

Shivaji University, Kolhapur

Department of Technology

Vision

To be a leader in engineering and technology education, a research centre of global standards to provide valuable resources for industry and society through development of competent technical human resources.

Mission

1. To develop technocrats of national & international stature committed to the task of nation building.
2. To organize teaching learning programs to facilitate the development of competent and committed professionals for practice, research and academics.
3. To undertake collaborative research projects that offer opportunities for consistent interaction with industries.

Name of Programme: M.Tech. (Electronics Technology)

Program Outcomes

- 1) Knowledge utilization for streaming all the multi-disciplinary aspects of engineering.
- 2) Implementation of various methodologies for analyzing real world problems in a constrained environment to get solution for the problem.
- 3) To work in a multi disciplinary environment an ability to design, simulate, test and fabricate the circuits and system developed for a particular application.

- 4) Ability to identify, formulate and solve challenging real world problems.
- 5) Various licensed and FOSS (Free Open Source Software) tools implementation for design and development of engineering applications.
- 6) Understanding of social, political, health and cultural issues.
- 7) Students are taught to keep an environmental oriented development with sustainability.
- 8) An understanding of professional and ethical responsibility.
- 9) Students will learn to communicate their ideas to be effective in collaboration with other members of engineering teams.
- 10) Development of soft skills like oral, verbal communication, public speaking, business etiquettes and manners, group discussions, personal interviews.
- 11) Recognition need for and an ability to engage in lifelong learning.

Program Specific Outcomes

PSO 1- An Ability to analyze, simulate and design the electronic systems.

PSO 2- An ability to use technical knowledge for designing various electronic systems.

Course Outcomes

Part-I Semester-I

Course code	Course title	
C10	Research Methodology	<ol style="list-style-type: none"> 1. To get the knowledge of some basic concepts of research and its methodologies 2. To select and define appropriate research problem and parameters 3. To prepare a research proposal (to undertake a project) 4. To organize and conduct research (advanced project) in a more appropriate manner

		5. To write a research report and thesis
Course code C11	Course title High speed analog design	<ol style="list-style-type: none"> 1. To get fundamental concept of architecture of analog ICs like OPAMP, Video, Imaging, Communications, and Instrumentation ICs etc. 2. To be Familiar with ICs used in many applications such as video, imaging, communications, instrumentation etc. 3. Design of high speed analog circuits
Course code C12	Course title Reconfigurable platforms & HDL	<ol style="list-style-type: none"> 1. To learn different reconfigurable architectures. 2. To be Familiar with SoC, NoC. 3. To be capable of designing and implementing combinational and sequential digital circuits and optimize them with respect to different constraints, such as area, delay, power, or reliability.
Course code C13	Course title Communication Networks	<ol style="list-style-type: none"> 1. To get acquainted with different aspects of IPv6. 2. To be familiar with TCP/IP and wireless communication technology. 3. Study of advanced networks. 4. To be able to develop network using networking tools.
Course code E14 (V) Memory Technologies	Course title Memory Technologies	<ol style="list-style-type: none"> 1. Analyze the different types of RAM, ROM designs. 2. Analyze the different RAM and ROM architecture and interconnects. 3. Analysis about design and characterization technique. 4. To get knowledge of new developments in semiconductor memory design.
Course code E14 (V) CMOS VLSI Design	Course title CMOS VLSI Design	<ol style="list-style-type: none"> 1. Have the ability to synthesize static and dynamic logic cells based on knowledge of MOS device physics, modeling, and circuit topologies. 2. Be capable of designing and implementing combinational and sequential CMOS digital circuits and optimize them with respect to different constraints, such as area, delay, power, or

		<p>reliability.</p> <ol style="list-style-type: none"> 3. Be capable of implementing a complete design verification process using computer-automated tools for layout, extraction, simulation, and timing analysis. 4. To know the fabrication process of CMOS technology and its layout design rules
<p>Course code</p> <p>E 14 (E)</p> <p>Asynchronous Circuit Design</p>	<p>Course title</p> <p>Asynchronous circuit design</p>	<ol style="list-style-type: none"> 1. To understand theoretical & practical aspects of circuit design by asynchronous methods. 2. Learning various asynchronous communication protocols. 3. Analyze and synthesize asynchronous circuits. 4. Understand the classification of asynchronous circuit. 5. Understand the hazards and other challenges in the design of asynchronous circuit. 6. Able to design asynchronous circuit using Huffman and Muller techniques.
<p>Course code</p> <p>E 14 (E)</p> <p>Advanced Computer Architecture</p>	<p>Course title</p> <p>Advanced computer architecture</p>	<ol style="list-style-type: none"> 1. To learn powerful high speed computing architectures. 2. Learning basics of instruction level pipelining. 3. Understand the advanced concepts of computer architecture. 4. Exposing the major differentials of RISC and CISC architectural characteristics. 5. Investigating modern design structures of Pipelined and Multiprocessors systems. 6. To be acquainted with recent computer architectures and I/O devices. 7. Understand the different techniques for reducing latencies in I/O devices.
<p>Elective –II</p> <p>E 15 (V)</p>	<p>Digital Systems and Testing</p>	<ol style="list-style-type: none"> 1. To learn various combinational and sequential circuits. 2. To learn the various faults associated with combinational and sequential circuits. 3. To develop logic for removing various faults the digital systems 4. To learn various BIST architectures for development of fault free systems.

E 15 (V)	Mixed Signal ASIC Design	<ol style="list-style-type: none"> 1. Analysis the different types of ASICs design. 2. Analysis the different Logic cell architecture and interconnects. 3. Analysis about different programmable ASIC design software. 4. Identification of new developments in SOC and low power design.
E 15(E)	RISC Microcontrollers	<ol style="list-style-type: none"> 1. Familiarity with Embedded Systems Design 2. Learning architectures of PIC & ARM.
E15 (E)	AUTOMOTIVE EMBEDDED SYSTEMS	<ol style="list-style-type: none"> 1. To make the students completely aware of the different components of the automotive. 2. The student completing the course shall be very highly competent in the automotive domain trained for the latest technologies. 3. This course addresses modeling and implementation of advanced technology automotive engines for improved fuel economy and emissions, and improvements in systems engineering processes for the design of automotive embedded systems.
S16	Seminar-I	<ol style="list-style-type: none"> 1. Exposure to recent development in Electronics Technology. 2. Development of presentation & communication skills, stage daring. 3. Independent understanding of new concept.
Part-I Semester-II		
Course code C21	DSP Processors	<ol style="list-style-type: none"> 1. To learn TMS320C6xxx, DSP processor architectures. 2. To learn how to implement various signal processing applications using TMS320C6xxx. 3. To learn code optimization, memory optimization

Course code C22	Real Time Operating Systems	<ol style="list-style-type: none"> 1. Learning Real Time Systems. 2. Learning concepts of RTOS 3. Gaining familiarity with applications of RTOS in different domains.
Course code C23	Course title Mobile Computing	<ol style="list-style-type: none"> 1. Introduction to 1G to 4G architectures. 2. Familiarity with GSM, VoIP systems. 3. Mobile computing applications.
Course code Elective 3 E 24 (V)	Course title Systems on Chip	<ol style="list-style-type: none"> 1. To learn CMOS IC technology 2. Familiarity with MOSFET, gate delay and other system level components. 3. To learn I/O architectural details.
Course code E 24 (V)	Course title Wavelet Transform and its applications	<ol style="list-style-type: none"> 1. Familiarity with wavelet transform 2. To study applications of wavelet transforms.
Course code E 24 (E)	Course title Microelectromechanical Systems	<ol style="list-style-type: none"> 1. To learn basics of MEMS technology. 2. To get knowledge processes involved in MEMS.
Course code E 24 (E)	Course title Robotics and Machine Vision	<ol style="list-style-type: none"> 1. Learning fundamental practical aspects of robotics. 2. Understanding image processing techniques. 3. Using image processing techniques for machine vision applications
Course code E25(V)	Course title RF Integrated Circuit Design	<ol style="list-style-type: none"> 1. Learning basics of MOSFET. 2. Learning RF Integrated Circuits fundamentals. 3. Familiarity with EMI, EMC.
Course code E25(E)	Course title High performance network	<ol style="list-style-type: none"> 1. Gaining familiarity with network design issues. 2. Introduction to spread spectrum and CDMA. 3. Familiarity with internet security algorithms.
Course code E25 (E)	Course title High Speed Digital Design	<ol style="list-style-type: none"> 1. Students shall become familiar with and application of many high speed signal processing building blocks such as amplifiers, ADCs, DACs, etc. 2. System applications are of broad general interest or emerging market trends. 3. The proper application of high speed

		devices also
S29	Seminar-II	<ol style="list-style-type: none"> 4. Exposure to recent development in Electronics Technology. 5. Development of presentation & communication skills, stage daring. 6. Independent understanding of new concept.
Part-II Semester-III		
Course code T31	Course title Industrial Training	<ol style="list-style-type: none"> 1. To get familiarity with Industrial working process. 2. To get knowledge from product design to dispatch.
S32	Dissertation Phase I & II	<ol style="list-style-type: none"> 1. Doing rigorous literature review and studying all the facets for proceeding towards the research. 2. Defining the research problem. 3. Setting the objective for research. 4. Applying appropriate methodology to achieve desirable goal. 5. Design and Implementation of task. 6. Getting appropriate results. 7. Thesis writing. 8. Research paper publication
Part-II semester-IV		
D42	Dissertation Phase I & II	<ol style="list-style-type: none"> 1. Doing rigorous literature review and studying all the facets for proceeding towards the research. 2. Defining the research problem. 3. Setting the objective for research. 4. Applying appropriate methodology to achieve desirable goal. 5. Design and Implementation of task. 6. Getting appropriate results. 7. Thesis writing. 8. Research paper publication