Course Outcome of the Courses of B.Tech. 5th Semester and Mapping of the Course Outcome with Programme Outcome

Sl. No.	Sub-Code	Subject	Hours per Week			Credit	Marks	
			L	T	P	C	CE	ESE
Theory								
1	ME181501	Applied Thermodynamics - I	3	0	2	4	30	70
2	ME181502	Machine Design - I	3	0	2	4	30	70
3	ME181503	Mechanisms and Dynamics of Machines	3	0	2	4	30	70
4	ME181504	Heat Transfer - I	3	0	0	3	30	70
5	ME181505	Engineering Inspection and Metrology	3	0	0	3	30	70
6	HS181506	Engineering Economics	3	0	0	3	30	70
Practical								
1	ME181514	Heat Transfer – I Lab	0	0	2	1	15	35
2	ME181515	Engineering Inspection and Metrology Lab	0	0	2	1	15	35
3	SI181521	Internship-II (SAI-Academia)	0	0	0	1	-	100
TOTAL			18	0	10	**24**	**210**	**590**
Total Contact Hours per week: 28								
Total Credits: 24								

APPLIED THERMODYNAMICS-I [ME181501]

Course Outcome (COs): At the completion of the course, the student will be able to:

CO1	Evaluate the performance of steam power cycle and select suitable modified methods to improve the efficiency of power cycle.
CO2	Explain various components of a steam generating plant and; estimate the draft and chimney height.
CO3	Apply the various thermodynamic laws and properties of steam to evaluate the performance of boiler, nozzle, turbine and condensers.
CO4	Explain the concepts of Availability and Irreversibility under various thermodynamic systems.

Mapping of COs with Pos

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	**3**	**2**	**-**	**-**	**-**	**-**	**-**	**1**	**1**	**1**	**-**	**1**
CO2	**3**	**1**	**-**	**-**	**-**	**-**	**-**	**1**	**1**	**1**	**-**	**1**
CO3	**3**	**2**	**-**	**-**	**-**	**-**	**-**	**1**	**1**	**1**	**-**	**1**
CO4	**1**	**-**	**-**	**-**	**-**	**-**	**-**	**1**	**1**	**1**	**-**	**1**

MACHINE DESIGN – I [ME181502]

Course Outcome (COs): At the completion of the course, the student will be able to:

CO1	**Describe** the design process, material selection, different modes and theories of failure; and **calculate** stresses and stress concentration under variable loading conditions.
CO2	**Design** bolted, rivetted and welded joints for various engineering applications.
CO3	**Design** solid and hollow shafts for various loading conditions; and cotter and knuckle joint for alternating / tensile loads**.**
CO4	**Describe** rigid and flexible couplings and **design** Rigid Couplings.
CO5	**Design** Belt, Rope and Chain Drive.

Mapping of COs with Pos

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

MECHANISMS AND DYNAMICS OF MACHINES [ME181503]

Course Outcome (COs): At the completion of the course, the student will be able to:

CO1	**Illustrate** Kinematic analysis of plane motion graphically and analytically and draw velocity and acceleration diagram.
CO2	**Synthesize** mechanisms to generate the desired motions by combination of different machine elements using analytical and graphical approaches.
CO3	**Describe** different types of mechanism used in engineering applications and their working principles.
CO4	**Estimate** Gyroscopic action in certain machine elements using principle of gyroscope.
CO5	**Analyze** balancing of rotating and reciprocating masses, single and multi-cylinder engines.

Mapping of COs with Pos

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

HEAT TRANSFER-1 [ME181504]

Course Outcome (COs): At the completion of the course, the student will be able to:

CO1	Explain the basic principles and mode of heat transfer.
CO2	Analyse steady state heat conduction for temperature distribution and rate of heat transfer for different geometries
CO3	Analyse unsteady state heat conduction in solids.
CO4	Solve problems involving view factors and radiative exchange between surfaces.
CO5	Define various terms related to diffusional heat transfer and solve problems for mass diffusion coefficient.

Mapping of COs with Pos

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	**2**	**1**	**-**	**-**	**-**	**-**	**-**	**1**	**1**	**1**	**-**	**1**
CO2	**2**	**3**	**-**	**-**	**-**	**-**	**-**	**1**	**1**	**1**	**-**	**1**
CO3	**2**	**3**	**-**	**-**	**-**	**-**	**-**	**1**	**1**	**1**	**-**	**1**
CO4	**3**	**2**	**-**	**-**	**-**	**-**	**-**	**1**	**1**	**1**	**-**	**1**
CO5	**3**	**2**	**-**	**-**	**-**	**-**	**-**	**1**	**1**	**1**	**-**	**1**

ENGINEERING INSPECTION AND METROLOGY [ME181505]

Course Outcome (COs): At the completion of the course, the student will be able to:

CO1	Describe precision and accuracy; and apply the knowledge of inspection and errors in measurement for decision making in manufacturing industry.
CO2	Describe tool room measuring instruments for different applications and design appropriate control charts for statistical process control.
CO3	Develop analytical and experimental techniques for precise measurement of thread and gear parameters.
CO4	Apply necessary standards for obtaining desired fit and design appropriate limit gauges.
CO5	Estimate texture of machined surface by stylus equipment and optical interferometry.

Mapping of COs with POs

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	2	-	-	-	1	-	**1**	1	1	-	1
CO2	1	2	3	1	-	-	-	**1**	1	1	-	1
CO3	1	2	3	-	-	-	-	**1**	1	1	-	1
CO4	3	2	3	-	-	-	-	**1**	1	1	-	1
CO5	1	3	-	1	-	-	-	**1**	1	1	-	1

ENGINEERING INSPECTION AND METROLOGY LAB [ME181515]

Course Outcome (COs): At the completion of the course, the student will be able to:

CO1	Select proper instruments for dimensional measurement according to level of precision (1 micron).
CO2	Utilize Slip gauge for calibration of instrument during precision measurement.
CO3	Measure thread profile using Profile Projector.
CO4	To estimate precisely surface roughness of machined surface texture.

Mapping of COs with Pos

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	2	2	–	–	–	–	–	1	2	2	–	1
CO2	2	2	–	–	–	–	–	1	2	2	–	1
CO3	2	1	–	–	–	–	–	1	2	2	–	1
CO4	2	1	–	–	–	–	–	1	2	2	–	1

HEAT TRANSFER – I LAB [ME181514]

Course Outcome (COs): At the completion of the course, the student will be able to:

CO1	Estimate physical properties like thermal conductivity of different liquids and solids and compare its variation.
CO2	Apply Fourier's law to validate the theoretical over all heat transfer coefficient
CO3	Conduct experimental research in radiation heat transfer and determine various related parameters specifically Stefan-Boltzmann constant and Emissivity of solid surface.

Mapping of COs with Pos

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	**2**	**2**	**-**	**1**	**-**	**-**	**-**	**1**	**1**	**1**	**-**	**1**
CO2	**2**	**2**	**-**	**1**	**-**	**-**	**-**	**1**	**1**	**1**	**-**	**1**
CO3	**2**	**2**	**-**	**1**	**-**	**-**	**-**	**1**	**1**	**1**	**-**	**1**

INTERNSHIP-II (SAI-ACADEMIC) [SI181521]

Course Outcome (COs): At the completion of the course, the student will be able to:

CO1	Communicate effectively through report preparation and presentation.
CO2	Apply engineering knowledge, modern tools and techniques for system investigation and/or research method for system development.
CO3	Develop interpersonal and team skill.

Mapping of COs with Pos

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	2	1	1	1	–	–	1	2	3	–	2
CO2	3	2	1	1	1	–	–	1	2	3	–	2
CO3	3	2	1	1	1	_	_	1	2	3	-	2