M Tech 2015 SCHEME

SEMESTER-1

06ME6017   COMPUTATIONAL METHODS IN THERMAL ENGINEERING

Course Outcomes [COs]

SNO	DESCRIPTION	Bloom's Taxonomy Level
CO1	The students will be able to solve equations, system of equations, differentiation and integration using numerical methods	Understand (level 2)
CO2	The students will be able to solve initial & boundary value problems based on ordinary differential equations	Understand (level 2)
CO3	The students will be able to solve initial & boundary value problems based on partial differential equations.	Understand (level 2)
CO4	Apply computational methods to solve heat conduction problems	Apply (level 3)
CO5	The students will be able to use optimization method to solve maxima & minima problems	Understand (level 2)

06ME6027   APPLIED THERMODYNAMICS

Course Outcomes [COs]

SNO	DESCRIPTION	Bloom's Taxonomy Level
CO1	The students will be able to understand the essential theoretical basis of engineering thermodynamics and its application to a range of problems of relevance to practical engineering	Understand (level 2)
CO2	The students will be able to understand the basic tools and methodologies for carrying out thermodynamic analyses of	Understand (level 2)

	engineering systems.	
CO3	The students will be able to understand thermodynamic properties of working fluids including enthalpy and entropy	Understand (level 2)
CO4	CO4: The students will be able to understand First Law of Thermodynamics applied to common engineering situations and Second Law of Thermodynamics applied to heat engines and refrigeration systems	Understand (level 2)
CO5	The students will be able to understand common practical heat engine and refrigeration cycles.	Understand (level 2)

06ME6037   CONDUCTION AND RADIATION

Course Outcomes [COs]

SNO	*DESCRIPTION*	*Bloom's Taxonomy Level*
CO1	The students will be able to demonstrate an ability to understand the fundamentals of heat transfer	Understand (level 2)
CO2	The students will be able to understand two dimensional steady state heat conduction	Understand (level 2)
CO3	The students will be able to demonstrate an ability to understand the advances in conductive heat transfer	Understand (level 2)
CO4	The students will be able to demonstrate an ability to understand the advances in radiative heat transfer	Understand (level 2)
CO5	The students will be able to understand the concept of view factors used in radiative heat transfe	Understand (level 2)

06ME6047   ADVANCED FLUID MECHANICS

Course Outcomes [COs]

SNO	*DESCRIPTION*	*Bloom's Taxonomy Level*

CO1	The students will show an ability to understand the basic concepts of fluid mechanics	Understand (level 2)
CO2	The students will be able to understand the Boundary conditions and apply the governing equations to find out velocity, pressure, drag force and wall shear stress distribution for practical problem	Understand (level 2)
CO3	The students will show an ability to solve the fluid mechanics problems encountering boundary layer.	Apply (level 3)
CO4	The students will show an ability to understand the physics of turbulence	Understand (level 2)
CO5	The students will show an ability to understand the concepts of Compressible fluid flow	Understand (level 2)

06ME6067   RESEARCH METHODOLOGY

Course Outcomes [COs]

SNO	DESCRIPTION	Bloom's Taxonomy Level
CO1	Develop an understanding of the factors involved in formulating a good research problem	Understand (level 2)
CO2	Apply the research steps to solving a real world research problem	Apply (level 3)
CO3	Formulate hypotheses for research purposes which are to be proved or disproved using scientific methods	Apply (level 3)
CO4	: Discover the use of differential equations as a tool for Mathematical modelling & simulation.	Understand (level 2)
CO5	Illustrate the format of a typical thesis report	Understand (level 2)

06ME6157   ADVANCED REFRIGERATION & AIR CONDITIONING

Course Outcomes [COs]

SNO	DESCRIPTION	Bloom's Taxonomy Level
CO1	The students will be able to use Refrigerant Tables and calculate efficiencies, piston displacements, discharge temperatures and power requirements in single – stage, multi-stage and cascade type vapour compression systems	Understand (level 2)
CO2	The students will be able to determine pertinent quantities in absorption systems	Understand (level 2)
CO3	The students will be able to design and match components of vapour compression systems	Apply (level 3)
CO4	The students will be able to carry out cooling load and design calculations in air conditioning and associated room air distribution systems.	Understand (level 2)
CO5	The students will be able to understand duct design in air conditioning system.	Understand (level 2)

06ME6077   SEMINAR I

Course Outcomes [COs]

SNO	DESCRIPTION	Bloom's Taxonomy Level
CO1	The students will show an ability to present a substantial technical report/document	Understand (level 2)
CO2	The students will show an ability to write substantial technical report/document.	Understand (level 2)
CO3	The students will show an ability to independently carry out research /investigation in thermal Engineering.	Understand (level 2)
CO4	. The students will show an ability to demonstrate a degree of mastery over the areas of thermal Engineering.	Apply (level 3)
CO5	The students will be able to develop an understanding of the	Understand

factors involved in formulating a good research problem.	(level 2)

06ME6087   THERMAL ENGINEERING LABORATORY

Course Outcomes [COs]

SNO	DESCRIPTION	Bloom's Taxonomy Level
CO1	Infer from property charts and tables and to apply the data for the evaluation of performance parameters of refrigerators, air conditioners and heat exchangers	Understand (level 2)
CO2	Apply knowledge in analysis and interpretation of thermo-fluid problems.	Apply (level 3)
CO3	Analyze automobile exhaust gas using exhaust gas analyser	Analyse (level 4)
CO4	Analyze parameters and performance characteristics of petrol and diesel engines including VCR engine	Analyse (level 4)
CO5	Utilize one's ability as an individual or in a team for the effective communication, practical skill and document design	Apply (level 3)

SEMESTER-II

06ME6018   CONVECTIVE HEAT TRANSFER

Course Outcomes [COs]

SNO	DESCRIPTION	Bloom's Taxonomy Level
CO1	The students will be able to understand the basics of convective heat transfer	Understand (level 2)
CO2	The students will be able to understand laminar internal flows.	Understand (level 2)
CO3	The students will be able to understand Heat transfer in turbulent	Understand

	flow	(level 2)
CO4	The students will be able to understand Free convection problems	Understand (level 2)
CO5	The students will be able to demonstrate an ability to develop and solve various challenging problems in convective heat transfer	Apply (level 3)

06ME6028   COMPUTATIONAL METHODS IN FLUID FLOW AND HEAT TRANSFER

Course Outcomes [COs]

SNO	*DESCRIPTION*	*Bloom's Taxonomy Level*
CO1	The students will be able to understand the basic concepts of CFD	Understand (level 2)
CO2	The students will be able to demonstrate the skill to apply the computational methods to solve steady state heat conduction problem.	Apply (level 3)
CO3	The students will be able to demonstrate the skill to apply the computational methods to solve transient heat conduction problem.	Apply (level 3)
CO4	The students will be able to demonstrate an ability to understand numerical analysis like consistency, stability and errors of different finite difference scheme.	Understand (level 2)
CO5	The students will be able to understand the solution algorithms of CFD	Understand (level 2)

06ME6038   IC ENGINE & COMBUSTION

Course Outcomes [COs]

SNO	*DESCRIPTION*	*Bloom's Taxonomy Level*

CO1	The students will be able to demonstrate an ability to understand the fundamental concepts of IC Engines and Combustion Phenomenon.	Understand (level 2)
CO2	The students will be able to apply the basic knowledge to develop new technologies for performance enhancement.	Apply (level 3)
CO3	The students will be able to develop methods for Green emissions	Apply (level 3)
CO4	The students will be able to perform vehicle analysis and overhauling by themselves.	Understand (level 2)
CO5	The students will be able to understand laminar premixed flames and turbulent flames	Understand (level 2)

06ME6148   PRINCIPLES OF TURBO MACHINERY

Course Outcomes [COs]

SNO	*DESCRIPTION*	*Bloom's Taxonomy Level*
CO1	The students will be able to discuss the single- and multi-disciplinary issues in the detail design of turbine engines.	Understand (level 2)
CO2	The students will be able to understand the principles and applications of turbo machinery in modern industry.	Understand (level 2)
CO3	The students will be able to understand the viscous and compressible effects responsible for non - ideal performance in turbo machines	Understand (level 2)
CO4	The students will be able to understand the basic characteristics of turbines and fans with different kinds of working mediums.	Understand (level 2)
CO5	The students will be able to understand the basic characteristics of radial and axial pumps and compressors with different kinds of working mediums	Understand (level 2)

06ME6158   MODERN ENERGY CONVERSION SYSTEMS

Course Outcomes [COs]

SNO	DESCRIPTION	Bloom's Taxonomy Level
CO1	: The students will be able to understand the different energy conversion methodologies.	Understand (level 2)
CO2	The students will be able to understand the limitations of conventional energy conversion which depends on the use of fossil fuels.	Understand (level 2)
CO3	The students will be able to understand the variety of technologies available for alternate, safe and renewable energy conversion.	Understand (level 2)
CO4	The students will be able to understand the constructional features, safety and waste disposal procedures of Nuclear Energy power plant.	Understand (level 2)
CO5	The students will be able to understand the design considerations, constructional features and performance of solar thermal devices and solar thermal power generation systems.	Understand (level 2)

06ME6068   MINI PROJECT

Course Outcomes [COs]

SNO	DESCRIPTION	Bloom's Taxonomy Level
CO1	The students will show an ability to design/develop solution to practical problems in the areas of thermal Engineering	Apply (level 3)
CO2	The students will show an ability to present a substantial technical document.	Understand (level 2)
CO3	The students will show an ability to write substantial technical report/document	Understand (level 2)
CO4	The students will show an ability to independently carry out research /investigation in thermal Engineering	Understand (level 2)

CO5	The students will be able to develop an understanding of the factors involved in formulating a good research problem.	Understand (level 2)

06ME6078   COMPUTATIONAL LAB

Course Outcomes [COs]

SNO	*DESCRIPTION*	*Bloom's Taxonomy Level*
CO1	The students will be able to use modern analysis software like ANSYS and Scilab.	Understand (level 2)
CO2	The students will be able to write Scilab code to find the roots of algebraic and transcendental equations.	Understand (level 2)
CO3	The students will be able to write Scilab code for numerical integration of ordinary differential equations.[	Understand (level 2)
CO4	The students will be able to Design, modeling and analysis: using ANSYS FLUENT.	Apply (level 3)
CO5	The students will show an ability to write substantial technical document.	Understand (level 2)

SEMESTER-III

06ME7117   CRYOGENIC ENGINEERING

Course Outcomes [COs]

SNO	*DESCRIPTION*	*Bloom's Taxonomy Level*
CO1	The students will be able to understand the difference in the behavior of engineering materials at very low temperatures.	Understand (level 2)
CO2	The students will be able to understand the theory and technologies of producing cryogenic temperatures.	Understand (level 2)
CO3	The students will be able to understand Gas liquefaction	Understand

	systems.	(level 2)
CO4	The students will be able to understand Cryogenic fluid storage and transfer systems.	Understand (level 2)
CO5	The students will be able to become aware of modern day use of cryogenic engineering.	Understand (level 2)

06ME7127   ENERGY CONSERVATION AND MANAGEMENT

Course Outcomes [COs]

SNO	*DESCRIPTION*	*Bloom's Taxonomy Level*
CO1	The students will be able to appreciate the importance of energy conservation.	Understand (level 2)
CO2	The students will be able to identify energy conservation opportunities in electrical installations and lighting systems and take remedial measures	Apply (level 3)
CO3	The students will be able to identify energy conservation opportunities in electrical installations and lighting systems and take remedial measures.	Apply (level 3)
CO4	The students will be able to identify energy conservation opportunities in boiler units, steam distribution; HVAC systems etc and suggest appropriate measures.	Apply (level 3)
CO5	The students will be able to Conduct financial evaluation of energy projects and recommend the best one among the available project alternatives.	Apply (level 3)

06ME7037   SEMINAR II

Course Outcomes [COs]

SNO	*DESCRIPTION*	*Bloom's Taxonomy Level*

CO1	The students will show an ability to present a substantial technical report/document.	Understand (level 2)
CO2	The students will show an ability to write substantial technical report/document.	Understand (level 2)
CO3	The students will show an ability to independently carry out research /investigation in thermal Engineering.	Understand (level 2)
CO4	The students will show an ability to demonstrate a degree of mastery over the areas of thermal Engineering.	Apply (level 3)
CO5	The students will be able to develop an understanding of the factors involved in formulating a good research problem.	Understand (level 2)

06ME7047   PROJECT (PHASE I)

Course Outcomes [COs]

SNO	DESCRIPTION	Bloom's Taxonomy Level
CO1	The students will show an ability to design/develop solution to practical problems in the areas of thermal Engineering	Apply (level 3)
CO2	The students will show an ability to present a substantial technical document.	Understand (level 2)
CO3	The students will show an ability to write substantial technical report/document.	Understand (level 2)
CO4	The students will show an ability to independently carry out research /investigation in thermal Engineering	Understand (level 2)
CO5	The students will be able to develop an understanding of the factors involved in formulating a good research problem	Understand (level 2)

SEMESTER-IV

06ME7018   PROJECT (PHASE II)

Course Outcomes [COs]

SNO	*DESCRIPTION*	*Bloom's Taxonomy Level*
CO1	The students will show an ability to design/develop solution to practical problems in the areas of thermal Engineering	Apply (level 3)
CO2	The students will show an ability to present a substantial technical document.	Understand (level 2)
CO3	The students will show an ability to write substantial technical report/document	Understand (level 2)
CO4	The students will show an ability to independently carry out research /investigation in thermal Engineering	Understand (level 2)
CO5	The students will be able to develop an understanding of the factors involved in formulating a good research problem.	Understand (level 2)