SRES'S

Shree Ramchandra College of Engineering

Mechanical Engineering

Course Outcomes

Final Year Engineering (2019 Pattern)

Course code and Name: 302041 - Heating, Ventilation, Air Conditioning and Refrigeration Teaching

402041.1	ANALYSE different air-craft refrigeration systems and EXPLAIN the properties, applications and environmental issues of different refrigerants...
402041.2	ANALYSE multi pressure refrigeration system used for refrigeration applications.
402041.3	DISCUSS types of compressors, condensers, evaporators and expansion valves along with regulatory and safety controls and DESCRIBE Transcritical and ejector refrigeration systems.
402041.4	ESTIMATE cooling load for air conditioning systems used with concern of design conditions and indoor quality of air.
402041.5	DESIGN air distribution system along with consideration of ventilation and infiltration.
402041.6	EXPLAIN the working of types of desiccants, evaporative, thermal storage, radiant cooling, clean room and heat pump systems.

Course code and Name: 402042 - Dynamics of Machinery

402042.1	APPLY balancing technique for static and dynamic balancing of multi cylinder inline and radial engines.
402042.2	ANALYZE the gyroscopic couple or effect for stabilization of Ship, Airplane and Four wheeler vehicles.
402042.3	ESTIMATE natural frequency for single DOF un-damped & damped free vibratory systems.
402042.4	DETERMINE response to forced vibrations due to harmonic excitation, base excitation and excitation due to unbalance forces.
402042.5	ESTIMATE natural frequencies, mode shapes for 2 DOF un-damped free longitudinal and torsional vibratory systems.
402042.6	DESCRIBE noise and vibration measuring instruments for industrial / real life applications along with suitable method for noise and vibration control.

Course code and Name: 402043 - Turbomachinery

402043.1	VALIDATE impulse moment principle using flat, inclined and curved surfaces and INVESTIGATE performance characteristics of hydraulic turbines.
402043.2	DETERMINE performance parameters of impulse and reaction steam turbine along with discussion of nozzles, governing mechanism & losses.
402043.3	MEASURE performance parameters of single & multistage centrifugal pumps along with discussion of cavitation and selection.
402043.4	EXPLAIN performance parameters of centrifugal compressor along with discussion of theoretical aspects of axial compressor.

Course code and Name: 402044A Elective III - Automobile Design

402044A.1	COMPREHEND the steps involved in the design process of Principal Engine Components.
402044A.2	GAIN the knowledge and design of Engine Sub-Systems.
402044A.3	COMPUTE the critical dimensions of chassis components involved in the Steering System and Differential and final drive of a vehicle.
402044A.4	SELECT the tyres and wheels required for automobile vehicle and design the various types automotive brakes.
402044A.5	UNDERSTAND the design concepts of Automotive Suspension system
402044A.6	POSSES the knowledge of Vehicle Packaging and System Integration, NVH.

Course code and Name: 402044B Elective III - Design of Heat Transfer Equipments

402044B.1	EXPLAIN the design aspect of heat exchanger considering fouling factor for Heat Transfer Applications
402044B.2	SELECT and DESIGN the double tube heat exchangers for process industry
402044B.3	DESIGN the Shell & Tube Heat Exchangers for specified conditions
402044B.4	DESIGN the condensers and evaporators for refrigeration applications
402044B.5	DESIGN the compact heat exchangers
402044B.6	ANALYSE the performance of counter and cross flow cooling tower.

Course code and Name: 402044C Elective III - Modern Machining Processes

402044C.1	UNDERSTAND and ANALYZE the mechanism, process parameters of mechanical assisted modern machining processes.
402044C.2	UNDERSTAND the mechanism, construction and working of laser, plasma and electron beam assisted machining.
402044C.3	CLASSIFY and ANALYZE the mechanism, process parameters of the chemical and electrochemical machining.
402044C.4	RELATE and ANALYZE the mechanism and select process parameters Electrical Discharge Machining for an application.
402044C.5	ILLUSTRATE the application of micromachining processes.
402044C.6	SUGGEST appropriate nanomachining process for the specific application.

Course code and Name: 402044D Elective III - Industrial Engineering

402044D.1 EVALUATE the productivity and IMPLEMENT various productivity improvement techniques.

402044D.2 APPLY work study techniques and UNDERSTANDS its importance for better productivity.

402044D.3 DEMONSTRATE the ability to SELECT plant location, appropriate layout and material handling equipment.

402044D.4 USE of Production planning and control tools for effective planning, scheduling and managing the shop floor control.

402044D.5 PLAN inventory requirements and EXERCISE effective control on manufacturing requirements.

402044D.6 APPLY Ergonomics and legislations for human comfort at work place and UNDERSTANDS the role of value engineering in improving productivity.

Course code and Name: 402044E Elective III - Internet of Things

402044E.1 EXPLAIN the Applications/Devices, Protocols and Communication Models of IoT

402044E.2 DEMONSTARTE small Mechanical Engineering IoT oriented applications using Sensors, Actuators, Microcontrollers and Cloud

402044E.3 SELECT commonly used IoT Simulation Hardware platforms

402044E.4 APPLICATION of Interfacing and Communication Technologies for IoT

402044E.5 ILLUSTRATE IoT Application Development and Security of IoT Ecosystem

402044E.6 EVALUATE Present and Future Domain specific Applications of IoT Ecosystem

Course code and Name: 402044F Elective III - Computational Fluid Dynamics

402044F.1 DISTINGUISH and ANALYSE the governing equations of fluid mechanics and heat transfer in various formulations

402044F.2 ANALYZE and MODEL the conduction and advection problems

402044F.3 ANALYZE and MODEL the Convection-Diffusion problems

402044F.4 IDENTIFY and EVALUATE the External/Internal flow and its simulation

402044F.5 DISTINGUISH and COMPARE concepts of stability and turbulence.

402044F.6 USE and APPLY a CFD tool for effectively solving practical Fluid-Structure Interaction problems

Course code and Name: 402045A Elective IV - Product Design and Development

402045A.1 UNDERSTAND Product design and Product development processes

402045A.2 UNDERSTAND Processes, tools and techniques for Market Survey & Product Specification Finalization

402045A.3 UNDERSTAND Processes, tools and techniques for Concept Inception, Verification and selection

402045A.4 UNDERSTAND Processes, tools and techniques for Concept Exploration & Development

402045A.5 UNDERSTAND Processes, tools and techniques for Design Verification and Validation

402045A.6 UNDERSTAND Processes, tools and techniques for Robust Design and

Development

Course code and Name: 402045B Elective IV - Experimental Methods in Thermal Engineering

402045B.1	IDENTIFY the suitable instrument for measuring parameters as per performance characteristics
402045B.2	ANALYZE experimental data by using different statistical techniques and estimate error
402045B.3	DISTINGUISH different methods of temperature measurements and thermal radiation
402045B.4	CLASSIFY various pressure measurement instruments and their comparison
402045B.5	EXPLAIN different flow measurement methods and flow visualization techniques
402045B.6	APPLY knowledge of modern engineering experimentation, including calibration, data acquisition, analysis and interpretation using different AI and ML techniques

Course code and Name: 402045C Elective IV - Additive Manufacturing

402045C.1	USE and CLASSIFY the fundamentals of Additive Manufacturing Technologies for engineering applications.
402045C.2	IDENTIFY and CATEGORIZE the methodology to manufacture the products using light-based photo-curing, LASER based technologies and STUDY their applications, benefits.
402045C.3	IDENTIFY and CATEGORIZE the methodology to manufacture the products using extrusion-based deposition, inkjet-based technologies and STUDY their applications, benefits.
402045C.4	SYNTHESIZE, RECOMMEND and DESIGN the suitable material and process for fabrication and build behavior of verities of product.
402045C.5	DESIGN and CONSTRUCT the AM equipment’s for appropriate applications and the input CAD model.
402045C.6	DEVELOP the knowledge of additive manufacturing for various real-life applications.

Course code and Name: 402045D Elective IV - Operations Research

402045D.1	EVALUATE various situations of Games theory and Decision techniques and APPLY them to solve them in real life for decision making.
402045D.2	SELECT appropriate model for queuing situations and sequencing situations and FIND the optimal solutions using models for different situations.
402045D.3	FORMULATE various management problems and SOLVE them using Linear programming using graphical method and simplex method.
402045D.4	FORMULATE variety of problems such as transportation, assignment, travelling salesman and SOLVE these problems using linear programming approach.
402045D.5	PLAN optimum project schedule for network models arising from a wide range of applications and for replacement situations find the optimal solutions using appropriate models for the situation.

402045D.6 APPLY concepts of simulation and Dynamic programming

Course code and Name: 402045E Elective IV - Augmented Reality and Virtual Reality

402045E.1 UNDERSTAND fundamental Computer Vision, Computer Graphics and Human-Computer Interaction Techniques related to VR/AR
402045E.2 UNDERSTAND Geometric Modeling Techniques
402045E.3 UNDERSTAND the Virtual Environment
402045E.4 ANALYZE and EVALUATE VR/AR Technologies
402045E.5 APPLY various types of Hardware and Software in Virtual Reality systems
402045E.6 DESIGN and FORMULATE Virtual/Augmented Reality Applications

Course code and Name: 402046: Data Analytics Laboratory

402046.1 UNDERSTAND the basics of data analytics using concepts of statistics and probability.
402046.2 APPLY various inferential statistical analysis techniques to describe data sets and withdraw useful conclusions from acquired data set.
402046.3 EXPLORE the data analytics techniques using various tools
402046.4 APPLY data science concept and methods to solve problems in real world context
402046.5 SELECT advanced techniques to conduct thorough and insightful analysis and interpret the results

Course code and Name: 402047 - Project (Stage I)

402047.1 IMPLEMENT systems approach.
402047.2 CONCEPTUALIZE a novel idea / technique into a product.
402047.3 THINK in terms of a multi-disciplinary environment.
402047.4 TAKE ON the challenges of teamwork, and DOCUMENT all aspects of design work.
402047.5 UNDERSTAND the management techniques of implementing a project.
402047.6 DEMONSTRATE the final product for Functionality, Designability, and Manufacturability.