outcomes (PSOs)

> Understand the concepts in various areas of Mechanics, Manufacturing, Design, Materials and Thermal engineering.

> Apply the engineering concepts in various domains and to solve the problems through latest design and manufacturing software tools.

> Provide solution to the social relevant problems through mechanical engineering concepts with ethical values.

2.6.1. DEPARTMENT OF ARTIFICIAL INTELLIGENCE AND DATA SCIENCE

Programme Educational Objectives (PEOs)

> To address the real time complex engineering problems using innovative approach with core computing skills.
> To apply core-analytical knowledge and appropriate techniques and provide solutions to real time challenges of national and global society.
> To impart ethical knowledge for professional excellence, leadership and develop life-long learning skills needed for employment and entrepreneurship.

Programme Outcomes (POs)

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.

Programme Specific Outcomes (PSOs)

- Understand, analyze and develop essential proficiency in the areas related to Artificial Intelligence and Data Science in terms of underlying statistical and computational principles and apply the knowledge to solve practical problems.
- Implement Artificial Intelligence and Data Science techniques such as Neural Networks, Machine Learning and Data Analytics to design novel algorithms for successful career and entrepreneurship.
- Apply the skills in the sectors of Health Care, Education, Agriculture, Intelligent Transport, Environment, Smart Systems in multi-disciplinary domains.

2.6.1. DEPARTMENT OF INFORMATION TECHNOLOGY

Programme Educational Objectives (PEOs)

> To empower graduates with a strong mathematical foundation, scientific, engineering and concepts of Information Technology to solve problems by analyzing and designing solutions.

> To inculcate graduates with qualities like excellent communication skills, teamwork, moral values, ethical conduct and technical excellence for real world challenges.

> To empower graduates for lifelong learning through innovative activities, advanced technology and higher studies.

Programme Outcomes (POs)

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.

Programme Specific Outcomes (PSOs)

- To understand the concepts of theoretical working of computing-machines and their applications in the field of software technology, application and system programming, data analytics, machine learning, networking and other relevant areas.

- To have an ability to apply knowledge of automation and usage of modern hardware and software tools related to Information Technology for solving complex problems.

- To have the capability to analyze, comprehend, design and development of computing systems for multi-disciplinary engineering applications with ethical valuesfor societal wellbeing.