

PDEA's College Of Engineering Manjari (Bk.)

Computer Engineering Department

Program Education Objectives (PEO)

1. To prepare globally competent graduates having strong fundamentals, domain knowledge, updated with modern technology to provide the effective solutions for Computer science and Engineering problems.
2. To prepare the graduates to work as a committed professional with strong professional ethics and values, sense of responsibilities, understanding of legal, safety, health, societal, cultural and environmental issues.
3. To prepare committed and motivated graduates with research attitude, lifelong learning, investigative approach, and multidisciplinary thinking.
4. To prepare the graduates with strong managerial and communication skills to work effectively as individual as well as in teams.

Programme Outcomes (PO)

1. Graduates will know the knowledge of mathematics, science and engineering.
2. Graduates will able to design and conduct experiments as well as to analyze and interpret data.
3. Graduates will apply process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health, and safety, manufacturability and sustainability.
4. Graduates will able to function on multidisciplinary teams.
5. Graduates will able to identify, formulate and solve engineering problems.
6. Graduates will able to understand professional & ethical responsibility.
7. Graduates will able to communicate effectively.
8. Graduates will demonstrate the broad education necessary to understand the impact of engineering solutions in a global, economic, environmental and societal context.
9. Graduates able to reorganize the need and ability to engage in lifelong learning.
10. Graduates will apply knowledge on contemporary issues.

11. Graduates will be able to use techniques, skills and modern engineering tools necessary for engineering practice.
12. Graduate will demonstrate an ability to participate and succeed in competitive examinations like GATE, GRE.

Programme Specific Outcomes (PSOs)

1. The ability to understand, analyze and develop computer programs using concept areas related to algorithms, mathematics, system software, web design, big data analytics, and networking for efficient design of computer-based systems of varying complexity.
2. The ability to understand the evolutionary changes in computing, apply standard practices and strategies in software project development using open-ended programming environments to deliver a quality product for business success, real world problems and meet the challenges of the future.
3. Ability to test and analyze the quality of various subsystems and to integrate them in order to evolve a larger computing system.

Course @ glance

- Discrete Mathematics
- Digital Electronics and Logic Design
- Data Structures and Algorithms
- Computer Organization and Architecture
- Object Oriented Programming
- Engineering Mathematics III
- Computer Graphics
- Advanced Data Structures
- Microprocessor
- Principles of Programming Languages
- Theory of Computation
- Database Management Systems (DBMS)
- Software Engineering & Project Management
- Information Systems & Engineering Economics
- Computer Networks (CN)
- Design & Analysis of Algorithms
- Systems Programming & Operating System
- Embedded Systems & Internet of Things
- Software Modeling and Design

- Web Technology
- High Performance Computing
- Artificial Intelligence and Robotics
- Data Analytics
- Pervasive and Ubiquitous Computing
- Software Testing and Quality Assurance
- Machine Learning
- Information and Cyber Security
- Compilers
- Cloud Computing

PDEA's College Of Engineering Manjari (Bk.)

Mechanical Engineering Department

Program Education Objectives (PEO)

PEO1: Stand out in professional career and/or higher education by acquiring knowledge in mathematical, computing and Mechanical Engineering principles.

PEO2: Be able to develop the communication skills, professional personality and ethical values that will mould them into a good human beings, responsible citizens and competent professionals.

PEO3: Demonstrate good scientific and engineering breadth in the design and development of novel and cost-effective products to cater to the needs of the society.

PEO4: Proliferate mechanical engineers with utmost practical skill with sound theoretical knowledge.

Programme Outcomes (PO)

Engineering Graduates will be able to:

1. Use research based knowledge to conduct experiments, analyze and interpret data and synthesize information to valid conclusion.
2. Identify, formulate, analyze and solve complex mechanical engineering problems.
3. Participate and succeed in competitive examinations and/or seek employment in the industry helping to promote entrepreneurship skills among students.
4. Use the techniques, skills, and modern engineering tools necessary for engineering practice.
5. Acknowledge the need for lifelong learning and being a part of it.
6. Understand knowledge of professional and ethical responsibilities.
7. Provide solutions to varied engineering problems using software tools.
8. Apply basic knowledge of science, mathematics and engineering fundamentals in the field of Mechanical Engineering
9. Function competently as an individual and as a part of multi-disciplinary teams.
10. Understand impact of Mechanical engineering solutions on society and environment in continuous and sustainable manner.

11. Understand contemporary issues.

12. Apply and commit ethical principles /norms/standards during their professional engineering practices.

Programme Specific Outcomes (PSOs)

1. Extend and implement new thoughts on product design and development with the aids of modern, AutoCAD, proE, catia, CAD/CAM, CFD tools, for better manufacturing practices.
2. Ability to search, articulate the industrial problems and solve with the use of Mechanical Engineering tools for futuristic outcomes and development of society.
3. Apply technical knowledge in the fields of Thermal, Design, and Manufacturing sciences to solve Engineering Problems.

Course @ glance

- Heat Transfer
- Design of Machine Elements
- Mechatronics
- Fluid Mechanics
- Turbo machinery
- Thermodynamics
- Engineering Graphics
- Basic Mechanical Engineering
- Engineering Metallurgy
- Material Science
- Advanced Manufacturing Process
- Numerical Methods and Optimization
- Refrigeration & Air Conditioning

- Theory Of Machine
- Strength Of Material
- Heating Ventilation & Air Conditioning
- Computational Fluid Dynamics
- Dynamics Of Machinery
- Finite Element Analysis
- Automobile Engineering
- Energy Audit & Management
- Power Plant Engineering
- Solar and Wind Power
- CAD/CAM Automation
- Robotics
- Mechanical System Design
- Metrology & Quality Control
- Operation Research

PDEA's College Of Engineering Manjari (Bk.)
E&TC/Electronics Engineering Department

Program Specific Outcomes (PSOs)

PSO 1- An ability to design and implement complex systems in areas like signal processing embedded systems, VLSI and Communication Systems.

PSO 2 -An ability to make use of acquired technical knowledge for qualifying in competitive examinations at various levels.

PSO 3 Graduates will be able to apply fundamentals of electronics in various domains of analog and digital systems.

At the end of the program, the graduates of B.E.of the department will be able to

Programme Outcomes:

PO 1 - Engineering Knowledge: Apply knowledge of mathematics, science , and Electronics and Communication Engineering for solving engineering problems and modelling.

PO 2 - Problem analysis: Design and conduct experiments as well as to analyze and interpret experimental or collected data, simulate and fabricate electronic circuits and systems and make own projects utilizing latest software tools and techniques. They also possess the ability to identify, formulate, research literature and analyze complex engineering problems to reach logical conclusions.

PO 3 - Design / development of solutions: Design a system, component or process to meet the desired specifications, performance and capabilities; compatible with health, safety, legal, societal and environmental considerations.

PO 4 - Conduct investigations of complex problems: Use research based knowledge and research methods including design of experiments in analyzing and interpreting data, and synthesizes the data to come to valid conclusion.

PO 5 - Modern tool usage: Apply appropriate techniques, resources and modern attitudes, IT tools (linking hardware and software) including prediction and modeling to complex engineering activities and research.

PO 6 - Engineer and Society: Understand the special duty they owe to protect the public's health, safety and welfare by virtue of their professional status as engineers in society.

PO 7 - Environment and sustainability: Understand and correctly interpret the impact of engineering solutions in global, societal and environmental contexts and demonstrate the knowledge of a need for sustainable development.

PO 8 - Ethics: Understand ethics of life and professions and abide by them.

PO 9 - Individual and Team-work: Articulate teamwork principles, work with a multi-disciplinary team, and appreciate the role of a leader, leadership principles, and attitudes conducive to effective professional practice of Electronics and Communication Engineering.

PO 10 - Communication: Communicate and present effectively both orally and in writing, such as being able to comprehend and write effective reports and design documentation, make effective presentations and give and receive clear instructions.

PO 11 - Project management and finance: Demonstrate knowledge and understanding of the engineering finance and management principles as a member and leader in a team to manage projects in multi-disciplinary environments.

PO 12 - Life-long learning: Engage in life-long learning, demonstrate knowledge and understanding of contemporary and emerging issues relevant to their domain - demonstrate knowledge and understanding of business practices and principles of management and understand their limitations, develop awareness of legal consequences of engineering solution.

Program Education Objectives (PEOs)

PEO 1-Preparation: transition to a successful professional career

To prepare the students to excel undergraduate programmes, in applied research, or in PG programmes to succeed in industry/technical profession anywhere in the world through rigorous learning- teaching.

PEO 2-Core Competence: development of the fundamental prerequisites

To provide students with a solid foundation in mathematical, scientific and electronics and communication engineering fundamentals required to solve engineering problems – thus generating core competence. This serves them lifelong in their professional domain as well as higher education.

PEO 3- Design Competence: aiding the students in the R & D competency

To inculcate a strong flavour of research activities among the students and impart them with good scientific and engineering depth and breadth of knowledge including proficiency in hardware languages, use of latest software tools, ability to apply engineering experience in designing and conducting experiments and analyze the significance of experimental data so as to comprehend, analyze, design and create novel products and provide solutions to the real life problems facing the society and humanity at large.

PEO 4- Professionalism: developing lifelong and world class employability

To inculcate in students the finest professional attributes, ethics, a positive attitude, effective communication and presentation skills, ownership, responsibility and accountability – aptitude to work in multi-cultural/national and multi-disciplinary ambience, develop in one adaptability to different situations, ability to work in teams, take independent decisions and ability to integrate engineering issues to broader social contexts.

PEO 5- Career Development: equipping the students to succeed in a variety of career options

To prepare the students for successful and productive career choices in both public and private sectors in the field of electronics & communication engineering or other allied engineering or other fields. Also equipping the students by imparting professional development courses and industrial trainings, preparing students to crack various national level competitive examinations like GATE, IES, etc and providing encouragement to pursue higher studies or to become successful entrepreneurs in life.

PEO 6- Learning Environment: inculcate a lifelong learning culture

To provide students with an academic environment that ignites in one the spirit of excellence, develop the urge of discovery, creativity, inventiveness, leadership and a passion to be the best by providing state-of-the-art facility and an overall ambience that fosters brilliance.

Savitribai Phule Pune University, Pune

SE(E&TC/Electronics Engineering) 2015 Course

(With effect from Academic Year 2016-17)

S.E.SEMESTER-I

Course Code	Course
204181	Signals & Systems
204182	Electronic Devices & Circuits
204183	Electrical Circuits and Machines

204184	Data Structures and Algorithms
204185	Digital Electronics
204186	Electronic Measuring Instruments & Tools
204192	Audit Course 1- Road Safety Management
Total Credits	25

S.E.SEMESTER-II

Course Code	Course
207005	Engineering Mathematics III
204187	Integrated Circuits
204188	Control Systems
204189	Analog Communication
204190	Object Oriented Programming
204191	Employability Skill Development
204193	Cyber Crime and law

Savitribai Phule University of Pune, Pune
Third Year Electronics Engineering (2015 Course)

(With effect from Academic Year 2017-18)

T.E.SEMESTER-I

Course Code	Course
304201	Power Electronics and Applications
304202	Instrumentation Systems
304203	Electromagnetics and Wave propagation
304204	Microcontrollers and Applications
304205	Data Communication
Audit Course 3	
Total Credits	25

T.E.SEMESTER-II

Course Code	Course
304206	DSP and Applications
304207	Embedded Processors
304208	Business Management and Organization
304209	Fundamentals of HDL
304210	PLC and Applications
Total Credits	25

Savitribai Phule Pune University
Final Year Electronics Engineering (2015 Course) (With effect
from Academic Year 2018-19)

B.E. SEMESTER-I

Course Code	Course
404201	VLSI Design
404202	Advanced Power Electronics
404203	Electronics System Design
404204	Elective I -Embedded Systems & RTOS
404205	Elective II-Mobile communication
Audit Course 5	Critical Thinking
Total Credits	22

B.E. SEMESTER-II

Course Code	Course
404209	Computer Networks & Security
404210	Process Instrumentation
404211	Elective III --Audio Video Engineering
404212	Elective IV --Robotics
Total Credits	22

PDEA's College Of Engineering Manjari (Bk.)

Instrumentation Engineering Department

B.E. Instrumentation and Control Program Objectives:

1. To develop technically sound Engineers for successful careers in industry that meets the local and global needs.
2. To provide fundamental knowledge of Instrumentation and Control and to strengthen applied mathematical base and analytical ability of the students.
3. To provide experience in Instrumentation Engineering in the three areas viz. Instrument Design, Process Instrumentation and Process Control.
4. To develop Instrumentation strategies for various walks of life viz. Environmental, Biomedical and Automobile.
5. To expose the students with state of art technology so that the students will be ready to step in the industry with confidence and with reduced training period.
6. To develop communication skills, teamwork skills, entrepreneurship qualities and managerial skills.

Program Specific Outcomes:

The field of instrumentation and control systems engineering technology is heavily dependent on the application of computers in the analysis, design, and operation of manufacturing and processing facilities. The program must demonstrate that graduates have the ability to:

1. Apply concepts of automatic control, including measurement, feedback and feed forward regulation for the operation of continuous and discrete systems,
2. Design and implement systems utilizing analog and/or digital control devices,
3. Apply the concepts of chemistry, physics, and electricity/electronics to measurement and control systems,
4. Apply the concepts of digital and microprocessor systems and functionality of system components/devices for the automation of processes,
5. Apply the concepts of measurements and sensor selection, and
6. Communicate the technical details of control systems using current techniques and graphical standards.

Name of Subjects:

1. Engineering Mathematics - III
2. Sensors & Transducers – I
3. Basic Instrumentation
4. Linear Integrated Circuits
5. Network Theory
6. Programming Languages
7. Audit Course 1
8. Sensors & Transducers - II
9. Automatic Control Systems
10. Electronic Instrumentation
11. Digital Techniques
12. Industrial Drives
13. Soft Skills
14. Drives Control Laboratory
15. Audit Course 2
16. Embedded System Design
17. Instrumental Methods for Chemical Analysis
18. Control System Components
19. Control System Design
20. Industrial Organization and Management
21. Numerical Methods
22. Seminar
23. Audit Course – 3
24. Digital Signal Processing
25. Process Loop Components
26. Unit Operations & Power Plant Instrumentation
27. Instrument and System Design
28. Bio - Medical Instrumentation
29. Mini Project
30. Audit Course – 4
31. Process Dynamics and Control
32. Project Engineering and Management
33. Computer Techniques and Applications
34. Elective- I
35. Elective- II
36. Project Stage- I
37. Audit Course- 5
38. Process Instrumentation
39. Industrial Automation
40. Elective- III
41. Elective- IV
42. Project Stage- II
43. Online Certification Course
44. Audit Course- 6

PDEA's College Of Engineering Manjari (Bk.)

Information Technology Department

Program Objectives:

The students of Information Technology course after passing out will

1. Graduates of the program will possess strong fundamental concepts in mathematics, science, engineering and Technology to address technological challenges with emerging trends.
2. Possess knowledge and skills in the field of Computer Science & Engineering and Information Technology for analyzing, designing and implementing multifaceted engineering problems of any domain with innovative and efficient approaches.
3. Acquire an attitude and aptitude for research, entrepreneurship and higher studies in the field of Computer Science & Engineering and Information Technology.
4. Learn commitment to ethical practices, societal contributions through communities and life-long intellect.
5. Attain 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 Specific Outcomes:

The students in the Information Technology course will attain:

1. An ability to apply knowledge of computing, mathematics including discrete mathematics as well as probability and statistics, science, engineering and technology.
2. An ability to define a problem and provide a systematic solution with the help of conducting experiments, as well as analyzing and interpreting the data.
3. An ability to design, implement, and evaluate a software or a software/hardware co-system, component, or process to meet desired needs within realistic constraints.
4. An ability to identify, formulate, and provides systematic solutions to complex engineering problems.
5. An ability to use the techniques, skills, and modern engineering technologies tools, standard processes necessary for practice as a IT professional.
6. An ability to apply mathematical foundations, algorithmic principles, and Information Technology theory in the modeling and design of computer-based systems with necessary constraints and assumptions.

7. An ability to analyze the local and global impact of computing 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.

Name of Subjects:

1. Discrete Structures
2. Computer Organization & Architecture
3. Digital Electronics and Logic Design
4. Fundamentals of Data Structures
5. Problem Solving and Object Oriented programming
6. Digital Laboratory
7. Programming Laboratory
8. Object Oriented Programming Lab.
9. Communication Skills
10. Audit Course 1
11. Engineering Mathematics -III
12. Computer Graphics
13. Processor Architecture and Interfacing
14. Data Structures & Files
15. Foundations of Communication and Computer Network
16. Processor Interfacing Laboratory
17. Data Structure and Files Laboratory
18. Computer Graphics Laboratory
19. Audit Course 2
20. Theory of Computation
21. Database Management Systems
22. Software Engineering & Project Management
23. Operating System
24. Human-Computer Interaction
25. Software Laboratory-I

26. Software Laboratory-II
27. Software Laboratory-III
28. Audit Course 3
29. Computer Network Technology
30. Systems Programming
31. Design and Analysis of Algorithms
32. Cloud Computing
33. Data Science & Big Data Analytics
34. Software Laboratory-IV
35. Software Laboratory-V
36. Software Laboratory-VI
37. Project Based Seminar
38. Audit Course 4
39. Information and Cyber Security
40. Machine Learning and Applications
41. Software Design and Modeling
42. Software Design and Modeling
43. Elective-I
44. Elective-II
45. Computer Laboratory-VII
46. Computer Laboratory-VIII
47. Project Phase-I
48. Audit Course-V
49. Distributed Computing System
50. Ubiquitous Computing
51. Elective-III
52. Elective-IV
53. Computer Laboratory-IX
54. Computer Laboratory-X
55. Project Work
56. Audit Course-VI