Subject Code/Name: - 4ME2-01/DATA ANALYTICS

	List of Course Outcomes
CO-1	Describe Data Analytics and the skill sets need for a data analyst.
CO-2	Explain statistical inference and probability distributions commonly used as foundation for statistical modeling.
CO-3	Apply basic data analytics techniques: ANOVA, MANOVA, ANCOVA, MANCOVA, linear regression etc.
CO-4	Identify common approaches and algorithms for basic features selection, decision trees and factor analysis.
CO-5	Apply common approaches and algorithms used for Cluster analysis and Time series model.

MAPPING OF COURSE OUTCOME WITH PROGRAM OUTCOMES AND PSO

COURSE				Pl	ROG	RAM	OUI	CON	Æ				PS	0
OUTCOME	PO-	PO-	PO-	PO-										
ourcom	1	2	3	4	5	6	7	8	9	10	11	12	PSO-1	PSO-2
I	2	-	-	-	-	-	-	-	-	-	-	-	-	-
II	2	2	-	-	-	-	-	-	-	-	-	-	-	-
III	2	2	-	3	-	-	-	-	-	-	-	-	2	-
IV	-	3	-	3	-	-	-	-	-	-	-	-	2	-
\mathbf{V}	-	3	-	2	-	-	-	-	-	-	-	-	-	-
AVG	2	3	-	3	-	-	-	-	-	-	-	-	-	-

Note: Correlation levels 1, 2 or 3 as defined below: 1: Slight (Low) 2: Moderate (Medium) 3: Substantial (High)

Subject Code/Name: - 4ME1-02/TECHNICAL COMMUNICATION

	List of Course Outcomes
	Acquisition of technical communication's generic aspects like Reading Technical
CO-1	Material, Technical Writing, Listening, Thinking and using technical phrases in
	spoken, Knowing the parts of a technical documents like screenshots, graphs,
	tabular data, data analysis, pictorial depiction.
CO-2	Getting adapted with the technical generic formats/templates of technical writing
00-2	of memos, technical report writing, technical presentations, technical proposal
	writing, minutes of meeting and the notes taking techniques.
CO-3	Accessing the reading material and developing the writing technical material with
000	the use of technical concepts and tools like Vacaroo, Miscrosoft Visio, Notepad
	++, Kinemaster, Powtoon, Split Page Technique, Diagram Technique.
CO-4	Learning the skill of proofreading and copy editing, paraphrasing and spinning
00-4	using technical tools and manually using the knowledge of advance technical
	grammar.
CO-5	Learning the technical phrases and writing styles like descriptive, argumentative
00-5	etc for developing good technical documents for presentations or disseminating
	technical documents.

MAPPING OF COURSE OUTCOME WITH PROGRAM OUTCOMES AND PSO

COURSE				Р	ROG	RAM	OUT	COM	E				PS	50
OUTCO ME	РО -1	PO -2	РО -3	PO -4	PO -5	PO -6	РО -7	PO 8	PO -9	PO -10	PO -11	PO -12	PSO -1	PSO -2
Ι	-	-	-	-	-	-	-	-	1	3	-	1	-	2
II	-	-	-	-	-	-	-	-	1	3	-	1	-	2
III	-	-	-	-	-	-	-	-	1	3	-	1	-	2
IV	-	-	-	-	-	-	-	-	1	3	-	1	-	2
V	-	-	-	-	-	-	-	-	1	3	-	1	-	2
AVG	-	-	-	-	-	-	-	-	1	3	-	1	-	2

Note: Correlation levels 1, 2 or 3 as defined below:

List of Course OutcomesCO-1Define the need for modulation and the basic communication system modelCO-1Observe the need for modulation and the basic communication system modelCO-2Observe the concept of operational amplifiers and various applications of op-
amp.CO-3Develop concept of simplification using Boolean and KMAP and design various
combinational and sequential circuitsCO-3Investigate the effect of feedback in practical circuits like Oscillators
Multivibrators etc.CO-5Analyze the characteristics and application semiconductor devices.

Subject Code/Name: - 4ME3-04 DIGITAL ELECTRONICS

MAPPING OF COURSE OUTCOME WITH PROGRAM OUTCOMES AND PSO

COURSE				Pl	ROG	RAM	OUT	CON	ΛE				PS	0
OUTCOME	PO-													
ourcom	1	2	3	4	5	6	7	8	9	10	11	12	PSO-1	PSO-2
I	3	1	-	-	-	-	-	-	-	-	-	3	-	3
II	3	2	2	-	-					-	-	3	-	3
III	3	3	-	-	-	-	-	-	-	3	-	3	-	3
IV	3	3	3	-	-	-	-	-	-	-	-	3	-	3
V	3	3	2	-	-	-	-	-	-	1	-	3	-	3
AVG	3	3	3	-	-	-	-	-	-	2	-	3	-	3

Note: Correlation levels 1, 2 or 3 as defined below:

Subject Code/Name: - 4ME04-05 FLUID MECHANICS & FLUID MACHINES

	List of Course Outcomes
CO-1	Define fluid and Understand Fluid properties, Buoyancy, stability of submerged and floating bodies, Manometer, and static fluid forces on different surfaces
CO-2	Understand various types of flow, Mass Momentum and energy conservation and related equations.
CO-3	Understand laminar and turbulent flow through pipes and parallel plates.
CO-4	Explain various applications of Bernoulli's Equation, Notches and Weirs, Orifices and Mouthpieces, Major and Minor losses in pipe flow, piping network, and draw HGL and TEL
CO-5	Understand and classify different Turbines and Pumps, plot curves for various efficiencies and draw velocity triangles for the same.

MAPPING OF COURSE OUTCOMES WITH PROGRAM OUTCOMES AND PSO'S

COUDSE					PROG	RAM	OUTC	OMES	5				PS	O's
OUTCOMES	PO- 1	PO- 2	PO- 3	PO- 4	PO- 5	PO- 6	PO- 7	PO- 8	PO- 9	PO- 10	PO- 11	PO- 12	PSO-	PSO- 2
			_											
CO-1	3	-	-	-	-	-	-	-	-	-	-	-	-	3
CO-2	3	2	-	-	-	-	-	-	-	-	-	-	-	3
CO-3	3	-	-	-	-	-	-	-	-	-	-	-	-	3
CO-4	3	-	-	-	-	-	-	-	-	-	-	-	-	3
CO-5	3	4	-	-	-	-	-	-	-	-	-	-	-	3
AVG	3	2	-	-	-	-	-	-	-	-	-	-	-	3

Note: Correlation levels 1, 2 or 3 as defined below:

Subject Code/Name: - 4ME04-06 MANUFACTURING PROCESSESS

	List of Course Outcomes
CO-1	Understand the classification, scope and relative applications of basic manufacturing methods used in industries.
СО-2	Explain the different casting methods with their process details, applications and limitations.
СО-3	Understand the characteristics, process details and applications of rolling, forging, extrusion and drawing operations.
CO-4	Classify and explain in detail the different welding methods with brief introduction to brazing and soldering.
CO-5	Understand the powder metallurgy process with its typical advantages, limitations and industrial applications.

MAPPING OF COURSE OBJECTIVE WITH PROGRAM OUTCOMES

COURSE				PR	OGR	AM C	OUTC	OME	S				PS	O's
OUTCO	PO-	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PS	PS
MES	1	-2	-3	-4	-5	-6	-7	-8	-9	-10	-11	-12	0-1	0-2
CO-1	3	-	-	-	-	-	-	-	-	-	-	-	-	3
CO-2	3	3	2	-	-	-	-	-	-	-	-	-	-	3
CO-3	3	3	2	-	-	-	-	-	-	-	-	-	-	3
CO-4	2	3	2	-	-	-	-	-	-	-	-	-	-	3
CO-5	3	3	2	-	-	-	-	-	-	-	-	-	-	3
AVG	3	3	2	-	-	-	-	-	-	-	-	-	-	3

Note: Correlation levels 1, 2 or 3 as defined below:

Subject Code/Name: - 4ME04-07 THEORY OF MACHINES

	List of Course Outcomes
CO-1	Explain Kinematic Chain, Mechanisms and their Inversions; analyze velocity and acceleration of various mechanisms.
CO-2	Solve problem-related to friction. Explain the principle and applications of clutch and brake.
СО-3	Explain details of gear tooth profiles and conditions of interference and undercutting. Explain different types of gear trains using analytical and tabular methods.
CO-4	Explain the principle and applications of a gyroscope. Explain and draw cam profile and velocity-acceleration analysis for different cams and followers
CO-5	Explain the principle and verify the practical vs. theoretical torque relation for gyroscope and its applications. Explain static and dynamic balancing.

MAPPING OF COURSE OUTCOME WITH PROGRAM OUTCOMES AND PSO

COURSE				Р	ROG	RAM	OUT	СОМ	E				P	SO
OUTCO ME	РО -1	PO -2	РО -3	PO -4	РО -5	PO -6	РО -7	PO -8	PO -9	PO -10	PO -11	PO -12	PSO -1	PSO- 2
Ι	3	_	-	-	-	_	-	-	3	-	-	3	-	-
II	3	_	-	-	-	-	-	-	3	-	-	3	-	-
III	3	_	-	-	-	_	_	-	3	_	-	3	-	-
IV	3	-	-	-	-	-	-	-	3	-	-	3	-	-
V	3	-	-	-	-	-	-	-	3	-	-	3	-	-
AVG	3	-	-	-	-	-	-	-	3	-	-	3	-	-

Note: Correlation levels 1, 2 or 3 as defined below: 1: Slight (Low) 2: Moderate (Medium) 3: Substantial (High)

Subject Code/Name: - 4ME3-21 DIGITAL ELECTRONICS LAB

	List of Course Outcomes
CO-1	Understand the pin description of digital IC's
CO-2	Implement Arithmetic logic circuits using digital IC's
CO-3	Implement combinational circuits using digital IC's.
CO-4	Apply concept of universal logic gates for digital circuit designing.
CO-5	Examine the behavior of sequential circuits using digital IC's

MAPPING OF COURSE OUTCOME WITH PROGRAM OUTCOMES AND PSO

COURSE	PROGRAM OUTCOME												PSO	
OUTCO ME	РО -1	PO -2	PO -3	PO -4	PO -5	PO -6	РО -7	PO -8	PO -9	PO -10	PO -11	PO -12	PSO -1	PSO -2
Ι	2	2	1	2	-	-	-	-	-	-	-	3	1	-
II	2	3	2	3	-	-	-	-	-	-	-	2	2	-
III	2	3	2	2	-	-	-	-	-	-	-	2	2	-
IV	2	2	2	2	-	-	-	-	-	-	-	2	1	-
V	2	2	3	2	-	-	-	-	-	-	-	2	2	-
AVG	2	2	2	2	-	-	-	-	-	-	-	3	2	-

Note: Correlation levels 1, 2 or 3 as defined below:

Subject Code/Name: - 4ME3-22 FLUID MECHANICS LAB

	List of Course Outcomes
CO-1	Determine experimentally Metacentric height of the given body; and Cd, Cv & Cc of the given orifice.
CO-2	Calibrate experimentally the given rectangular notch or triangular notch, Venturimeter, Nozzle meter and Orifice meter and determine flow rate
CO-3	Stating Bernoulli's theorem with assumptions verify experimentally Bernoulli's theorem with the help of given experimental setup
CO-4	Determine and analyze major and minor pipe losses
CO-5	Explain and compare the working of various turbines, pipe fittings and manometers.

MAPPING OF COURSE OBJECTIVE WITH PROGRAM OUTCOMES

	PROGRAM OUTCOMES												PSO's		
COURSE OUTCOMES	PO-	PO-	PO-	PO-	PO-	PO-	PO-	PO-	PO-	PO-	PO-	PO-	PSO	PSO-	
	1	2	3	4	5	6	7	8	9	10	11	12	-1	2	
CO-1	3	3	3	2	2	-	-	-	-	-	-	3	3	3	
CO-2	3	3	3	3	2	-	-	-	-	-	-	3	3	2	
CO-3	3	3	2	3	-	-	-	-	-	-	-	3	2	-	
CO-4	3	2	2	2	-	-	-	-	-	-	-	3	2	-	
CO-5	3	3	2	3	-	-	-	-	-	-	-	3	2	-	
AVG	3	3	3	3	2	-	-	-	-	-	-	3	3	2.5	

Note: Correlation levels 1, 2 or 3 as defined below: 1: Slight (Low) 2: Moderate (Medium) 3: Substantial (High)

Subject Code/Name: - 4ME3-23 PRODUCTION PRACTICE LAB

	List of Course Outcomes
CO-1	Exhibit understanding of the constructional features, working principle and operation performed on lathe, shaper, milling and grinding machine tool.
CO-2	Select appropriate cutting tools, suitable work & tool holding devices, optimum cutting parameters and safe working procedures on various machine tools.
CO-3	Measure various sand properties by performing sand moulding tests and prepare a green sand mould from a given split pattern.
CO-4	Perform the welding operation as per given drawing using TIG, MIG and SPOT welding techniques and exhibit use of safe working procedures and appropriate welding equipment's.
CO-5	Produce the part as per given drawing on lathe, shaper, milling and grinding machine tool and perform its error analysis.

COURSE				Pl	ROG	RAM	OUI	CON	ЛE				PSO	
OUTCOME	РО- 1	РО- 2	РО- 3	РО- 4	РО- 5	РО- 6	РО- 7	РО- 8	РО- 9	РО- 10	РО- 11	РО- 12	PSO-1	PSO-2
Ι	2	2	-	3	3	-	-	-	-	-	-	3	2	-
II	2	2	2	3	3	-	-	-	-	-	-	3	3	-
III	2	2	-	3	3	-	-	-	-	-	-	3	2	-
IV	2	2	3	3	3	-	-	-	-	-	-	3	3	-
V	2	-	2	-	3	-	-	-	-	-	-	2	2	-
AVG	2	2	2	3	3	-	-	-	-	-	_	3	2.4	-

Note: Correlation levels 1, 2 or 3 as defined below: 1: Slight (Low) 2: Moderate (Medium) 3: Substantial (High)

Subject Code/Name: - 4ME3-24 THEORY OF MACHINES LAB

	List of Course Outcomes
CO-1	Explain and discus inversions of four bar, single slider and double slider chain. Steering Mechanisms- Davis and Ackerman; quick return mechanism and draw its velocity and acceleration diagrams.
CO-2	Explain and demonstrate cam and followers arrangements available in laboratory and plot displacement v/s angle of rotation curve for these.
CO-3	Determine co-efficient of friction of different materials using two roller oscillating arrangement and differentiate among.
CO-4	Describe, discuss and differentiate various types of dynamometers, Brakes, Clutches and Gear boxes with their applications
CO-5	Explain the principle and verify the practical vs. theoretical torque relation for gyroscope and its applications. Explain static and dynamic balancing.

COURSE				Р	ROG	RAM	OUT	СОМ	E				PSO	
OUTCO ME	РО -1	PO -2	РО -3	РО -4	РО -5	РО -6	РО -7	PO -8	PO -9	PO -10	PO -11	PO -12	PSO -1	PSO -2
Ι	3	-	-	-	-	-	-	-	3	-	-	3	-	-
II	3	-	-	-	-	-	-	-	3	-	-	3	-	-
III	3	-	-	-	-	-	-	-	3	-	-	3	-	-
IV	3	-	-	_	_	_	_	-	3	-	_	3	_	-
V	3	-	-	-	-	-	-	-	3	-	-	3	_	-

AVG	3	-	-	-	-	-	-	-	3	-	_	3	-	-
				1		1 1					1			

Note: Correlation levels 1, 2 or 3 as defined below:

1: Slight (Low) 2: Moderate (Medium) 3: Substantial (High) Subject Code/Name: - 6ME3-01 MEASUREMENT & METROLOGY

	List of Course Outcomes
CO-1	Explain the basics knowledge of measurements, metrology and measuring devices.
CO-2	Understand the principle of linear and angular measuring instruments and apply the acquired knowledge for the accurate and precise measurement of a given quantity.
CO-3	Understand the fundamentals of various methods for the measurements of screw threads, surface roughness parameters and working of optical measuring instruments.
CO-4	Understand various advanced measuring devices and machine tool metrology and to describe application of principle of metrology and measurements in industries.
CO-5	Understand and able to use various devices for measuring torque, force, strain, stress and temperature. To develop competence in sensors, transducers and terminating devices with associated parameters.

COURSE		PROGRAM OUTCOME													
OUTCOME	РО- 1	PO- 2	РО- 3	РО- 4	РО- 5	РО- 6	РО- 7	PO- 8	РО- 9	PO- 10	РО- 11	PO- 12	PSO-1	PSO-2	
Ι	2	-	-	-	1	-	-	-	-	-	-	-	-	-	
II	2	-	-	-	-	-	-	-	-	-	-	-	-	3	
III	2	-	-	-	1	-	-	-	-	-	-	-	-	3	
IV	2	-	-	-	1	-	-	-	-	-	-	-	-	-	
V	2	-	_	-	1	-	_	_	-	-	-	-	-	1	

AVG	2	-	-	-	1	-	-	-	-	-	-	-	-	1.5
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Note: Correlation levels 1, 2 or 3 as defined below: 1: Slight (Low) 2: Moderate (Medium) 3: Substantial (High)

Subject Code/Name: - 6ME4-02 CIMS

	List of Course Outcomes										
CO-1	Demonstrate the knowledge about role of computer and automation in manufacturing.										
CO-2	Describe the NC system, components and its advantages and adaptive control.										
CO-3	Prepare a part program using G & M codes for drilling, milling and lathe operations.										
CO-4	Describe the application of computer in CAPP, material handling, and quality control.										
CO-5	Explain the concept of group technology, FMS, collaborative engineering, agile and lean manufacturing.										

COURSE		PROGRAM OUTCOME												PSO	
OUTCO ME	РО -1	PO -2	РО -3	PO -4	РО -5	РО -6	РО -7	PO -8	PO -9	PO -10	РО -11	PO -12	PSO -1	PSO -2	
Ι	2	-	-	-	3	-	-	-	-	-	-	-	-	-	
II	3	-	-	-	3	-	-	-	-	-	-	-	-	-	
III	3	2	-	-	3	-	-	-	-	-	-	-	-	-	
IV	3	-	-	-	3	-	-	-	-	-	-	-	-	-	
V	3	2	-	-	3	-	-	-	-	-	-	-	-	-	

AVG	3	2	-	-	3	-	-	-	-	-	-	-	-	-

Note: Correlation levels 1, 2 or 3 as defined below: 1: Slight (Low) 2: Moderate (Medium) 3: Substantial (High)

Subject Code/Name: - 6ME4-03 MECHANICAL VIBRATIONS

	List of Course Outcomes
CO-1	Explain basics of sound, noise and vibration; as well as their control strategies.
CO-2	Derive equations of motion for undamped one-dimensional vibrations, and solve problems of damped free vibrations.
CO-3	Analyse and solve problems of forced vibrations involving frequency response curves, phase angle plots, vibration isolation and transmissibility.
CO-4	Analyse and solve problems involving vibrations of systems having more than one degree of freedom.
CO-5	Recall and explain concepts involving vibrations of continuous systems.

COURSE		PROGRAM OUTCOME												PSO	
OUTCO ME	РО -1	PO -2	РО -3	РО -4	РО -5	РО -6	РО -7	PO -8	PO -9	PO -10	РО -11	PO -12	PSO -1	PSO -2	
Ι	3	3	-	-	-	-	-	-	-	-	-	-	-	3	
II	3	3	-	-	-	-	-	-	-	-	-	-	-	3	
III	3	3	-	-	-	-	-	-	-	-	-	-	-	3	
IV	3	3	-	-	-	-	-	-	-	-	-	-	-	3	
V	3	3	_	-	-	-	-	-	-	-	-	-	-	3	

AVG	3	3	-	-	-	-	-	-	-	-	-	-	-	3

Note: Correlation levels 1, 2 or 3 as defined below:

1: Slight (Low) 2: Moderate (Medium) 3: Substantial (High)

	List of Course Outcomes
CO-1	Apply knowledge of design considerations such as variable loads, endurance stresses, size, surface finish, notch sensitivity, and stress concentration and design Shafts and Bolts under variable stresses.
CO-2	Design of various IC engine components including piston, cylinder, connecting rod and crank shaft.
CO-3	Design of helical springs like compression, tension, torsional and variable stresses; and design belt, rope and pulley drive systems.
CO-4	Design of spur, helical, bevel and worm gears under wear and dynamic load consideration using Lewis and Buckingham equations. Analyze bearing reactions due to gear tooth forces.
CO-5	Design of sliding and journal bearings for given hydrodynamic, hydrostatic, boundary, thermal equilibrium conditions and minimum film thickness of lubrication.
CO-6	Select anti-friction bearings for different loads and load cycles, mounting of the bearings, Method of lubrication.

Subject Code/Name: - 6ME4-04 DESIGN OF MACHINE ELEMENT-II

COURSE]	PROG	RAM	OUTC	OMES	5				PS	50
OUTCOMES	PO- 1	PO- 2	PO- 3	PO- 4	PO- 5	PO- 6	PO- 7	PO- 8	PO- 9	PO- 10	PO- 11	PO- 12	PSO- 1	PSO- 2
CO-1	2	-	-	-	3	3	-	3	-	-	-	2	-	3
CO-2	-	3	3	-	3	3	-	3	-	-	-	2	-	3
CO-3	-	3	3	-	3	3	-	3	-	-	-	2	-	3
CO-4	-	3	3	-	3	3	-	3	-	-	-	2	-	3
CO-5	3	3	-	-	3	3	-	3	-	-	-	2	-	3
CO-6	3	3	3	-	3	-	-	3	-	-	-	2	-	3

AVG	3	3	3	-	3	3	-	3	-	-	-	2	-	3

Note: Correlation levels 1, 2 or 3 as defined below:

1: Slight (Low) 2: Moderate (Medium) 3: Substantial (High

Subject Code/Name: - 6ME4-05 QUALITY MANAGEMENT

	List of Course Outcomes
CO-1	Describe the scope, outcomes, evolution and various philosophies of quality
	management and cost of quality.
CO-2	Analyze and interpret the process quality using various graphical and statistical tools like control charts, probability distribution, sampling distribution, hypothesis testing, DOE and acceptance sampling.
CO-3	Describe the leadership and various quality management systems including, FMEA, Six sigma, Quality audit and ISO 9000.
CO-4	Explain and analyze the product quality improvement using QFD, Robust design and Taguchi method.
CO-5	Apply the product reliability analysis methods for various system configurations.

COURSE				Р	ROG	RAM	OUT	СОМ	E				PSO		
OUTCO ME	РО -1	PO -2	РО -3	PO -4	PO -5	PO -6	PO -7	PO -8	PO -9	PO -10	РО -11	PO -12	PSO -1	PSO -2	
Ι	2	-	-	2	-	-	-	-	-	-	-	3	-	3	
II	2	3	-	-	2	-	-	-	-	-	-	-	-	3	
III	2	-	-	2	2	-	-	-	-	-	-	3	-	3	
IV	2	3	-	2	2	-	-	-	-	-	-	-	-	-	
V	2	3	_	2	-	-	_	-	-	-	_	3	_	3	

AVG	2	3	-	2	2	-	-	-	-	-	-	3	-	3
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Note: Correlation levels 1, 2 or 3 as defined below: 1: Slight (Low) 2: Moderate (Medium) 3: Substantial (High)

Subject Code/Name: - 6ME5- 11 REFRIGERATIOM & AIR CONDITIONING

	List of Course Outcomes
CO-1	Analyze the reversed Carnot cycle and vapour compression refrigeration cycle (VCR).
CO-2	Select the air-refrigeration systems for aircraft, and vapour absorption refrigeration system for rural and remote areas and select environmental friendly refrigerants considering the international standards.
CO-3	Identify the Psychometric processes for different applications and design the parameters of air-conditioning system as per standards.
CO-4	Understand the human comfort, ASHRAE chart and concept of effective temperature.
CO-5	Estimate cooling load and heating load considering human comfort and optimize the air conditioning system as per requirements.

COURSE		PROGRAM OUTCOME												PSO	
OUTCO ME	РО -1	PO -2	РО -3	PO -4	PO -5	PO -6	PO -7	PO -8	PO -9	PO -10	РО -11	PO -12	PSO -1	PSO -2	
Ι	3	3	-	-	-	-	-	-	-	-	-	-	-	-	
II	3	3	3	-	-	3	3	-	-	-	-	-	-	-	
III	-	3	3	-	-	3	3	-	-	-	-	-	-	-	
IV	-	3	3	-	-	3	3	-	-	-	-	-	-	-	

V	3	3	3	_	_	3	3	_	_	-	_	-	-	-
AVG	3	3	3	_	-	3	3	-	-	-	-	-	-	-

Note: Correlation levels 1, 2 or 3 as defined below: 1: Slight (Low) 2: Moderate (Medium) 3: Substantial (High)

Subject Code/Name: - 6ME4-21 CIMS LAB

	List of Course Outcomes
CO-1	Identify the various parts and operations of CNC machines.
CO-2	Explain the use of various G codes and M codes for CNC lathe & milling machines
CO-3	Simulate the part program of given drawing on cut viewer turn and mill software
CO-4	Setup the reference point of cutting tool on CNC Lathe & Milling.
CO-5	Point out safety precautions that must be observed when operating a CNC machines.

COURSE				Р	ROG	RAM	OUT	СОМ	Е				PS	50
OUTCO ME	PO -1	PO -2	PO -3	PO -4	PO -5	PO -6	PO -7	PO -8	PO -9	PO -10	PO -11	PO -12	PSO -1	PSO -2
Ι	2	-	-	-	3	-	-	-	-	-	-	-	-	-
II	2	-	-	-	3	-	-	-	-	-	-	-	-	2
III	2	-	-	-	3	-	-	-	-	-	-	-	-	3
IV	2	_	-	-	3	-	-	-	-	-	-	-	-	-

V	2	-	-	-	2	-	_	_	-	-	-	-	-	-
AVG	2	-	-	-	3	-	-	-	-	-	-	-	-	2.5

Note: Correlation levels 1, 2 or 3 as defined below: 1: Slight (Low) 2: Moderate (Medium) 3: Substantial (High)

Subject Code/Name: - 6ME4-22 VIBRATION LAB

	List of Course Outcomes
CO-1	Experimentally determine the time period and natural frequency of free vibrations of various systems, and compare the theoretical and practical results.
CO-2	Experimentally determine the radius of gyration and mass moment of inertia of objects.
CO-3	Experimentally determine the damping constant of a fluid in case of damped torsional vibration using logarithmic decrement.
CO-4	Analyze forced vibrations using virtual lab simulator.
CO-5	Experimentally verify Dunkerley's rule for fundamental frequency of multi degree of freedom systems.

COURSE				Р	ROG	RAM	OUT	COM	E				PS	50
OUTCO ME	PO -1	PO -2	PO -3	PO -4	PO -5	PO -6	PO -7	PO -8	PO -9	PO -10	PO -11	PO -12	PSO -1	PSO -2
Ι	3	-	-	3	3	-	-	-	-	-	-	-	-	3
II	3	-	-	3	3	-	-	-	-	-	-	-	-	3
III	3	-	-	3	3	-	-	-	-	-	-	-	-	3

IV	3	-	-	3	3	-	-	-	-	-	-	-	-	3
v	3	-	-	3	3	-	-	-	-	-	-	-	-	3
AVG	3	-	-	3	3	-	-	-	-	-	-	-	-	3

Note: Correlation levels 1, 2 or 3 as defined below: 1: Slight (Low) 2: Moderate (Medium) 3: Substantial (High)

6ME4-23 MACHINE DESIGN PRACTICE-II

	List of Course Outcomes
CO-1	Apply knowledge of design considerations in fatigue loading and analyze bolts under variable stresses
CO-2	Design the curved beams
CO-3	Design belt, rope and pulley drive
CO-4	Design spur, helical, bevel and worm gears under dynamic load conditions.
CO-5	Design of Sliding contact bearing and Anti-friction bearing under various load conditions.

COURSE		PROGRAM OUTCOME												
OUTCO ME	PO -1	PO -2	PO -3	PO -4	PO -5	PO -6	PO -7	PO -8	PO -9	PO -10	PO -11	PO -12	PSO -1	PSO -2
Ι	2	-	-	-	-	-	-	-	3	-	-	-	-	-
II	2	2	2	-	-	2	-	-	3	-	-	-	-	-

III	2	2	2	-	_	2	_	_	3	-	_	-	-	-
IV	2	2	2	-	-	2	-	-	3	-	-	-	-	-
V	2	2	2	-	-	2	-	-	3	-	-	-	-	-
AVG	2	2	2	-	-	2	-	-	3	-	-	-	-	-

Note: Correlation levels 1, 2 or 3 as defined below: 1: Slight (Low) 2: Moderate (Medium) 3: Substantial (High)

6ME4-24 THERMAL ENGINEERING LAB-I

	List of Course Outcomes
CO-1	Identify and explain the different parts of petrol and diesel engines, and to draw
0.0-1	valve timing diagrams.
CO 2	Explain and differentiate various types of boilers and identify and selection of
0-2	required its mounting and accessories.
CO 3	Demonstrate the working of steering, braking and transmission systems of
0-5	automobile and discuss the latest development.

COURSE	PROGRAM OUTCOME											PSO		
OUTCO ME	PO -1	PO -2	РО -3	РО -4	РО -5	РО -6	РО -7	PO -8	PO -9	PO -10	PO -11	PO -12	PSO -1	PSO -2
Ι	-	-	-	-	-	-	-	-	1	-	-	-	_	3
II	-	1	-	-	-	-	-	-	-	-	-	-	-	3
III	-	-	-	-	-	-	-	-	1	-	-	-	-	3

Note: Correlation levels 1, 2 or 3 as defined below: 1: Slight (Low) 2: Moderate (Medium) 3: Substantial (High)

8ME5-12 SUPPLY AND OPERATION MANAGEMENT

	List of Course Outcomes
	Describe the scope of operations management, trends in business and
CO-1	management process and forecast the demand for products and services for a
	given organization.
CO 2	Solve managerial problems related to product and service design and capacity
0-2	planning.
	Analyze managerial problems related to plant location and layout, assembly line
CO-3	balancing, aggregate and material requirement planning for a given
	organization.
CO-4	Solve managerial problems related to production planning and control such as
	sequencing, scheduling and understand principles of JIT and lean manufacturing.
<u> </u>	Apply project management techniques namely PERT and CPM to a given
0.5	problem and understand key elements of supply chain management.

COURSE		PROGRAM OUTCOME												
OUTCO ME	РО -1	PO -2	PO -3	РО -4	PO -5	PO -6	РО -7	PO -8	PO -9	PO -10	PO -11	PO -12	PSO -1	PSO -2
Ι	3	3	-	-	-	-	-	-	-	-	-	-	-	3

II	3	3	-	-	-	-	-	-	-	-	2	-	-	3
III	3	3	-	-	-	-	-	-	-	-	2	-	-	3
IV	3	3	-	-	-	-	-	-	-	-	2	-	-	3
V	3	3	-	-	-	-	-	-	-	-	2	-	-	3
AVG	3	3	-	-	-	-	-	-	-	-	2	-	-	3

Note: Correlation levels 1, 2 or 3 as defined below: 1: Slight (Low) 2: Moderate (Medium) 3: Substantial (High)

8TT6-60.2 DISASTER MANAGEMENT

	List of Course Outcomes
CO-1	Affirm the usefulness of integrating management principles in disaster mitigation work
CO-2	Distinguish between the different approaches needed to manage pre-during and post-disaster periods
СО-3	Explain the process of risk management and relate to risk transfer

COURSE	PROGRAM OUTCOME											PSO		
OUTCO ME	PO -1	PO -2	PO -3	PO -4	PO -5	PO -6	PO -7	PO -8	PO -9	PO -10	PO -11	PO -12	PSO -1	PSO -2
Ι	-	3	-	-	-	-	-	-	-	-	-	-	-	3
II	3	2	-	-	2	-	-	-	-	-	-	-	-	3

III	3	3	-	-	2	-	-	_	-	-	-	-	-	3
AVG	3	3	_	_	2	_	-	-	-	_	_	_	-	3

Note: Correlation levels 1, 2 or 3 as defined below:

1: Slight (Low) 2: Moderate (Medium) 3: Substantial (High)

8ME4-21 INDUSTRIAL ENGINEERING LAB

	List of Course Outcomes
CO-1	Perform experiments related to time study and flow charts and analyze to improve the existing process
CO-2	Analyze existing workstation with respect to controls and displays and suggest improved design from ergonomic viewpoint for workers safety.
CO-3	Perform case studies on MRP, BOM, capacity planning, CPM & PERT, and plant location & layout.
CO-4	Solve the operations research problems using OR software's like TORA/LINGO/LINDO/SAS/EXCEL SOLVER etc.
CO-5	Communicate effectively, work in groups, search literature and analyze the data.

COURSE		PROGRAM OUTCOME												PSO	
OUTCO ME	РО -1	PO -2	РО -3	PO -4	PO -5	PO -6	РО -7	PO -8	PO -9	PO -10	PO -11	PO -12	PSO -1	PSO -2	
Ι	2	2	-	_	-	-	-	-	-	-	_	-	-	3	

II	2	3	-	2	2	-	-	-	-	-	-	-	-	3
III	2	2	-	-	-	-	-	-	-	-	-	3	-	3
IV	2	3	-	2	2	-	-	-	-	-	-	-	-	3
V	2	2	-	2	2	-	-	-	-	-	-	3	-	-
AVG	2	3		2	2							3		3

Note: Correlation levels 1, 2 or 3 as defined below: 1: Slight (Low) 2: Moderate (Medium) 3: Substantial (High)

8ME4-22 METROLOGY LAB

	List of Course Outcomes
CO-1	Measure the linear dimensions with the help of vernier caliper, vernier height gauge, micrometer, dial gauge and telescopic gauges.
CO-2	Measure the angle by universal bevel protractor and sine bar.
СО-3	Use slip gauges to build required dimensions and use of hardness tester for rubber and plastics.
CO-4	Use instruments namely optical flat, optical profile projector, tool maker microscope and surface roughness tester to find out parameters of gear, screw threads and cutting tool by stating possible errors and limitations.
CO-5	Use appropriate instruments and techniques to measure of coating thickness on electroplated part and paint coating on steel and non-ferrous material & Analyse and compare the method of small-bore measurement with the aid of spheres.

COURSE	PROGRAM OUTCOME											PSO		
OUTCO	РО	РО	РО	РО	РО	РО	РО	РО	РО	РО	РО	РО	DGO	D
ME	-1	-2	-3	-4	-5	-6	-7	-8	-9	-10	-11	-12	PSO 1	PSO 2
													-1	-2

I	2	1	-	2	-	-	-	-	3	3	-	-	-	3
II	2	1	-	2	-	-	-	-	3	3	-	-	-	3
III	2	1	-	2	-	-	-	-	3	3	-	-	-	3
IV	2	1	-	2	-	-	-	-	3	3	-	-	-	3
V	2	1	-	2	-	-	-	-	3	3	-	-	-	3
AVG	2	1	-	2	-	-	-	-	3	3	-	-	-	3

Note: Correlation levels 1, 2 or 3 as defined below: 1: Slight (Low) 2: Moderate (Medium) 3: Substantial (High)

8ME7-50 PROJECT

	List of Course Outcomes								
CO-1	Define a problem and review literature to identify the gaps, objectives & scope								
0.0-1	of the work in project team in advanced areas of mechanical engineering.								
CO 2	Analyze the problems of mechanical engineering to formulate objectives of								
0-2	project.								
	Design a system, component, or process to meet the desired needs within								
CO-3	certain realistic constraints such as economic, environmental, social, safety,								
	manufacturability, and sustainability.								
CO 4	Demonstrate the techniques, skills, and modern engineering tools necessary for								
0.0-4	engineering practice.								
CO 5	Apply knowledge to solve engineering problem in multidisciplinary functional								
0-5	teams to communicate effectively and ethically.								
CO-6	Prepare a professional report as per recommended format and defend the work.								

COURSE	PROGRAM OUTCOME													PSO	
OUTCO ME	РО -1	PO -2	PO -3	РО -4	PO -5	PO -6	PO -7	PO -8	PO -9	PO -10	PO -11	PO -12	PSO -1	PSO -2	
Ι	3	3	-	-	-	-	-	-	3	-	-	2	3	3	

II	3	3	-	_	3	3	-	-	3	2	-	2	3	3
III	3	3	-	-	2	3	3	3	-	-	-	2	3	3
IV	-	-	3	2	3	3	-	3	-	-	-	2	3	3
V	-	3		-	3	3	-	3	-	2	-	2	3	3
VI	-	-	3	-	-	3		3	-	3		2	3	
AVG	3	3	3	2	3	3	3	3	3	2	-	2	3	3

Note: Correlation levels 1, 2 or 3 as defined below: 1: Slight (Low) 2: Moderate (Medium) 3: Substantial (High)