

**Program Educational Objectives (PEO),
Program Outcomes (PO)
&
Program Specific Outcomes (PEO)**

The ICFAI Foundation for Higher Education

The ICFAI Foundation for Higher Education (IFHE) is declared as a Deemed-to-be University, under Section 3 of the UGC Act, 1956. It has evolved a comprehensive student-centric learning approach consisting of several stages, designed to add significant values to the learner's understanding in an integrated manner, covering relevant knowledge, practical skills and positive attitudes. IFHE comprises of:

- Faculty of Management (IBS Hyderabad),
- Faculty of Science and Technology (IcfaiTech), and
- Faculty of Law (FoL).
- Faculty of Architecture (SOA).

Vision and Mission of IFHE

The vision of IFHE is to be a top ranking University of choice for students, staff and corporates, recognized for excellence in Higher Education and Research especially relevant to social needs.

The mission of the Deemed University is to offer world class, innovative, career-oriented professional postgraduate and undergraduate programs through inclusive technology- aided pedagogies to equip students with the requisite professional and life skills as well as social sensitivity and high sense of ethics. The University will strive to create an intellectually stimulating environment for Research, particularly in areas bearing on the socio-economic and cultural development of the state and the nation.

1.2 Faculty of Science and Technology (IcfaiTech)

Faculty of Science and Technology (IcfaiTech), Hyderabad is a constituent of the ICFAI Foundation for Higher Education. It has been established to promote quality education in the field of Science and Technology. IcfaiTech strives to acquire a reputation as a highly purposive, innovative institution setting the pace for workable reforms in professional education suitable and most relevant for the Indian cultural milieu.

VISION

The IcfaiTech campus shall become a leading institute for scientific research as well as innovative teaching and learning, keeping pace with evolving knowledge domains. It shall

emerge as an attractive destination for the excellent students and the faculties. IcfaiTech aspires to be highly ranked amongst the group of other peer institutes.

MISSION

The mission of the IcfaiTech is to provide high quality teaching and learning experience through our first degree and higher degree programs.

- **Teaching Excellence:** IcfaiTech periodically reviews and redesigns existing courses and introduces new courses and programs geared towards current research and industry. It explores new dimensions in teaching and learning and uses various platforms and methodologies.
- **Research Excellence:** The faculty members of the department carry out research in almost all the major areas. The department is now vigorously scaling up its research activity and giving more visibility to it. The volume of research publications in peer reviewed journals of repute and the research funding received by the department has been increasing steadily.
- **Faculty Leadership in Administration:** The faculty members of the department make significant contribution to administrative leadership and various institute activities and initiatives.

PROGRAM EDUCATIONAL OBJECTIVES, PROGRAM OUTCOMES AND PROGRAM SPECIFIC OUTCOMES

Program Educational Objectives (PEOs):

Program educational objectives are broad statements that describe the career and professional accomplishments that the program is preparing graduates to achieve.

Program Outcomes (POs):

Program outcomes describe what students are expected to know and would be able to do by the time of graduation. These relate to the skills, knowledge, and behaviors that students acquire as they progress through the program.

Program Specific Outcomes (PSOs):

Program Specific Outcomes are statements that describe what the graduates of a specific engineering program should be able to do.

STATEMENTS OF PEOs, POs AND PSOs

PROGRAM EDUCATIONAL OBJECTIVES (PEOs):

PEO1-PROFESSIONAL DEVELOPMENT

To develop in the students the ability to acquire knowledge of Mathematics, Science & Engineering and apply it professionally within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability and sustainability with due ethical responsibility.

PEO2-CORE PROFICIENCY

To provide ability to identify, formulate, comprehend, analyze, design and solve engineering problems with hands on experience in various technologies using modern tools necessary for engineering practice to satisfy the needs of society and the industry.

PEO3- TECHNICAL ACCOMPLISHMENTS

To equip the students with the ability to design, simulate, experiment, analyze, optimize and interpret in their core applications through multi disciplinary concepts and contemporary learning to build them into industry ready graduates.

PEO4- PROFESSIONALISM

To provide training, exposure and awareness on importance of soft skills for better career and holistic personality development as well as professional attitude towards ethical issues, team work, responsibility, accountability, multidisciplinary approach and capability to relate engineering issues to broader social context.

PEO5- LEARNING ENVIRONMENT

To provide students with an academic environment and make them aware of excellence, develop the urge of discovery, creativity, inventiveness, leadership, written ethical codes and guidelines and the life-long learning to become a successful professional in Electronics and Communication Engineering.

PROGRAM OUTCOMES (POs):

PO1	Engineering knowledge	An ability to apply knowledge of mathematics (including probability, statistics and discrete mathematics), science, and engineering for solving Engineering problems and modeling
PO2	Problem analysis	An ability to design, simulate and conduct experiments, as well as to analyze and interpret data including hardware and software components
PO3	Design / development of solutions	An ability to design a complex system or process to meet desired specifications and needs
PO4	Conduct investigations of complex problems	An ability to identify, formulate, comprehend, analyze, design synthesis of the information to solve complex engineering problems and provide valid conclusions.
PO5	Modern tool usage	An ability to use the techniques, skills and modern engineering tools necessary for engineering practice
PO6	The engineer and society	An understanding of professional, health, safety, legal, cultural and social responsibilities
PO7	Environment and sustainability	The broad education necessary to understand the impact of engineering solutions in a global, economic, environmental and demonstrate the knowledge need for sustainable development.
PO8	Ethics	Apply ethical principles, responsibility and norms of the engineering practice
PO9	Individual and team work	An ability to function on multi-disciplinary teams.
PO10	Communication	An ability to communicate and present effectively
PO11	Project management and finance	An ability to use the modern engineering tools, techniques, skills and management principles to do work as a member and leader in a team, to manage projects in multi-disciplinary environments
PO12	Life-long learning	A recognition of the need for, and an ability to engage in, to resolve contemporary issues and acquire lifelong learning

PROGRAM SPECIFIC OUTCOMES (PSOs):

B.Sc. Program (Mathematics)

PSO1	Model computational problems by applying mathematical concepts and design solutions using suitable data structures and algorithmic techniques
PSO2	Design and develop solutions by following standard software engineering principles and implement by using suitable programming languages and platforms
PSO3	Develop system solutions involving both hardware and software modules

B.Sc. Program (Physics)

PSO1	To acquire a coherent and through understanding of the field of Physics by learning the traditional and modern areas like Mechanics, Electrodynamics, Mathematical physics, Condensed matter physics, Laser optics, Modern physics etc., and their connection with related disciplinary areas / subjects like Engineering sciences, Mathematics, Environmental sciences, Information Technology etc.
PSO2	To obtain procedural knowledge that creates different types of professionals, well versed in Physics and related disciplines to be engaged in research & development and teaching.
PSO3	Be aware of the importance of mathematical modelling simulation and computation. To appreciate the role of mathematical and approximation methods in helping us understand the way in which physical world works.
PSO4	To acquire skills required to plan and execute experiments/investigations related to the discipline and to analyse and interpret the acquired data using appropriate tools and prepare a report accurately depicting the methodology, the findings and the conclusions.
PSO5	To acquire and demonstrate problem-solving skills, independent thinking to solve Physics-related problems and obtain well-defined solutions. To develop an open mind to expand the boundaries of ones understanding of Physics to tackle open-ended problems in the inter-disciplinary areas. To acquire analytical skills to construct logical arguments. To develop an ability to comprehend research texts and papers and to develop communication skills to present scientific papers/ results in a compact form to audience groups of various competency levels. To acquire ability to deconstruct difficult scientific concepts/results into simpler parts in order to disseminate the scientific progress to the general public.
PSO6	To acquire an ability to adapt to the rapid changes taking place due technological and scientific developments. To develop an understanding on the impact of these advances on the society and ecology.
PSO7	To acquire an ability to function independently or in a team and to work in a multi-disciplinary work environments. To develop interpersonal and leadership skills to lead a team. To learn to respect intellectual property rights and help in promoting a safe environment for learning and working by following ethical professional behavior.

B.Tech. Program (Civil Engineering)

PSO1	Graduates will have an ability to understand, describe, analyse and solve problems related to Civil Engineering.
PSO2	Graduates will have an ability to plan, execute, prepare cost estimates for various Civil Engineering projects.
PSO3	Interdisciplinary approach help the graduates to interact and work seamlessly in multi disciplinary teams.

B.Tech. Program (Computer Science Engineering)

PSO1	Attain the professional skill sets to understand, create and optimize algorithms, analyze, design and implement software and hardware-based solutions for industry and research problems.
PSO2	Gain vast knowledge in various areas of Computer Science and Engineering and implement the skills in higher studies, professional career and entrepreneurship
PSO3	Excellent adaptability to function in multi-disciplinary work environment, good interpersonal skills as a leader in a team in appreciation of professional ethics and societal responsibilities.

B.Tech. Program (Data Science & Artificial Engineering)

PSO1	Acquire the professional expertise to learn insights from data, transform insights into mathematical and algorithmic models and provide solutions for societal, economical, business and research problems.
PSO2	Obtain broad understanding in various areas of Data Analysis, Machine Learning and Artificial Intelligence and apply the skills in higher studies, professional career and entrepreneurship.
PSO3	Excellent adaptability to function in multi-disciplinary work environment, good interpersonal skills as a leader in a team in appreciation of professional ethics and societal responsibilities.

B.Tech. Program
(Electronics & Communication Engineering)

PSO1	To develop ability to analyze, design and implement solution to complex engineering problems in electronics and communications systems, through innovations and to collaborate in research and development.
PSO2	Develop ability to adapt fast to new developments in field of electronics, benefitting society and guided by principle of zero effect on the environment.
PSO3	To function in multi-disciplinary work environment, good interpersonal skills as a leader in a team in appreciation of professional ethics and societal responsibilities.

B.Tech. Program
(Electronics & Electrical Engineering)

PSO1	To develop ability to analyze, design and implement solution to complex engineering problems in electrical engineering covering from power systems to electronic systems. To develop culture of innovations and keen interest in research and development in all fields of electrical engineering.
PSO2	To develop ability to adapt fast to new changes in the field of electrical engineering, and part of developments benefitting society but without allowing any adverse effect on the environment.
PSO3	To function in multi-disciplinary work environment, good interpersonal skills as a leader in a team in appreciation of professional ethics and societal responsibilities.

B.Tech. Program
(Mechanical Engineering)

PSO1	Ability to analyze, design and develop Mechanical systems to solve the Engineering problems by integrating thermal, design and manufacturing Domains.
PSO2	Ability to succeed in competitive examinations or to pursue higher studies or research.
PSO3	Ability to apply the learned Mechanical Engineering knowledge for the Development of society and self.

B.Tech. Program
(Mechatronics)

PSO1	Ability to design, evaluate and built on innovative mechatronic systems to solve the Engineering problems by integrating mechanical, electronics and systems engineering
PSO2	Ability to pursue their higher studies and or research
PSO3	Ability to excel in his/her professional career as an employee or employer.
PSO4	Ability to apply the learned knowledge for the development of intelligent systems to contribute to the societal needs