

ROHINI COLLEGE OF ENGINEERING AND TECHNOLOGY
DEPARTMENT OF MECHANICAL ENGINEERING

Anna University Regulation 2013
M.E THERMAL ENGINEERING
List of Course Names

S.No.	Sem	Course code	Course	Course Title
1	I	13C101	MA7169	Advanced Numerical Methods
2		13C102	TE7101	Advanced Heat Transfer
3		13C103	TE7102	Advanced Thermodynamics
4		13C104	TE7103	Advanced Engineering Fluid Mechanics
5		13C105	TE7104	Fuels and Combustion
6		13C106	IC7071	Advanced Internal Combustion Engineering
7		13C107	TE7111	Thermal Engineering Laboratory
8	II	13C108	TE7201	Design of Thermal Systems
9		13C109	TE7202	Instrumentation for Thermal Engineering
10		13C110	TE7203	Environmental Engineering and Pollution Control
11		13C111	EY7008	Nuclear Engineering
12		13C112	TE7005	Food Processing, Preservation and Transport
13		13C113	TE7008	Energy Management in Thermal Systems
14		13C114	TE7211	Seminar I
15		13C115	TE7212	Simulation Laboratory
16	III	13C201	TE7010	Advanced Power Plant Engineering
17		13C202	TE7011	Advanced Thermal Storage Technologies
18		13C203	TE7012	Cogeneration and Waste Heat Recovery Systems
19		13C204	TE7311	Seminar II
20		13C205	TE7312	Project work(Phase I)
21	IV	13C206	TE7411	Project Work (Phase II)

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Anna University Regulation 2013
M.E Communication Systems

Course Outcomes (CO)

13C101 – MA7169 ADVANCED NUMERICAL METHODS

13C101.1	Solve an algebraic or transcendental equation and differential equations using an appropriate numerical method.
13C101.2	Solve linear system of equations and differential equations using an appropriate numerical method.
13C101.3	Solving the initial boundary value problems and boundary value problems using finite difference method.
13C101.4	Solving the initial boundary value problems and boundary value problems using finite element method.
13C101.5	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.

13C102 – TE7101 ADVANCED HEAT TRANSFER

13C102.1	On successful completion of this course the student will be able to understand the concept of conduction, finned system and gas radiation heat transfer .
13C102.2	On successful completion of this course the student will be able to understand the concept of turbulent flow and high speed flow on forced convective heat transfer
13C102.3	On successful completion of this course the student will be able to understand the concept of phase change and have knowledge on the design of various types of heat exchangers.
13C102.4	On successful completion of this course the student will be able to understand the application of numerical methods in heat transfer applications.
13C102.5	On successful completion of this course the student will gain knowledge in correlation of heat and mass transfer in engine applications.

13C103 – TE7102 ADVANCED THERMODYNAMICS

13C103.1	On successful completion of this course the student will be able to understand availability analysis and thermodynamic property relations.
13C103.2	On successful completion of this course the student will be able to understand real gas behaviour and multi – component systems.
13C103.3	On successful completion of this course the student will be able to understand thermochemistry, adiabatic flame temperature, chemical thermodynamics and equilibrium concepts.
13C103.4	On successful completion of this course the student will be able to understand micro and macro states of statistical thermodynamic concepts.
13C103.5	On successful completion of this course the student will be able to understand thermo-electric phenomenas.

13C104 – TE7103 ADVANCED FLUID MECHANICS

13C104.1	On successful completion of this course the student will be able to understand equations of motion, momentum ,energy concepts for engineering applications .
13C104.2	On successful completion of this course the student will be able to understand various flow theory in aerodynamics.
13C104.3	On successful completion of this course the student will be able to understand viscous flow theory.
13C104.4	On successful completion of this course the student will be able to understand boundary layer concept.
13C104.5	On successful completion of this course the student will be able to understand nozzles and diffuser compressed fluid flows.

13C105 – TE7104 FUEL AND COMBUSTION

13C105.1	On successful completion of this course the student will be able to understand various fuel properties and characterization
13C105.2	On successful completion of this course the student will be able to understand various solid and liquid fuels
13C105.3	On successful completion of this course the student will be able to understand various gaseous fuels
13C105.4	On successful completion of this course the student will be able to understand combustion and chemical kinetics Air-Fuel Composition
13C105.5	On successful completion of this course the student will be able to understand combustion equipments

13C106 – IC7010 ADVANCED INTERNAL COMBUSTION ENGINEERING

13C106.1	On successful completion of this course the student will be able to understand spark ignition engines.
13C106.2	On successful completion of this course the student will be able to understand compression ignition engines.
13C106.3	On successful completion of this course the student will be able to understand pollutant formation and control.
13C106.4	On successful completion of this course the student will be able to understand various alternative fuels for IC engines.
13C106.5	On successful completion of this course the student will be able to understand the recent trends in IC engines.

13C107 – TE7111 THERMAL ENGINEERING LABORATORY

13C107.1	On successful completion of this course the student will know the various performance and emission test on S.I and C.I Engine
13C107.2	On successful completion of this course the student will know about cooling tower solar water heater and refrigeration and heat pump
13C107.3	On successful completion of this course the student will be able to understand the boiler efficiency testing.
13C107.4	On successful completion of this course the student will be able to understand to measure properties of various alternative fuels.
13C107.5	On successful completion of this course the student will be able to measure the fuel cell and thermal storage systems

13C108- TE7201 DESIGN OF THERMAL SYSTEMS

13C108.1	Understand the aspects of designing of thermal systems.
13C108.2	To enable the students use appropriate measurement system for various applications
13C108.3	Solve the problem using numerical simulation by choosing the design variables which affects the problem.
13C108.4	Explain economic aspects of designing and able to apply different techniques of optimization applicable to thermal system.
13C108.5	To design a suitable control system for various thermal systems

13C109- TE7202 INSTRUMENTATION FOR THERMAL ENGINEERING

13C109.1	Infer the role of uncertainty analysis in measuring instruments.
13C109.2	Select the appropriate temperature sensors based on specific applications.
13C109.3	Identify the suitable sensors for pressure and volume measurements.
13C109.4	Evaluate thermos physical properties of media.
13C109.5	Appraise the advantages of data acquisition systems.

13C110 - TE7203 ENVIRONMENTAL ENGINEERING AND POLLUTION CONTROL

13C110.1	Types and effects of each type of pollution on man – earth will be made known.
13C110.2	Technical aspects of Global Warming will make them understand the impact they have on climate
13C110.3	Technologies that are available for reduction of pollutants dumped into the atmosphere
13C110.4	Cursory / superficial formation - the students – had in Hazardous waste, waste disposal hitherto will be deep & sensible enough after studying this subject
13C110.5	Comprehend the different techniques available for safe disposal of hazardous waste

13C111 - EY7008 NUCLEAR ENGINEERING

13C111.1	To describe fundamental study of nuclear reactions
13C111.2	To learn nuclear fuels cycles, characteristics. Fundamental principles governing nuclear fission chain reaction and fusion
13C111.3	To discuss future nuclear reactor systems with respect to generation of energy, fuel breeding, incineration of nuclear material and safety.
13C111.4	Students will be able to understand the importance of fusion energy, fusion systems and its prospects. .
13C111.5	Students will be having fundamental knowledge of radioisotopes applications in various fields.

13C112- TE7005 FOOD PROCESSING, PRESERVATION AND TRANSPORTATION

13C112.1	To introduce microbiology of food products
13C112.2	To give an overview of thermodynamic properties of food products and different food processing techniques.
13C112.3	To explain the freezing and drying principles and estimate freezing time calculation.
13C112.4	To give an understanding of the various cold storage design
13C112.5	To introduce design features of refrigerated containers transportation

13C113 - TE7008 Energy Management in Thermal Systems

13C113.1	Students will be able to apply the knowledge of the subject to calculate the efficiency of various thermal utilities.
13C113.2	Students able to audit the power plants, the various measures for energy conservation and financial implications for various thermal utilities.
13C113.3	Students will be able to improve the thermal efficiency by designing suitable systems for heat recovery and co-generation
13C113.4	Students will be able to design suitable energy monitoring system to analyze and optimize the energy consumption in an organization.
13C113.5	Students will be able to guide the employees of the organization about the need and the methods of energy conservation.

13C114 - TE7211 SEMINAR I

13C114.1	Identify and choose appropriate topic of relevance.
13C114.2	Assimilate literature on technical articles of specified topic and develop comprehension and Prepare technical report.
13C114.3	Design, develop and deliver presentation on specified technical topic

13C115 - TE7212 SIMULATION LABORATORY

13C115.1	Students able to get knowledge about various heat transfer simulation study on different thermal engineering applications by using analysis softwares
13C115.2	Use of these tools for any engineering and real time applications.
13C115.3	Students able to get knowledge about various heat transfer simulation study on different thermal engineering applications by using analysis softwares

13C201 - TE7010 ADVANCED POWER PLANT ENGINEERING

13C201.1	Evaluate appropriate power generation technologies for mitigating the energy gap
13C201.2	Appraise the steam rate, heat rate and cost for generating electricity from coal based thermal power plants
13C201.3	Analyse and suggest measures for improving the performance of gas turbine and diesel power plants
13C201.4	Assess the applicability and performance of a cogeneration system
13C201.5	Decide a suitable type of hydroelectric/nuclear power plant commensurate with the prevailing conditions

13C202 - TE7011 ADVANCED THERMAL STORAGE TECHNOLOGIES

13C202.1	Understand the basic components of energy consumption and their influence on energy systems.
13C202.2	Understand renewable energy integration into energy systems.
13C202.3	Be able to develop and calculate example cases related to renewable energy and its integration into energy systems.
13C202.4	Students can able understand the principles of heat storage systems, regenerators and its applications.
13C202.5	Understand holistically energy systems, their components and interaction outside the system boundaries.

13C203 - TE7012 COGENERATION AND WASTE HEAT RECOVERY SYSTEMS

13C203.1	students can able understand the principles of cogeneration systems, ,
13C203.2	students can able understand the principles of waste heat recovery systems
13C203.3	Students can able understand the principles of applications of cogeneration and economic analysis of waste heat recovery systems.
13C203.4	To understand the significance of waste heat recovery systems and carry out its economic Analysis.
13C203.5	students can able understand the concept of cogeneration, its types and probable areas of applications

13C204 - TE7311 SEMINAR II

13C204.1	Develop the capacity to observe intelligently and propose and defend opinions and ideas with tact and conviction.
13C204.2	Develop skills regarding professional communication and technical report writing.
13C204.3	Learn the methodology of publishing technical papers.
13C204.4	Organize a detailed literature survey and build a document with respect to technical publications.
13C204.5	Establish motivation for any topic of interest and develop a thought process for technical presentation.

13C205 - TE7312 PROJECT WORK (PHASE I)

13C205.1	Student will be able to use the knowledge of the fundamentals of subjects to search the related literature.
13C205.2	Student will be able to analyze and evaluate the available resources and to select/design/create most appropriate one.
13C205.3	The students' would apply the knowledge gained from theoretical and practical courses in solving problems,
13C205.4	The students' as to give confidence to the students to be creative, well planned, organized, coordinated in their project work phase – II.

13C206 - TE7411 PROJECT WORK (PHASE II)

13C206.1	Student will be able to use knowledge for formulation / fabrication of the desired project.
13C206.2	Student will be able to analyze the available resources and to select most appropriate one.
13C206.3	Student will be able to integrate the knowledge of the fundamentals of subjects to search the related literature and devise solution
13C206.4	The students' to be creative, well planned, organized, coordinated project outcome of the aimed work.