**St. Mother Theresa Engineering College**

**DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING**

**ODD SEM SUBJECTS**

1. **EC 3354 - Signals and systems**

**Year/ Sem**- II / III

**Course Outcome:**

CO1: determine if a given system is linear/causal/stable

CO2: determine the frequency components present in a deterministic signal

CO3: characterize continuous LTI systems in the time domain and frequency domain

CO4: characterize discrete LTI systems in the time domain and frequency domain

CO5: compute the output of an LTI system in the time and frequency domains

1. **CEC352- Satellite Communication**

**Year/ Sem –** III / V

**Course Outcome:**

CO1: Identify the satellite orbits

CO2: Analyze the satellite subsystems

CO3: Evaluate the satellite link power budget

CO4: Identify access technology for satellite

CO5: Design various satellite applications

1. **OMR353- Sensors**

**Year/ Sem –** IV / VII

**Course Outcome:**

CO1: Understand various sensor effects, sensor characteristics, signal types, calibration methods and obtain transfer function and empirical relation of sensors. They can also analyze the sensor response.

CO2: Analyze and select suitable sensor for displacement, proximity and range measurement.

CO3: Analyze and select suitable sensor for force, magnetic field, speed, position and direction measurement.

CO4: Analyze and select suitable sensor for light detection, pressure and temperature measurement and also familiar with other miniaturized smart sensors.

CO5: Select and design suitable signal conditioning circuit with proper compensation and linearizing element based on sensor output signal.

1. **ORA351 - Foundation of Robotics**

**Year/ Sem –** IV / VII

**Course Outcome:**

CO1: Interpret the features of robots and technology involved in the control.

CO2: Apply the basic engineering knowledge and laws for the design of robotics.

CO3: Explain the basic concepts like various configurations, classification and parts of end effectors compare various end effectors and grippers and tools and sensors used in robots.

CO4: Explain the concept of kinematics, degeneracy, dexterity and trajectory planning. CO5: Demonstrate the image processing and image analysis techniques by machine vision system.

1. **EC3501 – Wireless Communications**

**Year/ Sem –** III / V

**Course Outcome:**

CO1: Understand The Concept and Design of a Cellular System.

CO2: Understand Mobile Radio Propagation and Various Digital Modulation Techniques.

CO3: Understand The Concepts of Multiple Access Techniques and Wireless Networks

CO4: Characterize a wireless channel and evolve the system design specifications

CO5: Design a cellular system based on resource availability and traffic demands.

1. **CEC339 – Fundamentals of Nano Electronics**

**Year/ Sem –** III / V

**Course Outcome:**

CO1: Understand the basics of nano electronics including quantum wires, dots and wells

CO2: Use the mechanism behind quantum electronic devices

CO3: Analyze the key performance aspects of tunnelling and superconducting nano electronic devices

CO4: Apply the knowledge in the development of nanotubes and nanostructure

1. **EC3352 – Digital Systems Design**

**Year/ Sem –** II / III

**Course Outcome:**

CO1: Use Boolean algebra and simplification procedures relevant to digital logic.

CO2: Design various combinational digital circuits using logic gates.

CO3: Analyse and design synchronous sequential circuits.

CO4: Analyse and design asynchronous sequential circuits.

CO5: Build logic gates and use programmable devices

1. **ME 3791 – Mechatronics and IoT**

**Year/ Sem –** IV Mech / VII

**Course Outcome:**

1. Explain Select suitable sensors and actuators to develop mechatronics systems.
2. Discuss Devise proper signal conditioning circuit for mechatronics systems, and also able to implement PLC as a controller for an automated system.
3. Elucidate the fundamentals of Iot and Embedded Systems
4. Discuss Control I/O devices through Arduino and Raspberry Pi.
5. Design and develop an apt mechatronics/IoT based system for the given real-time application.
6. **EC3353– Electronic Devices and Circuits**

**Year/ Sem –** II / III

**Course Outcome:**

CO1: Explain the structure and working operation of basic electronic devices.

CO2: Design and analyze amplifiers.

CO3: Analyze frequency response of BJT and MOSFET amplifiers

CO4: Design and analyze feedback amplifiers and oscillator principles.

CO5: Design and analyze power amplifiers and supply circuits

1. **ME3781 - Mechatronics and IoT Laboratory**

**Year/ Sem –** IV Mech / VII

**Course Outcome:**

1. Demonstrate the functioning of mechatronics systems with various pneumatic, hydraulic and electrical systems.
2. Demonstrate the microcontroller and PLC as controllers in automation systems by executing proper interfacing of I/O devices and programming
3. Demonstrate the sensing and actuation of mechatronics elements using IoT.
4. **EC3552– VLSI and Chip Design**

**Year/ Sem –** III / V

**Course Outcome:**

CO1: In depth knowledge of MOS technology

CO2: Understand Combinational Logic Circuits and Design Principles

CO3: Understand Sequential Logic Circuits and Clocking Strategies

CO4: Understand Memory architecture and building blocks

CO5: Understand the ASIC Design Process and Testing.

1. **EC3561– VLSI Laboratory**

**Year/ Sem –** III / V

**Course Outcome:**

CO1: Write HDL code for basic as well as advanced digital integrated circuit

CO2: Import the logic modules into FPGA Boards

CO3: Synthesize Place and Route the digital Ips 96

CO4: Design, Simulate and Extract the layouts of Digital & Analog IC Blocks using EDA tools

CO5: Test and Verification of IC design

1. **EC3551– Transmission lines and RF Systems**

**Year/ Sem –** III / V

**Course Outcome:**

CO1: Explain the characteristics of transmission lines and its losses.

CO2: Calculate the standing wave ratio and input impedance in high frequency transmission lines.

CO3: Analyze impedance matching by stubs using Smith Charts.

CO4: Comprehend the characteristics of TE and TM waves.

CO5: Design a RF transceiver system for wireless communication

1. **CS3351– Digital Principles and Computer Organization**

**Year/ Sem –** II CSE / III

**Course Outcome:**

CO1: Design various combinational digital circuits using logic gates

CO2: Design sequential circuits and analyze the design procedures

CO3: State the fundamentals of computer systems and analyze the execution of an instruction

CO4: Analyze different types of control design and identify hazards

CO5: Identify the characteristics of various memory systems and I/O communication

1. **GE3361– Professional Development**

**Year/ Sem –** II / III

**Course Outcome:**

CO1: Use MS Word to create quality documents, by structuring and organizing content for their day to day technical and academic requirements

CO2: Use MS EXCEL to perform data operations and analytics, record, retrieve data as per requirements and visualize data for ease of understanding

CO3: Use MS PowerPoint to create high quality academic presentations by including common tables, charts, graphs, interlinking other elements, and using media objects.

1. **GE3791– Human values and Ethics**

**Year/ Sem –** IV / VII

**Course Outcome:**

CO1: Identify the importance of democratic, secular and scientific values in harmonious functioning of social life

CO2: Practice democratic and scientific values in both their personal and professional life.

CO3: Find rational solutions to social problems.

CO4: Behave in an ethical manner in society

CO5: Practice critical thinking and the pursuit of truth.

1. **EC3351– Control Systems**

**Year/ Sem –** II / III

**Course Outcome:**

CO1: Compute the transfer function of different physical systems.

CO2: Analyse the time domain specification and calculate the steady state error.

CO3: Illustrate the frequency response characteristics of open loop and closed loop system response.

CO4: Analyse the stability using Routh and root locus techniques.

CO5: Illustrate the state space model of a physical system and discuss the concepts of sampled data control system.

1. **EC3361 – Electronic Devices and Circuits Laboratory**

**Year/ Sem –** II / III

**Course Outcome:**

CO1: Characteristics of PN Junction Diode and Zener diode.

CO2: Design and Testing of BJT and MOSFET amplifiers.

CO3: Operation of power amplifiers.

1. **CEC356– Speech processing**

**Year/ Sem –** III / V

**Course Outcome:**

CO1: Understand the fundamentals of speech.

CO2: Extract various speech features for speech related applications

CO3: Choose an appropriate speech coder for a given application.

CO4: Build a speech enhancement system.

CO5: Build a text-to-speech synthesis system for various applications

1. **MX3084– Disaster Risk Reduction and Management**

**Year/ Sem –** III / V

**Course Outcome:**

CO1: To impart knowledge on the concepts of Disaster, Vulnerability and Disaster Risk reduction (DRR)

CO2: To enhance understanding on Hazards, Vulnerability and Disaster Risk Assessment prevention and risk reduction

CO3: To develop disaster response skills by adopting relevant tools and technology CO4: Enhance awareness of institutional processes for Disaster response in the country

CO5: Develop rudimentary ability to respond to their surroundings with potential