SRES'S

Shree Ramchandra College of Engineering

Mechanical Engineering

Course Outcomes

Third Year Engineering (2019 Pattern)

Course code and Name: 302041 - Numerical and Statistical Methods

302041.1 SOLVE system of equations using direct and iterative numerical methods..
302041.2 ESTIMATE solutions for differential equations using numerical techniques.
302041.3 DEVELOP solution for engineering applications with numerical integration.
302041.4 DESIGN and CREATE a model using a curve fitting and regression analysis.
302041.5 APPLY statistical Technique for quantitative data analysis.
302041.6 DEMONSTRATE the data, using the concepts of probability and linear algebra.

Course code and Name: 302042 - Heat and Mass Transfer

302042.1 ANALYZE & APPLY the modes of heat transfer equations for one dimensional thermal system.
302042.2 DESIGN a thermal system considering fins, thermal insulation and & Transient heat conduction.
302042.3 EVALUATE the heat transfer rate in natural and forced convection & validate with experimentation results.
302042.4 INTERPRET heat transfer by radiation between objects with simple geometries, for black and grey surfaces.
302042.5 ABILITY to analyze the rate of mass transfer using Fick's Law of Diffusion and understands mass diffusion in different coordinate systems.
302042.6 DESIGN & ANALYSIS of heat transfer equipments and investigation of its performance.

Course code and Name: 302043 - Design of Machine Elements

302043.1 DESIGN AND ANALYZE the cotter and knuckle Joints, levers and components subjected to eccentric loading.
302043.2 DESIGN shafts, keys and couplings under static loading conditions.
302043.3 ANALYZE different stresses in power screws and APPLY those in the procedure to design screw jack.
302043.4 EVALUATE dimensions of machine components under fluctuating loads.

302043.5 EVALUATE & INTERPRET the stress developed on the different type of welded and threaded joints.

302043.6 APPLY the design and development procedure for different types of springs.

Course code and Name: 302044 - Mechatronics

302044.1 DEFINE key elements of mechatronics, principle of sensor and its characteristics.

302044.2 UTILIZE concept of signal processing and MAKE use of interfacing systems such as ADC, DAC, Digital I/O.

302044.3 DETERMINE the transfer function by using block diagram reduction technique.

302044.4 EVALUATE Poles and Zero, frequency domain parameter for mathematical modeling for mechanical system.

302044.5 APPLY the concept of different controller modes to an industrial application.

302044.6 DEVELOP the ladder programming for industrial application.

Course code and Name: 302045A Elective I - Advanced Forming & Joining Processes

302045A.1 ANALYSE the effect of friction in metal forming deep drawing and IDENTIFICATION of surface defects and their remedies in deep drawing operations

302045A.2 ASSESS the parameters for special forming operation and SELECT appropriate special forming operation for particular applications

302045A.3 ANALYSE the effect of HAZ on microstructure and mechanical properties of materials

302045A.4 CLASSIFY various solid state welding process and SELECT suitable welding processes for particular applications.

302045A.5 CLASSIFY various advanced welding process and SELECT suitable welding processes for particular applications.

302045A.6 INTERPRET the principles of sustainable manufacturing and its role in manufacturing industry.

Course code and Name: 302045B Elective I - Machining Science &Technology

302045B.1 DEFINE metal cutting principles and mechanics of metal cutting and tool life.

302045B.2 DESCRIBE features of gear and thread manufacturing processes.

302045B.3 SELECT appropriate grinding wheel and demonstrate the various surface finishing processes.

302045B.4 SELECT appropriate jigs/fixtures and to draw the process plan for a given component.

302045B.5 SELECT & EVALUATE various parameters of process planning.

302045B.6 GENERATE CNC program for Turning / Milling processes and generate tool path using CAM software.

Course code and Name: 302046 - Digital Manufacturing Laboratory

302046.1 DEVELOP a component using conventional machines, CNC machines and Additive Manufacturing Techniques.

302046.2 ANALYZE cutting tool parameters for machining given job.

302046.3 DEMONSTRATE simulation of manufacturing process using Digital Manufacturing Tools.

302046.4 SELECT and DESIGN jigs and Fixtures for a given component.

302046.5 DEMONESTRATE different parameters for CNC retrofitting and reconditioning.

Course code and Name: 302047 - Skill Development

302047.1 APPLY& DEMONSTRATE procedure of assembly & disassembly of various machines.

302047.2 DESIGN & DEVELOP a working/model of machine parts or any new product.

302047.3 EVALUATE fault with diagnosis on the machines, machine tools and home appliances.

302047.4 IDENTIFY & DEMONSTRATE the various activities performed in an industry such as maintenance, design of components, material selection.