Programme Outcomes for B.Tech Chemical Engineering

PO-1: Engineering knowledge: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.

PO-2: Problem analysis: Identify, formulate, research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.

PO-3: 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.

PO-4: 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.

PO-5: 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.

PO-6: 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.

PO-7: 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.

PO-8: Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

PO-9: Individual and team work: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.

PO-10: 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.

PO-11: Project management and finance: Demonstrate knowledge 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.

PO-12: 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 Outcomes for B.Tech Civil Engineering

PO-1: Engineering knowledge: Ability to acquire and apply fundamental principles of science and engineering to address the issues and challenges of Civil Engineering and Technology

PO-2: Problem analysis: Ability to analyze and solve practical problems related to Civil Engineering and Technology

PO-3: Design/development of solutions: Ability to design, develop and evaluate Civil Engineering works to meet the desired need

PO-4: Conduct investigations of complex problems: Ability to conduct, analyse and interpret experiments and apply experimental results to improve the process in Civil Engineering

PO-5: Modern tool usage Ability to use current technology, skills and modern techniques in construction practices of Civil Engineering structure

PO-6: The engineer and society: Ability to assess the impact of global, social and cultural changes on Infrastructure projects

PO-7: Environment and sustainability: Ability to understand the importance of sustainability and environmental impact in design and development of Infrastructure projects

PO-8: Ethics: Ability to exhibit professional, legal and ethical behavior

PO-9: Individual and team work: Ability to work effectively as an individual and as a member leader in a team

PO-10: Communication: Ability to communicate and present effectively

PO-11: Project management and finance: Ability to employ effective project management skills to develop a project plan, monitor and track development efforts

PO-12: Life-long learning: Ability to enhance self-improvement through continuous professional development and life- long learning

Program Outcome for B.Tech Electrical Engineering:

PO-1: Engineering knowledge: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.

PO-2: 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.

PO-3: 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.

PO-4: 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.

PO-5: 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.

PO-6: 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.

PO-7: 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.

PO-8: Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

PO-9: Individual and team work: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.

PO-10: 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.

PO-11: 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.

PO-12: 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 Outcome for B.Tech ICT:

PO-1: Engineering knowledge: Apply the knowledge of mathematics, science, engineering fundamentals and an engineering specialization to the solution of complex engineering problems.

PO-2: 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.

PO-3: 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.

PO-4: 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.

PO-5: 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.

PO-6: 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.

PO-7: 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.

PO-8: Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

PO-9: Individual and team work: Function effectively as an individual, and as a member or leader in diverse teams and in multidisciplinary settings.

PO-10: 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.

PO-11: 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 in multidisciplinary environments.

PO-12: 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 Outcomes B.Tech. Electronics and Communication Engineering (ECE):

PO-1: Engineering knowledge: Apply the knowledge of mathematics, science, engineering fundamentals and an engineering specialization to the solution of complex engineering problems.

PO-2: 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.

PO-3: 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.

PO-4: 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.

PO-5: 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.

PO-6: 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.

PO-7: 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.

PO-8: Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

PO-9: Individual and team work: Function effectively as an individual, and as a member or leader in diverse teams and in multidisciplinary settings.

PO-10: 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.

PO-11: 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 in multidisciplinary environments.

PO-12: 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 Outcomes for B.Tech. Computer Engineering:

PO-1: Engineering knowledge: Apply the knowledge of mathematics, science, engineering fundamentals and an engineering specialization to the solution of complex engineering problems.

PO-2: 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.

PO-3: 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.

PO-4: 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.

PO-5: 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.

PO-6: 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.

PO-7: 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.

PO-8: Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

PO-9: Individual and team work: Function effectively as an individual, and as a member or leader in diverse teams and in multidisciplinary settings.

PO-10: 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.

PO-11: 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 in multidisciplinary environments.

PO-12: 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 Outcomes for B.Tech. Automobile Engineering:

PO-1: Engineering knowledge: Apply the knowledge of mathematics, science, engineering fundamentals and an engineering specialization to the solution of complex engineering problems.

PO-2: 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.

PO-3: 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.

PO-4: 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.

PO-5: 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.

PO-6: 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.

PO-7: 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.

PO-8: Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

PO-9: Individual and team work: Function effectively as an individual, and as a member or leader in diverse teams and in multidisciplinary settings.

PO-10: 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.

PO-11: 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 in multidisciplinary environments.

PO-12: 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 Outcomes for B.Tech. Mechanical Engineering:

PO-1: Engineering knowledge: Apply the knowledge of mathematics, science, engineering fundamentals and an engineering specialization to the solution of complex engineering problems.

PO-2: 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.

PO-3: 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.

PO-4: 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.

PO-5: 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.

PO-6: 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.

PO-7: 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.

PO-8: Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

PO-9: Individual and team work: Function effectively as an individual, and as a member or leader in diverse teams and in multidisciplinary settings.

PO-10: 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.

PO-11: 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 in multidisciplinary environments.

PO-12: 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.

M.Tech. (Computer Engg. (Data Science))

Program Educational Objectives (PEOs)

PEO-1. Graduate will have successful professional career as innovators, entrepreneurs, and business professionals who will be able to adapt to an ever-changing world and its demands for computational and data analytic skills.

PEO-2. Graduate will undertake research work or pursue higher studies by acquiring in depth knowledge in data science and allied fields.

Program Outcomes (as per NBA-PG SAR Guidelines)

PO-1: An ability to independently carry out research /investigation and development work to solve practical problems.

PO-2: An ability to write and present a substantial technical report/document.

PO-3: Students should be able to demonstrate a degree of mastery over the area as per the specialization of the program. The mastery should be at a level higher than the requirements in the appropriate bachelor program.

PO-4: Students should be able to analyse and relate critically to different sources of information, datasets and data processes; and apply these to structure and formulate data-driven reasoning.

PO-5 : Students should be able to apply modern data science methods to the solution of real world business problems, communicate findings, and effectively present results using data visualization techniques for societal benefits.

PO-6: Recognize and analyse ethical issues in business related to intellectual property, data security, integrity, and privacy.

M.Tech. (Computer Engg. (Cyber Security))

Program Educational Objectives (PEOs)

PEO-1. Graduate will be successfully recognized as superiors for their problem solving capabilities and professional skills in the field of Cyber Security.

PEO-2. Graduate pursue higher studies or research career by acquiring in depth knowledge in cyber security and allied fields.

Program Outcomes (POs)

PO-1: An ability to independently carry out research /investigation and development work to solve practical problems.

PO-2: An ability to write and present a substantial technical report/document.

PO-3: Students should be able to demonstrate a degree of mastery over the area as per the specialization of the program. The mastery should be at a level higher than the requirements in the appropriate bachelor program.

PO-4: Design and Innovate computing systems addressing diverse needs in the domain of cyber security.

PO-5: Analyze the requirements of cyber security and design operational strategies and policies.

PO-6: Use cyber security solutions to analyze ethical, legal and social implications to solve real world problems.

Programme Outcomes for M. Tech Electrical Engineering (Power Systems):

PO-1: An ability to independently carry out research /investigation and development work to solve practical problems

PO-2: An ability to write and present a substantial technical report/document

PO-3: Students should be able to demonstrate a degree of mastery over the area as per the specialization of the program. The mastery should be at a level higher than the requirements in the appropriate bachelor program

Programme Outcomes for M. Tech Nuclear Science and Technology:

PO-1: An ability to use of nuclear technology and nuclear isotopes in food and agriculture, medicine and healthcare.

PO-2: An ability to integration of nuclear systems into society and environment.

PO-3: An ability to use of different techniques like imagine techniques into nuclear industry.

PO-4: An ability to devise and conduct experiments, interpret data and provide well informed conclusions related to nuclear technology.

PO-5: An ability to use of his knowledge into nuclear safety and security of nuclear materials.

PO-6: An ability to understand the impact of engineering solutions within economical, environmental and societal context for sustainable development.

PO-7: An ability to develop technology with ethical responsibility through his multidisciplinary research.

PO-8: To produce nuclear technology based entrepreneur.

PO-9: An ability to use of nuclear science technology in peaceful use

Programme Outcomes for M. Tech (Energy Systems (Focused on Solar Energy)):

PO-1: To prepare the students for successful career in the energy industry; energy regulation and management agencies; and in the academic and R&D institutions.

PO-2: To produce graduates strong in energy resources, technologies and management fundamentals, and capable in addressing the present and potential future energy problems.

PO-3: To produce energy professionals, who are sensitive to, and well aware of, the energy issues and concerns, and who can apply their specialized knowledge for the sustainable energy management.

PO-4: 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.

Programme Outcomes for M. Tech Chemical Engineering:

PO-1: An ability to independently carry out research /investigation and development work to solve practical problems.

PO-2: An ability to write and present a substantial technical report/document.

PO-3: Students should be able to demonstrate a degree of mastery over the area as per the specialization of the program. The mastery should be at a level higher than the requirements in the appropriate bachelor program

Programme Outcomes for M. Tech (Energy and Environmental Management):

PO-1: An ability to independently carry out research /investigation and development work to solve practical problems.

PO-2: An ability to write and present a substantial technical report/document.

PO-3: Students should be able to demonstrate a degree of mastery over the area as per the specialization of the program. The mastery should be at a level higher than the requirements in the appropriate bachelor program

Programme Outcomes for M. Tech Civil Engineering (Infrastructure Engineering and Management):

PO-1: Engineering Knowledge: Student would be able to apply the engineering knowledge pertaining to Infrastructure Engineering and Infrastructure Management. This programme aims at developing Techno-Managers for the complex infrastructure projects.

PO-2: Problem Analysis: Student would be able to analyze the problems pertaining to decision making in complex mega infrastructure projects.

PO-3: Modern Tool Usage: Student would be able to use the modern tools and techniques including digital transformation methods used for managing, controlling and monitoring of present day complex infrastructure projects.

PO-4: Engineer and Society: Programme aims at developing Techno-Managers who would contribute towards societal development.

PO-5: Environment and Sustainability: Student would have overall concepts about the process and methodology for sustainable development.

PO-6: Ethics: Apply ethical principles and commit to professional ethics and responsibilities.

PO-7: Project Management and Finance: Programme aims at delivering thorough knowledge about Project management and Project Finance for controlling and monitoring of complex infrastructure projects.

PO-8: Communication: Student would develop strong communication skills to become capable Project Managers for handling infrastructure projects independently.

PO-9: Life-Long Learning: Programme aims at developing life-long learners capable of contributing to the society throughout their life.

Programme Outcomes for M. Tech Mechanical Engineering (Design):

PO-1: Independently/jointly carry out research/investigation and development work to solve practical problems.

PO-2: Formulate, analyze, interpret and synthesize problems in mechanical engineering design using modern tools and techniques following all ethical practices.

PO-3: Design component, process or system to meet desired needs of manufacturability, sustainability, economy, environment, health and safety.

PO-4: Write/prepare and present a substantial technical report/document.

PO-5: Develop competence to successfully execute Industry/R&D/Entrepreneurial projects, address societal needs and be a life-long learner.

Programme Outcomes for M. Tech Mechanical Engineering (Manufacturing):

PO-1: An ability to use appropriate analytical tools in identifying, searching, and formulating problems related to manufacturing engineering to reach the valid conclusions.

PO-2: To develop the ethical, societal, health, safety, legal and cultural values and consequent responsibilities relevant to manufacturing practices.

PO-3: To understand the importance of the sustainability in manufacturing domain through societal and environmental context.

PO-4: An ability to communicate knowledge through substantial technical reports.

PO-5: Engage in life-long learning in manufacturing technologies and contemporary issues.

Programme Outcomes for M. Tech Mechanical Engineering (Thermal Engineering):

PO-1: An ability to independently carry out research /investigation and development work to solve practical problems.

PO-2: An ability to write and present a substantial technical report/document.

PO-3: An ability to acquire and apply advanced knowledge in the area of thermal sciences.

PO-4: An ability to work effectively in interdisciplinary teams to develop efficient thermal systems for the society.

PO-5: An ability to apply engineering and scientific principles for the effective management of thermal systems.

PO-6: An ability to examine critically the outcomes of one's actions and make corrective measures subsequently.

Program Outcomes for M. Tech Environmental Engineering:

PO-1: Engineering knowledge: Ability to acquire and apply fundamental principles of science and engineering to address the environmental problems

PO-2: Problem analysis: Ability to analyze and solve practical problems related to environment issues

PO-3: Design/development of solutions: Ability to design, develop and evaluate treatment plants

PO-4: Conduct investigations of complex problems: Ability to conduct, analyze and interpret experiments and apply experimental results to improve the process in environmental engineering

PO-5: Modern tool usage Ability to use modern tools and techniques for solving environmental problems

PO-6: The engineer and society: Ability to assess the impact of global, social and cultural changes on environment

PO-7: Environment and sustainability: Ability to understand the importance of sustainability for any industrial projects

PO-8: Ethics: Ability to exhibit professional, legal and ethical behavior

PO-9: Individual and team work: Ability to work effectively as an individual and as a member/ leader in a team

PO-10: Communication: Ability to communicate and present effectively

PO-11: Environmental economics and finance: Ability to employ environmental and economic knowledge to understand linkage between economic growth and environment.

PO-12: Life-long learning: Ability to enhance self-improvement through continuous professional development and life- long learning

Program Outcomes for M. Tech (Civil – Transportation Engineering)

PO-1: Develop a thorough understanding of transportation engineering and allied subjects

PO-2: Demonstrate knowledge of transportation project planning, design, construction, and maintenance

PO-3: Ability to use analytical skills to identify, analyze, and solve real-world transportation engineering challenges

PO-4: Inculcate the research knowledge to provide suitable and sustainable solutions to various transportation authorities for effective implementation

PO-5: Develop skills to apply modern tools, software, and other IT tools for solving complex transportation problems

PO-6: The ability to write and present research articles, technical reports/documents, and technical reports/documents

PO-7: Ability to work independently or as part of a team with high ethical values when it comes to social, environmental, and economic issues