



**K. J. SOMAIYA INSTITUTE OF ENGINEERING  
AND  
INFORMATION TECHNOLOGY,  
MUMBAI - 400 022**

**2. PROGRAMS & DEPARTMENTS**

**2. Programs and Departments**

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## **2.1 DEPARTMENT OF ELECTRONICS AND TELECOMMUNICATION ENGINEERING**

Electronics and Telecommunication Engineering department started in the year 2001 with the intake of 60. In 2003 department intake increased to 120 and continues to remain the same.

The Department of Electronics and Telecommunication Engineering has well qualified and highly motivated faculty supported by dedicated non teaching staff members. The department committed to impart excellent teaching-learning, training and research in the field of technical education in most efficient manner to its students. The department believes in innovation & perfection and works to give an engineering attitude to the students for their confidence building so as to solve technical problems.

### **2.1.1 VISION :**

To provide a good academic environment that helps students to develop critical thinking, leadership and learning skills to become successful engineers.

### **2.1.2 MISSION :**

1. To offer excellent training in Electronics and Telecommunication Engineering to groom students into outstanding professional.
2. To involve students in activities meant to develop their team work and leadership abilities.
3. To inculcate moral values and environmental consciousness among students.

### **2.1.3 PROGRAM EDUCATIONAL OBJECTIVES (PEOs):**

1. To train learners in analyzing and applying the fundamentals of Basic sciences, Mathematics and formulate solutions by using appropriate engineering techniques, skills and tools.
2. To help the learners appreciate the value of professional practices in Electronics and Telecommunication engineering sector, scientific research and career.
3. To enquire and apply Electronics and Telecommunication Engineering solutions in societal and environmental contexts.
4. To stress upon the development of necessary professional skills along with effective oral and written communication.

#### 2.1.4 PROGRAM OUTCOMES (POs) :

*The graduates of this program will be able to:*

1. Apply the knowledge of mathematics, science and fundamentals of engineering to solve the problem of Electronics and Telecommunication Engineering.
2. Identify, articulate and analyze the complex engineering problems related to Electronics and Telecommunication Engineering to reach validated conclusions with the help of mathematics and engineering sciences.
3. Design the solutions for complex engineering problems of Electronics and Telecommunication Engineering to meet desired sustainable goals within realistic constraints such as economic, environmental, social and ethical.
4. Apply knowledge of research to design, analyze and interpret the data related to Electronics and Telecommunication Engineering problems to achieve valid conclusions.
5. Decide and apply appropriate techniques and tools to model/ solve, complex engineering problems with their own limitations.
6. Address societal and environmental issues by applying engineering knowledge with appropriate reasoning.
7. Recognize the effect of engineering solutions in the context of society and environment to achieve sustained development.
8. Follow professional ethics and norms in the engineering practice.
9. Reflect the qualities of leadership and perform efficiently in the multidisciplinary settings.
10. Produce effective reports and documents with effective communication for complex engineering activities with thorough understanding chosen engineering field.
11. Present the knowledge methodically by comprehending the principles of engineering and management in their professional careers.
12. Adapt for the need based life-long learning considering day-to-day technological advances.

**2.1.5 PROGRAM SPECIFIC OBJECTIVES (PSOs) :**

*The graduates of this program will be able to:*

1. Understand, design and develop cost-effective solutions for the problems related to field of electronics and telecommunication with an understanding of testing and maintenance.
2. Derive solutions through simulation by the use of various software's required for designing and analysis.

**2.2 DEPARTMENT OF ELECTRONICS ENGINEERING**

The department of Electronics Engineering is a harmonious group of many enthusiastic and dedicated minds, having vibrant atmosphere in the department. Students are encouraged to participate in co-curricular and extra-curricular activities. The department facilitates educational experience through industry institute interaction, and integration of theory and practice.

**2.2.1 VISION :**

To be a place of academic excellence by imparting quality teaching in the field of Electronics Engineering

**2.2.2 MISSION :**

1. To prepare the students to accept technological challenges with confidence
2. To facilitate educational experience through industry institute interaction, and integration of theory and practice
3. To aid the holistic development of the students.

**2.2.3 PROGRAM EDUCATIONAL OBJECTIVES (PEOs):**

1. To impart to students, the necessary design and laboratory skills needed to design and develop hardware and software solutions applicable in real life situations.
2. To develop the analytical skills, written and oral communication skills, critical thinking and problem-solving abilities needed for personal growth.
3. To inculcate professionalism, team skills and the desire to engage in lifelong learning.

#### **2.2.4 PROGRAM OUTCOMES (POs) :**

*The graduates of this program will be able to:*

1. Demonstrate knowledge of core sciences, mathematics and Electronics Engineering
2. Review literature to identify, formulate analyse and solve complex problems using mathematical principles and engineering sciences.
3. Design solutions for Electronics engineering problems which meet specifications, while adhering to environmental and safety regulations.
4. Apply research based knowledge to design and conduct experiments, analyze and interpret the data related to Electronics Engineering problems and arrive at valid conclusions.
5. Select and apply or create appropriate hardware or software tools and techniques to solve Engineering problems.
6. Apply engineering knowledge to address societal and environmental issues
7. Practice and advocate sustainable development
8. Demonstrate professional ethics and be committed to it
9. Work as a leader or team member in diverse and multidisciplinary teams
10. Communicate effectively and generate clear and precise documentation
11. Work as team leaders or members, handling finance, projects and applying their engineering and management principles in a multidisciplinary environment.
12. Recognise the need for and engage in lifelong learning.

#### **2.2.5 PROGRAM SPECIFIC OBJECTIVES (PSOs) :**

*The graduates of this program will be able to:*

1. Design, test, maintain equipment and arrive at cost effective and appropriate solutions to problems.
2. Use software for design, simulation and analysis of systems

### **2.3 DEPARTMENT OF COMPUTER ENGINEERING**

The Computer Engineering department provides excellent education to all students which

foster creativity in learning, research and building a knowledge base by imparting quality education. The department has well qualified and motivated faculty members and support staff. The laboratories are adequately equipped with state-of-the art facilities.

### **2.2.1 VISION :**

To be the finest centre of learning by imparting quality teaching in the field of computer engineering.

### **2.2.2 MISSION :**

1. To inculcate in student the ability to analyze, design and develop software projects.
2. To prepare students to be ready for ever changing scenario in the field of computer engineering.
3. To help the students to attain and utilize their potential for successful carrier and to the need of society and industry.

### **2.2.3 PROGRAM EDUCATIONAL OBJECTIVES (PEOs):**

1. To prepare the students with sound knowledge of mathematics, science and engineering fundamentals to build a lifelong career in computer engineering domains.
2. To train the students to analyze, design, implement, test and deploy software projects for solving real world problems with the use of modern tools and techniques.
3. To inculcate professional ethics, leadership qualities and social awareness in the students.

### **2.2.4 PROGRAM OUTCOMES (POs) :**

*The Computer Engineering graduates will be able to:*

1. Effectively apply the knowledge of computing, mathematics, science and engineering fundamentals appropriate to the discipline.
2. Identify and analyze the solutions to engineering problems.



3. Design, implement a process, program and computer based system meeting the requirements of all stakeholders.
4. Conduct in depth study and examination of complex real world problems.
5. Create and use appropriate techniques, resources and modern engineering computing tools.
6. Provide computer engineering solutions for the betterment of individual and society.
7. Understand environmental responsibilities and create sustainable solutions.
8. Ensure professional and ethical behavior.
9. Function effectively as an individual and as a member of a multidisciplinary team to accomplish a common goal.
10. Communicate effectively with the engineering community as well as with the society at large.
11. Manage and budget of computer engineering projects by using current computing tools and techniques.
12. Confidently pursue professional development through lifelong learning.

#### **2.2.5 PROGRAM SPECIFIC OBJECTIVES (PSOs) :**

*The Computer Engineering graduates will be able to:*

1. Use computer engineering technique and open source software tools.
2. Work on real time social and industry based projects.

### **2.4 DEPARTMENT OF INFORMATION TECHNOLOGY**

Department of Information Technology imparts the quality based technical education in the IT field with constant value addition in the frontiers of Computer and Information Science. The strength of the department is the students and the faculty of good caliber.

#### **2.4.1 VISION :**

To educate students to be among the best in the challenging world of Information Technology and to also groom future leaders for industry, academia, government and society.

#### **2.4.2 MISSION :**

1. To groom competent engineers ready to face the challenges of the dynamic IT industry.
2. To enable students to analyse, design and implement novel IT solutions to engineering problems.
3. To instil professional ethics and social awareness in the students.

#### **2.4.3 PROGRAM EDUCATIONAL OBJECTIVES (PEOs):**

1. To provide students with the technical knowledge to build a lifelong career in IT domain.
2. To develop research, analysis, design and implementation skills in the students.
3. To impart professional, social and ethical values which enable them to work effectively in a multidisciplinary environment.

#### **2.4.4 PROGRAM OUTCOMES (POs) :**

*The graduates of this program will be able to:*

1. Apply knowledge and skills in the fundamental areas of mathematics, science and engineering for solving problems in the field of IT.
2. Analyze and formulate engineering problems in the field of research by applying basic principles of engineering subjects.
3. Conduct investigations, design, develop, analyse solutions for complex problems in IT domains.
4. Use research-based knowledge and methods including interpretation of data, and synthesis of the information to provide valid conclusions.
5. Create and use various tools to solve engineering problems and evaluate solutions with an understanding of limitations.
6. Understand and analyze the local and global impact of IT solutions in an economical, environmental and societal context on individual.
7. Practice professional ethics and demonstrate concern for society and environment.
8. Earn the ethical principles and commit to professional ethics with engineering

practice norms and responsibilities.

9. Function effectively as an individual and as a part of multidisciplinary teams.
10. Document and present engineering activities and give clear and precise instructions.
11. Apply, manage and budget the work effectively by demonstrating knowledge and understanding of the engineering and management techniques.
12. Feel the need to engage in continuing personal and professional development.

#### **2.4.5 PROGRAM SPECIFIC OBJECTIVES (PSOs) :**

*The graduates of this program will be able to:*

1. Develop various applications using open source software.
2. Analyze and implement Web based technology and create IT infrastructure.

### **2.5**

#### **DEPARTMENT OF ARTIFICIAL INTELLIGENCE AND DATA SCIENCE**

Artificial Intelligence and Data Science is an interdisciplinary branch of science, engineering and technology creating a complete ecosystem and a paradigm shift in virtually every sector of the technical industry, academics and research. Artificial Intelligence and Data Science is the future of technology which are changing the world at very high pace. The basic objectives of this course is to train students with the next age of Intelligence and analytics generated by machines, influencing nearly every facet of our lives to help improve efficiencies and augment human capabilities, influencing consumer products with significant breakthroughs in healthcare, manufacturing, finance and retail industries.

With the tremendous amount of data generated every day and the computing power available, Data Science plays important role helping every business organisation in identifying business trends and changes through advanced Big Data Analytics with variety of techniques and tools to interpret and predict business results and future from multiple data sources through statistical analysis, data aggregation, and data mining. Artificial Intelligence and Data Science undergraduate engineering course has been started by the institute from the academic year July 2020 with the intake capacity of 60 seats.

### 2.5.1 VISION :

To serve the society by **transforming young minds** and **preparing them for a bright future.**

### 2.5.2 MISSION

- To create a holistic educational experience for students focused on subject knowledge, problem solving, inquisitiveness, leadership, communication and team skills.
- To nurture an environment committed to the free exchange of ideas where research, creativity, innovation, and entrepreneurship can flourish.
- To impact society in a transformative way by engaging with external collaborators

### 2.5.3 PROGRAM EDUCATIONAL OBJECTIVES

After a few years graduates will be able to:

**PEO I :** Apply skills required to design and develop solutions applicable in real life situations

**PEO II :** Pursue successful and satisfying careers in the profession of their choice or enterprise.

**PEO III :** Pursue higher studies in related fields from recognized institutions.

### 2.5.4 PROGRAM OUTCOMES

Students of the program will:

**PSO I :** Exhibit proficiency in the field of **Artificial Intelligence** by **developing intelligent systems.**

**PSO II :** Be accomplished in the field of **data analytics, statistical programming languages and Machine learning**

## 2.6 POST-GRADUATE PROGRAM, MASTER OF TECHNOLOGY IN ARTIFICIAL INTELLIGENCE

### Programme Highlights:

**Programme :** Master of Technology in Artificial Intelligence

**Discipline :** Computer Engineering

**Intake :** 18 Seats

**Duration :** 2 Years

**Eligibility :** Passed Bachelor Degree in Computer Engineering / Information Technology / Electrical Engineering / Electronics Engineering / Electronics and

Telecommunication Engineering / Instrumentation Engineering / Power Electronics -- with at least 50% marks (at least 45% marks in case of candidates of Backward class categories, Economically Weaker Section (EWS) and persons with disability belonging to Maharashtra State)

**Requisite:** Non-Zero Positive GATE Score in Computer Science and Information Technology (CS), Electronics and Communication Engineering (EC), Electrical Engineering (EE), Instrumentation Engineering (IN) streams **OR** Full-time Work Experience of 2 Years with Sponsorship Certificate from the Employer

**Programme Objectives:**

- ✓ To provide comprehensive knowledge of state-of-the-art AI techniques
- ✓ To produce skilled practitioners who can cater to the needs of government, industry and scientific organizations in the area of AI
- ✓ To produce industry-ready professionals with strong algorithmic perspective of AI
- ✓ To acquaint working professionals with cutting-edge developments in AI
- ✓ To facilitate programmers in migrating to AI solutions' development
- ✓ To provide hands-on experience on multiple case studies using key drivers of AI like Python, R, MATLAB, Caffe, Hadoop and more

**Salient Features of the Programme:**

- ✓ Artificial Intelligence indicated as Emerging Areas of Technology by AICTE
- ✓ Cutting-edge curriculum designed with extensive input from industry subject matter experts
- ✓ Hands-on artificial intelligence projects
- ✓ Pedagogy: Learning by doing, Industry mentoring, Blended learning
- ✓ Job opportunities at Research and Development level
- ✓ Industry insights through multiple industry knowledge sessions
- ✓ Platform to exchange research ideas with peers through the International Conference organized annually at KJSIEIT
- ✓ Direct advantage of Center of Excellence at Robotics Process Automation at

**KJSIEIT**

- ✓ Benefit of R&D culture in KJSIEIT to aspirants: More than 40 Research Grants received, More than 35 MoUs signed with industries, Expert talks organized on Research Opportunities by eminent scientists, Training programmes on various AI software development tools, etc.
- ✓ 24\*7 access to state-of-the-art research publications in IEEE, ACM, Elsevier, Springer, etc. digital libraries for KJSIEITians

**Courses Offered:**

- ✓ Machine Learning and Pattern Recognition
- ✓ Mathematical Foundations of Data Science
- ✓ Deep and Reinforcement Learning
- ✓ Natural Language Processing
- ✓ Robotics Process Automation
- ✓ Bio-inspired AI
- ✓ Big Data Analytics
- ✓ Information Retrieval
- ✓ AI in Bio-informatics
- ✓ Autonomous Robotics
- ✓ Computer Vision
- ✓ IoT Data Analytics
- ✓ Speech Recognition
- ✓ Blockchain
- ✓ Mixed Reality

**2.7 DEPARTMENT OF BASIC SCIENCES AND HUMANITIES**

The department of Basic Sciences and Humanities endeavors to accomplish the objectives concerned with the Engineering courses. The teaching learning process is instrumental in instilling sense of formal acknowledgement and generative powers of information so as to respond to the requirements of transactional commercial culture.

**2.7.1 VISION :**



Department of Basic Sciences and Humanities tries to inculcate the knowledge of the dynamic combination of science, technology and humanities by nurturing the basic technical skill-sets and honing professional decorum

### **2.7.2 MISSION :**

1. To promote ethical values and social responsibility through novel learning techniques in basic sciences and humanities.
2. To improve logical thinking of students for knowing scientific, solving problems, and making good decisions.
3. To develop ethical sensibilities through value based education.

## **2.8 DEPARTMENT ADVISORY BOARD**

Department Advisory Board (DAB) is constituted for each department. It consists of Head of the Department, Industry representatives, Parent representative, Alumni representative and two senior faculty members of the department. Meeting of DAB is conducted before the commencement of every semester. DAB members are given information on plans of the department and are invited to respond with advice that will help the department in accomplishing the PEOs and POs. DAB acts as the primary source of external guidance for the department and provides advice, assistance and counselling for improvement.

## **2.9 DEPARTMENT QUALITY CIRCLE**

The Departmental Quality Circle (DQC) meeting is held before the beginning of semester to chart out the different activities to be conducted during the course of the semester. DQC is headed by Head of the Department with 5-6 teachers as members. DQC ensures timely, efficient and progressive performance of academic tasks of the department. DQC finalises the academic calendar of the department, suggests and implements ideas that help in positive growth of the department.

## **3.0 PROGRAM ASSESSMENT COMMITTEE**

The Program Assessment Committee (PAC) is formed under the leadership of Head of the Department. One senior faculty acts an academic co-ordinator and class-teachers are the other members of PAC. It monitors and evaluates the programme delivery. It also prepares periodic progress reports. Monthly monitoring reports regarding syllabus completion are collected and



corrective actions are devised in HOD meetings.