DEPARTMENT OF MECHANICAL ENGINEERING

NATIONAL INSTITUTE OF TECHNOLOGY, TIRUCHIRAPPALLI

COURSE PLAN – PART I							
Course Title	FLUID MECHANICS LABORATORY						
Course Code	MELR13			**No. of Credits**	1		
Course Code of Pre-requisite subject(s)	MEPC18 FLUID MECHANICS						
Session	January 2018			**Section (if, applicable)**	B		
Name of Faculty	Dr. R. Anand			**Department**	Mechanical		
Email	anandachu@nitt.edu			**Telephone No.**	0431-2503423/3438 9444838909		
Name of Course Coordinator(s) (if, applicable)							
E-mail				**Telephone No.**			
Course Type	☐	Core Course	☐	Elective Course	✓	Lab Requirement	

Syllabus (approved in BoS)

Determination of pipe friction.
Calibration of venturimeter, orifice meter and water meter.
Determination of discharge coefficients for notches, mouthpiece, orifice and weirs.
Determination of minor losses, flow through helical coils and metacentric height.
Performance characteristics of a reciprocating, centrifugal, gear oil, jet and submergible pump
Characteristics test on francis, Kaplan, pelton wheel turbine

COURSE OBJECTIVES

1. To provide practice in estimating friction losses.
2. To impart training to use various flow measuring devices for making engineering judgements.
3. To learn the working principles of hydraulic turbines and pumps.

COURSE OUTCOMES (CO)

Course Outcomes	**Aligned Programme Outcomes (PO)**
At the end of the course student will	
1. Estimate the friction and measure the frictional losses in fluid flow	**1,2,3,4,7,8,10**
2. Experiment with flow measurement devices like venturimeter and orificemeter	**1,2,3,5**
3. Predict the coefficient of discharge for flow through pipes	**1,2,3,7,9**
4. Perform test on turbines and pumps.	**1,2,3,7,9**

COURSE PLAN – PART II

COURSE OVERVIEW

The course provides the students with an insight into the measurement of discharge of fluid (water) through various notches, bends, and elbow and thus enables them to have a comparative study based on the losses, frictional effects and so on. In addition to this, students are also being introduced to the hydraulic machines like pumps and turbines which is useful in understanding the efficiency of the machines with respect to the concerned applications

COURSE TEACHING AND LEARNING ACTIVITIES

S.No.	Week/Contact Hours	Topic	Mode of Delivery
1	1st week	Introduction to experiments	Oral Presentation
2	2nd week	Determination of discharge coefficient of Venturi- meter	Demonstration
3	3rd week	Determination of discharge coefficient of orifice meter.	Demonstration
4	4th week	Determination of discharge coefficients for V- notch	Demonstration
5	5th week	Determination of discharge coefficients for rectangular notch	Demonstration
6	6th week	Determination of pipe friction.	Demonstration
7	7th week	Determination of minor loses in pipes.	Demonstration
8	8th week	Performance characteristics of reciprocating pump	Demonstration
9.	9th week	Performance characteristics of gear oil pump	Demonstration
10	10th week	Performance characteristics of jet pump	Demonstration
11	11th week	Characteristics test on Francis wheel turbine	Demonstration
12	12th week	Compensatory lab class for Absentees	Demonstration
13	13th week	End Semester Lab Exam	Assessment

COURSE ASSESSMENT METHODS				
S.No.	**Mode of Assessment**	**Week/Date**	**Duration**	**% Weightage**
1	Experimentation	Every Week	2 hours 30 minutes	30
2	Viva Voce	Every Week		30
3	Record Note	Every Week		10
4	Final Assessment	April second week	150 Minutes	30
	Total Marks			100

COURSE EXIT SURVEY

1. Feedback from the students during class committee meeting.
2. End semester feedback on Course Outcomes

COURSE POLICY

MODE OF CORRESPONDENCE

All the communication to the class (schedule of assessment/ course material/ any other information regarding this course) will be through the class representative.

ATTENDENCE

1. 75% attendance is essential to appear for the end semester examination.
2. A student having attendance in the range of 50 - 75% need to appear for the compensatory lab class.
3. Students not having 50% attendance at the end of the semester will have to REDO the course

ACADEMIC HONESTY & PLAGIARISM

1. All the students are expected to be genuine during the course work. Acquiring information by wrong means like copying in examination / assessment is considered as dishonest.
2. Tendering of information such as giving one's program, simulation work, assignments to another student to use or copy is also considered dishonest.
3. Any practice which is considered dishonest during any assessment will lead to cancellation of the assessment process for the candidate.

ADDITIONAL INFORMATION

The Course Coordinator is available for consultation at times those are displayed on the coordinator's office notice board. Queries may also be emailed to the Course Coordinator directly at anandachu@nitt.edu

FOR APPROVAL

Dr. R. Anand	**Dr.T. Ramesh**	**Dr. S.P. Sivapirakasam**
Course Faculty	**CC-Chairperson**	**HOD**

Guidelines:

a) The number of assessments for a course shall range from 4 to 6.
b) **Every course shall have a final assessment on the entire syllabus with at least 30% weightage.**
c) **One compensation assessment for absentees in assessments (other than final assessment) is mandatory. This is not applicable for project work/industrial lectures/internship.**
d) The policy for attendance for the course should be clearly specified.
e) Necessary care shall be taken to ensure that the course plan is reasonable and is objective.