

Department of Biotechnology Engineering

Program Outcomes (POs)

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 presentations, and give and receive clear instructions.
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.
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.

Biotechnology Programme Specific Outcomes (PSO)

1. Understanding of core concepts of Biosciences and Engineering
2. An ability to integrate engineering and bioscience knowledge to solve real time problems in Biotechnology.
3. An ability to design and conduct experiments, as well as to analyze and interpret the data.
4. Industry applications- Linking theory and practicals to solve real time problems in interdisciplinary areas of Biotechnology.
5. Knowledge of contemporary issues and an ability to remain abreast with new developing trends.

Department of Chemical Engineering

Programme Educational Objectives (PEOS)

1. To prepare them to be proficient in various domains of chemical engineering profession, and help them to acquire sufficient knowledge in the application of the Basic Sciences so as to enable them to design, analyze, and control chemical processes to prepare them well for a wide variety of positions as practicing chemical engineers,
2. To apply and integrate knowledge of the elements of chemical engineering to identify, formulate, and solve chemical process design problems, learn to use and apply modern experimental and computational techniques in chemical engineering, conduct experiments, including design of experiment, execution and recording, analysis and interpretation of results, and professional reporting of results
3. To prepare for a career in chemical engineering and allied fields by developing communication skills and coming to understand the importance of lifelong learning, professionalism, and ethical responsibility.
4. To demonstrate excellence in professional leadership roles including industry, business with high standard professional ethics, sense and belonging to global, environmental, health, safety and societal issues.

Programme Outcomes (POs)

1. Each graduate will have the ability to apply knowledge of mathematics, science and engineering fundamentals.
2. Each graduate will have the ability to design and conduct experiments, and to analyze and interpret experimental results
3. Each graduate will have the ability to design systems, components, or processes to meet specified objectives within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability in chemical engineering.
4. Each graduate will have the ability to work as a member of multidisciplinary teams, and have an understanding of team leadership

Department Of Civil Engineering

Program Educational Outcomes (PEO's)

1. Preparation: To produce Civil Engineering graduates with strong contemporary engineering knowledge and technical competence to use techniques, skills and modern engineering tools that allow them to work effectively in the diversified areas of Civil Engineering.
2. Core Competence: To produce Civil Engineering graduates who have strong foundation in mathematics, sciences and basic engineering and who have the ability to pursue advanced studies, professional career and research in various disciplines of Civil Engineering.
3. Breadth: To train students with sound practical knowledge by use of well-equipped laboratories and conduct the experiments, record, analyze and interpret data and also in scientific and engineering breadth that cover multi-disciplinary subjects enabling them to comprehend, analyze Civil Engineering problems and develop solutions.
4. Professionalism: To inculcate the students with professional and ethical attitude, effective communication skills, teamwork skills, multidisciplinary approach and an ability to relate engineering issues to broader social context and equip them with strong knowledge, competence and soft skills that allows them to contribute to the needs of industry, consultancy, government and academia to their might and develop consciousness on the issues of social concerns to have a meaningful linkage with the society.

Program outcomes

Engineering knowledge:

1. a -An ability to apply knowledge of mathematics, science, and engineering.
2. **Conduct investigations of complex problems:**
3. b - An ability to design and conduct experiments, as well as to analyze and interpret data.
4. **Design/development of solutions / Environment and sustainability:**
5. c - An 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.
6. **Individual and teamwork:**
7. d - An ability to function with multidisciplinary teams.

8. **Problem analysis:**
9. e - An ability to identify, formulate, and solve engineering problems.
10. **Ethics:**
11. f - An understanding of professional and ethical responsibility.
12. **Communication:**
13. g - An ability to communicate effectively.
14. **Environment, sustainability, the engineer and society:**
15. h - The broad education necessary to understand the impact of engineering solutions in a global, economic, environmental, and societal context.
16. **Life-long learning:**
17. i- A recognition of the need for, and an ability to engage in life-long learning.
18. **Design/development of solutions / Modern tool usage:**
19. j - A knowledge of contemporary issues.
20. **Modern tool usage:**
21. k - An ability to use the techniques, skills, and modern engineering tools necessary for engineering practice.
22. **Life-long learning / Project management and finance:**
23. l - An ability to achieve technical expertise to succeed as professional in industry and research.

Program Specific Outcomes

After completing Civil Engineering graduation, the candidate will be able to:

1. a- Plan and design various structures and processes under his/her domain of interest
2. b- Candidate will be able to execute structures and projects under his/her domain of interest
3. c- Candidate will be able to use all resources required for process and project under his/her domain of interest

Department of Computer Engineering

Program Educational Objectives (PEO)

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

The PEO of the Computer Engineering programme is to enable the students to :

1. Engage in professional projects requiring teamwork and making valuable contributions to design, development, and production in the practice of computer engineering or application areas,
2. Equip to adapt and grow with changes in technology, globalization, to pursue higher studies and research activities
3. Be capable of productive employment in field of Computer Engineering with competing technical expertise, leadership qualities and good interpersonal skill
4. Utilize broad educational experience, ethics, and professionalism to make a positive impact on their local and professional communities

Program Outcomes

Program outcomes are narrower statements that describe what students are expected to know and be able to do by the time of graduation. These relate to the skills, knowledge, and behaviors that students acquire in their matriculation through the program.

Students in the Computer Engineering program, at the time of their graduation, are expected to have:

1. An ability to apply fundamental principles of computing and mathematics as appropriate to the discipline of computer Engineering
2. An ability to apply engineering principles for the identification and solution of engineering problems, current practices and trends in computer systems
3. An ability to analyze the problem, identify the feasible and optimal solution, with design and construction hardware and software system, component, or process to meet desired needs
4. An ability to organize, analyze, and interpret data, tailored to application needs
5. An ability to design, implement and test a computing system, and to evaluate and

compare the efficiencies of alternative solutions in a global and social context

6. An ability to use current techniques, skills, and tools appropriate for immediate employment in computing technology development fields, research and higher studies,
7. An ability to function effectively with multidisciplinary teams to accomplish a common goal
8. An ability to effectively communicate technical information in speech, presentation, and in writing
9. A realization of need of lifelong learning and strive for continuous improvement
10. An Understanding of the relationships between technology and contemporary society
11. An Understanding of the ethical and professional responsibilities of an engineering practitioner with humanity too and
12. An ability to work in a team, exhibiting interpersonal skill; act proactively and demonstrate leadership qualities

Department of Electronics and Telecommunication Engineering

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 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 presentations, and give and receive clear instructions.
- 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.

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 (PSOs)

Electronics & Telecommunication Engineering Graduates will be able to -

1. **Concepts:** Understand Electronics & Telecommunication Engineering concepts through mathematics, analog, digital, signal processing, communication, computing, simulation, analysis and implementation.
2. **Methodology:** Emphasize on creative design ideas, assignments and projects to solve problems in engineering and allied fields.
3. **Skills:** Nurture holistic development and skills to pursue higher studies, employability and successful entrepreneurship to cater need of masses and industries.

Department of Mechanical Engineering

Program Education Objectives (PEO)

1. To acquire the knowledge in mathematics, science and engineering and to develop problem solving skills necessary for productive careers in mechanical engineering and other professions and to pursue graduate, professional and lifelong education
2. To expose on issues dealing with people in relation to themselves, society and the environment and understand the need for social, professional and ethical responsibility in engineering practice
3. To design and conduct experiments, analyse and interpret data, and effectively use modern technology in communication, research, and problem solving.
4. To formulate engineering problems and design a mechanical engineering system or component to meet desired needs
5. To engage in professional activities to promote the mechanical engineering profession
6. To prepare students for successful careers in industry that meet the needs of Indian and multinational companies

Program Education Outcomes (PO)

1. An ability to apply knowledge of mathematics, science, and engineering
2. An ability to design and conduct experiments, as well as to analyse and interpret the data
3. An 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.
4. An ability to function on multidisciplinary teams
5. An ability to identify, formulate and solve engineering problems
6. An understanding of professional and ethical responsibility
7. An ability to communicate effectively
8. The broad education necessary to understand the impact of engineering solutions in global, economic, environmental and societal contexts
9. A reorganization of the need for, and an ability to engage in lifelong learning
10. A knowledge of contemporary issues
11. An ability to use the techniques, skills and modern engineering tools necessary for engineering practice

**Department of Information Technology
Program Educational Objectives**

The students of Information Technology course after passing out will

1. Possess strong fundamental concepts in mathematics, science, engineering and Technology to address technological challenges.
2. Possess knowledge and skills in the field of Computer Science and Information Technology for analyzing, designing and implementing complex engineering problems of any domain with innovative approaches.
3. Possess an attitude and aptitude for research, entrepreneurship and higher studies in the field of Computer Science and Information Technology.
4. Have commitment to ethical practices, societal contributions through communities and lifelong learning.
5. Possess better communication, presentation, time management and team work skills leading to responsible & competent professionals and will be able to address challenges in the field of IT at global level.

Program outcomes

The students in the Information Technology course will attain:

1. An ability to apply knowledge of mathematics, computing, science, engineering and technology;
2. An ability to define a problem and provide a systematic solution with the help of conducting experiments, analyzing the problem and interpreting the data;
3. An ability to design, implement, and evaluate a software or a software/hardware system, component, or process to meet desired needs within realistic constraints;
4. An ability to identify, formulate, and provide systematic solutions to complex engineering/Technology problems;
5. An ability to use the techniques, skills, and modern engineering technology tools, standard processes necessary for practice as a IT professional;
6. An ability to apply mathematical foundations, algorithmic principles, and computer science theory in the modeling and design of computer-based systems with necessary constraints and assumptions;
7. An ability to analyze and provide solution for the local and global impact of information technology on individuals, organizations and society;
8. An ability to understand professional, ethical, legal, security and social issues and responsibilities;
9. An ability to function effectively as an individual or as a team member to accomplish a desired goal(s);

10. An ability to engage in life-long learning and continuing professional development to cope up with fast changes in the technologies/tools with the help of electives, professional organizations and extra-curricular activities;
11. An ability to communicate effectively in engineering community at large by means of effective presentations, report writing, paper publications, demonstrations;
12. An ability to understand engineering, management, financial aspects, performance, optimizations and time complexity necessary for professional practice;
13. An ability to apply design and development principles in the construction of software systems of varying complexity.

Department of Production Engineering

Program Educational Objectives

1. Development of high level technical knowledge and life-long learning activities among students to excel in the professional field and also globally.
2. Development of appropriate skill required in manufacturing & industrial engineering
3. To meet the needs of Indian & International companies.
4. Development of skill to formulate, analyze and solve a production system including automation.
Development of professional & ethical attitude, effective communication skill, team-Work skill and ability to relate engineering issues to social context including environment

Programme Outcomes (POS)

1. Program explained the need and application of mathematics & science in Production
2. Engineering
3. Formulation of relevant problems, conduction and analysis of experiments by using modern mathematical methods
4. Design and development of manufacturing systems to meet the need of society within given constraints.
5. Ability to investigate, interpret and optimize the production system.
6. An ability to use modern manufacturing techniques and resources to solve the complexity in production system by understanding the limitations.
7. Applying professional engineering practices for social and contemporary issues
8. Ability to provide the engineering solutions by considering societal and environmental issues and use the knowledge for sustainable development
9. Understanding of their professional and ethical responsibilities to compete on national or global platform
10. Ability to work as an individual or as a team member to solve the core and multi-disciplinary engineering problems
11. Develop effective communication skills in verbal and written form.
12. Applying engineering and management principles as an individual or as a team leader to meet the industrial requirements
13. Recognizing the need and preparing for lifelong learning to bring about a technological change.

Programme Specific outcomes

1. The Production Engineering Graduates will be able to Work in various sectors such as design, manufacturing, quality assurance, management, software etc., in the sphere of operation and maintenance.
2. An ability of collaborative learning to find out cost-effective, optimal solution for Industrial growth
3. Imparting technological inputs and managerial skills to pursue higher education or become technocrats and entrepreneurs

Course outcomes for each department are available on official website of Sinhgad Institute