DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

PROGRAMME: M.E - APPLIED ELECTRONICS

VISION

❖ To be a centre of excellence in education, training and research in Electronics and Communication Engineering to cultivate technically competent professionals for Industry and Society.

MISSION

❖ To import knowledge and skills to face challenges in Electronics and Communication Engineering.

❖ To provide ethical and value based education to address the social needs.

❖ To provide innovative environment to learning global atonements.

PROGRAM EDUCATIONAL OBJECTIVES (PEOs)

❖ To enable graduates to develop solutions to real world problems in the frontier areas of Applied Electronics.

❖ 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.

❖ To enable the graduates to exhibit leadership skills and enhance their abilities through lifelong learning.

❖ To become entrepreneurs to develop indigenous solutions.

PROGRAM OUTCOMES (POs)

❖ Engineering knowledge: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.

❖ Problem analysis: Identify, formulate, review research literature, and analyse complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.

❖ 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.

❖ 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.

❖ Modern Tool Usage: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modelling to complex engineering activities with an understanding of the limitations.

❖ 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.

❖ 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.

❖ Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

❖ Individual and team work: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.

❖ 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.

❖ 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.

❖ 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)

❖ To critically evaluate the design and provide optimal solutions to problem areas in advanced signal processing, digital system design, embedded systems and VLSI design.

❖ To enhance and develop electronic systems using modern engineering hardware and software tools.

❖ To work professionally and ethically in applied electronics and related areas.

COURSE OUTCOMES (COs)

Regulation	2017
Sem	01
Subject Code	MA5152
Subject Name	Applied Mathematics for Electronics Engineers
Course Outcome	❖ Concepts of fuzzy sets, knowledge representation using fuzzy rules, fuzzy logic, fuzzy prepositions and fuzzy quantifiers and applications of fuzzy logic. ❖ Apply various methods in matrix theory to solve system of linear equations. ❖ Computation of probability and moments, standard distributions of discrete and continuous random variables and functions of a random variable. ❖ Conceptualize the principle of optimality and sub-optimization, formulation and computational procedure of dynamic programming ❖ Exposing the basic characteristic features of a queuing system and acquire skills in analyzing queuing models. ❖ Using discrete time Markov chains to model computer systems.

Regulation	2017
Sem	01
Subject Code	AP5151
Subject Name	Advanced Digital System Design
Course Outcome	❖ Analyze and design sequential digital circuits ❖ Identify the requirements and specifications of the system required for a given application ❖ Design and use programming tools for implementing digital circuits of industry standards

Regulation	2017
Sem	01
Subject Code	AP5152
Subject Name	Advanced Digital Signal Processing
Course Outcome	❖ Formulate time domain and frequency domain description of Wide Sense Stationary process in terms of matrix algebra and relate to linear algebra concepts. ❖ State W-K theorem, spectral factorization theorem, spectrum estimation, bias and consistency of estimators. ❖ Wiener filtering, LMS algorithms, Levinson recursion algorithm, applications of adaptive filters ❖ Decimation, interpolation, Sampling rate conversion, Applications of multirate signal processing.

Regulation	2017
Sem	01
Subject Code	AP5191
Subject Name	Embedded System Design
Course Outcome	❖ Explain different protocols ❖ Discuss state machine and design process models ❖ Outline embedded software development tools and RTOS

Regulation	2017
Sem	01
Subject Code	AP5101
Subject Name	Sensors, Actuators and Interface Electronics

Course Outcome	❖ Compare Actuators
	❖ Evaluate digital sensors and semiconductor device sensors
	❖ Discuss Self-generating sensors

Regulation	2017	
Sem	01	
Subject Code	AP5002	
Subject Name	CAD for VLSI Circuits	Professional Elective -I
Course Outcome	❖ To use the simulation techniques at various levels in VLSI design flow ❖ Discuss the concepts of floor planning and routing ❖ Outline high level synthesis	

Regulation	2017
Sem	01
Subject Code	AP5111
Subject Name	Electronics System Design Laboratory I
Course Outcome	❖ Apply PIC, MSP430, '51 Microcontroller and 8086 for system design ❖ Simulate QMF ❖ Design sensor using simulation tools ❖ Design and analyze of real time signal processing system .

Regulation	2017
Sem	02
Subject Code	AP5251
Subject Name	Soft Computing and Optimization Techniques

Course Outcome	❖ Implement machine learning through Neural networks.
	❖ Develop a Fuzzy expert system.
	❖ Model Neuro Fuzzy system for clustering and classification.
	❖ Able to use the optimization techniques to solve the real world problems

Regulation	2017
Sem	02
Subject Code	AP5252
Subject Name	ASIC and FPGA Design
Course Outcome	❖ To analyze the synthesis, Simulation and testing of systems.
	❖ To apply different high performance algorithms in ASICs.
	❖ To discuss the design issues of SOC.

Regulation	2017
Sem	02
Subject Code	AP5291
Subject Name	Hardware - Software Co-Design
Course Outcome	❖ To assess prototyping and emulation techniques
	❖ To compare hardware / software co-synthesis
	❖ To formulate the design specification and validate its functionality by simulation

Regulation	2017
Sem	02
Subject Code	AP5292
Subject Name	Digital Image Processing
Course Outcome	❖ Discuss image enhancement techniques
	❖ Explain color image processing
	❖ Compare image compression schemes

Regulation	2017	
Sem	02	
Subject Code	AP5003	Professional Elective -II
Subject Name	VLSI Design Techniques	
Course Outcome	❖ Carry out transistor level design of the most important building blocks used in digital CMOS VLSI circuits. ❖ Discuss design methodology of arithmetic building block ❖ Analyze tradeoffs of the various circuit choices for each of the building block.	

Regulation	2017	
Sem	02	
Subject Code	AP5092	Professional Elective -III
Subject Name	Solid State Device Modeling And Simulation	
Course Outcome	❖ Explain the importance of MOS Capacitor and Small signal modeling ❖ Apply and determine the drift diffusion equation and stiff system equation. ❖ Analyze circuits using parasitic BJT parameters and newton Raphson method. ❖ Model the MOS transistor using schrodinger equation and Multistep methods	

Regulation	2017
Sem	02
Subject Code	AP5211
Subject Name	Electronics System Design Laboratory II

Course Outcome	❖ Utilize ARM with FPGA
	❖ Demonstrate design of ALU in FPGA using VHDL and Verilog
	❖ Assess flash controller programming - data flash with erase, verify and fusing
	❖ Explain design, simulation and analysis of signal integrity.

Regulation	2017	
Sem	03	
Sub Code	AP5301	
Sub Name	Advanced Microprocessors and Microcontrollers Architectures	
Course Outcome	❖ To explain the features and important specifications of modern microprocessors	
	❖ To explain the salient features CISC microprocessors based on IA-32 bit and IA-64 bit architectures	
	❖ To explain the salient features RISC processors based on ARM architecture and different application profiles of ARM core	
	❖ To explain the features and important specifications of modern microcontrollers	
	❖ To explain about ARM – M3 architecture and its salient features.	

Regulation	2017	
Sem	03	
Sub Code	AP5005	Professional Elective IV
Sub Name	System On Chip Design	

Course Outcome	❖ Analyze algorithms and architecture of hardware software inorder to optimize the system based on requirements and implementation constraints ❖ Model and specify systems at high level of abstraction ❖ Appreciate the co-design approach and virtual platform models ❖ Understand hardware, software and interface synthesis

Regulation	2017	
Sem	03	
Sub Code	VL5091	Professional Elective V
Sub Name	MEMS AND NEMS	
Course Outcome	❖ Discuss micro sensors ❖ Explain micro actuators ❖ Outline Nano-systems and Quantum mechanics	

Regulation	2017
Sem	03
Sub Code	AP5311
Sub Name	Project Work Phase - I
Course Outcome	❖ At the end of the course the students will have a clear idea of their area of work and they will be in a position to carry out the remaining phase II work in a systematic way

Regulation	2017
Sem	04
Sub Code	AP5411

Sub Name	Project Work Phase-II
Course Outcome	❖ On Completion of the project work students will be in a position to take up any challenging practical problems and find solution by formulating proper methodology