



DEPARTMENT OF MECHATRONICS ENGINEERING

Regulation-2021 Course Outcomes

S.N o	Year/ Sem	Course Category	Course Code & Name	Course Outcome	
1	II/III	Core	MA3351 & Transforms and Partial Differential Equations	CO1	Understand how to solve the given standard partial differential equations
				CO2	Solve differential equations using Fourier series analysis which plays a vital role in engineering applications
				CO3	Appreciate the physical significance of Fourier series techniques in solving one and two dimensional heat flow problems and one dimensional wave equations.
				CO4	Understand the mathematical principles on transforms and partial differential equations would provide them the ability to formulate and solve some of the physical problems of engineering.
				CO5	Use the effective mathematical tools for the solutions of partial differential equations by using Z transform techniques for discrete time systems.
2		Core	ME3351 ENGINEERING MECHANICS	CO1	Illustrate the vector and scalar representation of forces and moments
				CO2	Analyse the rigid body in equilibrium
				CO3	Evaluate the properties of distributed forces
				CO4	Determine the friction and the effects by the laws of friction.
				CO5	Calculate dynamic forces exerted in rigid body
3		Core	MF3391 MECHANICS OF MATERIALS	CO1	Apply the principle concepts behind stress, strain and deformation of solids for various engineering applications.
				CO2	Analyze the transverse loading on beams and stresses in beam for various engineering applications.
				CO3	Analyze the torsion principles on shafts and springs for various engineering applications.
				CO4	Analyze the deflection of beams for various engineering applications.
				CO5	Understanding the concept of theories of failure
4		Core	MR3351 & FLUID MECHANICS AND THERMAL SYSTEMS	CO1	Recognize the fluid properties, fluid statics and laws of thermodynamics
				CO2	Interpret the problems related to kinematics and dynamics of fluids and thermal systems
				CO3	Review the energy losses in flow through pipes and steady flow equation in thermal systems
				CO4	Analyse the fluid flow and thermal process

				CO5	Solve the problems related to fluid and thermal systems.
5		Core	MR3391 & Digital Electronics and Microprocessor	CO1	State the fundamental operating concepts behind digital logic circuits and microprocessors.
				CO2	Recognize the use of various digital logic circuits and sub units in microprocessors.
				CO3	Sketch the digital logic circuits and the architectures of microprocessors
				CO4	Design the DLC and Microprocessor for the standard applications.
				CO5	Create the circuits using DLC and Microprocessor for given applications
6		Core	MR3392 & Electrical Drives and Actuators	CO1	Recognize the principles and working of relays, drives and motors.
				CO2	Explain the working and characteristics of various drives and motors.
				CO3	Apply the solid state switching circuits to operate various types of Motors and
				CO4	Interpret the performance of Motors and Drives.
				CO5	Suggest the Motors and Drivers for given applications.
7		Core	MR3361 & Electrical Drives and Actuators Laboratory	CO1	Practice the basic working of AC, DC motor, stepper motor, servo motor and synchronous motor using power electronic drive
				CO2	Demonstrate the control of AC, DC motor, stepper motor, servo motor and synchronous motor using power electronic drive
				CO3	Analyze the performance of AC, DC motor, stepper motor, servo motor and synchronous motor using power electronic drive
8		Core	MR3311 & Design and Modelling Laboratory	CO1	Create 2D drawing and 3D models for part design and model developments.
				CO2	Integrate the parts and capable to simulate motion functionality of the model virtually.
				CO3	Analyze the Design, assembly and visualize the motion of machines and robots.
9		Core	GE3361 & Professional Development	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.
10	II/IV	Core	ME3493 MANUFACTURING TECHNOLOGY	CO1	Apply the mechanism of metal removal process and to identify the factors involved in improving machinability.
				CO2	Describe the constructional and operational features of centre lathe and other special purpose lathes.
				CO3	Describe the constructional and operational features of reciprocating machine tools
				CO4	Apply the constructional features and working principles of CNC machine tools.
				CO5	Demonstrate the Program CNC machine tools through planning, writing codes and setting

					up CNC machine tools to manufacture a given component.
11		Core	MR3451 KINEMATICS AND DYNAMICS OF MACHINERY	CO1	Recognize the basic terminologies of kinematics and dynamics of machines
				CO2	Interpret the various concepts of kinematics and dynamics including forces and frictions
				CO3	Show the motions parameters on the various mechanisms, gears and gear trains.
				CO4	Apply the mechanism, gears and gear train for the design of new machines.
				CO5	Analyze the working of various mechanism, gears and gear train.
12		Core	MR3491 SENSORS AND INSTRUMENTA TION	CO1	Recognize with various calibration techniques and signal types for sensors
				CO2	Describe the working principle and characteristics of force, magnetic, heading, pressure and temperature, smart and other sensors and transducers.
				CO3	Apply the various sensors and transducers in various applications
				CO4	Select the appropriate sensor for different applications.
				CO5	Acquire the signals from different sensors using Data acquisition systems.
13		Core	MR3492 EMBEDDED SYSTEMS AND PROGRAMMIN G	CO1	Know the various functional units of microcontroller, processors and system-on-chip based on the features and specifications.
				CO2	Recognize the role of each functional units in microcontroller, processors and systemon-chip based on the features and specifications.
				CO3	Interface the sensors, actuators and other I/O's with microcontroller, processors and system on chip based interfacing
				CO4	Design the circuit and write the programming microcontroller, processors and system on chip
				CO5	Develop the applications using Embedded system.
14		Core	MR3452 CONTROL SYSTEMS ENGINEERING	CO1	State the various control terminologies and concepts.
				CO2	Know the procedures in developing the transfer function, state space models and time and frequency domain analysis methods.
				CO3	Apply the procedures on developing the systems in transfer function and state space approach and apply to evaluate the performance of system in time and frequency domain techniques.
				CO4	Illustrate the time and frequency response characteristics of system response
				CO5	Analyze the performance of system using various time and frequency domain techniques.
15		Core	GE3451 ENVIRONMENT AL SCIENCES AND SUSTAINABILI TY	CO1	To recognize and understand the functions of environment, ecosystems and biodiversity and their conservation.
				CO2	To identify the causes, effects of environmental pollution and natural disasters and contribute to the preventive measures in the society.
				CO3	To identify and apply the understanding of renewable and non-renewable resources and

					contribute to the sustainable measures to preserve them for future generations.
				CO4	To recognize the different goals of sustainable development and apply them for suitable technological advancement and societal development
				CO5	To demonstrate the knowledge of sustainability practices and identify green materials, energy cycles and the role of sustainable urbanization.
16		Core	MR3461 Sensors and Instrumentation Laboratory	CO1	Demonstrate the various contact and non-contact sensors.
				CO2	Analyze and Identify appropriate sensors for given applications.
				CO3	Create a sensor system for given requirements.
17		Core	ME3382 MANUFACTURING TECHNOLOGY LABORATORY	CO1	Demonstrate the safety precautions exercised in the mechanical workshop and join two metals using GMAW
				CO2	The students able to make the work piece as per given shape and size using machining process such as rolling, drawing, turning, shaping, drilling and milling.
				CO3	The students become make the gears using gear making machines and analyze the defects in the cast and machined components
18		Core	MR3591 & Fluid Power Systems and Industrial Automation	CO1	Recognize the various concepts of fluid power and PLC systems.
				CO2	Comprehend functions of fluid power and PLC systems.
				CO3	Explain the various standard fluid power circuits, functions, communication and IO details of PLC.
				CO4	Demonstrate the standard fluid power circuits and PLC based interfaces.
				CO5	Construct the fluid power circuits and PLC based automation system.
19		Professional Elective	CRA332 & Drone Technologies	CO1	Know about a various type of drone technology, drone fabrication and programming.
				CO2	Execute the suitable operating procedures for functioning a drone.
				CO3	Select appropriate sensors and actuators for Drones.
				CO4	Develop a drone mechanism for specific applications.
				CO5	Create the programs for various drones.
20		Professional Elective	CME339 Additive Manufacturing	CO1	Recognize the development of AM technology and how AM technology propagated into various businesses and developing opportunities.
				CO2	Acquire knowledge on process of transforming a concept into the final product in AM technology.
				CO3	Elaborate the vat polymerization and direct energy deposition processes and its applications.
				CO4	Acquire knowledge on process and applications of powder bed fusion and material extrusion.
				CO5	Evaluate the advantages, limitations, applications of binder jetting, material jetting and sheet lamination processes.
21		Professional Elective	CME380 Automobile Engineering	CO1	Recognize the various parts of the automobile and their functions and materials.
				CO2	Discuss the engine auxiliary systems and engine emission control.

				CO3	Distinguish the working of different types of transmission systems.
				CO4	Explain the Steering, Brakes and Suspension Systems.
				CO5	Predict possible alternate sources of energy for IC Engines.
22		Professional Elective	CMR340 Condition Monitoring and Fault Diagnostics	CO1	Understand the basics of various condition monitoring methods.
				CO2	Select suitable condition monitoring sensors for various applications.
				CO3	Recall various signals processing for condition monitoring applications.
				CO4	Know about various failure analysis, maintenance and machine learning.
				CO5	Apply different fault diagnosis method for various applications.
23		Professional Elective	MR3561 Industrial Automation Laboratory	CO1	Design and simulate the fluid power circuits.
				CO2	Test the simulated output by constructing the fluid power circuits using suitable actuators and valves.
				CO3	Practice the PLC programming, Interfacing with IO and establish the communication between stations.
24		Professional Elective	MR3511 Kinematics and Dynamics of Machinery Laboratory	CO1	Demonstrate the principles of kinematics and dynamics of machinery
				CO2	Use the measuring devices for dynamic testing.
				CO3	Calculate the Natural frequency of vibrations, critical speed of shafts, transmissibility ratio, and Moment of Inertia.