

Gujarat Power Engineering & Research Institute(GPERI)

Program Vision, Mission, PSO, PEO

Name of the Programme: Civil Engineering	
Vision	To offer quality education in the field of civil engineering to transforming the students in to competent technocrats along with professional ethics.
Mission	<ul style="list-style-type: none">· To develop excellent academic environment through state of art laboratories, other infrastructural facilities, proficient faculty and staff members.· To encourage and facilitate faculties to pursue higher education, research and training.· To inculcate innovative sustainable practices among budding engineers to face ever evolving challenges.· To strengthen industry-institute linkages for knowledge sharing, experiential learning and entrepreneurial skill development.· To nurture professional ethics, human values and contributory personality among faculties and students.
Program Outcomes (POs)	<ol style="list-style-type: none">1. Engineering knowledge: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.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.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.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.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.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.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.8. Ethics: Apply ethical principles and commit to professional ethics

	<p>and responsibilities and norms of the engineering practice.</p> <p>9. Individual and team work: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.</p> <p>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.</p> <p>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.</p> <p>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.</p>
Program Specific Outcomes (PSOs)	<p>The Graduates will be able to</p> <ol style="list-style-type: none"> 1. Comprehend fundamental knowledge and develop proficiency to analyze civil engineering problems. 2. Design and develop civil engineering structures within realistic constraints. 3. Work efficiently as an individual or part of team to measure various quantities/parameters using state of art equipments and simulation tools.
Program Educational Objectives (PEOs)	<p>The Graduates will be able to</p> <ol style="list-style-type: none"> 1. Comprehend fundamental knowledge and develop proficiency to analyze civil engineering problems. 2. Design and develop civil engineering structures within realistic constraints. 3. Work efficiently as an individual or part of team to measure various quantities/parameters using state of art equipments and simulation tools.
Course Outcomes (COs) – One Sample Course	<ol style="list-style-type: none"> 1. Apply principles of statics to determine reactions, internal actions in statically determinate framed structures including arches & cables. 2. Compute strain energy stored member subjected to axial & flexural forces. 3. Determine displacement in a statically determinate beams by different methods 4. Perform stability checks to various structures such as chimney, retaining wall, dam subjected to gravity and lateral loading. 5. Differentiate the buckling behaviour of columns & struts with different end conditions. 6. Determine response of structure using professional software.

Name of the Programme: Computer Engineering	
Vision	To offer quality education in the field of computer engineering for transforming the students into competent technocrats along with professional ethics.
Mission	<ol style="list-style-type: none"> 1. To cultivate an excellent academic environment through state of art laboratories, other infrastructural facilities, proficient faculty and staff members. 2. To motivate and facilitate faculties to pursue higher education, research and training. 3. To inculcate innovative sustainable practices among budding engineers to face ever-evolving challenges. 4. To strengthen industry-institute linkages for knowledge sharing, experiential learning and entrepreneurial skill development. 5. To nurture professional ethics, human values and contributory personality among faculties and students.
Program Outcomes (POs)	<p>Engineering Graduates will be able to:</p> <ol style="list-style-type: none"> 1. Engineering knowledge: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems. 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. 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. 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. 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. 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. 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

	<p>development.</p> <p>8. Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.</p> <p>9. Individual and team work: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.</p> <p>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.</p> <p>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.</p> <p>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.</p>
<p>Program Specific Outcomes (PSOs)</p>	<p>The Graduates will be able to</p> <ol style="list-style-type: none"> 1. Utilize computer engineering fundamentals to analyze, design and solve complex problems of society and industry. 2. Apply standard practices and strategies to develop quality software using modern techniques, programming, logical skills and development tools. 3. Pursue continuous learning and work individually or in a team with excellent communication and project management skills.
<p>Program Educational Objectives (PEOs)</p>	<p>The following Program Educational Objectives (PEOs) are defined for Computer Engineering:</p> <p>Engineers will be able to</p> <ol style="list-style-type: none"> 1. Perceive, analyze and evaluate computational challenges and provide technological solutions. 2. Develop expertise in solving real-life developmental and societal problems. 3. Adapt the changing professional practices and envisage life-long learning. 4. Demonstrate leadership characteristics as a contributory personality.

Course Outcomes (COs) – One Sample Course	Subject Code: 3110003 Subject Name: PROGRAMMING FOR PROBLEM SOLVING Course Objective: CO1 Formulate algorithm/flowchart for given arithmetic and logical problem CO2 Translate algorithm/flowchart into C program using correct syntax and execute it CO3 Write programs using conditional, branching, iteration, and recursion CO4 Decompose a problem into function CO5 Develop an application using the concepts of array, pointer, structure, and file management to solve engineering and/or scientific problems
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Name of the Programme: Electrical Engineering	
Vision	To offer quality education in the field of Electrical engineering for transforming the students into competent technocrats along with professional ethics.
Mission	Mission of the Department <ol style="list-style-type: none"> 1. To develop excellent academic environment through state of art laboratories, other infrastructural facilities, proficient faculty and staff members. 2. To encourage and facilitate faculties to pursue higher education, research and training. 3. To inculcate innovative sustainable practices among budding engineers to face ever evolving challenges. 4. To strengthen industry-institute linkages for knowledge sharing, experiential learning and entrepreneurial skill development. 5. To nurture professional ethics, human values and contributory personality among faculties and students.
Program Outcomes (POs)	Engineering Graduates will be able to: 1. Engineering knowledge: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems. 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. 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

	<p>public health and safety, and the cultural, societal, and environmental considerations.</p> <p>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.</p> <p>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.</p> <p>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.</p> <p>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.</p> <p>8. Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.</p> <p>9. Individual and team work: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.</p> <p>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.</p> <p>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.</p> <p>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.</p>
<p>Program Specific Outcomes (PSOs)</p>	<p>The Graduates will be able to</p> <ol style="list-style-type: none"> 1. Comprehend fundamental knowledge and develop proficiency to analyze electrical engineering problems through hardware and software. 2. To carry out design, testing and analysis through Power electronics Renewable source of energy and electrical vehicle studies. 3. Work on multi-disciplinary project efficiently in a team as well as to lead a team in an organization or as entrepreneur.
<p>Program Educational Objectives (PEOs)</p>	<p>The following Program Educational Objectives (PEOs) are defined for Electrical Engineering:</p> <p>Engineers will be able to</p> <ol style="list-style-type: none"> 1. Contribute in planning, analysis, design, estimation, execution, and management of engineering projects.

	<ol style="list-style-type: none"> 2. Develop proficiency in solving real life developmental and societal problems. 3. Adapt the changing professional practices and envisage life-long learning. 4. Demonstrate leadership characteristic as a contributory personality.
Course Outcomes (COs) – One Sample Course	<p>Course Name: Electrical Circuit Analysis Course Code: 3130906</p> <p>Sr. Course Outcomes statement no.</p> <p>CO-1 Apply the knowledge of basic circuit law and simplify the network using reduction techniques.</p> <p>CO-2 Analyze the circuit using Kirchhoff's law and Network simplification theorems.</p> <p>CO-3 Infer and evaluate transient response, Steady state response, network functions.</p> <p>CO-4 Obtain the maximum power transfer to the load, and Analyze the series resonant and parallel resonant circuit.</p> <p>CO-5 Evaluate two-port network parameters.</p>

Name of the Programme: Mechanical Engineering	
Vision	To offer quality education in the field of Mechanical engineering to transforming the students in to competent technocrats along with professional ethics
Mission	<ol style="list-style-type: none"> 1. To develop excellent academic environment through state of art laboratories, other infrastructural facilities, proficient faculty and staff members. 2. To encourage and facilitate faculties to pursue higher education, research and training. 3. To inculcate innovative sustainable practices among budding engineers to face ever evolving challenges. 4. To strengthen industry-institute linkages for knowledge sharing, experiential learning and entrepreneurial skill development. 5. To nurture professional ethics, human values and contributory

	personality among faculties and students.
Program Outcomes (POs)	<p>Programme Outcomes (POs)</p> <ol style="list-style-type: none"> 1. Engineering knowledge: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems. 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. 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. 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. 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. 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. 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. 8. Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice. 9. Individual and team work: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings. 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

	<p>presentations, and give and receive clear instructions.</p> <p>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.</p> <p>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.</p>
Program Specific Outcomes (PSOs)	<p>The Graduates will be able to</p> <ol style="list-style-type: none"> 1. Utilize Mechanical Engineering fundamentals to analyze, design and solve complex problems of society and industry. 2. Apply standard practices and strategies to develop effective mechanical systems using modern techniques and state of the art technology. 3. Pursue continuous learning and work individually or in a team with excellent communication and project management skills.
Program Educational Objectives (PEOs)	<p>Engineers will be able to</p> <ol style="list-style-type: none"> 1. Contribute in planning, analysis, design, estimation, execution, and management of engineering projects. 2. Develop proficiency in solving real life developmental and societal problems. 3. Adapt the changing professional practices and envisage life-long learning. 4. Demonstrate leadership characteristic as a contributory personality.
Course Outcomes (COs) – One Sample Course	<p>Subject Name: Material Science and Metallurgy</p> <p>Subject Code: 3131904</p> <p>Course Objective:</p> <p>CO1 Understand the basic concept of Material Science and Metallurgy</p> <p>CO2 Know about the ferrous and non-ferrous metals and alloys and</p> <p>CO3 Understand different non-destructive testing methods.</p> <p>CO4 Find the causes and prevention of metallic corrosion</p> <p>CO5 Judge the Scope and limitations of different materials</p>