

TE MECHANICAL SEMESTER-II

Name Of Subject:	Numerical Methods and Optimization
Course Objectives:	
1	To study various methods for finding roots of equation & Errors
2	To solve simultaneous equation by using various methods
3	To get optimum solution for each problem
4	To solve ordinary & partial differential equation by using various numerical methods
5	To apply various methods for curve fitting & regression analysis
6	To study numerical integration methods & to prepare base for software
Course Outcomes: On completion of the course, students will be able to–	
CO1	Find roots of equations problems & minimize errors in it
CO2	Use appropriate Numerical Methods to solve complex mechanical engineering problems using elimination methods
CO3	Generate Solutions for real life problem using optimization techniques
CO4	Apply numerical methods to solve ordinary differential equation
CO5	Create curve fitting equation & analyze the problem
CO6	Formulate algorithms and programming & learn various integration methods

Name Of Subject:	Design of Machine Elements – II
Course Objectives:	
1	Enable students to attain the basic knowledge required to understand, analyze, design and select machine elements required in transmission systems.
2	Reinforce the philosophy that real engineering design problems are open-ended and challenging
3	Impart design skills to the students to apply these skills for the problems in real life industrial applications
4	Inculcate an attitude of team work, critical thinking, communication, planning and scheduling through design projects
5	Create awareness amongst students about safety, ethical, legal, and other societal constraints in execution of their design projects
6	Develop an holistic design approach to find out pragmatic solutions to realistic domestic and industrial problems
Course Outcomes:	
CO1	To understand and apply principles of gear design to spur gears and industrial spur gear boxes.
CO2	To become proficient in Design of Helical and Bevel Gear
CO3	To develop capability to analyse Rolling contact bearing and its selection from manufacturer's Catalogue.
CO4	To learn a skill to design worm gear box for various industrial applications.
CO5	To inculcate an ability to design belt drives and selection of belt, rope and chain drives.
CO6	To achieve an expertise in design of Sliding contact bearing in industrial applications.

Name Of Subject:	Refrigeration and Air Conditioning
Course Objectives:	
1	1.To understand fundamental principles and different methods of Refrigeration and Air-conditioning.
2	2.To learn refrigeration cycles and evaluate performance using P-h charts and Refrigerant Property tables.
3	3.To learn & need of Multi-stage Refrigeration system.
4	4.To understand the basic Air-conditioning processes on Psychometric charts.
5	5.To Study of the various equipment-operating principles, operating and safety controls employed in RAC systems.
6	6.To understand Air Distribution Systems & method of Duct Design.
Course Outcomes:	
CO1	Illustrate the fundamental principles, laws and applications of RAC.
CO2	Solve the problem based on VCC by using P-h chart & Property table.
CO3	Understand the need and application of Multi-Stage Refrigeration system.
CO4	Understand Basic Psychrometric and processes. Also know the Calculation of Cooling Load for AC by using Psychrometric chart.
CO5	Understand of the Various Equipment-operating Principles & their uses.
CO6	Classify ducts, methods & calculation of Duct Design.

Name Of Subject:	Mechatronics
Course Objectives:	
1	Understand key elements of Mechatronics system, representation into block diagram
2	Understand concept of transfer function, reduction and analysis
3	Understand the concept of PLC system and its ladder programming, and significance of PLC systems in industrial application
4	Understand the system modeling and analysis in time domain and frequency domain.
5	Understand control actions such as Proportional, derivative and integral and study its significance in industrial applications
6	Understand principles of sensors, its characteristics, interfacing with DAQ microcontroller
Course Outcomes:	
CO1	Identification of key elements of mechatronics system and its representation in terms of block diagram
CO2	Understanding the concept of signal processing and use of interfacing systems such as ADC, DAC, digital I/O
CO3	Interfacing of Sensors, Actuators using appropriate DAQ micro-controller
CO4	Time and Frequency domain analysis of system model (for control application)
CO5	PID control implementation on real time systems
CO6	Development of PLC ladder programming and implementation of real life system.

Name Of Subject:	Manufacturing - Process-II
Course Objectives:	
1	To analyze and understand the metal cutting phenomena
2	To make acquaintance of Drilling, Milling, Broaching, Boring and Planning
3	To study finishing process as Grinding and super finishing process as Honing, Lapping, Buffing and Burnishing
4	To study some of the advanced or unconventional machining process.
5	To study CNC/DNC technology
6	To study Jig and fixture design
Course Outcomes:	
CO1	Application of the knowledge to manufacture tools with specific geometrical data.
CO2	Understand and analyze Drilling, Milling, Broaching, Boring and Planning.
CO3	Identify various process parameters and their effect on processes.
CO4	Identifying & selecting suitable advanced machining process to manufacture given components.
CO5	Figure out application of modern machining such as CNC/DNC technology.
CO6	Application of the knowledge on Jigs and Fixtures for variety of operations