

ST JOSEPH'S COLLEGE OF ENGINEERING, CHENNAI
M.E.APPLIED ELECTRONICS
REGULATIONS – 2017

PROGRAM EDUCATIONAL OBJECTIVES

PEO1	To enable graduates to develop solutions to real world problems in the frontier areas of Applied Electronics.
PEO2	To enable the graduates to adapt to the latest trends in technology through self-learning and to pursue research to meet out the demands in industries and Academia.
PEO3	To enable the graduates to exhibit leadership skills and enhance their abilities through lifelong learning.

PROGRAM OUTCOMES

PO1	Engineering Knowledge: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
PO2	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.
PO3	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.
PO4	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.
PO5	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.
PO6	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.
PO7	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.
PO8	Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
PO9	Individual and team work: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
PO10	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.
PO11	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.
PO12	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

PSO1	To critically evaluate the design and provide optimal solutions to problem areas in advanced signal processing, digital system design, embedded systems and VLSI design.
PSO2	To enhance and develop electronic systems using modern engineering hardware and software tools.
PSO3	To work professionally and ethically in applied electronics and related areas.

MA5152 APPLIED MATHEMATICS FOR ELECTRONICS ENGINEERS

COURSE OUTCOMES

C101.1	To study concepts of fuzzy sets, knowledge representation using fuzzy rules, fuzzy logic, fuzzy prepositions, fuzzy quantifiers and applications of fuzzy logic
C101.2	To study various methods in matrix theory to solve system of linear equations
C101.3	To understand Computation of probability and moments, standard distributions of discrete and continuous random variables and functions of a random variable
C101.4	To Conceptualize the principle of optimality and sub-optimization, formulation and computational procedure of dynamic programming
C101.5	To learn characteristic features of a queuing system, acquire skills in analysing queuing models and to use discrete time Markov chains to model computer systems

AP5151 ADVANCED DIGITAL SYSTEM DESIGN

COURSE OUTCOMES

On completion of this course, the students will be

C102.1	To introduce methods to analyse and design synchronous sequential circuits.
C102.2	To introduce methods to analyse and design asynchronous sequential circuits.
C102.3	To learn fault diagnosis and testability Algorithms
C102.4	To introduce the architectures of programmable devices.
C102.5	To know use of Verilog in sequential digital system modeling

AP5152 ADVANCED DIGITAL SIGNAL PROCESSING

COURSE OUTCOMES

On completion of this course, the students will be able to

C103.1	Understand Discrete-time signal transforms, digital filter design, optimal filtering
C103.2	Know Power spectrum estimation, multi-rate digital signal processing
C103.3	Understand DSP architectures which are of importance in the areas of signal processing, control and communications.
C103.4	Design adaptive filters for a given application
C103.5	Design multirate DSP systems.

AP5191 EMBEDDED SYSTEM DESIGN

COURSE OUTCOMES

On completion of this course, the students will be able to

C104.1	Learn design challenges and design methodologies
C104.2	Study general and single purpose processor
C104.3	Understand bus structure
C104.4	Discuss state machine and design process models.
C104.5	Outline embedded software development tools and RTOS

AP5101 SENSORS, ACTUATORS AND INTERFACE ELECTRONICS

COURSE OUTCOMES

Upon Completion of the course, the students will be:

C105.1	Able to analyze the importance of static and dynamic characteristics of measurement systems
C105.2	Able to understand the different types of resistance and reactive sensors
C105.3	Able to evaluate self-generating sensors and its signal conditioning
C105.4	Able to know the different types of actuators and their usage
C105.5	Able to analyze digital sensors and semiconductor devices sensors

CU5292 Electromagnetic Interference and Compatibility

COURSE OUTCOMES

Upon Completion of the course, the students will be able:

C106.1	To understand the basic concepts of electromagnetic interference and compatibility.
C106.2	To understand the different mechanisms by which interference is coupled
C106.3	To design and study the different techniques used to control interference.
C106.4	To check the compliance of the systems with the international standards.
C106.5	To perform different tests to measure emission and immunity

AP5251 Soft Computing and Optimization Technique

COURSE OUTCOMES

On completion of this course, the students will be

C108.1	The ability to Implement machine learning through Neural networks
C108.2	To Develop a Fuzzy expert system.
C108.3	To model Neuro Fuzzy system for clustering and classification
C108.4	Able to use the optimization techniques to solve the real world problems
C108.5	To gain knowledge in conventional optimization techniques and to understand the various evolutionary optimization techniques

AP5252 ASIC and FPGA Design

COURSE OUTCOMES

Upon Completion of the course, the students will be able:

C109.1	To understand the different types of ASICs and programming technologies
C109.2	To understand ASIC physical design
C109.3	To understand simulation and testing procedures for ASIC
C109.4	To understand the design procedures and design issues of ASIC
C109.5	To understand the design issues of SOC

AP5291 HARDWARE - SOFTWARE CO-DESIGN

COURSE OUTCOMES

On completion of this course, the students will be

C110.1	To acquire the knowledge about system specification and modelling.
C110.2	To learn the formulation of partitioning
C110.3	To acquire the knowledge about Cosynthesis algorithm and its issues.
C110.4	To study the different technical aspects about prototyping and emulation.
C110.5	To learn and design system level specification and heterogeneous specification.

AP5292: DIGITAL IMAGE PROCESSING

COURSE OUTCOMES

C111.1	To understand fundamentals of digital images
C111.2	To understand mathematical transforms necessary for image processing
C111.3	To understand segmentation of grey scale images
C111.4	To introduce the concepts of color image processing and understand image enhancement
C111.5	To know about the different image compression schemes

AP5004- HIGH PERFORMANCE NETWORKS

COURSE OUTCOMES

On completion of this course, the students will be

C112.1	To develop a comprehensive understanding of multimedia networking
C112.2	To acquire the knowledge about real time multimedia networking applications
C112.3	To study the types of VPN and tunneling protocols for security
C112.4	To acquire the knowledge about traffic modeling concepts
C112.5	To learn about network security in many layers and network management

AP5092: SOLID STATE DEVICES

COURSE OUTCOMES

At the end of this course, the student will be able to:

C113.1	Explain the importance of MOS Capacitor and Small signal modeling
C113.2	Apply and determine the drift diffusion equation and stiff system equation
C113.3	Analyze circuits using parasitic BJT parameters and newton Raphson method.
C113.4	Model the MOS transistor using Schrodinger equation and Multistep methods.
C113.5	Analyze the small signal analysis

AP5211 ELECTRONICS SYSTEM DESIGN LABORATORY II

COURSE OUTCOMES

On completion of this course, the students will be

C114.1	To study of 32 bit ARM7 microcontroller RTOS and its application
C114.2	To understand testing RTOS environment and system programming
C114.3	To learn wireless network design using embedded systems
C114.4	To learn System design using ASIC
C114.5	To know use of Verilog and VHDL in sequential digital system modeling

CP5281 Term Paper Writing

COURSE OUTCOMES

C115.1	Selecting a subject, narrowing the subject into a topic and stating an objective.
C115.2	Collecting the relevant bibliography and preparing a working outline.
C115.3	Studying the papers and understanding the authors contributions and critically analyzing each paper.
C115.4	Linking the papers and preparing a draft of the paper; Preparing conclusions based on the reading of all the papers.
C115.5	Writing the Final Paper and giving final Presentation.

AP5301: ADVANCED MICROPROCESSORS AND MICROCONTROLLERS ARCHITECTURES

COURSE OUTCOMES

On completion of this course, the students will be

C201.1	To familiarize about the features, specification and features of modern microprocessors
C201.2	To gain knowledge about high performance CISC architectures
C201.3	To gain knowledge about high performance RISC architectures
C201.4	To explain the features and important specifications of modern microcontrollers
C201.5	To gain knowledge about the 32 bit microcontrollers based on ARM and PIC32 architectures

CP5292: INTERNET OF THINGS

COURSE OUTCOMES

At the end of this course, the student will be able to:

C202.1	Analyze various protocols for IoT
C202.2	Develop web services to access/control IoT devices.
C202.3	Design a portable IoT using Rasperry Pi
C202.4	Deploy an IoT application and connect to the cloud.
C202.5	Analyze applications of IoT in real time scenario

VL5091 MEMS and NEMS

COURSE OUTCOMES

On completion of this course, the students will be

C203.1	Ability to understand the operation of micro devices, micro systems and their applications
C203.2	Ability to design the micro devices, micro systems using the MEMS fabrication process.
C203.3	Gain a knowledge of basic approaches for various sensor design
C203.4	Gain a knowledge of basic approaches for various actuator design
C203.5	Develop experience on micro/nano systems for photonics .

AP5311 Project Work (Phase I)

COURSE OUTCOMES

Upon Completion of the course, the students will be:

C204.1	To develop the ability to solve a specific problem right from its identification
C204.2	Review on literatures and learn about the problem and its solutions
C204.3	To develop the analytical skills, requirement analysis and design skills
C204.4	Learn the various system modules for implementing the project useful for the society and testing with the experimental data.
C204.5	To train the students in preparing project reports and to face review and viva voice examination.

AP5411 Project Work (Phase II)

COURSE OUTCOMES

Upon Completion of the course, the students will be:

C205.1	To develop the ability to solve a specific problem right from its identification
C205.2	Review on literatures and learn about the problem and its solutions
C205.3	To develop the analytical skills, requirement analysis and design skills
C205.4	Learn the various system modules for implementing the project useful for the society and testing with the experimental data.
C205.5	To train the students in preparing project reports and to face review and viva voice examination.