NATIONAL INSTITUTE OF TECHNOLOGY, TIRUCHIRAPPALLI

COURSE PLAN

COURSE OUTLINE TEMPLATE			
Course Title	THERMODYNAMICS AND FLUID MECHANICS LABORATORY		
Course Code	CE 285	**No. of Credits**	2
Department	Mechanical Engineering	**Faculty**	Dr. S. Venkatachalapathy Prof. Nanda Naik Korra
Pre-requisites Course Code	Prior knowledge of thermodynamics and fluid mechanics		
Course Coordinator(s) (if, applicable)	Not Applicable		
E-mail	svc@nitt.edu naik@nitt.edu	**Telephone No.**	9443514038 / 9894472210
Course Type	Core course		

COURSE OVERVIEW

To make the students understand the principles of thermodynamics and fluid mechanics by exposing them to experimental methods.

COURSE OBJECTIVES

1. To understand the principles of thermal and mechanical energy and their transformations
2. To provide a working knowledge of thermodynamics & fluid mechanics.

COURSE OUTCOMES (CO)

	Course Outcomes	Aligned Programme Outcomes (PO)
1.	1. An understanding of heat, work, internal energy, 1st and 2nd law of thermodynamics 2. An understanding of Dimensional Analysis, fluid statics	

and dynamics 3. An understanding of fluid mechanics fundamentals, including concepts of mass and momentum conservation. 4. Ability to apply the Bernoulli equation & control volume analysis to solve problems in fluid mechanics.	

COURSE TEACHING AND LEARNING ACTIVITIES

S.No.	Week	Topic	Mode of Delivery
	Students do the experiments in a cyclical manner	**Thermodynamics laboratory experiments.** 1. Performance test on single cylinder four stroke Diesel Engines. 2. Heat balance test on single cylinder four stroke Diesel Engines. 3. Morse test on multi-cylinder petrol engine. 4. Coefficient of performance (COP) in compression refrigerator cycle 5. Determination of Viscosity index of lubricant. **Fluid mechanics laboratory experiments.** 1. Determination of pipe friction. 2. Calibration of flow meters – Venturimeter and Orifice meter. 3. Determination of discharge coefficients for notches. 4. Determination of minor losses. 5. Characterization of Centrifugal pump 6. Verification of Bernoulli's theorem.	Hands-on experiments

COURSE ASSESSMENT METHODS

S.No.	Mode of Assessment	Week/Date	Duration	% Weightage
1	Continuous Assessment	Every week	After Each experiment	75
2	End semester exam	At the end of semester	3 hours	25

ESSENTIAL READINGS : Textbooks, reference books Website addresses, journals, etc

1. Ganesan, V., Internal Combustion Engines, Tata McGraw-Hill, 2003.
2. Heywood, J.B., Fundamentals of Internal Combustion Engines, McGraw-Hill, 1988.
3. Fox, R.W. and Mc Donald, A.T., *Introduction to Fluid Mechanics,* 6th ed., John Wiley, 2003.
4. White, F.M., *Fluid Mechanics,* 5th ed., McGraw-Hill, 2003.

COURSE EXIT SURVEY (mention the ways in which the feedback about the course is assessed and indicate the attainment also)

Anonymous questionnaire at the end of the semester

COURSE POLICY (including plagiarism, academic honesty, attendance, etc.)

75% attendance is required. If any student misses any experiment due to any valid reason they should do the experiment at a convenient time. Otherwise marks will not be awarded for that experiment.

ADDITIONAL COURSE INFORMATION

Queries may be emailed to the faculty members directly at svc@nitt.edu or naik@nitt.edu

FOR SENATE'S CONSIDERATION

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2.

Goldin R. Bennet
17.8.2015

Course Faculty _____ **CC-Chairperson** _____ **HOD** _____