Program Accreditation

Adama Science and Technology University (ASTU) is one of the two science and technology universities established to support the industrial development of the nation by producing competent and leading graduates in science and technology fields. The university is working to produce qualified, competent, and socially responsible professionals in the fields of science and technology through promoting research oriented science and technology education. ASTU is working aggressively to internationally accredit its seventeen (17) undergraduate programs. So far, all the currently existing curricula were revised as per the principle of curriculum accreditation following ABET accord and its now under implementation beginning from January 2020. The Program Educational Objectives (PEOs) and Student Outcomes/Program Outcomes of all the programs are listed as follows.

1. **Applied Biology**

   Program Education Objectives (PEOs)

   - **PEO-1**: To produce biologists that able to apply biological concepts at cellular and molecular levels with skills, and professional ethics who can lead the industrial sectors, interpret biological data, and present scientific reports.
   - **PEO-2**: To produce biologist who can design and apply the principles of applied biology to identify and solve societal problems related to industry, agriculture, health, environment issues, teaches educational institutions and search solutions in teams and in collaboration with the community, governmental bodies and NGOs.
   - **PEO-3**: To produce Biologists who can conduct biological and biotechnological process within research sectors with emphasis on genetic engineering for production enhancement, pharmaceutical biotechnology for drug and /or natural production, Biofuel, biogas and biodiesel engineering for energy production, etc.
   - **PEO-4**: To produce Biologists committed to bring sustainable development in terms of resource and energy conservation and sustainable utilization, and biological productions at small scale and commercial levels for the betterment of society and nation.
   - **PEO-5**: To add new field of study or courses based on national interest and generate trained manpower on designed specific packages to create job opportunity at national and international levels

PEO-6: To produce biologists who demonstrate technical competency and leadership to create, start-up business of their own and become professional bio-engineers leading to a successful career.

Student Learning Outcomes (POs)

- **PO-1:** Ability to perform applied researches in various biological disciplines
- **PO-2:** Ability to apply various biological techniques, and methods, at cellular and molecular level
- PO-3 Ability to analyze and interpret biological data, write and communicate scientific findings
- **PO-4:** Ability to study postgraduate study at national and international levels
- **PO-5:** Ability to engage different industrial sectors, research center, and other related area of their job opportunity and thus able to positively influence the society and serve as agent of change in matters related to application of any biological sciences
- **PO-6:** Ability to demonstrate knowledge, leadership quality, business incubation, project managing capability, and entrepreneurship skill etc. to one's own work and/or biological profession
- **PO-7:** Ability to produce biological and/or biotechnological competent with the aims of technology transfer for better production improvement as an individual, and member in diverse nation and in multi-disciplinary area
- **PO-8**: Ability to design projects based on social demand, training them and/or practical display how to engage for working habit for their income generations

2. **Applied Chemistry**

   Program Education Objectives (PEOs)

   - ❖ PEO-1: To produce qualified chemists with operational and leading role in chemical industries/ institutes.
   - ❖ PEO-2: To produce graduates capable of integrating and relating chemistry knowledge to address environmental and societal issues
   - ❖ PEO-3: To produce competent and qualified chemist who can carry out demand driven and collaborative research to address socio economic problems
   - ❖ PEO-4: Enabling graduates to pursue higher studies and to become entrepreneurs

Program Outcomes

- ❖ PO-1: Identify, formulate, and solve broadly defined technical or scientific problems by applying chemistry knowledge
- ❖ PO-2: Formulate or design a system, process, procedure or chemistry related program to meet desired needs
- ❖ PO-3: An ability to develop and conduct chemistry related experiments, analyze by applying appropriate techniques, modern instruments and interpret data and use scientific Justification to draw conclusions
- ❖ PO-4: An ability to communicate effectively with a range of audiences
- ❖ PO-5: Understand ethical and professional responsibilities and the impact of technical and/or scientific solutions in global, economic, environmental, and societal contexts
- ❖ PO-6: Function effectively on teams that establish goals, plan tasks, meet deadlines, and analyze risk and uncertainty
- ❖ PO-7: Ability to demonstrate the capacity to undertake lifelong learning

3. **Industrial Chemistry Program**

Program Education Objectives (PEO)

- ➢ PEO-1: To produce qualified Industrial chemists with operational and leading role in chemical industries/institutes
- ➢ PEO-2: To produce graduates capable of integrating and relating Industrial chemistry knowledge to address environmental and societal issues.
- ➢ PEO-3: To produce competent and qualified Industrial chemist who can carry out demand driven and collaborative research to address socio economic problems
- ➢ PEO-4: Enabling graduates to pursue higher studies and to become entrepreneurs

Program Outcomes

- ➢ PO-1: Identify, formulate, and solve broadly defined technical or scientific problems by applying Industrial chemistry knowledge.
- ➢ PO-2: Formulate or design a system, process, procedure or Industrial chemistry related program to meet desired needs

- ➢ PO-3: An ability to develop and conduct any chemistry related experiments, analyze by applying appropriate techniques, modern instruments and interpret data and use scientific Justification to draw conclusions
- ➢ PO-4: An ability to communicate effectively with a range of audiences
- ➢ PO-5: Understand ethical and professional responsibilities and the impact of technical and/or scientific solutions in global, economic, environmental, and societal contexts
- ➢ PO-6: Function effectively on teams that establish goals, plan tasks, meet deadlines, and analyze risk and uncertainty.
- ➢ PO-7: Ability to demonstrate the capacity to undertake lifelong learning

4. Applied Geology Program

Program Education Objectives (PEO)

- ♣ PEO-1: To produce technically qualified Geologist with the potential to become leaders in earth science with emphasis on natural resources (Geothermal gas, oil, Natural gas, coal, mineral resources, water and industrial minerals and rocks).
- ♣ PEO-2 To produce graduate who can play an important role in identifying problems and finding solutions to geological and natural hazard (earthquakes, floods, landslides)
- ♣ PEO-3 To produce Earth scientist who are committed and define ways of sustainable exploitation of geological resources for the betterment of society and nation.

Program Outcomes

- ♣ PO-1: Have the sufficient tacit and explicit knowledge to compare, analyze and synthesize data on geologic and geologic processes, features and resources.
- ♣ PO-2: Have the skill to measure, describe, record, report, and map geologic features, processes, and resources using conventional and up-to-date methods, equipments and standards
- ♣ PO-3: Have the attitude and caliber to transform theories and principles from one Earth Science discipline to another

- PO-4: Be able to convert the attained knowledge to actionable knowledge in sectors such as earth resources evaluation, development and management, geohazards and environmental changes detection and mitigation
- PO-5: Be able to conduct basic and applied researches in earth sciences (including problem identification, comparing and contrasting, inventorying) and be able to communicate with individuals and the community
- PO-6: Be cognizant of the ethics, attitude, and value of own profession and that of responsible citizenship
- PO-7: Integrate to be as part of a large organization, or equally, they could work for a consultancy firm (groundwater exploration, Geotechnical, Mining and environmental) and the capacity to undertake lifelong learning

5. Applied Mathematics Program

Program Education Objectives (PEOs)

- PEO-1: Transfer mathematical knowledge and technology to industries and the community
- PEO-2: Use knowledge and skills necessary for immediate employment or acceptance into a graduate program
- PEO-3: Assist and participate in conducting research where the knowledge of Mathematics and Statistics can be applied, for instance in financial, insurance, business, agriculture, health and engineering sectors
- PEO-4: Advance a core of mathematical and technical knowledge that is adaptable to changing technology and provide a solid foundation for future learning
- PEO-5: Reason logically, thinks critically and act in an ethical manner in his/her or in groups of professional career in particular and the community in general

Students Outcomes (PO)

- PO-1 Ability to apply the fundamental principles and techniques of mathematics to solve basic mathematical problems and other computations
- PO-2 Ability to acquire mathematical skills needed in modeling and solving practical problems

- PO-3 Ability to formulate or design a system, process, procedure or program to meet desired needs.
- PO-4 Ability to identify, formulate and solve mathematical problems arising in financial, engineering, health and agriculture sectors and many additional application areas.
- PO-5 Ability to comprehend theoretical and practical knowledge that can enable them to solve mathematical problems and societal problems of the country and the world at large.
- PO-6 Ability to function effectively on teams that establish goals, plan tasks, meet deadlines, and analyze risk and uncertainty
- PO-7 Ability to apply ethical principles and commit to professional ethics and responsibilities and norms of mathematical practice
- PO-8 Ability to apply technology tools to solve problems
- PO-9 Ability to develop and conduct experiments or test hypotheses, analyze and interpret data and use scientific judgment to draw conclusions
- PO-10 Ability to communicate effectively with the workforce and the community

6. Applied Physics Program

Program Education Objectives (PEOs)

- PEO-1 To produce qualified researcher that can conduct scientific research in the area of physics that solve the problem of the society
- PEO-2 To produce qualified Physicist who continuously upgrade his professional career and can apply his knowledge in Physics-related careers in industry, higher institutions and social affairs
- PEO-3 To produce professionals who can give demand driven community service by applying the knowledge of physics
- PEO-4 To produce an expert who can work in group, make reliable decisions, have personal confidence, have sense of responsibility and have the commitment to serve the community

Students Outcome

- ➢ PO-1 An ability to identify, formulate, and solve broadly defined technical or scientific problems by applying knowledge of mathematics and science and/or technical topics to areas relevant to physics.
- ➢ PO-2 An ability to formulate or design physical system, process, procedure or program to meet desired needs
- ➢ PO-3 An ability to develop and conduct physics related experiments or test hypotheses, analyze and interpret data and use scientific judgment to draw conclusions
- ➢ PO-4 An ability to ethically communicate effectively with scientific community and others.
- ➢ PO-5 Have developed solid knowledge in physics and readiness to be trained in specific professions like Physics teaching, Physics curriculum design and implementation
- ➢ PO-6 An ability to understand ethical and professional responsibilities and the impact of technical and/or scientific solutions in global, economic, environmental, and societal contexts
- ➢ PO-7 An ability to function effectively on teams that establish goals, plan tasks, meet deadlines, and analyze risk and uncertainty.
- ➢ PO-8 Develop the professional skills that prepare them for immediate employment or to pursue higher studies in the related disciplines.
- ➢ PO-9 Acquire the computational and information technology skills, to collect, order, analyze and present data using computers and other electronic systems.
- ➢ PO-10 Develop and adapt local technologies for local needs

7. **Pharmacy Program**

Program Education Objectives (PEO)

- ➢ PEO-1 To produce qualified pharmacists with operational and leading role in health sector and pharmaceutical industries.
- ➢ PEO-2 To create skilled and qualified pharmacist who can conduct demand-driven, collaborative, and team-based research to solve socioeconomic issues
- ➢ PEO-3 To deliver pharmacy services that is community-focused and upholds the highest standards of morality, intellect, and social principles.

- ➢ PEO-4 To produce pharmacy graduates with the necessary knowledge and skills to adapt, develop, and transfer technologies to industries, as well as to become entrepreneurs in the pharmaceutical and medical fields.

Program Outcomes

- ➢ PO-1 Discuss the fundamental concept and knowledge in discipline of pharmacy including biomedical and pharmaceutical sciences.
- ➢ PO-2 Exhibit knowledge from his/her major domain in problem identification, critical thinking, analysis and providing solutions to pharmaceutical and allied technology disciplines.
- ➢ PO-3 Analyze and formulate solutions to pharmaceutical related problems
- ➢ PO-4 Apply practical, digital and numeracy skills in clinical, industrial and community pharmacy settings.
- ➢ PO-5 Display integrity, ethics and professionalism in general conduct
- ➢ PO-6 Display abilities to manage tasks in drug manufacturing and clinical settings as a member and leader in a diverse team.
- ➢ PO-7 Demonstrate entrepreneurship skills and transfer technologies to industries pertaining to pharmaceutical related areas.

8. **Architecture**

Program Educational Objectives (PEOs)

- ➢ PEO-1: To Produce competitive Architects that Apply knowledge, strong reasoning, critical thinking, and quantitative skills by using the architectural principles for analyzing and solving the practical problems and could design and implement creative and sustainable solutions.
- ➢ PEO-2: To produce Architects who exhibit strong communication, interpersonal, and management skills as leaders to meet the increasing demands of the architecture profession to serve the community.
- ➢ PEO-3: To produce Architects to challenge conventions through innovative thinking and technological building design.
- ➢ PEO-4: To produce Graduates who Exhibit professional character and decision-making skills embodying professionalism and ethical behavior.

- ➢ PEO-5: To produce professional Architects who can engage in life-long learning professional development after graduation to meet evolving architectural challenges facing society by on-the-job training, participation in professional societies, additional formal education, continuing education and professional development, research, and self-study.

Program Outcomes (POs)/Student Outcomes (SOs)

- ➢ PO-1: Ability to apply knowledge of mathematics, science, and engineering to solve complex architectural problems.
- ➢ PO-2: Ability to design and conduct experiments, as well as analyze and interpret data related to architectural design and construction.
- ➢ PO-3: Ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability.
- ➢ PO-4: Ability to function effectively on multidisciplinary teams to accomplish common goals Related to architectural design and construction.
- ➢ PO-5: Ability to identify, formulate, and solve complex architectural problems using appropriate Research methods, including design thinking and critical analysis.
- ➢ PO-6: Ability to communicate effectively, both orally and in writing, with a range of audiences Related to architectural design and construction.
- ➢ PO-7: Ability to understand the impact of architectural solutions in a global, economic, Environmental, and societal context.
- ➢ PO-8: Ability to recognize the need for, and engage in, lifelong learning related to architectural design and construction, including the use of new technologies and emerging trends.

9. **Civil Engineering**

Program Educational Objectives (PEOs)

- • PEO-1: To produce technically qualified professional Civil Engineers with the potential to undertake detailed planning, design, construction, management, maintenance and rehabilitation of Civil Engineering Works.

- PEO-2: To produce Civil Engineers who can pursue advanced study and research in engineering, and engage in diverse alternative national and international productive career choices.

- PEO-3: To produce professionals skilled in critical reasoning and vital quality skills to identify, formulate and resolve Civil Engineering problems by considering environmental and social sensitivities.

- PEO-4: To create professionals who have the ability to design, develop and evaluate new innovative technology and apply them for the need of industry and community.

Program Outcomes (POs)

- PO-1: an ability to identify, formulate, and solve complex civl engineering problems by applying principles of engineering, science, and mathematics.

- PO-2: an ability to apply civil engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors.

- PO-3: an ability to communicate effectively with a range of audiences.

- PO-4: An ability to recognize ethical and professional responsibilities in civil engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts.

- PO-5: an ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives.

- PO-6: an ability to develop and conduct appropriate experimentation, analyze and interpret data, and use civil engineering judgment to draw conclusions.

- PO-7: an ability to acquire and apply new knowledge as needed, using appropriate learning strategies.

- PO-8: Recognize the need for, and have the preparation and ability to engage in, in dependent and life-long learning in the broadest context of technological change.

10. Water Resources Engineering

Program Educational Objectives (PEOs)

- ➢ PEO-1: To produce qualified Water Resource Engineers with the potential to execute detailed pre-feasibility study, planning, design, supervision and construction of water resources projects with high potential of being Leaders.

- ➢ PEO-2: To train Water resources professionals who can identify water resources development problems, develop solutions and guide maintain and rehabilitate existing water Resources Infrastructures.

- ➢ PEO-3: To produce Water Resources professionals who can involve in water resources research and consultancy service.

- ➢ PEO-4: To produce Water Resources Engineers who are socially responsible, respect professional ethics, value and engaged in team work, apply innovative knowledge, generate and transfer technology useful for water sectors.

Program Outcomes (POs)

- ➢ PO-1: An ability to identify, formulate, and solve complex Water resources engineering problems by applying principles of engineering, science, and mathematics.

- ➢ PO-2: an ability to apply water resources engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors.

- ➢ PO-3: an ability to communicate effectively with a range of audiences.

- ➢ PO-4: an ability to recognize ethical and professional responsibilities in water resources engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts.

- ➢ PO-5: an ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives.

- ➢ PO-6: an ability to develop and conduct appropriate experimentation, analyze and interpret data, and use water resources engineering judgment to draw conclusions.

- PO-7: an ability to acquire and apply new knowledge as needed, using appropriate learning strategies.
- PO-8: recognize the need for, and have the preparation and ability to engage in, in dependent and life-long learning in the broadest context of technological change.

11. Chemical Engineering Department

Program Educational Objectives (PEO)

- **PEO 1:** To produce Chemical Engineers who can understand practical chemical process industries and related areas besides applying innovative knowledge.
- PEO-2: To produce Chemical Engineers who are skillful to identify, troubleshoot and fix technical problems in chemical process industries and related areas by applying appropriate solutions.
- PEO-3: To produce Chemical Engineers who can conduct researches by applying basic scientific principles and chemical engineering knowledge to enhance professional engagement and advancing learning.
- PEO-4: To produce Chemical Engineers who are ethical and committed to coordinate and team up individual's task for better achievement and play a leadership role in the organization.
- PEO-5: To produce Chemical Engineers who are entrepreneurs and devoted to serve the community through research project, consulting and ensuring sustainable development.

Program Outcomes (POs)

- PO-1: Ability to apply knowledge of mathematics, science, engineering fundamentals and an engineering specialization to the solution of complex engineering problems.
- PO-2: Ability to identify, formulate, research literature and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences and engineering sciences.
- PO-3: Ability to design solutions for complex engineering problems and design systems, components or processes that meet specified needs with appropriate consideration for public health and safety, cultural, societal, and environmental considerations.

- PO-4: Ability to conduct investigation into complex problems using research based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of information to provide valid conclusions.

- PO-5: Ability to 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: Ability to apply reasoning informed by contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to professional engineering practice.

- PO-7: Ability to understand the impact of professional engineering solutions in societal and environmental contexts and demonstrate knowledge of and need for sustainable development.

- PO-8: Ability to apply ethical principles and commit to professional ethics and responsibilities and norms of engineering practice.

- PO-9: Ability to function effectively as an individual, and as a member or leader in diverse teams and in multi-disciplinary settings.

- PO-10: Ability to 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: Ability to demonstrate 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, to manage projects and in multidisciplinary environments.

- PO-12: Ability to recognize the need for, and have the preparations and ability to engage in independent and lifelong learning in the broadest context of technological change.

12. Material Science and Engineering

Program Educational Objectives (PEOs)

- ➢ **PEO-1:** To produce technically qualified Materials Engineers with the potential to become leaders in ceramic, metal, polymer and semiconductor industries that Fabricate/Synthesize/Process materials ranging from macro to nanoscale level for different applications.

- ➢ **PEO-2**: To produce an Engineer in Materials Science and Engineering who are committed to sustainable development of industries that design new materials and devices for the betterment of society and nation

- ➢ **PEO-3**: To produce ethical and competent Engineers in Materials Science and Engineering who are capable to Conduct economic and technically feasible community research projects in the areas related to Metals, Ceramics, polymers, Composites, Semiconductors, or other processing industries.

- ➢ **PEO-4**: To produce Engineers in Materials Science and Engineering who can work to advance the quality of communities' life using science and technology.

- ➢ **PEO-5:** To Produce an Engineer in Materials Science and Engineering who are capable to advice a government in materials related issue and policy preparation

- ➢ **PEO-6**: To Produce an Engineer in Materials Science and Engineering who are capable of communication using Mathematics, Science and engineering fundamentals through written, verbal, listening, and reading.

Program Outcomes (POs)

- ➢ PO-1: Apply knowledge of basic sciences & engineering fundamentals to model, understand, and predict material properties, processes, and structure.
- ➢ PO-2: Ability to design and conduct experiments, as well as to analyze and interpret data
- ➢ PO-3: Design a system, component, process or solution to engineering problems meet desired needs within realistic constraints.
- ➢ PO-4: Conduct investigation into complex problems using research based knowledge and research methods and analysis the investigation to provide valid conclusions.
- ➢ PO-5: 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: Apply contextual knowledge to assess societal, health, safety, legal and cultural issues and the uses consequent responsibilities relevant to professional engineering practice.
- ➢ PO-7: Understand the impact of professional engineering solutions in societal and environmental contexts and demonstrate knowledge of and need for sustainable development.
- ➢ PO-8: Apply ethical principles and commit to professional ethics and responsibilities and norms of engineering practice.
- ➢ PO-9: Function effectively as an individual, and as a member or leader in diverse teams and in multi-disciplinary settings.
- ➢ PO-10: Communicate effectively on complex engineering activities with the engineering community and with society at large.
- ➢ PO-11: Demonstrate leadership, business wisdom and entrepreneurship
- ➢ PO-12: Recognize the need for, and have the preparations and ability to engage in independent and lifelong learning in the broadest context of technological change.

13. Mechanical Engineering

Program Educational Objectives

- PEO-1 To produce a qualified mechanical engineer who engage in problem solving, design, manufacture, maintenance, and management of mechanical systems by systematically applying appropriate mathematical theories, computational tools, applied science

- PEO-2 Manifest expected level of ethics and responsibility with a very good awareness of social, economic and environment issues with in local as well as global context.

- PEO-3 Communicate effectively with professionals and non-professionals, be very good team player in interdisciplinary and multidisciplinary projects.

- PEO-4 Motivated and dedicated for lifelong learning and be at the forefront to strive and apply new technologies and contemporary knowledge through.

Student outcomes

- PO-1 Able to apply knowledge of mathematics, science and engineering to solve mechanical engineering problems

- PO-2 Ability to integrate engineering techniques, skills, and research-based knowledge to analyze engineering problems, and use engineering judgment to draw conclusions using principles of mathematics, sciences and engineering.

- PO-3 Ability to apply engineering design concepts that produce solutions in order to meet specific needs with consideration of social, environmental, and economic factors and assess the impact of the designs.

- PLO-4 Ability to conduct investigations of engineering problems and provide valid conclusions through research-based knowledge; designing and conducting experiment; analysis and interpretation of data.

- PO-5 Select and apply appropriate techniques, modern engineering knowledge and contemporary technologies and IT tools for prediction and modeling to solve mechanical engineering problems

- PO-6 Able to implement mechanical and basic electrical engineering knowledge and skill in installation, commissioning operation and maintenance of machinery and equipment.

- ➤ PO-7 Able to supervise, manufacturing and assembling of mechanical components and equipment of HVAC, thermal, transportation, & energy conversion systems and agricultural machinery & equipment with due attention for public health and safety, legal and cultural issues.
- ➤ PO-8 Ability to recognize and discharge ethical and professional responsibilities
- ➤ PO-9 Ability to function effectively in a team providing leadership, creating a collaborative and inclusive environment, establishing goals and planning tasks to meet objectives.
- ➤ PO-10 Ability to communicate effectively with a range of audiences in oral, written, graphic means within interpersonal, team, and group environments.
- ➤ PO-11 Acquire basic understanding of innovation and entrepreneurship, incorporate business practices, through applying project management tools and engineering techniques
- ➤ PO-12 Recognize the need for professional advancement by engaging in lifelong learning through an active participation in professional societies, professional certification, and different appropriate learning strategies.

14. Computer Science and Engineering (CSE)

Program Educational Outcome

- ➤ PEO-1: Be employed as computer science or computer engineering professionals demonstrating optimal professional competency or be able to pursue further graduate educational opportunities.
- ➤ PEO-2: Demonstrate peer-recognized expertise together with the ability to articulate that expertise as computer science or computer engineering professional
- ➤ PEO-3: Acquire strong analytic, design, and implementation skills required to formulate and solve computer science or computer engineering problems in the IT industry or research environment to create innovative technological solutions.
- ➤ PEO-4: Demonstrate that they can operate, communicate, collaborate, work in a team and adjust themselves for a lifelong learning and multidisciplinary research approach as ethically and socially responsible computer science or computer engineering professionals

Program Outcome/Students Outcome

➢ PO-1: Ability to identify, formulate, analyze, and solve complex computing or engineering problems by applying principles of computing, engineering, science, and mathematics.

➢ PO-2: Ability to design, implement, and evaluate a computing or engineering solution to meet a given set of requirements, with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors.

➢ PO-3: Ability to apply computer science theory and software development fundamentals to produce computing-based solutions.

➢ PO-4: Ability to develop and conduct appropriate experimentation analyze and interpret data, and use engineering judgment to draw conclusions.

➢ PO-5: Ability to communicate effectively with the computing and engineering community about complex computing and engineering activities by being able to comprehend and write effective reports, design documentation, make effective presentations, and give and understand clear instructions.

➢ PO-6: Ability to recognize ethical and professional responsibilities and make informed judgments in engineering and computing practice based on legal and ethical principles, considering the impact of solutions in global, economic, environmental, and societal contexts.

➢ PO-7: Ability to function effectively as a member or leader of a team engaged in activities appropriate to the program's discipline, creating a collaborative and inclusive environment, establishing goals, planning tasks, and meeting objectives.

➢ PO-8: Ability to acquire and apply new knowledge as needed, using appropriate learning strategies.

15. Electronics and Communication Engineering

Program Educational Objectives (PEOs)

➢ PEO-1: To provide graduates with a strong foundation in mathematics, science and engineering fundamentals to enable them to devise and deliver efficient solutions to challenging problems in Electronics &Communications Engineering.

- ➢ PEO-2: To produce ethically competent and technically qualified Electronics and Communication Engineers with the potential to become leaders in Industries and Companies associated with Electronics and Communication Engineering, and able to pursue research or have successful career in Academia.
- ➢ PEO-3: To produce Electronics and Communication Engineers who are committed to sustainable development of Electronics and Communication Systems Companies and Industries for the betterment of society and nation.
- ➢ PEO-4: To prepare graduates that can critically analyze existing literature in an area of specialization and ethically develop innovative and research-oriented methodologies to solve the problems identified to support the socio-economic development of the nation.

Program Outcome/Student Outcomes

- ➢ PO1: An ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics.
- ➢ PO2: An ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors.
- ➢ PO3: An ability to communicate effectively with a range of audiences.
- ➢ PO4: An ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts.
- ➢ PO5: An ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives.
- ➢ PO6: An ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions
- ➢ PO7: An ability to acquire and apply new knowledge as needed, using appropriate learning strategies

16. Electrical Power and Control Engineering

- PEO-1: To provide graduates with a solid foundation in mathematical, scientific, and engineering fundamentals and depth and breadth studies in Electrical Power and Control Engineering, to comprehend, analyze, design, provide solutions for practical issues in Electrical Power and Control Engineering

- PEO-2: To provide technical knowledge and skills to identify, comprehend, and solve complex tasks in industry and inspire the students to become future researchers/scientists with innovative ideas.

- PEO-3: To develop team-spirit and enterprising skills with effective communication and technical abilities to serve the society locally and internationally.

- PEO-4: To produce innovative engineers who can hold leadership responsibilities, establish their own enterprises and perform technology transfer for industries.

Program Outcome/Student Outcomes

- PO1: An ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics.

- PO2: An ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors.

- PO3: An ability to communicate effectively with a range of audiences.

- PO4: An ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts.

- PO5: An ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives.

- PO6: An ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions

- PO7: An ability to acquire and apply new knowledge as needed, using appropriate learning strategies

17. Software Engineering Program

+ PEO-1: Graduates will obtain general scientific and engineering knowledge, practical skills and general competences that make them confident to develop high-quality software solution in various application domain to meet the needs of industry and academia;

+ PEO-2: Graduates will communicate effectively as SE professionals with users, peers and upper management ethically and proactively;

+ PEO-3: Graduates will demonstrate an understanding of the importance of life-long learning, professional development and pursue postgraduate studies and succeed in academic and research careers;

+ PEO-4: Graduates will develop progressively managerial, reading, and influential roles in their work area and in the communities while solving community problems.

Program Outcome/Student Outcomes

+ PO1: Ability to identify, formulate, analyze, and solve complex computing or engineering problems by applying principles of computing, engineering, science, and mathematics.

+ PO2: An ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors.

+ PO3: An ability to communicate effectively with a range of audiences.

+ PO4: An ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts.

+ PO5: An ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives.

+ PO6: An ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions

- PO7: Cultivate the field of computing and its latest trends, to pursue teaching, research and development activities using appropriate learning strategies
- PO8: An ability to use the techniques, skills, and modern engineering tools and processes necessary for software engineering practice to maintain legacy software systems and to develop new software systems
- PO9: An ability to apply software engineering perspective through software design and construction, requirements analysis, verification, and validation, to develop solutions to modern problems such as security, data science, and systems engineering that meets the automation needs of the society and industry