Indra Ganesan
COLLEGE OF ENGINEERING

Approved by AICTE, New Delhi & Affiliated to Anna University, Chennai
Accredited by NAAC with 'B+' Grade, 2(f) & 12B Status Institution by UGC

IG Valley, Madurai Main Road, Manikandam, Tiruchirappalli - 620012

NAAC DOCUMENTS

QUALITY INDICATOR FRAME WORK

CRITERION – 2

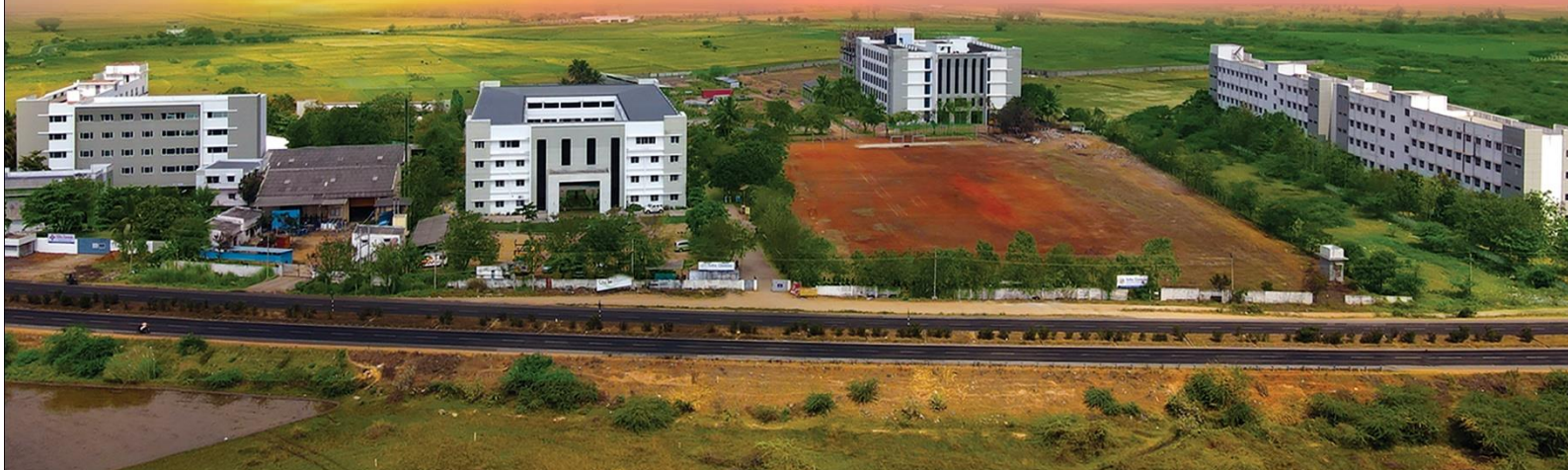
TEACHING-LEARNING AND EVALUATION

SUBMITTED BY

IQAC

INTERNAL QUALITY ASSURANCE CELL

INDRA GANESAN COLLEGE OF ENGINEERING



Indra Ganesan
COLLEGE OF ENGINEERING
Madurai Main Road (NH-45B), Manikandam, Tiruchirappalli - 620 012
Approved by AICTE, NewDelhi & Affiliated to Anna University, Chennai
NAAC Accredited, 2(F) Status Institution by UGC

Criteria 2	Teaching-Learning and Evaluation	350

Key Indicator-2.6 Student Performances and Learning Outcome (90)

2.6.1 Programme Outcomes (POs) and Course Outcomes (COs) for all programmes offered by the institution are stated and displayed on website

DEPARTMENT OF MECHANICAL

RG-2021

INDRA GANESAN COLLEGE OF ENGINEERING

IG Valley, Manikandam, Tiruchirappalli, Tamil Nadu – 620 012, India
(Approved by AICTE, New Delhi, Affiliated to Anna University, Chennai-25)
DEPARTMENT OF MECHANICAL ENGINEERING

DEPARTMENT OF MECHANICAL ENGINEERING

COURSE OUTCOMES2021
REGULATIONSMAPPING COs
WITH POs AND PSOs

MA3351 Transform and Partial Differential Equation

After successful completion of the course, the students should be able to

CO No.	Course Outcomes	POs	PSOs
C201.1	Employ the Fourier series concept in Engineering Problems.	1,2,3,4,6,7,8,9,10,	1,2,3
C201.2	Identify the solution of Fourier transform in continuous time signals.	1,2,3,7,9,10,11,12	1,3
C201.3	Elucidate the difference equation using Z-transform.	1,2,3,4,5,9,10,11	1,2
C201.4	Compute the solutions of the partial differential equation.	1,2,3,4,6,7,8,9,10,	1,3
C201.5	Utilize the Fourier series for heat and wave equations	1,2,,4,5,8,10,11,	1,2
C201.6	Apply the basic laws for engineering module	1,2,3,4,5,6,11,12	1,2,3

MAPPING OF COURSE OUTCOMES WITH PROGRAM OUTCOMES AND PROGRAM SPECIFIC OUTCOME

Course Out Comes	Level of CO	Program Outcomes												Program Specific Outcomes		
		K3	K4	K4	K5	K3, K5, K6	A3	A2	A3	A3	A3	A3	A2	K4	K4	K4
		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	PSO-3
C201.1	K3, A2	2	1													
C201.2	K2, A2	2	1													
C201.3	K4, A2	2	1													
C201.4	A2	2	1													
C201.5	A2	2	1													
C201.6	A3	2	1													
C201		2	1													

Dr. G. Balakrishnan, M.E., Ph.D.,
Principal
Indra Ganesan College of Engineering
IG Valley, Madurai Main Road
Manikandam, Trichy-620 012.

ME3351 Engineering Thermodynamics

COURSE OUTCOMES

After successful completion of the course, the students should be able to

CO No.	Course Outcomes	POs	PSOs
C202.1	Explain the basic concepts and laws of thermodynamics	1,2,3,4,5,6,9,10,11	1,2
C202.2	Apply second law of thermodynamics to open and closed systems and calculate entropy in thermal systems.	1,2,3,4,6,7,8,9,10,	1,3
C202.3	Calculate the properties of pure substance and explain the working of steam cycles	1,2,,4,5,6,7,8,11,12	1,2
C202.4	Distinguish between the properties of ideal and real gases	1,2,3,4,5,10,11,12	1,2,3
C202.5	Solve problems in psychrometric processes and gas mixtures.	1,2,3,4,5,6,9,10	1,2
C202.6	Apply thermodynamic laws for real time applications.	1,2,3,4,5,6,7,8,9,10,	1,3

MAPPING OF COURSE OUTCOMES WITH PROGRAM OUTCOMES AND PROGRAM SPECIFIC OUTCOME

Course Out Comes	Level of CO	Program Outcomes												Program Specific Outcomes		
		K3	K4	K4	K5	K3, K5, K6	A3	A2	A3	A3	A3	A3	A2	K4	K4	K4
		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	PSO-3
C202.1	K2	2	1											1		
C202.2	K2	3	2		1									2		
C202.3	K2	3												2		
C202.4	K2	2	1											1		
C202.5	K2	3	2		1									2		
C202.6	K2	3	2							2	2	2	3	2		
C202		3	2		1					2	2	2	3	2		

Dr. G. Balakrishnan, M.E., Ph.D.,
Principal
Indra Ganesan College of Engineering
IG Valley, Madurai Main Road
Manikandam, Trichy-620 012

ME3391 Fluid Mechanics and Machinery

COURSE OUTCOMES

After successful completion of the course, the students should be able to

CO No.	Course Outcomes	POs	PSOs
C203.1	Calculate the fluid properties and flow characteristics	1,2,3,4,5,6,9,10,11	1,2
C203.2	Compute the flow of fluid in circular conduits	1,2,3,4,6,7,8,9,10,	1,3
C203.3	Discuss the importance of dimensional and model analysis	1,2,,4,5,6,10,11,12	1,2
C203.4	Estimate the performance of hydraulic turbines	1,2,3,4,5,6,7,10,12	1,2,3
C203.5	Explain the working principle and draw the performance curves of hydraulic pumps.	1,2,3,4,5,6,9,10,11	1,2
C203.6	Demonstrate a keen Learneding of various fluid properties,involving real time experimentation	1,4,5,6,7,8,9,10,11	1,2

MAPPING OF COURSE OUTCOMES WITH PROGRAM OUTCOMES AND PROGRAM SPECIFIC OUTCOME

Course Out Comes	Level of CO	Program Outcomes												Program Specific Outcomes		
		K3	K4	K4	K5	K3, K5, K6	A3	A2	A3	A3	A3	A3	A2	K4	K4	K4
		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	PSO-3
C203.1	K2	3	2											2		
C203.2	K2	3	2											1		
C203.3	K2	2	1											1		
C203.4	K2	2	1											1		
C203.5	K2	2	1											1		
C203.6	K2	3	2		1					2	2	2	3	2		
C203		3	2		1					2	2	2	3	1		

Dr. G. Balakrishnan, M.E., Ph.D.,
Principal
Indra Ganesan College of Engineering
IG Valley, Madurai Main Road
Manikandam, Trichy-620 012.

CE3391 Engineering Materials and Metallurgy

COURSE OUTCOMES

After successful completion of the course, the students should be able to

CO No.	Course Outcomes	POs	PSOs
C204.1	Explain various binary alloy systems with respective invariantreaction.	1,2,,4,5,6,7,8,11,12	1,2
C204.2	Classify various heat treatment process and its significance	1,2,3,6,7,10,11,12	1,2,3
C204.3	Discuss various Ferrous and non-ferrous metals with its application	1,2,3,4,5,6,9,10,11	1,2
C204.4	Summarize the various non-metallic materials with its applications	1,2,3,4,5,6,7,8,9,10	1,3
C204.5	Compute the material properties by various material testingtechniques	1,2,,5,6,7,8,9,11	1,2
C204.6	Apply the knowledge of material science on material selection forspecific requirements	1,2,3,4,5,6,11,12	1,2

MAPPING OF COURSE OUTCOMES WITH PROGRAM OUTCOMES AND PROGRAM SPECIFIC OUTCOME

Course Out Comes	Level of CO	Program Outcomes												Program Specific Outcomes		
		K3	K4	K4	K5	K3, K5, K6	A3	A2	A3	A3	A3	A3	A2	K4	K4	K4
		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	PSO-3
C204.1	K2	2									2				1	
C204.2	K2	3	2		1						2				2	
C204.3	K2	2		1							2				1	
C204.4	K2	2		1							2				1	
C204.5	K2	2				2					2				1	
C204.6	K2			2						2	2	2	3		2	
C204		2	2	1	1	2				2	2	2	3		1	

Dr. G. Balakrishnan, M.E., Ph.D.,
Principal
Indra Ganesan College of Engineering
IG Valley, Madurai Main Road
Manikandam, Trichy-620 012.

ME3392 Manufacturing Process

COURSE OUTCOMES

After successful completion of the course, the students should be able to

CO No.	Course Outcomes	POs	PSOs
C205.1	Distinguish the various casting methods for product making with their merits and demerits.	1,2,3,4,5,6,7,10,11,12	1,2,3
C205.2	Distinguish the various material joining process and associated defects with possible cause and cure.	1,2,3,5,6,9,10,11	1,2
C205.3	Discuss various metal forming process with its application	1,2,3,4,5,6,7,8,9,10	1,3
C205.4	Distinguish the various process involved in sheet metal forming with its applications and salientfeatures	1,2,4,5,6,8,9,10,	1,2
C205.5	Explain the various process in making of plastic components for engineering / domestic applications.	1,2,4,5,6,7,10,11,12	1,2,3
C205.6	Apply the manufacturing process suitable for making products.	1,2,6,7,10,11,12	1,2,3

MAPPING OF COURSE OUTCOMES WITH PROGRAM OUTCOMES AND PROGRAM SPECIFIC OUTCOME

Course Out Comes	Level of CO	Program Outcomes												Program Specific Outcomes		
		K3	K4	K4	K5	K3, K5, K6	A3	A2	A3	A3	A3	A3	A2	K4	K4	K4
		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	PSO-3
C205.1	K2	2									2				1	
C205.2	K2	2									2				1	
C205.3	K3	2									2				1	
C205.4	K2	2									2				1	
C205.5	K2	2									2				1	
C205.6	K3	3		2						2	2	2	3		2	
C205		2		2						2	2	2	3		1	

Dr. G. Balakrishnan, M.E., Ph.D.,
Principal
Indra Ganesan College of Engineering
IG Valley, Madurai Main Road
Manikandam, Trichy-620 012.

ME3393 ENGINEERING MECHANICS

COURSE OUTCOMES

After successful completion of the course, the students should be able to

CO No.	Course Outcomes	POs	PSOs
C206.1	Compute the resultant force for planar and spatial system of forces.	1,2,5,6,7,10,11,12	1,2,3
C206.2	Estimate the force, moment for planar and spatial system of forces.	1,2,3,4,5,6,9,10,11	1,2,3
C206.3	Compute the centroid, second moment of area, center of gravity, product moment of inertia and massmoment of inertia.	1,3,4,5,6,7,8,9,10	1,3
C206.4	Compute the motion parameters like displacement, velocity, acceleration using dynamics.	1,2,,4,5,6,7,8,9,10,11	1,2,3
C206.5	Compute the reaction force by applying principles of friction and the motion parameters of rigid body.	1,2,3,4,5,6,11,12	1,2,3
C206.6	Apply the concepts of mechanics and work in force analysis	1,2,3,4,7,10,11,12	1,2,

MAPPING OF COURSE OUTCOMES WITH PROGRAM OUTCOMES AND PROGRAM SPECIFIC OUTCOME

Course Out Comes	Level of CO	Program Outcomes												Program Specific Outcomes		
		K3	K4	K4	K5	K3, K5, K6	A3	A2	A3	A3	A3	A3	A2	K4	K4	K4
		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	PSO-3
C206.1	K2	2	1												1	
C206.2	K1	2	1												1	
C206.3	K3	2	1												1	
C206.4	K3	2	1												1	
C206.5	K1	2	1												1	
C206.6	K3	3	2												2	
C206		2	1												1	

Dr. G. Balakrishnan, M.E., Ph.D.,
Principal
Indra Ganesan College of Engineering
IG Valley, Madurai Main Road
Manikandam, Trichy-620 012.

ME3382 Manufacturing Processes Laboratory

COURSE OUTCOMES

After successful completion of the course, the students should be able to

CO No.	Course Outcomes	POs	PSOs
C207.1	Demonstrate the working of lathe machine	1 ,4,5,6,7,9,10,	1,2
C207.2	Compare the various operations performed in Lathe machines.	1,2,3,4,5,7,9,11	1,3
C207.3	Operate the shaper machine to fabricate simple shapes.	1,4,5,6,7,8,9,10	1,2
C207.4	Use the arc welding process for manufacturing basic structuralshapes.	1,2,4,5,10,11	1,2,3
C207.5	Develop the green sand mould for a simple component	1,2,3,6,9,10,11	1,2
C207.6	C Apply the concept of manufacturing processes for makingmechanical product / working model.	1,3,4,5,7,8,10,11	1,2,3

MAPPING OF COURSE OUTCOMES WITH PROGRAM OUTCOMES AND PROGRAM SPECIFIC OUTCOME

Course Out Comes	Level of CO	Program Outcomes												Program Specific Outcomes		
		K3	K4	K4	K5	K3, K5, K6	A3	A2	A3	A3	A3	A3	A2	K4	K4	K4
		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	PSO-3
C207.1	K1	1	1	1	1											
C207.2	K3	3	2	2	1	1										
C207.3	K4	2	3	3	2	2										
C207.4	K3	3	2	2	1	1										
C207.5	K1	1	1	1	1	1										
C207.6	K3	3	2	2	1	1										
C107		2	2	2	1	1			3	3	3	3	3			

Dr. G. Balakrishnan, M.E., Ph.D.,
Principal
Indra Ganesan College of Engineering
IG Valley, Madurai Main Road
Manikandam, Trichy-620 012

ME3381 Computer Aided Machine Drawing

COURSE OUTCOMES

After successful completion of the course, the students should be able to

CO No.	Course Outcomes	POs	PSOs
C208.1	Assess optical fibre parameters using laser properties.	1,2,3,4,5,6,7,9,10,11	1,2,3
C208.2	Measure the velocity of ultrasonic waves in a given liquid medium.	3,6,7,8,9,10,11	1,3
C208.3	Compute the wavelength of mercury spectrum using properties of light	2,4,5,6,7,8,10,11	1,2
C208.4	Compute the thermal conductivity of a bad conductor using Lee's method.	1,3,4,5,6,7,10,11	1,2,3
C208.5	Determine the modulus of a material using Hooke's law.	1,4,5,6,9,10,11	1,2
C208.6	Estimate water quality parameters such as dissolved oxygen content, chloride content of the water samples.	2,3,4,5,7,8,10,11	1,2,3

MAPPING OF COURSE OUTCOMES WITH PROGRAM OUTCOMES AND PROGRAM SPECIFIC OUTCOME

Course Out Comes	Level of CO	Program Outcomes												Program Specific Outcomes		
		K3	K4	K4	K5	K3, K5, K6	A3	A2	A3	A3	A3	A3	A2	K4	K4	K4
		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	PSO-3
C208.1	K2	2	1													
C208.2	K2	2	1													
C208.3	K2	2	1											1		
C208.4	K2	2	1											2		
C208.5	K2	2	1											2		
C208.6	K2	2	1											2		
C208		2	1											2		

Dr. G. Balakrishnan, M.E., Ph.D.,
Principal
Indra Ganesan College of Engineering
IG Valley, Madurai Main Road
Manikandam, Trichy-620 012.

GE3361 Professional Development

COURSE OUTCOMES

After successful completion of the course, the students should be able to

CO No.	Course Outcomes	POs	PSOs
C209.1	Breakdown the ideas in to its elementary constituents, analyze and act after a meaning full thought process.	1,3,4,5,6,7,9,11	1,2,3
C209.2	Analyze the phrase and passage and explicitly pass on the ideas meaning fully.	1,2,3,4,5,7,9,11	1,3
C209.3	Manage to interpret the given phrase or the graphical rendering and review the contents well individually or as a group.	1,4,5,6,7,8,9,10	1,2
C209.4	Concentrate on the communication aspect of complicated ideas and respond positively.	1,2,4,5,10,11	1,2,3
C209.5	Debate the issues and find the rudiments of the problem individually and as a group.	1,2,3,6,9,10,11	1,2
C209.6	Respond intelligently and seek clarification and Learned completely.	1,2,3,4,6,7,8,9,	1,2,3

MAPPING OF COURSE OUTCOMES WITH PROGRAM OUTCOMES AND PROGRAM SPECIFIC OUTCOME

Course Out Comes	Level of CO	Program Outcomes												Program Specific Outcomes		
		K3	K4	K4	K5	K3, K5, K6	A3	A2	A3	A3	A3	A3	A2	K4	K4	K4
		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	PSO-3
C209.1	K2,A2										2		3			
C209.2	K3,A2									2	2		3			
C209.3	K3,A2										2		3			
C209.4	A2										2		3			
C209.5	A3									3	3		3			
C209.6	A2										2		3			
C209										3	2		3			

Dr. G. Balakrishnan, M.E., Ph.D.,
Principal
Indra Ganesan College of Engineering
IG Valley, Madurai Main Road
Manikandam, Trichy-620 012.

ME3493 Manufacturing Technology

COURSE OUTCOMES

After successful completion of the course, the students should be able to

CO No.	Course Outcomes	POs	PSOs
C211.1	Distinguish the various casting methods for product making with their merits anddemerits.	1,4,5,6,7,8	1,3
C211.2	Distinguish the various material joining process and associated defects with possible cause and curve	1,2,,4,5,6,7,8,9,10,11	1,2
C211.3	Discuss the various metal forming process with its application	1,2,3,4,5,7,9,11	1,2,3
C211.4	Distinguish the various process involved in sheet metal forming with its applications andsalient features	1,4,5,6,7,8,9,10	1,2
C211.5	Explain the various process in making of plastic components for engineering / domesticapplications.	1,2,4,5,10,11	1,2,3
C211.6	Apply the suitable manufacturing process for making products.	1,2,3,6,9,10,11	1,3

MAPPING OF COURSE OUTCOMES WITH PROGRAM OUTCOMES AND PROGRAM SPECIFIC OUTCOME

Course Out Comes	Level of CO	Program Outcomes											Program Specific Outcomes		
		K3	K4	K4	K5	K3, K5, K6	A3	A2	A3	A3	A3	A3	A2	K4	K4	K4
		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	PSO-3
C211.1	K2	2	1	1	1											
C211.2	K2	2	1		1											
C211.3	K2	2	1													
C211.4	K2	2	1													
C211.5	K2	2	1													
C211.6	K2	2	1													
C211		2	1	1	1											

Dr. G. Balakrishnan, M.E., Ph.D.,
Principal
Indra Ganesan College of Engineering
IG Valley, Madurai Main Road
Manikandam, Trichy-620 012.

Kinematics of Machinery

COURSE OUTCOMES

After successful completion of the course, the students should be able to

CO No.	Course Outcomes	POs	PSOs
C212.1	Explain the principles of kinematic pairs of planar mechanisms.	1,2,3,4,5,7,9,11	1,2,3
C212.2	Compute velocity and acceleration in planar mechanisms.	1,4,5,6,7,8,9,10	1,3
C212.3	Apply various motion principles to draw cam profiles	1,2,4,5,10,11	1,2
C212.4	Summarize the role of gear geometry in gear train.	1,2,3,4,5,6,7,10,11,12	1,2,3
C212.5	Explain the mechanisms by algebraic and vector methods.	1,3,4,5,6,9,10,11	1,2
C212.6	Examine the kinematic interactions of various elements in a givenmachine tool.	1,2,3,4,5,6,7,	1,2,3

MAPPING OF COURSE OUTCOMES WITH PROGRAM OUTCOMES AND PROGRAM SPECIFIC OUTCOME

Course Out Comes	Level of CO	Program Outcomes												Program Specific Outcomes		
		K3	K4	K4	K5	K3, K5, K6	A3	A2	A3	A3	A3	A3	A2	K4	K4	K4
		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	PSO-3
C212.1	K2	2													1	
C212.2	K2	2	1	1											1	
C212.3	K2	3	1												2	
C212.4	K2	2	1	1											1	
C212.5	K2	2	1												1	
C212.6	K2	3	2	2						2	2	2	3		2	
C12		2	1	2						2	2	2	3		1	

CE3491 Strength of Materials

COURSE OUTCOMES

After successful completion of the course, the students should be able to

CO No.	Course Outcomes	POs	PSOs
C213.1	Estimate the stresses, strains and deformations in solids under axialloading	1,2,3,4,7,8,9,10,11	1,3
C213.2	Compute the bending and shearing stresses in beams subjected to loadings	1,2,3,4,5,7,9,11	1,2
C213.3	Examine the effect of torsion in shafts and springs	1,4,5,6,7,8,9,10	1,2,3
C213.4	Calculate the deflection and slopes in beams	1,2,4,5,10,11	1,2
C213.5	Compute the two dimensional stresses in thin cylinder and spherical shells	1,2,3,4,5,6,7,8,10,11	1,2,3
C213.6	Calculate the stresses and deformation of solids subjected to variousloads.	1,4,5,6,7,8	1,3

MAPPING OF COURSE OUTCOMES WITH PROGRAM OUTCOMES AND PROGRAM SPECIFIC OUTCOME

Course Out Comes	Level of CO	Program Outcomes												Program Specific Outcomes		
		K3	K4	K4	K5	K3, K5, K6	A3	A2	A3	A3	A3	A3	A2	K4	K4	K4
		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	PSO-3
C213.1	K3	2	1												1	
C213.2	K3	3	2												2	
C213.3	K2	2	1												1	
C213.4	K2	3	2												2	
C213.5	K2	3	2												2	
C213.6	K2															
C213		3	2							2	2	2	3		2	

Dr. G. Balakrishnan, M.E., Ph.D.,
Principal
Indra Ganesan College of Engineering
IG Valley, Madurai Main Road
Manikandam, Trichy-620 012.

ME3451 Thermal Engineering

COURSE OUTCOMES

After successful completion of the course, the students should be able to

CO No.	Course Outcomes	POs	PSOs
C214.1	Distinguish the performance of different air standard cycles	1,2,3,4,5,7,9	1,3
C214.2	Summarize the working of compressor and factors influencing itsperformance in different stages.	1,4,5,6,7,8,9,10	1,2
C214.3	Explain the functioning and features of IC engines, components and auxiliaries	1,2,4,5,10,11	1,2,3
C214.4	Calculate the performance parameters of IC Engines and its associated systems.	1,2,3,4,5,7,9,11	1,2
C214.5	Discuss the concepts to improve the performance of Gas turbines.	1,3,4,5,6,9,10	1,2,3
C214.6	Examine the performance of compressors, engines and turbines.	1,2,3,4,7,8,10,11	1,3

MAPPING OF COURSE OUTCOMES WITH PROGRAM OUTCOMES AND PROGRAM SPECIFIC OUTCOME

Course Out Comes	Level of CO	Program Outcomes												Program Specific Outcomes		
		K3	K4	K4	K5	K3, K5, K6	A3	A2	A3	A3	A3	A3	A2	K4	K4	K4
		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	PSO-3
C214.1	K2						2	3			2			1		
C214.2	K2	2					2	3			2			1		
C214.3	K2	2					2	3			2			1		
C214.4	K2						2	3			2			1		
C214.5	K2							3			2					
C214.6	K2	2					2	3			2					
C113		2	1				2	3			2			1		

Dr. G. Balakrishnan, M.E., Ph.D.,
Principal
Indra Ganesan College of Engineering
IG Valley, Madurai Main Road
Manikandam, Trichy-620 012.

ME3491 Theory of Machine

COURSE OUTCOMES

After successful completion of the course, the students should be able to

CO No.	Course Outcomes	POs	PSOs
C215.1	Illustrate the student conversant with commonly used mechanism for industrial application.	1,2,3,4,5,7,9	1,3
C215.2	Analyze the velocity and acceleration of a mechanisms analytically and synthesis of problems.	1,4,5,6,7,8,9,10	1,2
C215.3	Construct the cam profile and analyze effect of friction in different mechanisms.	1,2,3,4,5,10,11	1,2,3
C215.4	Determine the static and dynamic forces for mechanical systems and flywheels	1,2,3,4,5,7,9,10	1,2
C215.5	Design of belt and chain drive system	1,3,4,5,6,9,10	1,2,3
C215.6	Design gear mechanisms for a given motion or a given input/output motion or force relationship	1,2,3,4,5,7,9	1,3

MAPPING OF COURSE OUTCOMES WITH PROGRAM OUTCOMES AND PROGRAM SPECIFIC OUTCOME

Course Out Comes	Level of CO	Program Outcomes												Program Specific Outcomes		
		K3	K4	K4	K5	K3, K5, K6	A3	A2	A3	A3	A3	A3	A2	K4	K4	K4
		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	PSO-3
C215.1	K2	2	1												1	
C215.2	K2	2	1												1	
C215.3	K2	2	1												1	
C215.4	K2	2	1												1	
C215.5	K2	2	1												1	
C215.6	K3	3	2												2	
C215		2	1												1	

Dr. G. Balakrishnan, M.E., Ph.D.,
Principal
Indra Ganesan College of Engineering
IG Valley, Madurai Main Road
Manikandam, Trichy-620 012.

Strength of Materials and Fluid Mechanics and Machinery Laboratory

COURSE OUTCOMES

After successful completion of the course, the students should be able to

CO No.	Course Outcomes	POs	PSOs
C216.1	Compute the mechanical properties of materials.	1,2,3,4,5,7,9,10	1,3
C216.2	Calculate the deflection of beam by deflection method and springs using tensile andcompression tests.	1,4,5,6,7,8,9,10	1,2
C216.3	Summarize the influence of heat treatment process in mechanicalproperties and micro structure.	1,2,3,4,5,10,11	1,2,3
C216.4	Apply Bernoulli's principle in various flow meters.	1,4,5,7,9,10	1,2
C216.5	Discuss the characteristics of hydraulic pumps and prime movers.	1,3,4,5,6,9,10	1,2,3
C216.6	Use flow meters and hydraulic machines for specific applications.	1,2,3,4,5,7,9	1,3

MAPPING OF COURSE OUTCOMES WITH PROGRAM OUTCOMES AND PROGRAM SPECIFIC OUTCOME

Course Out Comes	Level of CO	Program Outcomes												Program Specific Outcomes		
		K3	K4	K4	K5	K3, K5, K6	A3	A2	A3	A3	A3	A3	A2	K4	K4	K4
		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	PSO-3
C216.1	K1	2		1		1										1
C216.2	K3	3	2													2
C216.3	K3	3	2													2
C216.4	K3	3	2	2	1	3									2	
C216.5	K3	3	2	2	1	3									2	
C216.6	K2	2	1		1	2				2	2	2			1	
C216		3	2	2	1	2			3	3	3	3	3		2	2

Dr. G. Balakrishnan, M.E., Ph.D.,
Principal
Indra Ganesan College of Engineering
IG Valley, Madurai Main Road
Manikandam, Trichy-620 012.

THERMAL ENGINEERING LABORATORY

COURSE OUTCOMES

After successful completion of the course, the students should be able to

CO No.	Course Outcomes	POs	PSOs
C217.1	Illustrate the performance, Characteristics and Load test on DC Shunt motor and DC Generator	1,2,3,4,5,7,9,10	1,3
C217.2	Analyze the measurement of three phase power and explain the performance of induction motor &Transformer	1,4,5,6,7,8,9,10	1,2
C217.3	Demonstrate the various electric circuits laws and theorems	1,2,3,4,5,10,11	1,2,3
C217.4	Explain the various characteristics of different transducers	1,2,3,4,5,7,9,10	1,2

MAPPING OF COURSE OUTCOMES WITH PROGRAM OUTCOMES AND PROGRAM SPECIFIC OUTCOME

Course Out Comes	Level of CO	Program Outcomes												Program Specific Outcomes		
		K3	K4	K4	K5	K3, K5, K6	A3	A2	A3	A3	A3	A3	A2	K4	K4	K4
		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	PSO-3
C217.1	K2	2	1	1	1		1							1		
C217.2	K2	2	1	1	1		1							1		
C217.3	K2	2	1	1	1										1	
C217.4	K2	2	1	1	1										1	
C217		2	1	1	1		1		3	3	3	3	3	1	1	2

Dr. G. Balakrishnan, M.E., Ph.D.,
Principal
Indra Ganesan College of Engineering
IG Valley, Madurai Main Road
Manikandam, Trichy-620 012.

ME3591 Design of Machine Elements

COURSE OUTCOMES

After successful completion of the course, the students should be able to

CO No.	Course Outcomes	POs	PSOs
C301.1	Familiar in various step involved in the design process	1,2,3,4,5,7,9	1,3
C301.2	Learned, compute and explain the concepts of steady and variable stresses in machine elements	1,4,5,6,7,8,9,10	1,2,3
C301.3	Learn to use standard data and apply the same for designing various machine elements	2,3,4,5,10,11	1,2
C301.4	Learned the principles, compute and predict the strengthrequirements for machine elements.	1,2,3,4,5,7,9,10	1,2
C301.5	Analyze and demonstrate the design procedures for various machine elements.	1,3,4,5,6,9,10,11	1,2
C301.6	Able to Learned the design procedure of miscellaneous elements like seals, gaskets and connecting rod.	1,4,5,7,8,9,	1,2

MAPPING OF COURSE OUTCOMES WITH PROGRAM OUTCOMES AND PROGRAM SPECIFIC OUTCOME

Course Out Comes	Level of CO	Program Outcomes												Program Specific Outcomes		
		K3	K4	K4	K5	K3, K5, K6	A3	A2	A3	A3	A3	A3	A2	K4	K4	K4
		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	PSO-3
C301.1	K3	3	2	2										2		
C301.2	K2	2	1	1										1		
C301.3	K3	3	2	2										2		
C301.4	K2	2	1	1										1		
C301.5	K2	2	1	1										1		
C301.6	K3	3	2	2	1									2		
C301		3	2	2	1									2		

Dr. G. Balakrishnan, M.E., Ph.D.,
Principal
Indra Ganesan College of Engineering
IG Valley, Madurai Main Road
Manikandam, Trichy-620 012.

ME3592 Metrology and Measurements

COURSE OUTCOMES

After successful completion of the course, the students should be able to

CO No.	Course Outcomes	POs	PSOs
C302.1	Learned and explain about basic principles ofmeasurements.	1,2,,4,5,6,7,8,9,10,11	1,3
C302.2	Demonstrate various method of measuring mechanical parameters.	1,2,3,4,5,6,7,10	1,2,3
C302.3	Learned and explain the usage of the operations and applications of Linear, Angular measuring instruments.	1,2,3,4,5,6,7,8,9,	1,2
C302.4	Learned, explain and apply various measurementstechniques for measuring Threads, Gears, Surface Finish, Linear and Cylindrical Components.	1,2,3, 7,8,9,10,11	1,2
C302.5	Apply the usage of Quality control of components.	1,2,,4,5,6,7,8,9,10,11	1,2
C302.6	Exhibit the knowledge in the application of Coordinate Measuring Machine	1,2,3,4,5, ,9,10,11,	1,2

MAPPING OF COURSE OUTCOMES WITH PROGRAM OUTCOMES AND PROGRAM SPECIFIC OUTCOME

Course Out Comes	Level of CO	Program Outcomes												Program Specific Outcomes		
		K3	K4	K4	K5	K3, K5, K6	A3	A2	A3	A3	A3	A3	A2	K4	K4	K4
		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	PSO-3
C302.1	K2	2									2				1	
C302.2	K3	2									2					
C302.3	K3	2				2					2					1
C302.4	K2	2									2			1	1	1
C302.5	K3	2	1								2			1		
C302.6	K3 & A2	3	2							2	2	2	3		2	
C302		2	2			2				2	2	2	3	1	1	1

Dr. G. Balakrishnan, M.E., Ph.D.,
Principal
Indra Ganesan College of Engineering
IG Valley, Madurai Main Road
Manikandam, Trichy-620 012.

ME3681 CAD CAM

COURSE OUTCOMES

After successful completion of the course, the students should be able to

CO No.	Course Outcomes	POs	PSOs
C303.1	To provide the overview of evolution of automation, CIM and its principles.	1,2,,4,5,6,7,8,9,10,11	1,3
C303.2	To learn the various Automation tools, include various material handling system.	1,2,3, 7,10,11,12	1,2,3
C303.3	To train students to apply group technology and FMS.	1,2,3,4,5, ,10,11	1,3
C303.4	To familiarize the computer aided process planning in manufacturing.	1,2,3,4,5,6,7,8,9,	1,2
C303.5	To introduce to basics of data transaction, information integration and control of CIM.	1,2,,4,5,6,7,8,9,	1,2,3
C303.6	Demonstrate the concept of parametric design for mechanical assembly.	1,2,, ,6,7,8,9,10,11	1,3

MAPPING OF COURSE OUTCOMES WITH PROGRAM OUTCOMES AND PROGRAM SPECIFIC OUTCOME

Course Out Comes	Level of CO	Program Outcomes												Program Specific Outcomes		
		K3	K4	K4	K5	K3, K5, K6	A3	A2	A3	A3	A3	A3	A2	K4	K4	K4
		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	PSO-3
C303.1	K3	3	2											2		
C303.2	K3	3	2											1		
C303.3	K2	2	1											1		
C303.4	K2	2	1											1		
C303.5	K2	2	1											1		
C303.6	K3 & A2	3	2		1					2	2	2	3	2		
C303		3	2		1					2	2	2	3	1		

Dr. G. Balakrishnan, M.E., Ph.D.,
Principal
Indra Ganesan College of Engineering
IG Valley, Madurai Main Road
Manikandam, Trichy-620 012.

ME3691 ROBOTICS
COURSE OUTCOMES

After successful completion of the course, the students should be able to

CO No.	Course Outcomes	POs	PSOs
C304.1	To learn about basics of robots and their classifications .	1,2,,4,5,6.9,10,11	1,3
C304.2	Discuss the robot kinematics in various planar mechanisms	1,2,3,4,5,6,7 ,12	1,2,3
C304.3	To learn about the concepts in robot dynamics	1,2,3,4,5,6,7,8,9,	1,3
C304.4	Explain the concepts in trajectory planning and programming.	,3,4,5,6, 9,10,11	1,2
C304.5	To know about the various applications of robots	1,2,,4,5,6,7,8,9,	1,2,3
C304.6	Apply the kinematics link and join for the robotics.	1,2,,4,57,8,9,10,11	1,3

MAPPING OF COURSE OUTCOMES WITH PROGRAM OUTCOMES AND PROGRAM SPECIFIC OUTCOME

Course Out Comes	Level of CO	Program Outcomes												Program Specific Outcomes		
		K3	K4	K4	K5	K3, K5, K6	A3	A2	A3	A3	A3	A3	A2	K4	K4	K4
		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	PSO-3
C304.1	K2	2									2				1	
C304.2	K2	2									2				1	
C304.3	K2	2									2				1	
C304.4	K2	2									2				1	
C304.5	K2	2									2				1	
C304.6	K3 & A2	3		2						2	2	2	3		2	
C304		2		2						2	2	2	3		1	

Dr. G. Balakrishnan, M.E., Ph.D.,
Principal
Indra Ganesan College of Engineering
IG Valley, Madurai Main Road
Manikandam, Trichy-620 012.

CME384 POWER PLANT ENGINEERING
COURSE OUTCOMES

After successful completion of the course, the students should be able to

CO No.	Course Outcomes	POs	PSOs
C305.1	To study the coal based thermal power plants.	1,2 ,6,7,8,9,10,11	1,3
C305.2	To study the diesel, gas turbine and combined cycle power plants.	1,2,3, 10,11,12	1,2,3
C305.3	To learn the basic of nuclear engineering and power plants.	1,2,3,4,5, 10,11	1,3
C305.4	To learn the power from renewable energy	2,3,4,5,6,7,8,9	1,2
C305.5	To study energy, economic and environmental issues of power plants	4,5,6,7,8,9,10	1,2,3
C305.6	Able to utilize Refrigeration and Psychometric chart.	1,2,4.,7,8,9	1,3

MAPPING OF COURSE OUTCOMES WITH PROGRAM OUTCOMES AND PROGRAM SPECIFIC OUTCOME

Course Out Comes	Level of CO	Program Outcomes												Program Specific Outcomes		
		K3	K4	K4	K5	K3, K5, K6	A3	A2	A3	A3	A3	A3	A2	K4	K4	K4
		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	PSO-3
C305.1	K2	2												1		
C305.2	K2	2	1											1		
C305.3	K2	2												1		
C305.4	K2	2												1		
C305.5	K2	2	1					3						1		
C305.6	K2	2	1											1		
C305		2	1					3						1		

Dr. G. Balakrishnan, M.E., Ph.D.,
Principal
Indra Ganesan College of Engineering
IG Valley, Madurai Main Road
Manikandam, Trichy-620 012.

ME3581 Metrology and Measurements Laboratory

COURSE OUTCOMES

After successful completion of the course, the students should be able to

CO No.	Course Outcomes	POs	PSOs
C306.1	Demonstrate the basic working concepts of the various measuring instruments.	1,2,3,4,5,6,7,8	1,3
C306.2	Learned the difference in accuracy and precision among various techniques.	2,3,4,5,6,7,8,9,	1,2
C306.3	Discuss the methods of calibrating the equipment.	1,2,,4,5,6,7,10,11	1,2,3
C306.4	Compute the displacement, force and torque of machine element.	1,2, ,9,10,11	1,3
C306.5	Explain the various types of gear trains and simple mechanisms.	1,2,3,4,5,6,7,8,9	1,3
C306.6	Utilize the principles learnt in kinematics and dynamics ofmachinery	1,2,3 ,8,9,10,11	1,2

MAPPING OF COURSE OUTCOMES WITH PROGRAM OUTCOMES AND PROGRAM SPECIFIC OUTCOME

Course Out Comes	Level of CO	Program Outcomes												Program Specific Outcomes		
		K3	K4	K4	K5	K3, K5, K6	A3	A2	A3	A3	A3	A3	A2	K4	K4	K4
		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	PSO-3
C306.1	K3	3				3								2		2
C306.2	K1	2	1													1
C306.3	K3	2														1
C306.4	K1	2														1
C306.5	K3	2	1											1		1
C306.6	K2	3	2			3								2		2
C306		2	2	2	1	3			3	3	3	3	3			2

Dr. G. Balakrishnan, M.E., Ph.D.,
Principal
Indra Ganesan College of Engineering
IG Valley, Madurai Main Road
Manikandam, Trichy-620 012.