CAYMET'S
Siddhant College of Engineering. Sudumbare.
Electronics & Telecommunication Engineering Department.
B.E. 2019 Pattern

COURSES OUTCOMES

Semester I

404181: Radiation and Microwave Theory
CO1: Apply the fundamentals of electromagnetic to derive free space propagation equation and distinguish various performance parameters of antenna.
CO2: Identify various modes in the waveguide. Compare: coaxial line, rectangular waveguides & straplines and identify applications of the same.
CO3: Explore construction and working of principles passive microwave devices/components.
CO4: Explore construction and working of principles active microwave devices/components.
CO5: Analyze the structure, characteristics, operation, equivalent circuits and applications of various microwave solid state active devices.
CO6: Know the various microwave systems, device set ups of microwave measurement devices and Identify the effect of radiations on environmental sustainability.

404182: VLSI Design and Technology
CO1: Develop effective HDL codes for digital design.
CO2: Apply knowledge of real time issues in digital design.
CO3: Model digital circuit with HDL, simulate, synthesis and prototype in PLDs.
CO4: Design CMOS circuits for specified applications.
CO5: Analyze various issues and constraints in design of an ASIC.
CO6: Apply knowledge of testability in design and Build In Self Test (BIST) circuit.

404183: Cloud Computing
CO1: Understand the basic concepts of Cloud Computing.
CO2: Describe the underlying principles of different Cloud Service Models.
CO3: Classify the types of Virtualization.
CO4: Examine the Cloud Architecture and understand the importance of Cloud Security.
CO5: Develop applications on Cloud Platforms.
CO6: Evaluate distributed computing and the Internet of Things.

404184 (A): Speech Processing (Elective - III)
CO1: Understand basics of Human speech production mechanism.
CO2: Classify speech sounds based on acoustic and articulatory phonetics.
CO3: Analyze speech signal to extract the characteristic of vocal tract (formants) and vocal cords (pitch).
CO4: Evaluate speech signal for extracting LPC and MFCC Parameters of speech signal.
CO5: Implement algorithms for processing of speech and audio signals considering the properties of acoustic signals.
CO6: Design speech recognition application for speech signal analysis.

404184 (B): PLC SCADA and Automation (Elective - III)
CO1: Understand and Recognize Industrial Control Problems.

CO2: Analyze & explain different hardware functions of PLC.
CO3: Develop Ladder Programming in PLC and PLC Interface in real time applications.
CO4: Explore and interpret functionality of SCADA.
CO5: Identify and interpret the functionality of DCS.
CO6: Define and explain CNC machines and Applications of Industrial Protocols.

404184 (C): Java Script (Elective - III)
CO1: Use basic features of java script.
CO2: Use relevant data types for developing application in java script.
CO3: Use the function and objects as self-contained, with data passing in and out through well-defined interfaces in development of small systems.
CO4: Apply the regular expression for Text matching and manipulation.
CO5: Explore use of the various aspects of JavaScript object models that are fundamental to the proper use of the language.
CO6: Develop the application using windows controlling and form handling.

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404184 (D): Embedded System & RTOS (Elective - III)
CO1: Apply design metrics of Embedded systems to design real time applications to match recent trends in technology.
CO2: Apply Real time systems concepts.
CO3: Evaluate μCOS operating system and its services.
CO4: Apply Embedded Linux Development Environment and testing tools.
CO5: Analyze Linux operating system and device drivers.
CO6: Analyze the hardware – software co design issues for testing of real time Embedded system.

404184 (E): Modernized IoT (Elective - III)
CO1: Comprehend and analyze concepts of sensors, actuators, IoT and IoE. CO2: Interpret IoT Architecture Design Aspects.
CO3: Comprehend the operation of IoT protocols.
CO4: Describe various IoT boards, interfacing, and programming for IoT.
CO5: Illustrate the technologies, Catalysts, and precursors of IIoT using suitable use cases.
CO6: Provide suitable solution for domain specific applications of IoT.

404185 (A): Data Mining (Elective - IV)
CO1: Understand the process of data mining and performance issues in data mining.
CO2: Apply data preprocessing techniques to the historical data collected in data warehouse.
CO3: Analyze various types of frequent pattern analysis methods and advanced Pattern mining Techniques.
CO4: Evaluate various data mining algorithms for developing effective data mining models.
CO5: Analyze different clustering and outlier detection methods.
CO6: Design data mining models in different mining application areas.

404185 (B): Electronics Product Design (Elective - IV)
CO1: Understand and explain design flow of design of electronics product. CO2: Associate with various circuit design issues and testing.
CO3: Inferring different software designing aspects and the Importance of product test & test specifications.
CO4: Summarizing printed circuit boards and different parameters.
CO5: Estimating assorted product design aspects.
CO6: Exemplifying special design considerations and importance of documentation.

404185 (B): Deep Learning (Elective - IV)
CO1: Classify machine learning algorithms and its types.
CO2: Discuss the concepts of deep learning and its Frameworks.
CO3: Identify the deep learning architectures with respect to the applications. CO4: Demonstrate different architectures of Convolutional neural networks. CO5: Discuss natural language processing architectures.
CO6: Make use of various case studies and deep learning applications.

404185 (D): Low Power CMOS (Elective - IV)
CO1: Explain the sources of power dissipation in CMOS.
CO2: Classify the special techniques to mitigate the power consumption in CMOS circuits.

CO3: Summarize the power optimization and trade off techniques in digital circuits.
CO4: Illustrate the power estimation at logic and circuit level.
CO5: Explain the software design for low power in various level.
CO6: Use the CAD tools for low power synthesis.

404185 (E): Smart Antennas (Elective - IV)
CO1: Compare various linear wire antenna and uniform array in terms of antenna parameters and analyze them based on the current distribution and identify an appropriate wire antenna for given application.
CO2: Classify Microstrip & re-configurable antenna and techniques.
CO3: Describe smart antenna systems and discuss the beam steering and mutual coupling effects.
CO4: Explain DOA estimation methods and classify.
CO5: Classify the beam forming methods.
CO6: Describe and Compare MIMO systems.404186: Lab Practice - 1

404188: Project Phase – I
Course Outcomes:
CO1: Demonstrate a sound technical knowledge in field of E&TC in the form of project.
CO2: Undertake real life problem identification, formulation and solution.
CO3: Design engineering solutions to complex problems utilizing a systematic approach.
CO4: Demonstrate the knowledge, effective communication skills and attitudes as professional engineer.

Semester II

404190: Fiber Optic Communication
CO1: Explain the working of components and measurement equipments in optical fiber networks.
CO2: Calculate the important parameters associated with optical components used in fiber optic telecommunication systems.
CO3: Compare and contrast the performance of major components in optical links.
CO4: Evaluate the performance viability of optical links using the power and rise time budget analysis.
CO5: Design digital optical link by proper selection of components and check its viability using simulation tools.
CO6: Compile technical information related to state of art components, standards, simulation tools and current technological trends by accessing the online resources to update their domain knowledge.

404191 (A): Biomedical Signal Processing (Elective - V)
CO1: Describe the origin of various biomedical signals and Interpret the meaning of various parameters associated with biomedical signals
CO2: Analyze ECG Signals with extraction of meaningful information
CO3: Explain Processing of EEG signals for Diseases of Central Nervous System
CO4: Analyze EMG signals for understanding Neuromuscular Diseases
CO5: Analyze various Biomedical Signals
CO6: Process the biomedical signals to remove adaptive interference and noise

404191 (B): Industrial Drives & Control (Elective - V)
CO1: Understand significance and design of various components of electrical drives.

CO2: Develop, evaluate and analyze the performance of DC motor drives.
CO3: Design, estimate and examine the performance of chopper controlled DC drives.
CO4: Adapt, choose and categorize performance of PWM inverter drives for Induction motors.
CO5: Elaborate, interpret and analyze the performance of Synchronous motor drive.
CO6: Develop, explain and examine performance of stepper motor control.

404191 (C): Android Development (Elective - V)
CO1: Describe the process of developing mobile applications.
CO2: Create mobile applications on the different android platform.
CO3: Design and implement mobile applications involving data storage in databases.

404191 (D): Embedded System Design (Elective - V)
CO1: Apply the design aspects of Embedded system.
CO2: Create and debug a firmware for the Embedded System using ARM Cortex M4.
CO3: Develop a specific software code for the functionality of the Embedded System.
CO4: Utilize an open source RTOS for embedded system design.
CO5: Design an advanced embedded system.
CO6: Explore Embedded Android system.

404191 (E): Mobile Computing (Elective - V)
CO1: Understand concepts of Mobile Communication.
CO2: Analyze next generation Mobile Communication System.
CO3: Understand network layers of Mobile Communication.
CO4: Understand IP and Transport layers of Mobile Communication.
CO5: Study of different mathematical models.
CO6: Understand different mobile applications.

404192 (A): System on Chip (Elective - VI)
CO1: Understand the basic concepts and architecture of SOC.
CO2: Understand the basic terminology of Verilog HDL programming.
CO3: Apply the various Verilog modeling styles in writing the design and test bench codes.
CO4: Understand the basic steps used in the VLSI Physical Design.
CO5: Understand the basic architecture of various processors used in SOC.
CO6: Understand the working principle of various Buses and memory used in SOC.

404192 (B): Nano electronics (Elective - VI)
CO1: Understand the fundamental knowledge behind nanotechnology.
CO2: Understand to Nano-CMOS technology.
CO3: Explore various Nano electronics material.
CO4: Understand the importance of carbon nanotubes.
CO5: Understand Nanomaterial and Nano device fabrication.
CO6: Understand various applications of Nanotechnology in Electronics.

404192 (C): Remote Sensing (Elective - VI)
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CO3: Explore various Nano electronics material.
CO4: Understand the importance of carbon nanotubes.
CO5: Understand Nanomaterial and Nano device fabrication.
CO6: Understand various applications of Nanotechnology in Electronics.

404192 (C): Remote Sensing (Elective - VI)
CO1: Describe the concepts of remote sensing and electromagnetic radiation interaction.
CO2: Explain the sensors characteristics and analyze its resolution.
CO3: Classify different types of satellite data products and design various color composites.
CO4: Describe the fundamentals of microwave remote sensing.
CO5: Analyze GNSS signal structure and augmentation systems.
CO6: Demonstrate and describe real life applications of remote sensing.

404192 (D): Digital Marketing (Elective - VI)

CO1: Design websites using free tools like WordPress and explore it for digital marketing.
CO2: Apply various keywords for a website & to perform SEO.
CO3: Understand the various SEM Tools and implement the Digital Marketing Tools.
CO4: Illustrate the use of Facebook, Instagram and YouTube for Digital Marketing in real life.
CO5: Use Linked in platform for various campaigning.
CO6: Understand the importance of recent trends in digital marketing.

404193: Innovation and Entrepreneurship
CO1: Understand Innovation, Entrepreneurship and characteristics of an entrepreneur.
CO2: Develop a strong understanding of the Design Process and its application in variety of business settings.
CO3: Generate sustainable ideas.
CO4: Explore various processes required to be an entrepreneur.
CO5: Understand patents and its process of filing.
CO6: Choose and use appropriate social media for marketing.

404194: Digital Business Management
CO1: Identify drivers of digital business.
CO2: Illustrate various approaches and techniques for E-business and management.
CO3: Prepare E-business plan.404195: Fiber Optic Lab