

**NATIONAL INSTITUTE OF TECHNOLOGY, TIRUCHIRAPPALLI****DEPARTMENT OF MECHANICAL ENGINEERING**

COURSE PLAN – PART I			
Course Title	ADVANCED THERMAL ENGINEERING LABORATORY		
Course Code	ME609	No. of Credits	2
Course Code of Pre-requisite subject(s)	NIL		
Session	Jul. 2021	Section (if, applicable)	I st Year M.Tech
Name of Faculty	Dr. K.S.S. Harish Dr. S. Vedharaj	Department	Mechanical
Email	harish@nitt.edu vedha@nitt.edu	Phone No.	9940404264 8220389260
Name of Course Coordinator(s) (if, applicable)	-----		
Course Type	Lab course		
Syllabus (approved in BoS)			
1. Simulation of IC engine processes 2. Performance and emission characteristics of SI and CI engines 3. Production, optimization and characterization studies of alternate fuels 4. Thermal property measurements of liquids 5. Melting and solidification studies of medium temperature phase change materials 6. Studies on HVAC system 7. Unsteady state heat transfer equipment 8. Radiation errors in temperature measurement 9. Pool boiling heat transfer			
COURSE OBJECTIVES			
1. To study the performance and emission characteristics of IC engine 2. To impart the knowledge of various alternate fuels for IC engines 3. To understand the thermodynamic relations of thermal engineering devices 4. To understand the working principle of different heat transfer equipments			
COURSE OUTCOMES (CO)			
Course Outcomes At the end of the course student will	Aligned Programme Outcomes (PO)		
1. Understand the performance and emission characteristics of IC engine	1,4,5,8,12		
2. Know the various alternate fuels and production methods	1,4,5,8,12		
3. Understand the thermodynamic relations of thermal engineering devices	1,4,5,8,12		
4. Understand the working characteristics of different heat transfer equipment	1,4,5,8,12		
5. Understand the pool boiling heat transfer	1,4,5,8,12		
6. Understand about HVAC system	1,4,5,8,12		

COURSE PLAN – PART II**COURSE OVERVIEW**

This course provides practical knowledge to the students in thermal equipment and its application in thermal engineering fields. This course includes performance and emission characteristics of SI and IC engines. This course provides knowledge in alternate fuels and its production. Moreover, by this course the students able to understand the radiation errors, pool boiling system and HVAC system.

COURSE TEACHING AND LEARNING ACTIVITIES

S.No.	Week	Topic	Mode of Delivery
1	1 st Week	Simulation of IC engine processes	Interaction with suitable experiments
2	2 nd Week	Performance and emission characteristics of SI and CI engines	Interaction with suitable experiments
3	3 rd Week	Production, optimization and characterization studies of alternate fuels	Interaction with suitable experiments
4	4 th Week	Thermal property measurements of liquids	Interaction with suitable experiments
5	5 th Week	Melting and solidification studies of medium temperature phase change materials	Interaction with suitable experiments
6	6 th Week	Studies on HVAC system	Interaction with suitable experiments
7	7 th Week	Unsteady state heat transfer equipment	Interaction with suitable experiments
8	8 th Week	Radiation errors in temperature measurement	Interaction with suitable experiments
9	9 th Week	Pool boiling heat transfer	Interaction with suitable experiments
10	10 th Week	Compensation class	Interaction with suitable experiments
11	11 th week	End semester laboratory exam	-----

COURSE ASSESSMENT METHODS

Sl.no.	Mode of Assesement	Week	Duration	% Weightage
1	Internal Assesment – Continuous Evaluation Online mode	10 Weeks	3 hours/week	70
2	End semester examination (Viva voce)	As per the schedule	3 hours	30

COURSE EXIT SURVEY

- Feedback from the students during class committee meetings.
- Anonymous feedback through questionnaire and unknown formats.

COURSE POLICY (preferred mode of correspondence with students, policy on attendance, compensation assessment, academic honesty and plagiarism etc.)

MODE OF CORRESPONDENCE (email/ phone etc)

All the students are advised to come to the laboratory session without fail. All the correspondence

(lab exercise details/ compensation class/lab reports, etc.) will be intimated in the google classroom only.

ATTENDANCE

- At least 75% attendance in each course is mandatory.
- A maximum of 10% shall be allowed under On Duty (OD) category.
- Students with less than 65% of attendance shall be prevented from writing the final assessment and shall be awarded 'V' grade.

COMPENSATION ASSESSMENT

- Compensation lab will be conducted before end of the course.

ACADEMIC HONESTY & PLAGIARISM

- Possessing a mobile phone, carrying bits of paper, talking to other students, copying from others during an assessment will be treated as punishable dishonesty.
- Zero mark to be awarded for the offenders. For copying from another student, both students get the same penalty of zero mark.
- The departmental disciplinary committee including the course faculty member, PAC chairperson and the HoD, as members shall verify the facts of the malpractice and award the punishment if the student is found guilty. The report shall be submitted to the Academic office.
- The above policy against academic dishonesty shall be applicable for all the programmes.

ADDITIONAL INFORMATION

- The faculty is available for consultation at times as per the intimation given by the faculty.
- Queries (if required) to the course teacher shall only be emailed to the email id specified by the teacher(harish@nitt.edu / vedha@nitt.edu)

FOR APPROVAL



Course Faculty



CC-Chairperson



HOD 27/10/2021