COURSE OUTCOMES OF MTECH(THERMAL)

No.	Course with code	Outcomes
1	TH700 Advanced Fluid Mechanics	1. Each individual should be capable of analysing the physical flow situation of the problem at hand and arrive at the governing equations. 2. Obtain analytical solution to linear and non-linear differential fluid flow governing equations for one dimension and two dimension flows, incompressible as well as compressible fluid. 3. Identification of flows likely to have shock and to develop tools to evaluate the shock region. 4. Analytical skills to analyse turbulent flows.
2	TH701 Heat & Mass Transfer	1. Improved analytical ability 2. Exposure to advanced solution methodology 3. Emphasis on physical insight
3	TH702 Refrigeration and Cryogenics	1. Student will be able to develop the thermodynamic properties of the any refrigerants. 2. Will be able to design the various components of the system. 3. Able to retrofit alternative refrigerants in the existing system after making suitable modifications required. 4. Selection of alternate refrigerants and the system as per the requirement

4	TH703 Combustion	1. The ability to analyse combustion stability and the formation of pollutants in practical combustion devices 2. An understanding of the fundamental theory of the combustion of non-premixed and premixed flames, laminar and turbulent flames, droplets and the theory of ignition 3. An understanding of the role of detailed chemical kinetics in combustion and the ability to calculate the equilibrium compositions of reacting systems. 4. An understanding of pollutant formation in practical devices such as internal combustion engines and gas turbines 5. Demonstration of fundamental knowledge through quizzes and exams. Presentation of analysis and design through engineering reports
5	TH704 Thermal Engg Lab	1. Estimation of uncertainty in experiments and the so obtained results. 2. Exposure to inverse heat conduction technique

6	TH705 Design of Renewable Energy Systems	1. To provide students an appreciation for the need and promise of simultaneously alternative and "clean" energy technologies such as renewable energy systems 2. To train students to apply thermal science fundamentals to the design/analysis of renewable energy system components 3. Expose students to the diversity of beneficial applications currently utilizing renewable energy 4. Introduce students to societal catalysts and challenges regarding renewable energy implementation 5. To provide a platform for students to complete conceptual design problems based upon state-of-the-art scenarios for utilizing renewable energy within developing or developed regions 6. To enable students to work in groups on design projects assigned to them 7. To enhance a student's ability to communicate in written form
7	TH706 Measurement in Thermal Systems	1. Graduate will be able to design and conduct experiments, as well as to organize, analyze and interpret data to produce meaningful conclusions and recommendations 2. Graduate will be able to provide thermal systems or components or process to meet desired need within realistic constraints such as manufacturability, sustainability and safety 3. Graduate will be able to identify, formulate and solve complex engineering problems 4. Graduate will be able to use the techniques, skills and modern engineering tools necessary for engineering practices

8	TH707 Thermal Computation Lab	1. Understanding various experimental measurement techniques involved in the field of thermal engineering. 2. Understanding the concept of measured data analysis and data acquisition techniques

Elective Courses

No.	Course with code	Outcomes
1	TH811 Turbomachines	1. Recognize typical designs of turbomachines and differentiate from positive displacement machines 2. Explain the working principles of turbomachines and apply it to various types of machines 3. Perform the preliminary design of turbomachines (pumps, compressors, turbines) on a 1-D basis 4. Determine the off-design behavior of turbines and compressors and relate it to changes in the velocity triangles 5. Recognize relations between choices made early in the turbomachinery design process and the final components and operability 6. Recognize and discuss today's and tomorrow's use of turbomachines for enabling a sustainable society

2	TH819 Design of Air Conditioning Systems	1. Student will be able to create the psychrometric properties of the air and water mixtures in tabular and chart form. 2. Will be able to calculate the air conditioning load of a given space. 3. Will be able to select or design a suitable air conditioning system. 4. Confidence in applying the subject to any practical problems. 5. Suggesting suitable orientation and building materials for building passive solar buildings.
3	TH820 Computational Fluid Dynamics	1. Graduate will be able to demonstrate and apply in depth technical knowledge of engineering in design and operation of various thermal systems. 2. Graduate will be able provide design solutions to thermal systems or components or process to meet desired need within realistic constraints such as manufacturability, sustainability and safety. 3. Graduate will be able to identify, formulate and solve complex engineering problems Graduate has knowledge about current issues/advances in engineering practicesGraduate will be able to use the techniques, skills and modern engineering tools necessary for engineering practices

4	TH821 Cryogenics Technology	Graduates will be able to 1. do thermodynamic analysis of different liquefaction plants and suitable method of liquefaction 2. choose suitable materials for cryogenic systems 3. perform research in the area of cryogenics 4. design safe and efficient cryogenic systems 5. display new contemporary methods and tools to carry out thermo-physical and mechanical investigations, analysis, and processing of cryogenic machines, plants and equipment.
5	ME 803 Wind Energy Conversion	After successfully completing the course, 1. Students will have an understanding of the physical processes underlying the energy conversion process from wind. 2. Students will learn to assess a wind turbine site for its wind potential, energy needs, environmental (noise and avian) and societal impact and for optimum wind farm layout 3. They will have a solid basic knowledge of wind turbine aerodynamics and they will understand the main strategies used for controlling these machines over their complete operating range. 4. Students will learn to estimate the cost of energy for a given wind turbine plant