Dr. Vasantraodada Patil Shetkari Shikshan Mandal's																
	Department of Mechanical Engineering															
Course Outcomes(COs)																
Course Outcomes(COs) CO-PO Mapping																
	TY B.Tech Part I Semester V															
Course Name:	Heat Transfer	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	Explain the laws of heat transfer and deduce the general heat conduction equation and to explain it for 1-D steady state heat transfer in regular shape bodies	2	1			1				1						2
CO2	Describe the critical radius of insulation, overall heat transfer coefficient, thermal conductivity and lumped heat transfer	3	2			1										1
CO3	Interpret the extended surfaces	3	1			2		2		1					2	
CO4	Illustrate the boundary layer concept, dimensional analysis, forced and free convection under different conditions	3	3		1	1				1						
CO5	Describe the Boiling heat transfer, Evaluate the heat exchanger and examine the LMTD and NTU methods applied to engineering problems	3	3	3		1		2						2		
CO6	Explain the thermal radiation black body, emissivity and reflectivity and evaluation of view factor and radiation shields	2	3		2	2		2		1						
Course Name:	Machine Design - I	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	Formulate the problem by identifying customer need and convert into design Specification	1	1						1		2		1	3		1
CO2	Understand component behavior subjected to loads and identify failure criteria	3	2		1		1		1		1		1	2		1
CO3	Analyze the stresses and strain induced in the component	1	1				1		1		1		1		2	2
CO4	Design of machine component using theories of failures	3	3	2	1		2		1		1		1	3		2
C05	Design of component for finite life and infinite life when subjected to fluctuating load	1	1				1		1		1		1	3		2
CO6	Design of components like shaft, key, coupling, screw and spring	2	2	2	1		1		1		1		1	3		2

Course Name:	Theory of Machines - II	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
C01	Identify and select type of belt and rope drive for a particular application	2	3	1		2		1			2		2	2		1
CO2	Evaluate gear tooth geometry and select appropriate gears, gear trains	2	3					1					3		2	
CO3	Define governor and select/suggest an appropriate governor		2										2		1	
CO4	Characterize flywheels as per engine requirement		2		1									3		
CO5	Understand gyroscopic effects in ships, aero planes, and road vehicles.	2	3		2								3		2	
CO6	Understand free and forced vibrations of single degree freedom systems	2	3		3								3		2	
Course Name:	Automobile Engineering	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
	Identify the different parts of the automobile	2	1													1
CO1	Explain the working of various parts like engine, transmission, clutch, brakes etc.	1	2		2		1									1
CO2	Demonstrate various types of drive systems; front and rear wheels, two and four wheel drive	1	1		1	1									2	
CO3	Apply vehicle troubleshooting and maintenance procedures.	2			3	1										2
CO4	Analyze the environmental implications of automobile emissions. And suggest suitable regulatory modifications.		2			1	1	2							2	
Course Name:	Human Resource Management	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
C01	Describe trends in the labor force composition and how they impact human resource management practice.					2						1				
CO2	Discuss how to strategically plan for the human resources needed to meet organizational goals and objectives.											3				
CO3	Define the process of job analysis and discuss its importance as a foundation for human resource management practice										2					
CO4	Explain how legislation impacts human resource management practice.								2		2					
CO5	Compare and contrast methods used for selection and placement of human resources.									2	3					1
CO6	Describe the steps required to develop and evaluate an employee training program										1		3			1
CO7	Summarize the activities involved in evaluating and managing employee performance.										2	2			1	
CO8	Identify and explain the issues involved in establishing compensation systems.											2				

Course Name:	Applied Thermodynamics	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	Define the terms like calorific value of fuel, stoichiometric air- fuel ratio, excess air, equivalent evaporation, boiler efficiency, etc. Calculate minimum air required for combustion of fuel.	1	1													1
CO2	Studied and Analyze gas power cycles and vapour power cycles and derive expressions for the performance parameters like thermal efficiency.	1	2												2	
CO3	Classify various types of boilers, nozzle, steam turbine and condenser used in steam power plant.	1														
CO4	Classify various types condenser, nozzle and derived equations for its efficiency			1											1	
CO5	Draw P-v diagram for single-stage reciprocating air compressor, with and without clearance volume, and evaluate its performance. Differentiate between reciprocating androtary air compressors.		2											2		
TY B.Tech Part II Semester VI																
Course Name:	Manufacturing Processes - II	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
C01	Understand the process of powder metallurgy and its applications	3	3	1	1			2					1			
CO2	Calculate the cutting forces in orthogonal and oblique cutting	3	3										1		2	
CO3	Evaluate the machinability of materials	3	3	1	2	3							1		2	
CO4	Understand the abrasive processes	3	3	2									1			1
CO5	Explain the different precision machining processes	3	3	1	3								1			1
CO6	Understanding plastic	3	1	3	3	3			2				1			
Course Name:	Machine Design - II	PO1	PO2	PO3	PO4	PO5	PO6	PO 7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	Define function of bearing and classify bearings.	1	1						1				1	1		
CO2	Understanding failure of bearing and their influence on its selection.	3	2		1		1		1		1		1	1		
CO3	Classify the friction clutches and brakes and decide the torque capacity and friction disk parameter.	1	1				1		1		1		1		1	
CO4	Select materials and configuration for machine element like gears.	3	3	2	1		2		1		1		1		2	1
CO5	Design of elements like gears, belts for given power rating	1	1				1		1		1		1			2

Course Name:	Engineering Metrology and Quality Control	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
C01	Identify techniques to minimize the errors in measurement				3								2			1
CO2	Identify methods and devices for measurement of length, angle, and gear and thread parameters, surface roughness and geometric features of parts.		2	2		2										1
CO3	Choose limits for plug and ring gauges.			2	3	2								1		
CO4	Explain methods of measurement in modern machineries						3									
C05	Select quality control techniques and its applications	1					2		3	3		3	2		2	
CO6	Plot quality control charts and suggest measures to improve the quality of product and reduce cost using Statistical tools.	1					2		3	3		2	2		2	
Course Name:	Robotics	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	List the various components of a typical Robot, grippers, sensors, drive system and describe their functions	1	1	1		1										1
CO2	Calculate the word to joint and joint to word coordinates using forward and reverse transformations	2	3	2	1	2	1								2	
CO3	Calculate the gripper forces, drive sizes, etc.	3	2	2	1	1									2	
CO4	Develop simple robot program for tasks such as pick and place, arc welding, etc. using some robotic language such as VAL-II, AL, AML, RAIL, RPL, VAL	3	3	2	1	2		1							2	
CO5	Evaluate the application of robots in applications such as Material Handling, process operations and Assembly and inspection	3	1	1		1		1							2	
CO6	Discuss the implementation issues and social aspects of robotics	1	1	1												2
Course Name:	Energy Conservation and Management	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	Understand energy problem and need of energy management	1	2	3	1	2	3			2	2		2			1
CO2	Carry out energy audit of simple units	1	1	3		2	3			2	2		2		2	
CO3	Study various financial appraisal methods	2	1	1							1		2	1	 '	ļ
CO4	Analyze cogeneration and waste heat recovery systems	3	3			2	3						1	 	2	l
CO5	Do simple calculations regarding thermal insulation and electrical energy conservation			3			2						1			1