



MAR ATHANASIUS COLLEGE OF ENGINEERING
KOTHAMANGALAM

MECHANICAL ENGINEERING DEPARTMENT

LIST OF COURSE OUTCOME

M.TECH-Thermal Power Engineering

SEMESTER	SUBJECT CODE	SUBJECT NAME	CO NO:	CO DESCRIPTION
S1	05ME6101	ADVANCED THERMODYNAMICS	1	Student acquires knowledge on various properties of gas mixtures for reacting systems
			2	Student acquires knowledge on chemical reaction rates and equilibrium constant
			3	Ability to identify and classify various fuel types and carryout combustion analysis
			4	Able to analyse various flow models and knowledge on emission estimation and control
S1	05ME 6103	COMPRESSIBLE AND INCOMPRESSIBLE FLOWS	1	Able to analyse incompressible flow situation
			2	Able to analyse compressible flow situation
			3	Capable of using the theories in a real life situation
			4	To take appropriate decisions with regard to design of various fluid handling devices.
S1	05ME6105	ADVANCED HEAT AND MASS TRANSFER	1	The student gets a thorough knowledge to model conduction heat transfer problems, to apply conservation principles, to find exact and approximate solutions.
			2	The student gets a thorough knowledge to model convection heat transfer problems, to find the pertinent non-dimensional parameters, to non-dimensionalise equations, to find solutions using empirical relations and analogy.
			3	The student gets a thorough knowledge of basic principles of radiation heat transfer problems and to calculate

				radiation heat exchange in simple geometries.
			4	The student gets a thorough knowledge of basic principles in boiling & condensation and to mass transfer.
S1	05ME 6107	NUMERICAL METHODS IN ENGINEERING	1	An ability to apply approximation techniques as well as to carry out iterative techniques to solve complex engineering problems
			2	An ability to apply various interpolation and numerical calculus methods to solve Engineering problems.
			3	An ability to apply various transformation techniques and boundary condition differential equations to solve Engineering problems.
			4	An ability to apply regression and optimisation methods to solve engineering problems
S1	ME 6111	SOLAR ENERGY TECHNOLOGY	1	Students will be able to understand solar radiation energy and how it is measured.
			2	Students will be able to perform design and optimization of flat plate and concentrating collectors
			3	students will be able to understand passive devices which uses solar energy and perform calculation on wind and solar energy conversion and its economics.
			4	Students will be able to acquire knowledge on various solar direct conversion systems.
S1	05ME 6177	RESEARCH METHODOLOGY	1	To understand the significance of different types of research and its various stages.
			2	To have a clear understanding of types of data and of various methods available for data collection.
			3	To have an idea of different methods available for analyzing data and for interpretation of results
			4	To understand the right way of reporting and presenting the outcome of research

S1	05ME6191	THERMAL POWER LAB	1	To impart knowledge about the performance of I C engines, to gain experience in the analysis of exhaust gas emissions. Familiarized with the thermal power plants.
			2	A good understanding about various modes of heat transfer along with detailed concept in conduction heat transfer
			3	Capability to solve convection Heat Transfer Problems with help of various non-dimensional numbers and their empirical relations
			4	Ability to design and analyse various types of fins
			5	Ability to design and analyse various Heat Exchangers
			6	Detailed concept in Radiation Heat Transfer and radiation shields
S1	05ME6102	Measurement Systems In Thermal Engineering	1	
			2	Able to make a suitable selection of the appropriate instrument for a purpose
			3	Able to select the sensors according to the need
			4	Able to do the analysis of the measurements
S2	05ME6104	Computational Fluid Dynamics	1	To impart basic knowledge of governing equations and mathematical behavior of partial differential equations.
			2	To impart the knowledge in finite difference method (FDM).
			3	To impart the knowledge in finite volume method (FVM) for steady and unsteady flow
			4	To create confidence to solve complex problems in the field of fluid flow and heat transfer using high speed computers.
S2	05ME6106	Design Of Heat Transfer Equipments	1	The students gain knowledge of flow arrangements, for the design and performance analysis of double pipe heat exchangers.

			2	The students get a thorough knowledge to design, to calculate pressure drop and the effect of fouling and flow arrangements on the performance of shell and tube heat exchangers.
			3	The students will be able to design and analyse the performance of cooling towers.
			4	The students gain knowledge of the basic principles of plate heat exchangers, heat pipes and their applications.
S2	05ME6122	Alternative Fuels For IC Engines	1	Gain a working understanding of the engineering issues and perspective affecting fuel and engine developments
			2	Examine future trends and developments, including hydrogen as an internal combustion fuel
			3	Explore further fuel specification and performance requirements for advanced combustion systems
S2	05 ME 6132	Advanced Refrigeration	1	Able to understand the working and performance of Vapour compression refrigeration system and its components under different operating conditions.
			2	Able to understand the working and performance of Vapour Absorption refrigeration system and its components under different operating conditions.
			3	Able to understand the working and performance of Air refrigeration system and its components under different operating conditions.
			4	Able to design suitable refrigeration system including selection of suitable refrigerant.
S2	05ME 6166	Seminar - I	1	To assess the debating capability of the student to present a technical topic.
			2	To impart training to a student to face audience and present his ideas and thus creating in him self esteem and courage that are essential for an engineer
			6	

S2	05ME6188	Mini Project	1	To assess the debating capability of the student to present a technical topic. Also to impart training to a student to face audience and present his ideas and thus creating in him self esteem and courage that are essential for an engineer
S2	05ME6192	CFD Lab	1	Ability for design and geometric modelling of simple fluid flow and heat transfer systems in ANSYS
			2	Ability to use various meshing tools
			3	Apply proper boundary conditions and solution algorithm for typical flow and heat transfer problems
			4	Ability to use various post-processing techniques in computational fluid flow.
			5	
			6	
S3	05ME7141	COMBUSTION AND EMISSION IN IC ENGINES	1	Explain the basics of combustion reactions of any type of fuels
			2	2. Explain the combustion and emission formation in the spark ignited engine
			3	3. Explain the combustion and emission formation in the diesel engine
			4	4. Identify the most common exhaust emissions from internal combustion engines and their impact on health and environment
			5	5. Communicate different methods to reduce exhaust emissions from engines during combustion and after treatment process.
			6	
S3	05ME7155	SAFETY IN ENGINEERING INDUSTRY	1	Explain the basics of concept of safety management systems
			2	Explain various safe working conditions and accident investigations
			3	Explain various machine guarding methods,risk and various risk assessment techniques.
			4	Communicate different safety precautions and safe practices followed in Engineering Industries

			5	Evaluate and explain various types of pollution control methods
			6	
S3	05ME7167	SEMINAR II	1	To assess the debating capability of the student to present a technical topic.
			2	To impart training to a student to face audience and present his ideas and thus creating in him self esteem and courage that are essential for an engineer
S4	05ME7187	Project Phase 1	1	To improve the professional competency and research aptitude by touching the areas which otherwise not covered by theory or laboratory classes.
			2	To develop the work practice in students to apply theoretical and practical tools/techniques to solve real life problems related to industry and current research.
S4	05ME7188	Project Phase 2	1	Apply the fundamental knowledge in the area of thermal engineering.
			2	Identify the need of society and formulate research problem through literature survey.
			3	Device analytical, experimental and computational methodologies for solving real life problems in the field of thermal engineering.
			4	Analyze the results and effectively communicate the practically feasible solutions to the society through publications, patents and discussions.