Sree Dattha Institute of Engineering & Science

Sheriguda(V), Ibrahimpatnam (M), R.R. Dt. Hyderabad -501510.

Program Educational Objectives:

PEO-1 Establish as practicing professionals or researchers with continuous learning to solve problems in industry and society.

PEO-2 Apply skills with mathematical, core engineering and contemporary technologies to analyze the requirements, prepare technical specifications, design and provide novel engineering solutions.

PEO-3 Work as teams on multidisciplinary projects with leadership qualities, interpersonal, professional skills and ethical values.

Head of the Department

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Department of Computer Science and Engineering

Pos, PSOs & PIs

Program Outcomes:

POs describe what students are expected to know or be able to do by the time of graduation from the program. The Program Outcomes of UG in Computer Science and Engineering are:

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 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 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, give and receive clear instructions.

PO-11 ROJECT 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 Specific Outcomes:

A graduate of the Computer Science and Engineering Program will demonstrate:

PSO-1 Professional Skills: The ability to understand, analyze and develop computer programs in the areas related to algorithms, system software, multimedia, web design, big data analytics, and networking for efficient design of computer-based systems of varying complexity.

PSO-2 Problem-Solving Skills: The ability to apply standard practices and strategies in software project development using open-ended programming environments to deliver a quality product for business success.

PSO-3 Successful Career and Entrepreneurship: The ability to employ modern computer languages, environments, and platforms in creating innovative career paths to be an entrepreneur, enthusiasm for higher education, also include good manners and Ethics for responsible ,co-operative citizenship.

Performance Indicators (PIs):

PI #	PI Description
1.1.1	Apply the knowledge of discrete structures, linear algebra, statistics and numerical techniques to solve problems
1.1.2	Apply the concepts of probability, statistics and queuing theory in modeling of computer based system, data and network protocols.
1.2.1	Apply engineering fundamentals
1.3.1	Apply theory and principles of computer science engineering to solve

	an engineering problem
2.1.1	Evaluate problem statements and identifies objectives Identifies processes/modules/algorithms of a computer based system and parameters to solve a problem.
2.2.1	Reframe the computer based system into interconnected subsystems
2.2.2	Identifies functionalities and computing resources.
2.2.3	Identify existing solution/methods to solve the problem, including forming justified approximations and assumptions.
2.2.4	Compare and contrast alternative solution/methods to select the best methods
2.3.1	Able to apply computer engineering principles to formulate modules of a system with required applicability and performance.
2.3.2	Identify design constraints for required performance criteria.
2.4.1	Applies engineering mathematics to implement the solution.
2.4.2	Analyze and interpret the results using contemporary tools.
2.4.3	Identify the limitations of the solution and sources/causes. Arrive at conclusions with respect to the objectives
3.1.1	Able to define a precise problem statement with objectives and scope.
3.1.2	Able to identify and document system requirements from stake holders.
3.1.3	Ability to review state of the art literature to synthesize system requirements.
3.1.4	Synthesize engineering requirements from a review of the state-of-the-art
3.1.4	Ability to choose appropriate quality attributes as defined by ISO/IEC/IEEE standard.
3.1.5	Explore and synthesize engineering requirements considering health, safety risks, environmental, cultural and societal issues

3.1.6	Ability to develop software requirement specifications (SRS).
3.2.1	Ability to explore design alternatives.
3.2.2	Ability to produce a variety of potential design solutions uited to meet functional requirements.
3.2.3	Identify suitable non functional requirements for evaluation of alternate design solutions.
3.3.1	Ability to perform systematic evaluation of the degree to which several design concepts meet the criteria Consult with domain experts and stakeholders to select candidate engineering design solution for further development
3.4.1	Ability to refine architecture design into a detailed design within the existing constraints.
3.4.2	Ability to implement and integrate the modules.
3.4.3	Ability to verify the functionalities and validate the design.
4.1.1	Define a problem for purposes of investigation, its scope and importance.
4.1.2	Ability to choose appropriate procedure/algorithm, data set and test cases.
4.1.3	Ability to choose appropriate hardware/software tools to conduct the experiment.
4.2.1	1Design and develop appropriate procedures/methodologies based on the study objectives
4.3.1	Use appropriate procedures, tools and techniques to collect and analyze data
4.3.2	Critically analyze data for trends and correlations, stating possible errors and limitations.
4.3.3	Represent data (in tabular and/or graphical forms) so as to facilitate analysis and explanation of the data, and drawing of conclusions.
4.3.4	Synthesize information and knowledge about the problem from the

	raw data to reach appropriate conclusions
5.1.1	Identify modern engineering tools such as computer aided drafting, modeling and analysis; techniques and resources for engineering activities
5.1.2	Create/adapt/modify/extend tools and techniques to solve engineering problems
5.2.1	Identify the strengths and limitations of tools for (i) acquiring information, (ii) modeling and simulating, (iii) monitoring system performance, and (iv) creating engineering designs.
5.2.2	Demonstrate proficiency in using discipline specific tools
5.3.1	Discuss limitations and validate tools, techniques and resources
5.3.2	Verify the credibility of results from tool use with reference to the accuracy and limitations, and the assumptions inherent in their use.
6.1.1	Identify and describe various engineering roles; particularly as pertains to protection of the public and public interest at global, regional and local level.
6.2.1	Interpret legislation, regulations, codes, and standards relevant to your discipline and explain its contribution to the protection of the public.
7.1.1	Identify risks/impacts in the life-cycle of an engineering product or activity.
7.1.2	Understand the relationship between the technical, socio economic and environmental dimensions of sustainability.
7.2.1	Describe management techniques for sustainable development.
7.2.2	Apply principles of preventive engineering and sustainable development to an engineering activity or product relevant to the discipline.
8.1.1	Identify situations of unethical professional conduct and propose ethical alternatives.

8.2.1	Identify tenets of the ASME professional code of ethics
8.2.2	Examine and apply moral & ethical principles to known case studies
9.1.1	Recognize a variety of working and learning preferences; appreciate the value of diversity on a team
9.1.2	Implement the norms of practice (e.g. rules, roles, charters, agendas, etc.) of effective team work, to accomplish a goal.
9.2.1	Demonstrate effective communication, problem solving, conflict resolution and leadership skills
9.2.2	Treat other team members respectfully Listen to other members.
9.3.1	Present results as a team, with smooth integration of contributions from all individual efforts.
10.1.1	Read, understand and interpret technical and non-technical information.
10.1.2	Produce clear, well-constructed, and well supported written engineering documents.
10.1.3	Create flow in a document or presentation - a logical progression of ideas so that the main point is clear.
10.2.1	Listen to and comprehend information, instructions, and viewpoints of others.
10.2.2	Deliver effective oral presentations to technical and nontechnical audiences.
10.3.1	Create engineering-standard figures, reports and drawings to complement writing and presentations.
10.3.2	Use a variety of media effectively to convey a message in a document or a presentation.
11.1.1	Describe various economic and financial costs/benefits of an engineering activity
11.1.2	Analyze different forms of financial statements to evaluate the

	financial status of an engineering project.
11.2.1	Analyze and select the most appropriate proposal based on economic and financial considerations.
11.3.1	Identify the tasks required to complete an engineering activity, and the resources required to complete the tasks.
11.3.2	Use project management tools to schedule an engineering project so it is completed on time and on budget
12.1.1	Describe the rationale for requirement for continuing professional development
12.1.2	Identify deficiencies or gaps in knowledge and demonstrate an ability to source information to close this gap.
12.2.1	Identify historic points of technological advance in engineering that required practitioners to seek education in order to stay current.
12.2.2	Recognize the need and be able to clearly explain why it is vitally important to keep current regarding new developments in your field.
12.3.1	Source and comprehend technical literature and other credible sources of information.
12.3.2	Analyze sourced technical and popular information for feasibility, viability, sustainability, etc.

Head of the Department