IMS Engineering College, Ghaziabad

Department of Mechanical Engineering

2020-21

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Course Outcomes (CO) mapping with Programme Outcomes (PO) and Programme Specific Outcomes (PSO)

Institute Vision and Mission

Vision

Our vision is to impart vibrant innovative and global education and to make IMS the world leader in terms of excellence of education, research and to serve the nation in the 21st century.

Mission

- To develop IMSEC as a centre of excellence in technical and management education.
- To inculcate in its students, the qualities of leadership, professionalism, corporate understanding & executive competence.
- To imbibe & enhance human values, ethics & morals in our students.
- To transform students into globally competent professionals.

Department Vision and Mission

Vision

Our vision is to provide excellent education that creates the new opportunities for students to meet the current and future challenges of technological development in mechanical engineering.

Mission

- To provide students with a sound mechanical engineering education for a successful career.
- To impart quality education to the students and enhance their domain knowledge as well as soft skills to make them globally competitive mechanical engineers.
- Respond effectively to the needs of the industry with changing technology scenario.
- Encouraging culture of continuous teaching and learning process by adopting latest technology and methodology.
- To develop the professional ethics and human values for the welfare of society.

Program Outcomes

Engineering Graduates will be able to:

1. Engineering knowledge: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
2. Problem analysis: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
3. Design/development of solutions: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
4. Conduct investigations of complex problems: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.
5. Modern tool usage: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modelling to complex engineering activities with an understanding of the limitations.
6. The engineer and society: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.
7. Environment and sustainability: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
8. Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
9. Individual and team work: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
10. Communication: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.
11. Project management and finance: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
12. Life-long learning: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of

technological change.

Program Educational Objectives

1. To prepare students for successful career in industry that meet the needs of Indian and multinational companies.
2. To provide students with a sound foundation in the mathematical, scientific and engineering fundamentals necessary to formulate, solve and analyze engineering problems and to pursue higher studies.
3. To develop creative ability among students by utilizing their technical competence in design, manufacturing and product development.
4. To promote awareness in students for life-long learning and to introduce them about professional issues of mechanical engineering including ethics, global economy and emerging technologies.
5. To foster important job related skills such as improved oral and written communications and experience of working as a team.

Program Specific Outcomes (PSO)

1. Graduates shall have an ability to apply fundamental knowledge of mathematics, applied science, engineering and management for the solution of mechanical engineering problems.
2. Graduates shall have an ability to enhance their technical and professional skills to utilize their knowledge in specification, fabrication, testing and operation of basic mechanical systems/processes.
3. Graduates shall have an ability to apply learned principles to the design, analysis, development and implementation of advanced mechanical systems.

B.Tech. (Mechanical Engineering)

SEMESTER- III

Sl. No.	Subject Codes	Subject	Periods			Evaluation Scheme				End Semester		Total	Credit
			L	T	P	CT	TA	Total	PS	TE	PE		
1	KOE031-38/ KAS302	Engg. Science Course/Maths IV	3	1	0	30	20	50		100		150	4
2	KAS301/ KVE301	Technical Communication/Universal Human Values	2 3	1 0	0 0	30	20	50		100		150	3
3	KME301	Thermodynamics	3	1	0	30	20	50		100		150	4
4	KME302	Fluid Mechanics & Fluid Machines	3	1	0	30	20	50		100		150	4
5	KME303	Materials Engineering	3	0	0	30	20	50		100		150	3
6	KME351	Fluid Mechanics Lab	0	0	2				25		25	50	1
7	KME352	Material Testing Lab	0	0	2				25		25	50	1
8	KME353	Computer Aided Machine Drawing-I Lab	0	0	2				25		25	50	1
9	KME354	Mini Project or Internship Assessment*	0	0	2			50				50	1
10	KNC301/ KNC302	Computer System Security/Python Programming	2	0	0	15	10	25		50			0
11		MOOCs (Essential for Hons. Degree)											
		Total										950	22

*The Mini Project or internship (3-4 weeks) conducted during summer break after II semester and will be assessed during III semester.

IMS Engineering College, Ghaziabad

Sub Code	KOE-038
Sub. Name	Electronics Engineering

COURSE OUTCOMES		Bloom's Level
CO1	***Understand*** the concept of PN junction and special purpose diodes	
CO2	***Study*** the application of conventional diode and semiconductor diode.	
CO3	***Analyse*** the I-V characteristics of BJT and FET.	
CO4	***Analyse*** the of Op-Amp, amplifiers, integrator, and differentiator.	
CO5	***Understand*** the concept of digital storage oscilloscope and compare of DSO with analog oscilloscope.	

CO-PO Matrix

Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	2		1	2						1	
CO2	3	2		2	2						1	
CO3	3	2		2	2						1	
CO4	3	2		1	2						1	
CO5	2	1		2	1						1	
Avg	2.80	1.80	#DIV/0!	1.60	1.80	#DIV/0!	#DIV/0!	#DIV/0!	#####	#####	1.00	####

CO-PSO Matrix

COs	PSO1	PSO2	PSO3
CO1		1	1
CO2		1	1
CO3		2	2
CO4	2	2	2
CO5	-	-	-
Avg	2.00	1.50	1.50

IMS Engineering College, Ghaziabad

Sub Code	KAS 301
Sub. Name	Technical Communication

COURSE OUTCOMES		Bloom's Level
CO1	Students will be enabled to understand the nature and objective of Technical Communication relevant for the work place as engineers.	
CO2	Students will utilize the technical writing for the purposes of Technical Communication and its exposure in various dimensions.	
CO3	Students would imbibe inputs by presentation skills to enhance confidence in face diverse audience.	
CO4	Technical communication skills will create a vast know-how of the application of the learning to promote their technical competence.	
CO5	It would enable them to evaluate their efficiency as fluent & efficient communicators by learning the voice-dynamics.	

CO-PO Matrix

Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	1	1	2		1	2	1	1	3	3	2	1
CO2	1	2	3	3	3	2				3	2	3
CO3	1	2	3	2	3	2	1	2	3	3	2	3
CO4	2	2	3	1	3	3		1	3	3	3	3
CO5	1	1	3	1	1		3	3	3	3	1	3
Avg	1.20	1.60	2.80	1.75	2.20	2.25	1.67	1.75	3.00	3.00	2.00	2.60

CO-PSO Matrix

COs	PSO1	PSO2	PSO3
CO1	2	3	2
CO2	1	3	2
CO3	2	3	2
CO4	2	3	2
CO5	1	1	1
Avg	1.60	2.60	1.80

IMS Engineering College, Ghaziabad

Sub Code	KME 301
Sub. Name	Thermodynamics

COURSE OUTCOMES		Bloom's Level
CO1	Students will be able to understand the concept of systems, surroundings and boundaries along with zeroth law of thermodynamics and first law of thermodynamics.	
CO2	Students will be able to understand the concept of second law of thermodynamics and deep knowledge about entropy.	
CO3	Students will be able to understand the concept of Availability and Irreversibility, exergy analysis and thermodynamic relations.	
CO4	Students will be able to understand the properties of steam and cycle based on power production by using the heat energy of steam.	
CO5	Students will be able to understand the concept of refrigeration cycles and performance of vapour compression refrigeration cycle.	

CO-PO Matrix

Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	2	2	2	2	1	1						2
CO2	3	2	2	1	1	1						2
CO3	2	2	2	1	2	2	1					1
CO4	2	2	1	2	1	2	1					2
CO5	3	2	2	1	2	1	1					2
Avg	2.40	2.00	1.80	1.40	1.40	1.40	1.00	#DIV/0!	#####	#####	#####	1.80

CO-PSO Matrix

COs	PSO1	PSO2	PSO3
CO1	2	2	2
CO2	2	2	2
CO3	2	2	2
CO4	2	2	2
CO5	1	1	2
Avg	1.80	1.80	2.00

IMS Engineering College, Ghaziabad

Sub Code	KME-302
Sub. Name	Fluid Mechanics & Fluid Machines

COURSE OUTCOMES		Bloom's Level
CO1	Learn about the application of mass and momentum conservation laws for fluid flows.	
CO2	Understand the importance of dimensional analysis.	
CO3	Obtain the velocity and pressure variations in various types of simple flows.	
CO4	Analyze the flow in water pumps and turbines.	
CO5	Mathematically analyze simple flow situations.	
CO6	Evaluate the performance of pumps and turbines.	

CO-PO Matrix

Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	2	1	1								1
CO2	2	2	1	1	2		1					2
CO3	2	2	2	3	2	1	1					2
CO4	3	3	2	3	2	1	1					3
CO5	2	2	3	2	2	1	1					3
CO6	2	2	1	2	1	1						3
Avg	2.33	2.17	1.67	2.00	1.80	1.00	1.00	#DIV/0!	#####	#####	#####	2.33

CO-PSO Matrix

COs	PSO1	PSO2	PSO3
CO1	2		3
CO2	2	1	2
CO3	2		3
CO4	2	1	3
CO5	3		2
CO6	2	1	2
Avg	2.17	1.00	2.50

IMS Engineering College, Ghaziabad

Sub Code	KME-303
Sub. Name	Materials Engineering

COURSE OUTCOMES		Bloom's Level
CO1	Students will be able to understand basics of material structure, crystallography, imperfections and different mechanical properties with their testing.	
CO2	Students should have ability to explain the failure theory, fracture, fatigue properties and NDT testing for different materials.	
CO3	Students should be ready to aquire the knowledge of solidification, phase & equilibrium diagram for different materials	
CO4	Students will be able to understand the various heat treatment processes for ferrous and nonferrous materials and their alloys.	
CO5	Students should understand the concept of basic properties, structure & applications of farrous and nonferrous metals and their alloys.	

CO-PO Matrix

Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	2	1	2	3	2	2		3	3	2	2
CO2	3	2	1	2	3	1	1	1	3	2	1	2
CO3	3	2		2	2	2	1		2	1	1	1
CO4	2	1	1	2	1	2	1		2	2	2	2
CO5	1	1	1	1	2		1	1		3	3	3
Avg	2.40	1.60	1.00	1.80	2.20	1.75	1.20	1.00	2.50	2.20	1.80	2.00

CO-PSO Matrix

COs	PSO1	PSO2	PSO3
CO1	3	3	3
CO2	3	3	3
CO3	2	3	3
CO4	2	3	2
CO5	1	1	2
Avg	2.20	2.60	2.60

IMS Engineering College, Ghaziabad

Sub Code	KME-351
Sub. Name	Fluid Mechanics Lab

COURSE OUTCOMES		Bloom's Level
CO1	Measure the properties of fluids	
CO2	Compare the actual discharge with theoretical discharge through pipes and notch and weirs.	
CO3	Validate the Bernoulli's theorem and Darcy's law.	
CO4	Measure the loss of fluid flow energy in pipe chain.	
CO5	Measure the efficiency of turbines on different loads.	
CO6	Measure the performance of the pump on different loads.	

CO-PO Matrix												
Course Outcome	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**
CO1	1	2	1	1								1
CO2	2	2	1	1			1					2
CO3	2	2	2	3	1	1	1					2
CO4	3	3	2	3	1	1	1					3
CO5	2	2	3	2	1	1	1					3
CO6	2	2	1	2	1	1						3
Avg	2.00	2.17	1.67	2.00	1.00	1.00	1.00	#DIV/0!	#####	#####	#####	2.33

CO-PSO Matrix			
COs	**PSO1**	**PSO2**	**PSO3**
CO1	2	1	2
CO2	2	1	2
CO3	2		2
CO4	2	1	2
CO5	2		2
CO6	2	1	2
Avg	2.00	1.00	2.00

IMS Engineering College, Ghaziabad

Sub Code	KME-352
Sub. Name	Material Testing Lab

COURSE OUTCOMES		Bloom's Level
CO1	Students will be able to analyse different types of strength testing on UTM machine.	
CO2	Students should have ability to explain and analyse the Impact test on impact testing machine like Charpy, Izod or both.	
CO3	Students should be ready to aquire the knowledge to measure the Hardness of given specimen using Rockwell and Vickers/Brinell testing machines.	
CO4	Students will be able to understand the Spring index test on spring testing machine.	
CO5	Students will be able to analyse the Fatigue test and torsion test on fatigue testing & torsion testing machine.	
CO6	Students should have ability to explain the NDT testing for different materials.	

CO-PO Matrix

Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	2	2	2	3	1	1	2	1	1	2	2
CO2	3	2	1	2	3	1	1	1	3	2	1	2
CO3	3	2	2	2	2	2	1	2	2	1	1	1
CO4	2	1	1	2	1	2	1	1	2	2	2	2
CO5	1	1	1	1	2		1	1	1	3	3	3
CO6	3	2	2	2	2	2	1	1	2	1	1	1
Avg	2.50	1.67	1.50	1.83	2.17	1.60	1.00	1.33	1.83	1.67	1.67	1.83

CO-PSO Matrix

COs	PSO1	PSO2	PSO3
CO1	3	2	2
CO2	2	2	3
CO3	2	2	3
CO4	2	1	3
CO5	3	2	2
CO6	3	2	2
Avg	2.50	1.83	2.50

IMS Engineering College, Ghaziabad

Sub Code	KME 353
Sub. Name	Computer Aided Machine Drawing-I

COURSE OUTCOMES		Bloom's Level
CO1	The students will be able to understand the difference between design and drafting, views, quadrant etc.	
CO2	The students will be able to understand the projection of different machine elements.	
CO3	The students will be able to understand the different types of fastener and their projection.	
CO4	The students will learn to draft coupling, riveting etc.	
CO5	The students will be able to understand assembly of different machines' elements with assembly drawing.	

CO-PO Matrix

Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	1		3	2			2					
CO2	2	1		2			1					
CO3		2	3	2	1							
CO4		3		3	3				1		1	1
CO5	1		3	3	2	1	2					
Avg	1.33	2.00	3.00	2.40	2.00	1.00	1.67	######	1.00	######	1.00	1.00

CO-PSO Matrix

COs	PSO1	PSO2	PSO3
CO1	3	2	2
CO2	2	2	2
CO3	3	2	1
CO4	2	2	2
CO5	2	1	1
Avg	2.4	1.8	1.6

SEMESTER- IV													
Sl. No.	Subject Codes	Subject	Periods			Evaluation Scheme				End Semester		Total	Credit
			L	T	P	CT	TA	Total	PS	TE	PE		
1	KAS402/ KOE041-48	Maths IV/Engg. Science Course	3	1	0	30	20	50		100		150	4
2	KVE401/ KAS401	Universal Human Values/Technical Communication	3 2	0 1	0 0	30	20	50		100		150	3
3	KME401	Applied Thermodynamics	3	0	0	30	20	50		100		150	3
4	KME402	Engineering Mechanics	3	1	0	30	20	50		100		150	4
5	KME403	Manufacturing Processes	3	1	0	30	20	50		100		150	4
6	KME451	Applied Thermodynamics Lab	0	0	2				25		25	50	1
7	KME452	Manufacturing Processes Lab	0	0	2				25		25	50	1
8	KME453	Computer Aided Machine Drawing-II Lab	0	0	2				25		25	50	1
9	KNC402/ KNC401	Python Programming / Computer System Security	2	0	0	15	10	25		50			0
10		MOOCs (Essential for Hons. Degree)											
		Total										900	**21**

IMS Engineering College, Ghaziabad

Sub Code	KAS-402
Sub. Name	Maths-IV

COURSE OUTCOMES		Bloom's Level
CO1	The students will be able to learn the idea of partial differentiation and types of partial differential equations	
CO2	The students will be able to learn the idea of classification of second partial differential equations, wave, heat equation and transmission lines	
CO3	The students will be able to learn the basic ideas of statistics including measures of central tendency, correlation, regression and their properties.	
CO4	The students will be able to learn the idea s of probability and random variables and various discrete and continuous probability distributions and their properties.	
CO5	The students will be able to learn the statistical methods of studying data samples, hypothesis testing and statistical quality control, control charts and their properties.	

CO-PO Matrix

Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	2	1		1					1		
CO2	3	2	1									1
CO3	3	2	1	1						1	1	1
CO4	3	2	1	1	1						1	1
CO5	3	2	1	3	1		1			1	1	1
Avg	3.00	2.00	1.00	1.67	1.00	#DIV/0!	1.00	#DIV/0!	#####	1.00	1.00	1.00

CO-PSO Matrix

COs	PSO1	PSO2	PSO3
CO1	3		
CO2	3		
CO3	3		1
CO4	3		1
CO5	3		1
Avg	3.00	#DIV/0!	1.00

IMS Engineering College, Ghaziabad

Sub Code	KVE-401
Sub. Name	UNIVERSAL HUMAN VALUES

COURSE OUTCOMES		Bloom's Level
CO1	To sensitize students about the role and importance of human values and ethics in Personal, social and professional life	
CO2	To encourage students to read and realize the values of enlightened human beings	
CO3	To enable students to understand and appreciate ethical concerns relevant to modern lives	
CO4	Students becoming responsible citizens and better professionals who practice Values and Ethics in every sphere of life.	
CO5		

CO-PO Matrix

Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3											3
CO2		3	2	2								
CO3		3					2					
CO4	2						2		2		2	2
Avg	2.5	3	2	2	#DIV/0!	#DIV/0!	2	#DIV/0!	2	#DIV/0!	2	#DIV/0!

CO-PSO Matrix

COs	PSO1	PSO2	PSO3
CO1	3	2	1
CO2	2	2	1
CO3	2	1	1
CO4	1	1	1
Avg	2	1.5	1

IMS Engineering College, Ghaziabad

Sub Code	KME-401
Sub. Name	APPLIED THERMODYNAMICS

COURSE OUTCOMES		Bloom's Level
CO1	Student must be able to explain the basic cycles involved in operation of petrol and diesel engines.	
CO2	Student must be able to test a actual running engine on the basis of various parameters.	
CO3	Student must be able to design and analyse a thermal power plant.	
CO4	Student must be able to apply the fundamentals of steam and gas nozzles in real world problems.	
CO5	Student must be able to understand the basics of gas turbine and jet propulsion.	

CO-PO Matrix

Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	1						2	2	3	2	3	2
CO2	2	1	1			1	2		3		3	1
CO3	1	2				1	1	1	1	1	3	3
CO4	2	2	2		1		1	2	2		1	2
CO5				1		2	2	3	3	2	3	2
Avg	1.50	1.67	1.50	1.00	1.00	1.33	1.60	2.00	2.40	1.67	2.60	2.00

CO-PSO Matrix

COs	PSO1	PSO2	PSO3
CO1	2	2	2
CO2	2	1	2
CO3	2	2	2
CO4	3	3	2
CO5	1	2	1
Avg	2.00	2.00	1.80

IMS Engineering College, Ghaziabad

Sub Code	**KME-402**
Sub. Name	**Engineering Mechanics**

COURSE OUTCOMES		**Bloom's Level**
CO1	Students should be able to evaluate the resultant force of any coplanar force system and friction forces.	
CO2	Students should be able to determine the internal forces in trusses and understand how to draw the variation of shear load and bending moment acting over entire length of different beams	
CO3	Students should be able to obtain centroid and second moment of area.	
CO4	Students should be able to describe the motion of a rigid body in terms of its position, velocity and acceleration and to analyze the forces causing the motion of a particle.	
CO5	Students should be able to apply work, energy, impulse and momentum relationships for a particle in motion.	
CO6	Students should be able to describe and find the strength of material in bending and torsion.	

CO-PO Matrix

Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	2	2	2	1							1
CO2	3	3	3	2	2							2
CO3	3	3	2	3	2							2
CO4	3	2	3	2	2							3
CO5	3	3	2	3	2							3
CO6	3	3	3	2	1							2
Avg	3.00	2.67	2.50	2.33	1.67	#DIV/0!	#DIV/0!	#DIV/0!	#####	#####	#####	2.17

CO-PSO Matrix

COs	PSO1	PSO2	PSO3
CO1	3	2	3
CO2	2	1	3
CO3	3	3	2
CO4	3	1	3
CO5	2	1	1
CO6			
Avg	2.4	1.8	1.6

IMS Engineering College, Ghaziabad

Sub Code	KME-403
Sub. Name	Manufacturing Processes

COURSE OUTCOMES		Bloom's Level
CO1	Students should be able to understand importance of the casting method, design considerations and their types, metal forming processes and their analysis & sheet metal operations like cup/deep drawing and bending.	
CO2	Students should be able to understand metal cutting operation.	
CO3	Students should be able to learn grinding and super finishing processes.	
CO4	Students should be able to Identify the use and applications of welding equipment.	
CO5	Students should be able to learn the basics of unconventional machining processes.	

CO-PO Matrix

Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	3	2	2	2	1	1	2	1	1	1	1
CO2	3	3	3	2	2	1	1	1	1	1	1	2
CO3	2	2	2	2	2	1	1	1	1	1	1	1
CO4	3	3	3	2	2	1	1	1	1	1	1	2
CO5	2	2	2	2	2	1	1	1	1	1	1	1
Avg	2.60	2.60	2.40	2.00	2.00	1.00	1.00	1.20	1.00	1.00	1.00	1.40

CO-PSO Matrix

COs	PSO1	PSO2	PSO3
CO1	3	3	2
CO2	2	3	3
CO3	2	3	3
CO4	2	3	3
CO5	3	3	2
Avg	2.40	3.00	2.60

IMS Engineering College, Ghaziabad

Sub Code	KME 451
Sub. Name	Applied Thermodynamics Lab

COURSE OUTCOMES		Bloom's Level
CO1	Students will be able to analyse and understand the working of different types of Boiler.	
CO2	Students should have ability to explain and analyse the two stroke and four stroke engine.	
CO3	Students should be ready to aquire the knowledge to measure the heat balance sheet.	
CO4	Students will be able to understand the steam engines.	
CO5	Students will be able to analyse the gas turbine.	

CO-PO Matrix

Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	1		2	2			2					
CO2	2	1		3			1					
CO3		2	3	2	3							
CO4		2		2	2				2		1	1
CO5	3		2	2	2	1	2					
Avg	2	1.67	2.33	2.20	2.33	1.00	1.67	######	2.00	######	1.00	1

CO-PSO Matrix

COs	PSO1	PSO2	PSO3
CO1	2	2	2
CO2	2	2	2
CO3	3	3	1
CO4	3	2	3
CO5	2	1	1
Avg	2.4	2	1.8

IMS Engineering College, Ghaziabad

Sub Code	KME-452
Sub. Name	Manufacturing Process Lab

COURSE OUTCOMES		Bloom's Level
CO1	The students will understand the construction & working principle of Lathe machine and their application.	
CO2	The students will be able to analyse the working of milling machines & shaper machine.	
CO3	The students will learn to analyse grinding machine, surface grinding machine and drilling machine.	
CO4	The students can able to understand the design of different types of tool angles, tool materials, tool wear & tool life.	
CO5	The students will be able to know the design and drawing of Jigs & Fixture to hold the job on different machines.	
CO6	The students will be able to know the different types of welding processes and also the latest welding (joining) process like TIG & MIG.	

CO-PO Matrix

Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	2	2	2	2	2						1	2
CO2	2	2	2	2	2						1	2
CO3	2	3	2	2	2						1	2
CO4	3	3	3	3	2	1	1				1	2
CO5	2	2	2	2	2	1	1				1	2
CO6	3	3	2	2	2	1	1	1	1	1	1	2
Avg	2.33	2.50	2.17	2.17	2.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00

CO-PSO Matrix

COs	PSO1	PSO2	PSO3
CO1	3	3	3
CO2	2	2	3
CO3	2	2	3
CO4	2	2	3
CO5	3	2	2
CO6	3	3	3
Avg	2.50	2.33	2.83

IMS Engineering College, Ghaziabad

Sub Code	KME 453
Sub. Name	COMPUTER AIDED MACHINE DRAWING-II LAB

COURSE OUTCOMES		Bloom's Level
CO1	The students will understand the Conventional representation of machine components and materials.	
CO2	The students can able to understand Surface Roughness and nomenclature, machining symbols, indication of surface roughness.	
CO3	The students will learn Limits, Tolerance and Fits system of engineering design.	
CO4	The students will be able to understand and draw Part and Assembly Drawing of various machine parts.	
CO5	The students will understand Specification of Engineering materials, representation, Code designation.	
CO6	The students will be able to understand design and drawing of Production Drawing system.	
CO7	The students will be able to work on varrious Computer Aided Drafting software like AutoCAD, ProE etc.	

CO-PO Matrix

Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	2	2	1	2	2					1		2
CO2	2	2	1	2	2					1		2
CO3	2	1	1	2	2					1		2
CO4	2	1	1	2	2					1		2
CO5	2	1	1	2	2					1		2
CO6	2	1	1	2	2					1		2
CO7	2	2	2	2	3					2		2
Avg	2	1.43	1.14	2	2.14	####	####	####	####	1.14	#DIV/0!	2

CO-PSO Matrix			
COs	**PSO1**	**PSO2**	**PSO3**
CO1	3	3	3
CO2	3	2	2
CO3	2	2	1
CO4	2	1	1
CO5	1	2	1
CO6	2	1	1
CO7	1	2	2
Avg	2	1.86	1.57

B. Tech Mechanical Engineering

Evaluation Scheme

SEMESTER- V													
Sl. No.	Code	Subject	Periods			Evaluation Scheme				End Semester		Total	Credits
			L	T	P	CT	TA	Total	PS	TE	PE		
1	KME 501	Heat and Mass Transfer	3	1	0	30	20	50		100		150	4
2	KME 502	Strength of Material	3	1	0	30	20	50		100		150	4
3	KME 503	Industrial Engineering	3	1	0	30	20	50		100		150	4
4		Departmental Elective-I	3	0	0	30	20	50		100		150	3
5		Departmental Elective-II	3	0	0	30	20	50		100		150	3
6	KME 551	Heat Transfer LAB	0	0	2				25		25	50	1
7	KME 552	Python Lab	0	0	2				25		25	50	1
8	KME 553	Internet of Things Lab	0	0	2				25		25	50	1
9	KME 554	Mini Project or Internship Assessment*	0	0	2				50			50	1
10	KNC501/ KNC502	Constitution of India, Law and Engineering / Indian Tradition, Culture and Society	2	0	0	15	10	25		50			NC
11	MOOCs (Essential for Hons. Degree)												
		Total	**17**	**3**	**6**							**950**	**22**

*The Mini Project or internship (4 - 5 weeks) conducted during summer break after IV semester and will be assessed during V semester.

IMS Engineering College, Ghaziabad

Sub Code	**KME-501**
Sub. Name	**Heat and Mass Transfer**

COURSE OUTCOMES		**Bloom's Level**
CO1	Understand the fundamentals of heat and mass transfer.	K2
CO2	Apply the concept of steady and transient heat conduction.	K3
CO3	Apply the concept of thermal behavior of fins.	K3
CO4	Apply the concept of forced and free convection.	K3
CO5	Apply the concept of radiation for black and non-black bodies.	K3
CO6	Conduct thermal analysis of heat exchangers.	K4

CO-PO Matrix

Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	2	3	2	1	1	1	1	2	1	1	1
CO2	2	2	3	2	1	2	1	1	1	1	1	1
CO3	2	3	2	3	1	1	1	1	1	1	1	2
CO4	2	2	3	2	1	1	1	1	2	1	1	2
CO5	2	3	2	2	1	1	1	1	1	1	1	1
CO6	2	2	2	2	1	1	1	1	1	1	1	1
Avg	2.16	2.33	2.5	2.16	1	1.16	1	1	1.33	1	1	1.33

CO-PSO Matrix

COs	PSO1	PSO2	PSO3

CO1	2	2	3
CO2	3	2	2
CO3	2	2	2
CO4	3	2	2
CO5	2	2	3
CO6	2	2	2
Avg	2.33	2	2.33

Sub Code	**KME-502**
Sub. Name	**Strength of Material**

COURSE OUTCOMES		**Bloom's Level**
CO1	Understand the concept of stress and strain under different conditions of loading	K2
CO2	Determine the principal stresses and strains in structural members	K3
CO3	Determine the stresses and strains in the members subjected to axial, bending and torsional loads	K3
CO4	Apply the concepts of stresses and strain in solving problems related to springs, column and pressure vessels	K3
CO5	Calculate the slope, deflection and buckling of loaded members	K3
CO6	Analyze the stresses developed in straight and curved beams of different cross sections	K4

CO-PO Matrix												
Course Outcome	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**
CO1	3	3	2	2	2		1	1	1	1	1	1
CO2	3	2	2	2	2	1	1			1	1	1
CO3	3	3	2	2	2	1	1	1	1		1	1
CO4	3	3	3	2	2	1	1	1	1	1	1	1
CO5	3	3	2	2	2	1	1		1	1	1	1
CO6	3	3	3	2	2	1	1	1	1	1	1	1
Avg	3	2.83	2.33	2.00	2.00	0.83	1.00	0.66	0.83	0.83	1.00	1.00

CO-PSO Matrix			
Cos	**PSO1**	**PSO2**	**PSO3**
CO1	3	3	2
CO2	3	3	2
CO3	3	3	2
CO4	3	3	2
CO5	3	3	2
CO6	3	3	2
Avg	3.00	3.00	2.00

Sub Code	**KME-503**
Sub. Name	**Industrial Engineering**

COURSE OUTCOMES		**Bloom's Level**
CO1	Understand the concept of production system, productivity, facility and process planning in various industries	K2
CO2	Apply the various forecasting and project management techniques	K3
CO3	Apply the concept of break-even analysis, inventory control and resource utilization using queuing theory	K3
CO4	Apply principles of work study and ergonomics for design of work systems	K3
CO5	Formulate mathematical models for optimal solution of industrial problems using linear programming approach	K4

CO-PO Matrix												
Course Outcome	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**
CO1	1						2	2	3	2	3	2
CO2	2	1	1			2	2		3		2	1
CO3	2	2				1	2	1	1	2	3	1
CO4	2	2	2		1		1	2	2		1	2
CO5				1		2	2	3	3	2	3	2
Avg	1.75	1.67	1.50	1.00	1.00	1.67	1.80	2.00	2.40	2.00	2.40	1.60

CO-PSO Matrix			
Cos	**PSO1**	**PSO2**	**PSO3**
CO1	2	2	2
CO2	2	1	2
CO3	2	2	2
CO4	3	3	2
CO5	1	2	1
Avg	2.00	2.00	1.80

Sub Code	**KME-051**
Sub. Name	**Computer Integrated Manufacturing**

COURSE OUTCOMES		Bloom's Level
CO1	Understand the basic concepts of automation, computer numeric control machining	K2
CO2	Understand the algorithms of line generation, circle generation, transformation, curve, surface modeling and solid modeling	K2
CO3	Understand group technology, computer aided process planning, flexible manufacturing, Industry 4.0, robotics	K2
CO4	Understand information system and material handling in CIM environment, rapid prototyping	K2
CO5	Apply the algorithms of line & circle generation and geometric transformations	K3
CO6	Develop CNC program for simple operations	K3

CO-PO Matrix												
Course Outcome	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**
CO1	**2**	**3**	**2**	**3**	**1**	**2**	**1**	**2**	**2**	**2**	**2**	**2**
CO2	**2**	**3**	**2**	**3**	**1**	**2**	**1**	**2**	**2**	**2**	**2**	**2**
CO3	**2**	**3**	**2**	**3**	**1**	**2**		**2**	**2**	**2**	**2**	**2**
CO4	**2**	**2**	**2**	**3**	**1**	**2**		**2**	**2**	**2**	**2**	**2**
CO5	**2**	**1**	**2**	**3**	**1**	**2**	**1**	**2**	**2**	**2**	**2**	**2**
CO6	**2**	**1**	**2**	**3**	**1**	**2**	**1**	**2**	**2**	**2**	**2**	**2**
Avg	**2**	**2.16**	**2**	**3**	**1**	**2**	**1**	**2**	**2**	**2**	**2**	**2**

CO-PSO Matrix			
Cos	**PSO1**	**PSO2**	**PSO3**
CO1	**3**	**3**	**2**
CO2	**3**	**3**	**3**
CO3	**3**	**3**	**2**
CO4	**3**	**3**	**2**
CO5	**3**	**3**	**3**
CO6	**3**	**3**	**2**
Avg	**3**	**3**	**2.33**

Sub Code	**KME-054**
Sub. Name	**I C Engine, Fuel and Lubrication**

COURSE OUTCOMES		**Bloom's Level**
CO1	Explain the working principle, performance parameters and testing of IC Engine.	K2
CO2	Understand the combustion phenomena in SI and CI engines and factors influencing combustion chamber design.	K2
CO3	Understand the essential systems of IC engine and latest trends and developments in IC Engines.	K2
CO4	Understand the effect of engine emissions on environment and human health and methods of reducing it.	K2
CO5	Apply the concepts of thermodynamics to air standard cycle in IC Engines	K3
CO6	Analyze the effect of various operating parameters on IC engine performance.	K4

CO-PO Matrix												
Course Outcome	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**
CO1	3	3	2	2	2	1	1		1		1	1
CO2	3	3	3	1	2	1	2		1		1	1
CO3	2	2	2	2	2	2	1	1	1	1	1	1
CO4	1	1	1	1	2	2	1	1	1	1	2	2
CO5	3	3	3	2	2	2	1	1	1	1	1	1
CO6	3	3	3	2	2	1	1	1	1	1	1	1
Avg	**2.5**	**2.5**	**2.33**	**1.66**	**2**	**1.5**	**1.1**	**1**	**1**	**1**	**1.1**	**1.1**

CO-PSO Matrix			
Cos	**PSO1**	**PSO2**	**PSO3**
CO1	3	2	2
CO2	2	2	2
CO3	1	1	1
CO4	2	2	2
CO5	3	2	3
CO6	2	2	2
Avg	2.16	1.83	2

Sub Code	**KME-055**
Sub. Name	**Advanced Welding**

COURSE OUTCOMES		**Bloom's Level**
CO1	Understand the physics of arc welding process and various operating characteristics of welding power source.	K2
CO2	Analyse various welding processes and their applications.	K3
CO3	Apply the knowledge of welding for repair & maintenance, along with the weldability of different materials.	K3
CO4	Apply the concept of quality control and testing of weldments in industrial environment.	K3
CO5	Evaluate heat flow in welding and physical metallurgy of weldments.	K4

CO-PO Matrix												
Course Outcome	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**
CO1	3	3	2	2	1							1
CO2	3	2	3	3	2							2
CO3	3	3	3	3	3							2
CO4	3	3	3	2	2							3
CO5	3	2	3	3	2							3

Avg	3.00	2.60	2.80	2.60	2.00							2.20

CO-PSO Matrix			
Cos	**PSO1**	**PSO2**	**PSO3**
CO1	3	3	2
CO2	3	2	3
CO3	3	3	2
CO4	3	3	3
CO5	3	3	3
Avg	3.00	2.80	2.60

Sub Code	**KME-058**
Sub. Name	**Fuels and Combustion**

COURSE OUTCOMES		**Bloom's Level**
CO1	Understand the properties of different types of fuel with their application.	K2
CO2	Classify different types of fuels.	K2
CO3	Understand the concept of combustion.	K2
CO4	Understand the fundamental concept of air pollution and its control.	K2
CO5	Calculate various properties of the fuels.	K3
CO6	Analyze the flue gases.	K4

CO-PO Matrix												
Course Outcome	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**
CO1	2	2	2	1	1	1	1	1	3	1	1	2
CO2	3	3	3	2	1	3	1	1	1	1	1	3
CO3	3	2	3	2	1	2	2	1	2	1	1	2
CO4	2	3	2	3	1	1	1	1	1	1	1	1
CO5	2	2	3	2	1	2	3	1	2	1	1	2
CO6	2	2	2	2	1	1	1	1	1	1	1	2
Average	2.33	2.33	2.50	2.00	1.00	1.67	1.50	1.00	1.67	1.00	1.00	2.00

CO-PSO Matrix			
COs	**PSO1**	**PSO2**	**PSO3**

CO1	2	1	3
CO2	2	3	1
CO3	1	1	2
CO4	2	2	3
CO5	3	1	2
CO6	2	1	3
Average	2.00	1.50	2.33

Sub Code	**KME-551**
Sub. Name	**Heat Transfer Lab**

COURSE OUTCOMES		**Bloom's Level**
CO1	Student will be able to measure the thermal conductivity of different common metallic materials.	
CO2	Student will be able to determine the thermal conductivity of insulating Asbestos powder in spherical shell.	
CO3	Student will be able to determine LMTD, effectiveness, heat transfer & overall heat transfer coefficient in a parallel or counter flow heat exchangers.	
CO4	Student will be able to visualise the pool boiling process and find out the heat transfer and heat transfer coefficient in a pool boiling apparatus	
CO5	Student will be able to determine the heat transfer coefficient through drop-wise and film-wise condensation apparatus.	
CO6	Student will be able to study working principle of heat pipe.	

CO-PO Matrix												
Course Outcome	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**
CO1	2	1	1	1	1	2	1	1	2	1	1	1
CO2	1	2	1	1	1	1	1	1	1	1	1	2
CO3	2	2	1	1	1	1	2	1	1	1	1	2
CO4	2	2	2	3	1	2	1	1	1	1	1	1

CO5	2	2	3	2	1	1	1	1	2	1	1	1
CO6	3	2	2	2	1	1	1	1	1	1	1	2
Average	2.00	1.83	1.67	1.67	1.00	1.33	1.17	1.00	1.33	1.00	1.00	1.50

CO-PSO Matrix			
COs	**PSO1**	**PSO2**	**PSO3**
CO1	1	1	2
CO2	2	2	2
CO3	1	1	1
CO4	2	2	2
CO5	3	2	3
CO6	2	2	2
Average	1.83	1.67	2.00

Sub Code	**KME-552**
Sub. Name	**Python Lab**

COURSE OUTCOMES		**Bloom's Level**
CO1	Apply conditional statement, loops condition and functions in python program	K3
CO2	Solve mathematical and mechanical problems using python program	K3
CO3	Plot various type of chart using python program	K3
CO4	Analyze the mechanical problem using python program	K4

CO-PO Matrix												
Course Outcome	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**
CO1	2	2	2	2	2							
CO2	3	3	3	2	2							
CO3	2	2	2	2	2							
CO4	2	2	2	2	2							
Avg	2.25	2.25	2.25	2.00	2.00							

CO-PSO Matrix			
Cos	**PSO1**	**PSO2**	**PSO3**
CO1	2	2	2
CO2	2	2	2
CO3	2	2	2
CO4	2	2	2
Avg	2.00	2.00	2.00

Sub Code	**KME-553**
Sub. Name	Internet of Things Lab

COURSE OUTCOMES		Bloom's Level
CO1	Understand Internet of Things and its hardware and software components	K2
CO2	Interface I/O devices, sensors & communication modules	K3
CO3	Remotely monitor data and control devices	K3
CO4	Design prototype of IoT based smart system	K4
CO5	Develop IoT based projects for real life problem	K6

CO-PO Matrix												
Course Outcome	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**
CO1	2	2	2	2	2							
CO2	3	2	2	3	2							
CO3	3	2	3	2	2							
CO4	2	2	2	2	2							
CO5	2	2	2	2	2							
Avg	2.50	2.00	2.25	2.25	2.00							

CO-PSO Matrix			
Cos	**PSO1**	**PSO2**	**PSO3**
CO1	2	2	2
CO2	2	3	2
CO3	2	2	2
CO4	3	2	2
CO5	2	2	2
Avg	2.25	2.25	2.00

Sub Code	**KNC501**
Sub. Name	**Constitution of India, Law and Engineering**

COURSE OUTCOMES		**Bloom's Level**
CO1	Identify and explore the basic features and modalities about Indian constitution.	
CO2	Differentiate and relate the functioning of Indian parliamentary system at the center and state level.	
CO3	Differentiate different aspects of Indian Legal System and its related bodies.	
CO4	Discover and apply different laws and regulations related to engineering practices.	
CO5	. Correlate role of engineers with different organizations and governance models	

CO-PO Matrix												
Course Outcome	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**
CO1						2		2	1	1	2	2
CO2						2		1	1	1	2	2
CO3						2	1	1	1	1	1	2

CO4						3	2	2	1	2	1	2
CO5						3	2	2	1	2	1	2
Avg						2.4	**1**	1.6	1	1.4	1.4	2

CO-PSO Matrix			
COs	**PSO1**	**PSO2**	**PSO3**
CO1	1	1	1
CO2	1	1	1
CO3	1	1	1
CO4	1	2	1
CO5	1	2	1
Avg	1	1.4	1

B. Tech (Mechanical Engineering)

IMS Engineering College, Ghaziabad

SEMESTER- VI													
Sl. No.	Code	Subject	Periods			Evaluation Scheme				End Semester		Total	Credits
			L	T	P	CT	TA	Total	PS	TE	PE		
1	KME 601	Refrigeration and Air Conditioning	3	1	0	30	20	50		100		150	4
2	KME 602	Machine Design	3	1	0	30	20	50		100		150	4
3	KME 603	Theory of Machine	3	1	0	30	20	50		100		150	4
4		Departmental Elective-III	3	0	0	30	20	50		100		150	3
5		Open Elective-I	3	0	0	30	20	50		100		150	3
6	KME 651	Refrigeration and Air Conditioning Lab	0	0	2				25		25	50	1
7	KME 652	Machine Design Lab	0	0	2				25		25	50	1
8	KME 653	Theory of Machine Lab	0	0	2				25		25	50	1
9	KNC601/ KNC602	Constitution of India, Law and Engineering / Indian Tradition, Culture and Society	2	0	0	15	10	25		50			NC
10		**Total**	**17**	**3**	**6**							**900**	**21**

Sub Code	**KME-601**
Sub. Name	**Refrigeration & Air Conditioning**

COURSE OUTCOMES	**Bloom's Level**

CO1	Understand the basics concepts of Refrigeration & Air-Conditioning and its future prospects.	K2
CO2	Explain the construction and working of various components in Refrigeration & Air-Conditioning systems.	K2
CO3	Understand the different types of RAC systems with their respective applications.	K2
CO4	Apply the basic laws to the thermodynamic analysis of different processes involved in Refrigeration and Air-Conditioning.	K3
CO5	Apply the basic concepts to calculate the COP and other performance parameters for different RAC systems	K3
CO6	Analyze the effects of performance parameters on COP.	K4

CO-PO Matrix

Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	3	3	3	3	1	1	2	1	1	1	1
CO2	3	3	3	2	2	2	1	1	1	1	1	2
CO3	3	3	2	2	2	1	1	1	1	1	1	1
CO4	3	2	2	1	2	2	1	1	1	1	1	2
CO5	3	2	2	2	2	1	1	1	1	1	1	1
CO6	3	2	2	2	1	1	1	1	1	1	1	1
Avg	3	**2.5**	2.33	2.00	2.00	1.33	1.00	1.00	1.00	1.00	1.00	1.30

CO-PSO Matrix

COs	PSO1	PSO2	PSO3
CO1	3	3	3
CO2	3	3	3
CO3	2	2	3
CO4	2	3	3
CO5	1	3	2
CO6	1	2	2
Avg	2.00	2.66	2.66

Sub Code	KME 602
Sub. Name	Machine Design

COURSE OUTCOMES		Bloom's Level
CO1	Students should be able to understand the basic concepts of Solid Mechanics	K2
CO2	Students would be able to classify various machine elements on the basis of their functions.	K2
CO3	Students should be able to apply the various principles of solid mechanics to machine elements subjected to static and fluctuating load.	K3
CO4	Students should be able to analyse force, twisting moment and failure causes in various machine elements.	K4
CO5	Students should be able to design the machine elements to meet the required specification	K5

CO-PO Matrix

Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	3	3	2	2	1	1	2	1	2	1	1
CO2	3	2	3	3	2	1	2	1	1	1	1	2
CO3	3	3	3	2	3	2	3	1	1	1	1	1
CO4	3	3	3	1	2	1	1	1	1	1	1	2
CO5	2	3	3	2	2	3	3	1	1	1	1	1
Avg	2.8	2.8	3	2	2.2	1.6	2	1.2	1	1.2	1	1.4

CO-PSO Matrix

COs	PSO1	PSO2	PSO3
CO1	3	2	3
CO2	3	2	2
CO3	3	3	3
CO4	3	2	3
CO5	3	3	3
Avg	3	2.4	2.8

Sub Code	**KME-603**
Sub. Name	**Theory of Machines**

COURSE OUTCOMES		Bloom's Level
CO1	Understand the principles of kinematics and dynamics of machines.	K2
CO2	Calculate the velocity and acceleration for 4-bar and slider crank mechanism	K3
CO3	Develop cam profile for followers executing various types of motions	K3
CO4	Apply the concept of gear, gear train and flywheel for power transmission	K3
CO5	Apply dynamic force analysis for slider crank mechanism and balance rotating & reciprocating masses in machines.	K3
CO6	Apply the concepts of gyroscope, governors in fluctuation of load and brake & dynamometer in power transmission	K3

CO-PO Matrix												
Course Outcome	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**
CO1	2	2	2	1								1
CO2	2	2	1	1	2		1					2
CO3	3	3	1	2	2	1	1					2
CO4	2	3	2	3	2	1	1					3
CO5	2	3	3	2	2	1	1					3
CO6	2	3	2	1	2	1	1					2
Avg	2.17	2.67	1.83	1.67	2.00	1.00	1.00					2.17

CO-PSO Matrix			
Cos	**PSO1**	**PSO2**	**PSO3**
CO1	2		3
CO2	2	1	2
CO3	2		3
CO4	2	1	3
CO5	2		2
CO6	2	1	2
Avg	2	1	2.5

Sub Code	**KOE-069**
Sub. Name	Understanding the Human Being Comprehensively – Human Aspirations and its Fulfillment

COURSE OUTCOMES	
CO1	The methodology of this course is explorational and thus universally adaptable. It involves a systematic and rational study of the human being vis-à-vis the rest of existence.
CO2	It is free from any dogma or set of do's and don'ts related to values.
CO3	It is a process of self-investigation and self-exploration, and not of giving sermons. Whatever is found as truth or reality is stated as a proposal and the students are facilitated and encouraged to verify it in their own right, based on their Natural Acceptance and subsequent Experiential Validation.
CO4	This process of self-exploration takes the form of a dialogue between the teacher and the students to begin with, and then to continue within the student leading to continuous self-evolution.
CO5	This self-exploration also enables them to critically evaluate their pre- conditionings and present beliefs.

CO-PO Matrix

Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1					1	2	3	2	2	1		3
CO2			1		1		2	3	1			2
CO3		1			2	2	2	3	2	1		2
CO4	1				2		2	2	2	1	1	1
CO5			1	2		2	2	2	2	1		2
Avg	**1**	**1**	**1**	**2**	**1.5**	**2**	**2.2**	**2.4**	**1.8**	**1**	**1**	**2**

CO-PSO Matrix

COs	PSO1	PSO2	PSO3	PSO4
CO1	2		1	
CO2	1	1		
CO3	2	1		
CO4	1			
CO5	2	2		
CO6				
Avg	1.6	1.33	1	

Sub Code	**KME-061**
Sub. Name	**Nondestructive Testing**

COURSE OUTCOMES		Bloom's Level
CO1	Understand the concept of destructive and Non-destructive testing methods.	K2
CO2	Explain the working principle and application of die penetrant test and magnetic particle inspection.	K2
CO3	Understand the working principle of eddy current inspection.	K2
CO4	Apply radiographic techniques for testing.	K3
CO5	Apply the principle of Ultrasonic testing and applications in medical and engineering areas.	K3

CO-PO Matrix

Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	2		2	2		2		2	2	2		2
CO2	2		2	3		1		2	2	2		3
CO3	2		2	3		2		3	3	3		2
CO4	2		3	2		1		2	3	2		2
CO5	3		1	3		2		1	2	2		2
Avg	2.60		2.00	2.60		1.60		2.00	2.40	2.20		2.20

CO-PSO Matrix

Cos	PSO1	PSO2	PSO3
CO1	2	2	2
CO2	3	2	3
CO3	2	3	3
CO4	2	2	2
CO5	3	2	2
Avg	2.40	2.20	2.40

Sub Code	KME 651
Sub. Name	**Refrigeration & Air Conditioning Lab**

COURSE OUTCOMES		Bloom's Level
CO1	Determine the performance of different refrigeration and air-conditioning systems.	K3
CO2	Apply the concept of psychrometry on different air cooling systems.	K3
CO3	Interpret the use of different components, control systems and tools used in RAC systems	K3
CO4	Demonstrate the working of practical applications of RAC systems.	K2

CO-PO Matrix

Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	2	3	2	2	1	2	1	1	2	1	1
CO2	3	2	3	3	3	2	2	1	1	1	1	2
CO3	3	2	3	2	3	2	3	1	1	2	1	1
CO4	3	2	3	1	2	1	1	1	1	1	1	2
Avg	3	2	3	2	2.5	1.5	2	1	1	1.5	1	1.5

CO-PSO Matrix

COs	PSO1	PSO2	PSO3
CO1	3	3	2
CO2	3	3	2
CO3	3	3	2
CO4	3	3	2
Avg	3	3	2

Sub Code	KME 652
Sub. Name	Machine Design Lab

COURSE OUTCOMES	Bloom's Level

CO1	Students should be able to apply the various principles of solid mechanics to machine elements subjected to static and fluctuating load.	K3
CO2	Students would be able to write the computer programs and validate it.	K4
CO3	Students should be able to evaluate designed machine elements to check their safety.	K5
CO4	Students should be able to analyse force, twisting moment and failure causes in joints and couplings	K1
CO5	Students should be able to design the various machine elements like bearing, shaft etc.	K2

CO-PO Matrix												
Course Outcome	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**
CO1	3	3	3	2	2	1	1	2	1	2	1	1
CO2	2	2	3	3	3	2	2	1	1	1	1	2
CO3	3	2	3	2	3	2	3	1	1	2	1	1
CO4	3	3	2	1	2	1	1	1	1	1	1	2
CO5	2	3	3	2	2	2	3	1	1	1	1	1
Avg	2.6	2.6	2.8	2	2.4	1.6	2	1.2	1	1.4	1	1.4

CO-PSO Matrix			
COs	**PSO1**	**PSO2**	**PSO3**
CO1	3	2	3
CO2	3	3	2
CO3	2	3	2
CO4	3	3	3
CO5	3	2	3
Avg	2.8	2.6	2.6

Sub Code	**KME-653**
Sub. Name	**Theory of Machines Lab**

COURSE OUTCOMES	**Bloom's Level**

CO1	Demonstrate various mechanisms, their inversions and brake and clutches in automobiles	K2
CO2	Apply cam-follower mechanism to get desired motion of follower.	K3
CO3	Apply the concepts of gears and gear train to get desired velocity ratio for power transmission.	K3
CO4	Apply the concept of governors to control the fuel supply in engine.	K3
CO5	Determine the balancing load in static and dynamic balancing problem	K3

CO-PO Matrix

Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	3	3	2	2		1					3
CO2	3	3	3	3	2	1	1					3
CO3	3	3	3	3	2	1	1					3
CO4	3	3	3	3	2	1	1					3
CO5	3	2	3	3	2	1	1					3
Avg												

CO-PSO Matrix

COs	PSO1	PSO2	PSO3
CO1	2	1	3
CO2	2		3
CO3	3	1	3
CO4	3		2
CO5	2	1	3
Avg			

Sub Code	**KNC602**
Sub. Name	**INDIAN TRADITIONS, CULTURAL AND SOCIETY**

COURSE OUTCOMES		Bloom's Knowledge Level
CO1	The course aims at imparting basic principles of thought process, reasoning and inference to identify the roots and details of some of the contemporary issues faced by our nation and try to locate possible solutions to these challenges by digging deep into our past.	K3
CO2	To enable the students to understand the importance of our surroundings and encourage the students to contribute towards sustainable development.	K4
CO3	To sensitize students towards issues related to 'Indian' culture, tradition and its composite character.	K4
CO4	To make students aware of holistic life styles of Yogic-science and wisdom capsules in Sanskrit literature that are important in modern society with rapid technological advancements and societal disruptions.	K3
CO5	To acquaint students with Indian Knowledge System, Indian perspective of modern scientific world-view and basic principles of Yoga and holistic health care system.	K3

CO-PO Matrix

Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1				3		3		2				2
CO2						3	3	2				
CO3			2			3	3	1	3			
CO4			2			3	3	2	3			1
CO5			2			3	3	2	3			2
Avg			2.00	3.00		3.00	3.00	1.80	3.00			1.67

CO-PSO Matrix

COs	PSO1	PSO2	PSO3	PSO4
CO1	1		2	
CO2	1			
CO3		1		
CO4	1		2	
CO5		1	2	
Avg	1.00	1.00	2.00	

SEVENTH SEMESTER									
Sl.No.	Subject Code	Subject Name	Department	L-T-P	Th/Lab Marks	Sessional		Total	Credit
					ESE	CT	TA		
1		OPEN ELECTIVE COURSE-1	Other Deptt.	3-0-0	70	20	10	100	3
2		DEPTT ELECTIVE COURSE-3	Core Deptt.	3-0-0	70	20	10	100	3
3		DEPTT ELECTIVE COURSE-4	Core Deptt.	3-1-0	70	20	10	100	4
4	RME701	CAD/CAM	Core Deptt.	3-1-0	70	20	10	100	4
5	RME702	Automobile Engineering	Core Deptt.	3-0-0	70	20	10	100	3
6	RME751	CAD/CAM Lab	Core Deptt.	0-0-2	50		50	100	1
7	RME752	IC Engine & Automobile Lab	Core Deptt.	0-0-2	50		50	100	1
8	RME753	INDUSTRIAL TRAINING	Core Deptt.	0-0-3			100	100	2
9	RME754	PROJECT-1	Core Deptt.	0-0-6			200	200	3
	TOTAL				**450**	**100**	**450**	**1000**	**24**

DEPARTMENTAL ELECTIVE-3	
Sub.Code	Subject Name
RME070	Composite Materials
RME071	Power Plant Engineering
RME072	Supply Chain Management
RME073	Additive Manufacturing

DEPARTMENTAL ELECTIVE-4	
S.Code	Subject Name
RME075	Operation Research
RME076	Modelling &Simmulation
RME077	Computational Fluid Dynamics
RME078	Automation & Robotics

IMS Engineering College, Ghaziabad

Sub Code	ROE 074
Sub. Name	Understanding the human being Comprehensively Human Aspiration audits fulfilment

COURSE OUTCOMES		Bloom's Level
CO1	Understanding the human being Comprehensively Human Aspiration audits fulfilment	
CO2	Student will be able to appreciate the essential complementarily between 'values' and 'skills' to ensure sustained happiness and prosperity.	
CO3	Student will be able to develop a holistic perspective towards 'life' and 'profession' as well as towards happiness and prosperity based on correct understading of the Human reality and the rest of the Existence.	
CO4	Student will be able to relate plausible implications of holistic understanding in terms of ethical human conduct, trustful and mutually fulfilling human behavior in family as well as in society and mutually enriching interaction with Nature.	
CO5	Student will be able to understand Implications of the holistic understanding of harmony on Professional Ethics.	
CO6	Student will be able to understand the need of Value Education as well as its learning process.	

CO-PO Matrix

Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	1	1	1	1	1	2	2	1	2	2	2	2
CO2	1	1	1	1	1	1	1	1	3	2	1	2
CO3	1	1	1	1	2	2	1	2	2	1	1	1
CO4	2	1	1	2	1	2	1		2	2	2	2
CO5	1	1	1	1	2	1	1	1	1	2	2	2
CO6	1	1	2	2	1	1	2	2	2	2	2	2
Avg	1.17	1.00	1.17	1.33	1.33	1.50	1.33	1.40	2.00	1.83	1.67	1.83

CO-PSO Matrix

COs	PSO1	PSO2	PSO3
CO1	2	2	2
CO2	2	2	2
CO3	2	2	2
CO4	2	2	2
CO5	1	1	2
CO6	1	1	1
Avg	1.67	1.67	1.83

IMS Engineering College, Ghaziabad

Sub Code	RME-071
Sub. Name	POWER PLANT ENGINEERING

COURSE OUTCOMES		Bloom's Level
CO1	Student will be able to learn about basics of power plant engineering	
CO2	Student will be able to know about power plant economics	
CO3	Student will be able to know about general layout, operation and maintenance of thermal power plant of thermal power plant	
CO4	Student will be able to learn about performance of diesel power plant, gas turbine plant and its fuels	
CO5	Student will be able to learn about nuclear reactors and hydro power plant	
CO6	Student will be able to learn about electrical system in power plant	

CO-PO Matrix

Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	2	2	2	1							1
CO2	3	3	3	3	2							2
CO3	3	2	2	3	2							3
CO4	3	2	3	2	3							3
CO5	3	2	2	3	2							2
CO6	3	3	3	2	1							2
Avg	3.00	2.33	2.50	2.50	1.83	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#####	#####	2.17

CO-PSO Matrix

COs	PSO1	PSO2	PSO3
CO1	3	2	3
CO2	3	2	2
CO3	3	3	3
CO4	3	2	3
CO5	2	1	2
CO6	3	2	3
Avg	2.83	2.00	2.67

IMS Engineering College, Ghaziabad

Sub Code	RME-072
Sub. Name	SUPPLY CHAIN MANAGEMENT

COURSE OUTCOMES		Bloom's Level
CO1	Students will be able to understand, design, develop and implement supply chain management concepts.	
CO2	Student will be able to identify drivers and metrics in supply chain.	
CO3	Student will be able to advice management on the organization of E-commerce, logistics, import taxes, risk, customs and legal aspects of global trading.	
CO4	Student will be able to analyze the creation of new value in the supply chain for customers, society and the environment.	
CO5	Student will be able to explain the strategic importance of logistic elements and describe how they affect supply chain management.	

CO-PO Matrix

Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	1						2	2	3	2	3	2
CO2	2	1	1			2	2		3		2	1
CO3	2	2				1	2	1	1	2	3	1
CO4	2	2	2		1		1	2	2		1	2
CO5				1		2	2	3	3	2	3	2
CO6	1.75	1.67	1.50	1.00	1.00	1.67	1.80	2.00	2.40	2.00	2.40	1.60
Avg	1						2	2	3	2	3	2

CO-PSO Matrix

COs	PSO1	PSO2	PSO3
CO1	2	2	2
CO2	2	1	2
CO3	2	2	2
CO4	3	3	2
CO5	1	2	1
CO6	2.00	2.00	1.80
Avg	2	2	2

IMS Engineering College, Ghaziabad

Sub Code	RME075
Sub. Name	OPERATION RESEARCH

COURSE OUTCOMES		Bloom's Level
CO1	Student will be able to formulate linear programming problem.	
CO2	Student will be able to find optimal solution of an LPP.	
CO3	Student will be able to solve the problems of assignment model and Transportation model.	
CO4	Student will be able to understand the concept of decision making under under certainity,uncertainty and risk.	
CO5	Student will be able to apply johnson's algorithm to find the sequence of n-jobs on m-machines	
CO6	Student will be able to understand various models of inventory to solve the problems.	

CO-PO Matrix

Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	1	2	1		1	1		1	1		2	3
CO2	2	2	1	1	1	1	1		1	1	2	2
CO3	2	2	1		1		2		2	1	3	3
CO4	1	2			1	2	2	2	3	1	2	3
CO5	3	1	1	1		1		1	2	1	1	2
CO6	3	1	1	1		1		1		1	1	2
Avg	2.00	1.67	1.00	1.00	1.00	1.20	1.67	1.25	1.80	1.00	1.83	2.50

CO-PSO Matrix

COs	PSO1	PSO2	PSO3
CO1	3	1	1
CO2	3	1	1
CO3	2	1	1
CO4	2	1	1
CO5	3	2	1
CO6	2	1	1
Avg	2.50	1.17	1.00

IMS Engineering College, Ghaziabad

Sub Code	**RME-078**
Sub. Name	**AUTOMATION & ROBOTICS**

COURSE OUTCOMES		**Bloom's Level**
CO1	Students will able to learn the impact of automation and robotics technology.	
CO2	Students will able to learn about the manufacturing automation & Robot time estimation in Manufacturing.	
CO3	Student will able to learn about robotics; kinematic and dynamic and parts of the robot.	
CO4	Students will able to learn the robotics derive & power transmission system and learn about types and functions of end effector.	
CO5	Write algorithms to program and control simple mobile robots in useful engineering applications, interpret data obtained from real life problems using appropriate techniques to select suitable sensors and actuators for robots.	

CO-PO Matrix

Course Outcome	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**
CO1	2	1	2		1	2	1	1	3	3	2	1
CO2	1	1	3	3	1	2				3	1	3
CO3	2	2	3	2	3	2	1	2	1	1	2	2
CO4	2	2	3	1	3	3		1	3	3	1	3
CO5	1	1	3	1	1		3	1	1	3	1	3
Avg	1.60	1.40	2.80	1.75	1.80	2.25	1.67	1.25	2.00	2.60	1.40	2.40

CO-PSO Matrix

COs	**PSO1**	**PSO2**	**PSO3**
CO1	2	3	2
CO2	1	3	2
CO3	2	3	3
CO4	1	3	2
CO5	2	1	1
Avg	1.60	2.60	2.00

IMS Engineering College, Ghaziabad

Sub Code	RME-751
Sub. Name	CAD/CAM LAB

COURSE OUTCOMES		Bloom's Level
CO1	Students will learn and understand Line Drawing or Circle Drawing algorithm though a computer program.	
CO2	Students will learn and understand Geometric Transformation algorithm experiment for translation/rotation/scaling though a computer program.	
CO3	Students will be able to design and drawing for machine components and validate though a computer program.	
CO4	Students will be able to understand design and draw commands of 3-D Modelling Software.	
CO5	Students will be able to understand FEM concept and also able to validate the concept using a program or using a FEM Package.	
CO6	Students will be able to understand Numerical differentiation or numerical integration concept and write a computer program to validate it.	

CO-PO Matrix

Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	2	3	2	3	1	2	1	2	2	2	2	2
CO2	2	3	2	3	1	2	1	2	2	2	2	2
CO3	2	3	2	3	1	2		2	2	2	2	2
CO4	2	2	2	3	1	2		2	2	2	2	2
CO5	2	1	2	3	1	2	1	2	2	2	2	2
CO6	2	1	2	3	1	2	1	2	2	2	2	2
Avg	2	2.17	2	3	1	2	1	2	2	2	2	2

CO-PSO Matrix

COs	PSO1	PSO2	PSO3
CO1	3	3	2
CO2	3	3	3
CO3	3	3	2
CO4	3	3	2
CO5	3	3	3
CO6	3	3	3
Avg	3	3	2.5

IMS Engineering College, Ghaziabad

Sub Code	**RME 752**
Sub. Name	**ICE & AE LAB**

COURSE OUTCOMES		**Bloom's Level**
CO1	Students will understand the power generated inside the engine and transmitted to the wheels.	
CO2	Students will be able to understand the design, construction and workimg of gearbox, differential of rear axle.	
CO3	Students will be able to understand the design, construction and workimg of steering mechanism, braking system viz, mechanical, hydraulic disc, vacuume .	
CO4	Students will learn design and working of fuel supply system, like, carburetor, fuel pumps, MPFI sytem.	
CO5	Students will able to understand the constructional features of hatchback cars of different companies, like Maruti, Hyundai, TATA, Ford, Cheverolet.	
CO6	Students will be able to understand the constructional features of Common Scooters and Motorbike, like Bajaj, LML, Honda	
CO7	Visit to an automobile industry will give a general idea of autoparts manufacturing to the students.	

CO-PO Matrix

Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	1	2	3	1					1		1
CO2	2	1	2	3	1							1
CO3	2	2	2	3	1							1
CO4	2	1		3	1							1
CO5	2		1	2			1					1
CO6	2		1	2			1					1
CO7	1`			2	1	1	2	1	2		2	1
Avg	2.17	1.25	1.60	2.57	1.00	1.00	1.33	1.00	2.00	1.00	2.00	1.00

CO-PSO Matrix

COs	PSO1	PSO2	PSO3
CO1	3	2	3
CO2	3	3	1
CO3	1	3	3
CO4	3	2	3
CO5	2	1	2
CO6	3	2	3
CO7	2	3	1
Avg	2.43	2.29	2.29

EIGHT SEMESTER									
Sl.No.	Subject Code	Subject Name	Department	L-T-P	Th/Lab Marks	Sessional		Total	Credit
					ESE	CT	TA		
1		OPEN ELECTIVE COURSE-2	Other Deptt.	3-0-0	70	20	10	100	3
2		DEPTT ELECTIVE COURSE-5	Core Deptt.	3-1-0	70	20	10	100	4
3		DEPTT ELECTIVE COURSE-6	Core Deptt.	3-0-0	70	20	10	100	3
4	RME851	SEMINAR	Core Deptt.	0-0-3			100	100	2
5	RME852	PROJECT-2	Core Deptt.	0-0-12	350		250	600	12
	TOTAL				**560**	**60**	**380**	**1000**	**24**

DEPARTMENTAL ELECTIVE-5	
Sub.Code	Subject Name
RME080	Non-Destructive Testing
RME081	Advance Welding
RME082	Thermal Turbo Machine
RME083	Energy Conservation &Management

S.Code	MOOC Subject Name
RME084	Industrial Safety Engineering.

DEPARTMENTAL ELECTIVE-6	
S.Code	Subject Name
RME085	Total Quality Management
RME086	Gas Dynamics & Jet Propulsion
RME087	Design & Transmission System
RME088	Theory of Elasticity.

S.Code	MOOC Subject Name
RME089	Manufacturing of Composites.

IMS Engineering College, Ghaziabad

Sub Code	**ROE-086**
Sub. Name	**Renewable Energy Resources**

COURSE OUTCOMES		**Bloom's Level**
CO1	Students should be able to describe the fundamentals and main characteristics of renewable energy sources and their differences compared to fossil fuels.	
CO2	Students should be able to describe the basics of solar cell ,solar power plant, solar thermal energy and applications and performance.	
CO3	Students should be able to describe geothermal energy, Magneto-hydrodynamics and fuel cells and their working, performance and limitations.	
CO4	Students should be able to describe Wind energy system and Bio mass system and their working, performance and limitations.	
CO5	Students should be able to describe Ocean thermal energy conversion (OTEC), wave and tidal wave: Availability, theory and working principle, performance and limitations.	

CO-PO Matrix

Course Outcome	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**
CO1	2	2	1			1						1
CO2	3	3	1		1							3
CO3	3	3	1	1	1							3
CO4	3	3	1	2	1	1						3
CO5	2	3	1		1	1						3
Avg	2.60	2.80	1.00	1.50	1.00	1.00	#DIV/0!	#DIV/0!	#####	#####	#DIV/0!	2.60

CO-PSO Matrix

COs	**PSO1**	**PSO2**	**PSO3**
CO1	3	1	3
CO2	3	3	2
CO3	3	3	2
CO4	3	3	2
CO5	3	3	3
Avg	3.00	2.60	2.40

IMS Engineering College, Ghaziabad

Sub Code	RME 080
Sub. Name	NON DESTRUCTIVE TESTING

COURSE OUTCOMES		Bloom's Level
CO1	Students should be able to demonstrate the understanding of importance and application of non-destructive testing, classification of non-destructive testing and selection of non destructive testing process	
CO2	Students should be able to describe the basics of liquid penetrate inspection and magnetic particle inspection.	
CO3	Students should be able to demonstrate the understanding of non- destructive testing by radiographic methods.	
CO4	Students should be able to describe various advanced non-destructive testing techniques like Ultra sonic testing etc.	
CO5	Students will be able to demonstrate the understanding of fundamentals of eddy current testing.	
CO6	Students will be able to apply Non Destructive Testing techniques in various applications.	

CO-PO Matrix												
Course Outcome	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**
CO1	2		2	2		2		2	2	2		2
CO2	2		2	3		1		2	2	2		3
CO3	2		2	3		2		3	3	3		2
CO4	2		3	2		1		2	3	2		2
CO5	3		1	3		2		1	2	2		2
CO6	2		2	2		2		2	2	2		2
Avg	2.17	#DIV/0!	2.00	2.50	#DIV/0!	1.67	#DIV/0!	2.00	2.33	2.17	#####	2.17

CO-PSO Matrix			
COs	**PSO1**	**PSO2**	**PSO3**
CO1	2	2	2
CO2	3	2	3
CO3	2	3	3
CO4	2	2	2
CO5	3	2	2
CO6	2	2	2
Avg	2.33	2.17	2.33

IMS Engineering College, Ghaziabad

Sub Code	RME-081
Sub. Name	ADVANCE WELDING

COURSE OUTCOMES		Bloom's Level
CO1	Students will be able to select and operate tools and equipment to support welding and related activities.	
CO2	Students will be able to perform welding processes (i.e. MMAW, MIG, TIG, SAW, LBM, EBM etc.) for various applications.	
CO3	Students will be able to do repair & maintenance of welding	
CO4	Students will be able to select and perform welding on various materials	
CO5	Students will be able to design and inspect the weld joint – before, after and during welding	
CO6	Students will be able to select and operate tools and equipment to support welding and related activities.	

CO-PO Matrix

Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	3	2	2	1							1
CO2	3	2	3	3	2							2
CO3	3	3	3	3	3							2
CO4	3	3	3	2	2							3
CO5	3	2	3	3	2							3
CO6	3	3	2	2	2							2
Avg	3.00	2.67	2.67	2.50	2.00	#DIV/0!	#DIV/0!	#DIV/0!	#####	#####	#####	2.17

CO-PSO Matrix

COs	PSO1	PSO2	PSO3
CO1	3	3	2
CO2	3	2	3
CO3	3	3	2
CO4	3	3	3
CO5	3	3	3
CO6	3	2	1
Avg	3.00	2.67	2.33

IMS Engineering College, Ghaziabad

Sub Code	RME-085
Sub. Name	Total Quality Management

COURSE OUTCOMES		Bloom's Level
CO1	Students will be able to understand the concept of quality and different manufacturing techniques.	
CO2	Students will be able to demonstrate understanding of quality issues of all organizations, including public and service sectors.	
CO3	Students will be able to set up the different techniques for controlling the variation of quality parameters.	
CO4	Students will be able to demonstrate different methodologies along with relevant techniques proposed for product and process quality improvement.	
CO5	Students will be able to understand the breadth and depth of the quality management philosophy.	
CO6	Students will understand that the field of the quality keeps advancing and the scope of application of its philosophy expanding beyond the traditional manufacturing arena.	

CO-PO Matrix

Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1			1		1	3	2	3	3	2	2	3
CO2	1	2	3		2	3	2	2	3	2	2	2
CO3	3	3	3	3	3	2	2	1	2	3	3	3
CO4	3	1	2		2	2	2	1	2	2	1	3
CO5	1	1	2	1	3	3	2	1	3	2	3	3
CO6	1	1	3	1		1	2	1	2	2	2	2
Avg	1.80	1.60	2.33	1.67	2.20	2.33	2.00	1.50	2.50	2.17	2.17	2.67

CO-PSO Matrix

COs	PSO1	PSO2	PSO3
CO1	1	3	3
CO2	1	2	1
CO3	1	3	2
CO4	3	2	1
CO5	1	2	1
CO6	1	2	1
Avg	1.33	2.33	1.50