

AMRUTVAHINI COLLEGE OF ENGINEERING, SANGAMNER

Department Of Production Engineering

Course Outcomes

Final Year – 2015 Course			
Course Code	Course Name	Course Outcomes	
Semester-I			
411081	Machine Tool Design	CO1	Design multi-stage gear box for machine tool applications.
		CO2	Analysis of machine tool structures and element so machine tools such as bearings, powers crews, guide ways, etc.
		CO3	Understand the analysis of vibration and dynamic characteristics of machine tools
		CO4	Understand the control system parameter with respect to machine Tools
		CO5	Design special purpose machine tools
		CO6	Understand and apply the recent knowledge of machine tool.
411082	Automation & Control Engineering	CO1	Extend basic principles of fluid power for automation of industrial systems
		CO2	Select the suitable hydraulic and pneumatic component for an application
		CO3	Design basic fluid power components and circuits
		CO4	Apply electric, electronics and computer control systems used in soft automation.
		CO5	Understand application concepts of advanced automation systems to real life problems
		CO6	Learn automated assembly system

411083	Operations Research	CO1	Know principles of construction of mathematical models of conflicting situations and mathematical analysis methods of operations research;
		CO2	Select rational options in practical decision-making problems using standard mathematical models of operations research;
		CO3	Have skills in analysis of operations research objectives, mathematical methods and computer systems.
		CO4	Formulate the problem and use mathematical software to solve the proposed models.
		CO5	Ability to take decision with a quantitative basis and improves quality of decisions.
		CO6	Understand the variety of waiting line and simulation models and make better decisions concerning the operation of waiting line and simulation
411084(a)	Product Design & Development	CO1	Describe and carry out the basic engineering design process and also various techniques used for a product.
		CO2	Describe and analyze product architecture.
		CO3	Classify and analyze the product development process and customer requirements.
		CO4	Understand and analyze the identification of customer needs.
		CO5	Check the performance measure of design and DFMA.
		CO6	Perform the case study of product life cycle management of a product.
411085(c)	Additive Manufacturing	CO1	Describe and Comprehend the materials for used in additive manufacturing.
		CO2	Describe and understand the software for additive manufacturing and digitization techniques.
		CO3	Identify, explain and illustrate industrial applications of liquid based additive manufacturing technology.
		CO4	Describe, understand and illustrate industrial applications of solid based additive manufacturing technology
		CO5	Describe, understand and illustrate industrial applications of powder based additive manufacturing
		CO6	Describe, understand and illustrate applications of Bio-Additive Manufacturing- Computer Aided Tissue Engineering

411086	Machine Tool Design Lab	CO1	Design multi-stage gear box for any machine tool applications.
		CO2	Design on analysis of machine tool structures and element so machine tools such as bearings, powers crews, guide ways, etc.
		CO3	Analysis of vibration and dynamic characteristics of any machine tools
		CO4	Study and use of the control system parameter with respect to machine Tools.
		CO5	Design special purpose machine tools.
		CO6	Apply the recent knowledge of machine tool for any new concepts.
411087	Automation & Control Engineering Lab	CO1	Extend basic principles of fluid power for automation of industrial systems
		CO2	Select the suitable hydraulic and pneumatic component for an application
		CO3	Design basic fluid power components and circuits
		CO4	Apply electric, electronics and computer control systems used in soft automation.
		CO5	Understand application concepts of advanced automation systems to real life problems
		CO6	Learn automated assembly system
411088	Operations Research Lab	CO1	Know principles of construction of mathematical models of conflicting situations and mathematical analysis methods of operations research;
		CO2	Select rational options in practical decision-making problems using standard mathematical models of operations research;
		CO3	Have skills in analysis of operations research objectives, mathematical methods and computer systems.
		CO4	Formulate the problem and use mathematical software to solve the proposed models.
		CO5	Ability to take decision with a quantitative basis and improves quality of decisions.
		CO6	Understand the variety of waiting line and simulation models and make better decisions concerning the operation of waiting line and simulation

411089	Product Design & Development Lab	CO1	Learn how to identify customer needs for specific product
		CO2	Understand Product Life cycle Management (PLM)
		CO3	Understand concept of Quality Function Deployment (QFD) and House of Quality.
		CO4	Learn product design approach.
		CO5	Understand FMEA and its performance measures.
		CO6	Understand Product Tear Down approach in product design
411090	Project Phase-I	CO1	Ability to identify the community that shall benefit through the solution to the identified engineering problem
		CO2	Ability to engage in independent study to research literature in the identified domain and to consolidate the literature search to identify and formulate the engineering problem
		CO3	Ability to select the engineering tools/components necessary for solving the identified engineering problem
		CO4	To write test cases using multi-core, distributed, embedded, concurrent/Parallel environments;
		CO5	To write a conference paper
		CO6	To practice presentation, communication and team-work skills.
<b>Semester-II</b>			
411091	Computer Integrated Design & Manufacturing	CO1	Understand the basics of graphics workstations, generation and transformation of different graphic elements.
		CO2	Apply geometric modeling principles to design a component.
		CO3	Illustration of the role of computers in manufacturing process and apply it in operation.
		CO4	Evaluate different concepts to describe computer integrated manufacturing and develop part programming of CNC milling machine and CNC lathe.
		CO5	Apply the techniques of finite element analysis to solve engineering problems.
		CO6	Understand the basics of graphics workstations, generation and transformation of different graphic elements.

411092	Industrial Robotics	CO1	Understand the motions of robotic arm and body which generates robot configuration.
		CO2	Compute forward and inverse kinematics.
		CO3	Understand dynamic analysis of robot
		CO4	Understand different sensor applications and will be able to work out machine vision system
		CO5	Program robot to typical industrial task.
		CO6	Identify application of robots in different areas and understand role of AI in robotics
411093(c)	Automobile Engineering	CO1	Understand Vehicle specifications, Chassis and safety.
		CO2	Study of Fuel Supply System & Cooling System.
		CO3	Understand Lubrication System and Ignition System.
		CO4	Study of Clutches and Gear Boxes.
		CO5	Understand Suspension and Steering System.
		CO6	Understand Breaking Systems and Automobile Maintenance techniques.
411094(c)	World Class Manufacturing	CO1	Understand the concept of manufacturing excellence and framework for achieving manufacturing and business excellence.
		CO2	Understand and use the techniques of TPM, VSM and VAM to reduce bottlenecks in manufacturing.
		CO3	Understand and Apply the principles of tools like 5S, JIT, TPM, Lean Production, SQC and FMS to become World Class Organization.
		CO4	Evaluate Organizational learning techniques of removing Root cause of problems, Use people as problem solvers, Illustrate organizational structures, and motivation in relation to Human Resource in WCM.
		CO5	Decide performance indicators like POP, TOPP and AMBITE systems, six Sigma for analyzing world Class Performance.
		CO6	Understand and Illustrate Green Manufacturing, Clean Manufacturing, Agile Manufacturing concepts to lead Indian Organizations towards world Class status.

411095	Computer Integrated Design & Manufacturing Lab	CO1	Understanding of basic commands used in solid modelling.
		CO2	Ability to draw a solid model of a component using modelling software.
		CO3	Learn CNC programming for lathe.
		CO4	Learn and evaluate CNC programming for milling machine.
		CO5	Solve problems of stress strain analysis by using FEA software.
		CO6	Study of a simulation of a simple mechanical system.
411096	Industrial Robotics Lab	CO1	Understand the motions of robotic arm and body which generates robot configuration.
		CO2	Compute forward and inverse kinematics.
		CO3	Understand dynamic analysis of robot
		CO4	Understand different sensor applications and will be able to work out machine vision system
		CO5	Program robot to typical industrial task.
		CO6	Identify application of robots in different areas and understand role of AI in robotics
411097	Automobile Engineering Lab	CO1	Learn to how fuel injection systems for SI and CI engines works.
		CO2	Understand working of cooling systems & ignition systems in an automobile.
		CO3	Understand working of different types of clutches & transmission system in an automobile & Understand importance of wheel alignment & Study of different types braking system.
		CO4	Understand working of independent suspension system & Learn how to do preventive maintenance, trouble shooting for clutch, steering, brake, suspension and gear box systems in an automobile.
		CO5	study the constructional details, working principles and operation of the Electric Vehicle.
		CO6	study of Automotive Emission / Pollution control systems.

411098	World Class Manufacturing Lab	CO1	Understand the concept of manufacturing excellence and framework for achieving manufacturing and business excellence.
		CO2	Understand and use the techniques of TPM, VSM and VAM to reduce bottlenecks in manufacturing.
		CO3	Understand and Apply the principles of tools like 5S, JIT, TPM, Lean Production, SQC and FMS to become World Class Organization.
		CO4	Evaluate Organizational learning techniques of removing Root cause of problems, Use people as problem solvers, Illustrate organizational structures, and motivation in relation to Human Resource in WCM.
		CO5	Decide performance indicators like POP, TOPP and AMBITE systems, six Sigma for analyzing world Class Performance.
		CO6	Understand and Illustrate Green Manufacturing, Clean Manufacturing, Agile Manufacturing concepts to lead Indian Organizations towards world Class status.
411099	Project Work	CO1	Ability to transform the design solution(s) for the identified engineering problem into a full-scale model/prototype/virtual model
		CO2	Ability to analyze and interpret results of testing and validation of full-scale model/prototype/virtual model and to arrive at valid conclusions
		CO3	Ability to perform the budget analysis of the project through the utilization of resources
		CO4	Ability to demonstration of the project full-scale model/prototype/virtual model, effective written communication through the project stage II report
		CO5	To write conference paper
		CO6	To practice presentation, communication and team-work skills.