

ROHINI COLLEGE OF ENGINEERING AND TECHNOLOGY
DEPARTMENT OF MECHANICAL ENGINEERING

Anna University Regulation 2017
M.E THERMAL ENGINEERING
List of Course Names

S.No.	Sem	Course code	Course	Course Title
1	I	17C101	MA5153	Advanced numerical method
2		17C102	TE5151	Advanced Heat Transfer
3		17C103	TE5101	Advanced Thermodynamics
4		17C104	TE5102	Advanced Engineering Fluid Mechanics
5		17C105	EY5152	Energy Resources
6		17C106	TE5002	Advanced Internal Combustion Engineering
7		17C107	TE5111	Thermal Engineering Laboratory
8	II	17C108	TE5201	Instrumentation for Thermal Engineering
9		17C109	TE5291	Environmental Engineering and Pollution Control
10		17C110	TE5202	Fuels and Combustion
11		17C111	TE5006	Food Processing, Preservation and Transportation
12		17C112	EY5091	Nuclear Engineering
13		17C113	IC5091	Automobile Engineering
14		17C114	TE5261	Thermal Systems Simulation Laboratory
15	17C115	TE5211	Technical Seminar – I	
16	III	17C201	TE5074	Advanced Power Plant Engineering
17		17C202	TE5010	Cogeneration And Waste Heat Recovery Systems
18		17C203	TE5301	Design And Optimization Of Thermal Energy Systems
19		17C204	TE5311	Technical Seminar – II
20		17C205	TE5312	Project Work Phase – I
21	IV	17C206	TE5411	Project Work Phase – II

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Anna University Regulation 2017
M.E Communication Systems

Course Outcomes (CO)

17C101 – MA5153 ADVANCED NUMERICAL METHODS

17C101.1	Solve an algebraic or transcendental equation and differential equations using an appropriate numerical method.
17C101.2	Solve linear system of equations and differential equations using an appropriate numerical method.
17C101.3	Solving the initial boundary value problems and boundary value problems using finite difference method.
17C101.4	Solving the initial boundary value problems and boundary value problems using finite element method.
17C101.5	Selection of appropriate numerical methods to solve various types of problems in engineering and science in consideration with the minimum number of mathematical operations involved, accuracy requirements and available computational resources.

17C102 – TE5151 ADVANCED HEAT TRANSFER

17C102.1	On successful completion of this course the student will be able to understand the concept of conductive and radiative heat transfer mechanism.
17C102.2	On successful completion of this course the student will be able to understand the concept of turbulent forced convective heat transfer mechanism.
17C102.3	On successful completion of this course the student will be able to understand the concept of phase change heat transfer and heat exchanger mechanism.
17C102.4	On successful completion of this course the student will be able to understand the application of numerical methods in heat transfer applications.
17C102.5	On successful completion of this course the student will gain knowledge in combined heat and mass transfer mechanisms in engine applications.

17C103 – TE5101 ADVANCED THERMODYNAMICS

17C103.1	On successful completion of this course the student will be able to understand availability analysis and thermodynamic property relations.
17C103.2	On successful completion of this course the student will be able to understand real gas behaviour and multi – component systems.
17C103.3	On successful completion of this course the student will be able to understand chemical thermodynamics and equilibrium concepts.
17C103.4	On successful completion of this course the student will be able to understand statistical thermodynamic concepts.
17C103.5	On successful completion of this course the student will be able to understand irreversible thermodynamic concepts.

17C104 – TE5102 ADVANCED FLUID MECHANICS

17C104.1	On successful completion of this course the student will be able to understand basic equations of flow.
17C104.2	On successful completion of this course the student will be able to understand potential flow theory.
17C104.3	On successful completion of this course the student will be able to understand viscous flow theory.
17C104.4	On successful completion of this course the student will be able to understand boundary layer concept.
17C104.5	On successful completion of this course the student will be able to understand compressible fluid flow.

17C105 – EY5152 ENERGY RESOURCES

17C105.1	On successful completion of this course the student will be able to understand commercial energy in fuels.
17C105.2	On successful completion of this course the student will be able to understand solar energy as a fuels.
17C105.3	On successful completion of this course the student will be able to understand wind energy.
17C105.4	On successful completion of this course the student will be able to understand bio-energy.
17C105.5	On successful completion of this course the student will be able to understand different types of energy.

17C106 – TE5002 ADVANCED INTERNAL COMBUSTION ENGINES

17C106.1	On successful completion of this course the student will be able to understand spark ignition engines.
17C106.2	On successful completion of this course the student will be able to understand compression ignition engines.
17C106.3	On successful completion of this course the student will be able to understand pollutant formation and control.
17C106.4	On successful completion of this course the student will be able to understand alternative fuels for IC engines.
17C106.5	On successful completion of this course the student will be able to understand the recent trends in IC engines.

17C107 – TE5111 THERMAL ENGINEERING LABORATORY

17C107.1	On successful completion of this course the student will know the various alternate fuels are available for petrol engines.
17C107.2	On successful completion of this course the student will know the various alternate fuels are available for diesel engines.
17C107.3	On successful completion of this course the student will be able to understand the thermodynamic relations for thermal engineering devices.
17C107.4	On successful completion of this course the student will be able to understand the working principle of different renewable energy sources.
17C107.5	On successful completion of this course the student will be able to measure the properties of different fuels.

17C108- TE5201 INSTRUMENTATION FOR THERMAL ENGINEERING

17C108.1	To expose students to basic characteristics of measurement parameters
17C108.2	To enable the students use appropriate measurement system for various applications
17C108.3	To enable the students to measure thermo physical properties of solids and fuels
17C108.4	To elaborate the students on the need, types of control a control system
17C108.5	To design a suitable control system for various thermal systems

17C109- TE5291 ENVIRONMENTAL ENGINEERING AND POLLUTION CONTROL

17C109.1	To impart knowledge on the atmosphere and its present condition and, global warming.
17C109.2	To detail on the sources of water pollution and possible solutions for mitigating their degradation.
17C109.3	To detail on the sources of air pollution and possible solutions for mitigating their degradation.
17C109.4	To detail on the sources of solid waste and possible ways to dispose them safely
17C109.5	To impart knowledge on hazardous waste management.

17C110 - TE5202 FUELS AND COMBUSTION

17C110.1	Interpret and distinguish between the different types of conventional and non-conventional fuels
17C110.2	Demonstrate the utilization of synthetic and substitute fuels for practical applications.
17C110.3	Describe various parameters that are utilized to characterize fuels and its combustion process.
17C110.4	Analyze the kinetic mechanism involved in combustion and chemical reaction.
17C110.5	To detail on the sources of control of emissions in combustion.

17C111- TE5006 FOOD PROCESSING, PRESERVATION AND TRANSPORTATION

17C111.1	To introduce microbiology of food products
17C111.2	To give an overview of thermodynamic properties of food products and different food processing techniques.
17C111.3	To explain the freezing and drying principles and estimate freezing time calculation.
17C111.4	To give an understanding of the various cold storage design
17C111.5	To introduce design features of refrigerated containers transportation

17C112 - EY5091 NUCLEAR ENGINEERING

17C112.1	To describe fundamental study of nuclear reactions
17C112.2	To learn nuclear fuels cycles, characteristics. Fundamental principles governing nuclear fission chain reaction and fusion
17C112.3	To discuss future nuclear reactor systems with respect to generation of energy, fuel breeding, incineration of nuclear material and safety.
17C112.4	Students will be able to understand the importance of fusion energy, fusion systems and its prospects. .
17C112.5	Students will be having fundamental knowledge of radioisotopes applications in various fields.

17C113 - IC5091 AUTOMOBILE ENGINEERING

17C113.1	Students able to get knowledge about vehicle structure, auxiliary systems, transmission and recent alternative sources for vehicles.
17C113.2	Explain the working of various parts like engine, transmission, clutch, brakes
17C113.3	Describe how the steering and the suspension systems operate.
17C113.4	Understand the environmental implications of automobile emissions
17C113.5	Develop a strong base for understanding future developments in the automobile industry

17C114 - TE5261 THERMAL SYSTEMS SIMULATION LABORATORY

17C114.1	Students able to get knowledge about various heat transfer simulation study on different thermal engineering applications by using analysis softwares
17C114.2	Use of these tools for any engineering and real time applications.
17C114.3	Students able to get knowledge about various heat transfer simulation study on different thermal engineering applications by using analysis softwares

17C115 - TE5211 TECHNICAL SEMINAR – I

17C115.1	Identify and choose appropriate topic of relevance.
17C115.2	Assimilate literature on technical articles of specified topic and develop comprehension and Prepare technical report.
17C115.3	Design, develop and deliver presentation on specified technical topic

17C201 - TE5074 ADVANCED POWER PLANT ENGINEERING

17C201.1	Evaluate appropriate power generation technologies for mitigating the energy gap
17C201.2	Appraise the steam rate, heat rate and cost for generating electricity from coal based thermal power plants
17C201.3	Analyse and suggest measures for improving the performance of gas turbine and diesel power plants
17C201.4	Assess the applicability and performance of a cogeneration system
17C201.5	Decide a suitable type of hydroelectric/nuclear power plant commensurate with the prevailing conditions

17C202 - TE5010 COGENERATION AND WASTE HEAT RECOVERY SYSTEMS

17C202.1	students can able understand the principles of cogeneration systems, ,
17C202.2	students can able understand the principles of waste heat recovery systems
17C202.3	Students can able understand the principles of applications of cogeneration and economic analysis of waste heat recovery systems.
17C202.4	To understand the significance of waste heat recovery systems and carry out its economic Analysis.
17C202.5	students can able understand the concept of cogeneration, its types and probable areas of applications

17C203 - TE5301 DESIGN AND OPTIMIZATION OF THERMAL ENERGY SYSTEMS

17C203.1	On successful Completion of this course the student will be understand modeling and optimization of Thermal systems.
17C203.2	Understand basic design principles of the thermal systems and the type of models suitable for further analysis.
17C203.3	Carry out the Simulation and Modelling of typical thermal energy systems.
17C203.4	Analysis the effect of constraints on the performance of thermal energy systems.
17C203.5	Develop the dynamic analysis of the thermal system with control system feedback arrangement.

17C204 - TE5311 TECHNICAL SEMINAR – II

17C204.1	Develop the capacity to observe intelligently and propose and defend opinions and ideas with tact and conviction.
17C204.2	Develop skills regarding professional communication and technical report writing.
17C204.3	Learn the methodology of publishing technical papers.
17C204.4	Organize a detailed literature survey and build a document with respect to technical publications.
17C204.5	Establish motivation for any topic of interest and develop a thought process for technical presentation.

17C205 - TE5312 PROJECT WORK PHASE – I

17C205.1	Student will be able to use the knowledge of the fundamentals of subjects to search the related literature.
17C205.2	Student will be able to analyze and evaluate the available resources and to select/design/create most appropriate one.
17C205.3	The students' would apply the knowledge gained from theoretical and practical courses in solving problems,
17C205.4	The students' as to give confidence to the students to be creative, well planned, organized, coordinated in their project work phase – II.

17C206 - TE5411 PROJECT WORK PHASE – II

17C206.1	Student will be able to use knowledge for formulation / fabrication of the desired project.
17C206.2	Student will be able to analyze the available resources and to select most appropriate one.
17C206.3	Student will be able to integrate the knowledge of the fundamentals of subjects to search the related literature and devise solution
17C206.4	The students' to be creative, well planned, organized, coordinated project outcome of the aimed work.

Note:

The above Table should be provided for all the Courses in the respective Regulation.