DEPARTMENT OF INSTRUMENTATION AND CONTROL ENGINEERING

NATIONAL INSTITUTE OF TECHNOLOGY, TIRUCHIRAPPALLI

COURSE PLAN – PART I			
Course Title	Instrumentation Laboratory		
Course Code	ICLR14	**No. of Credits**	2
Course Code of Pre-requisite subject(s)	NA		
Session	July 2018	**Section (if, applicable)**	B
Name of Faculty	Mr. S. Srinivasulu Raju	**Department**	ICE
Email	ssraju@nitt.edu	**Mobile No.**	8870281340
Name of Course Coordinator(s) (if, applicable)	Not Applicable		
Course Type	☒ **Core course** ☐ **Elective course**		

Syllabus (approved in BoS)

1. Design of temperature transmitter using RTD.
2. Design of cold junction compensation circuit for Thermocouple.
3. Design of IC temperature transmitters.
4. Design of Linearization circuit for thermistor.
5. Study of zero elevation and suppression in differential pressure transmitter
6. Measurement of level using differential pressure transmitter.
7. Design of alarms and annunciators for process variable measurements.
8. Design of pressure/force transmitter

COURSE OBJECTIVES

The aim of this lab is to impart an adequate knowledge and expertise to handle equipment generally available in an industry.

COURSE OUTCOMES (CO)

Course Outcomes	**Aligned Programme Outcomes (PO)**
At the end of the course student will be able to understand and analyse Instrumentation systems and their applications to various industries.	1, 2, 3, 5 & 12

COURSE PLAN – PART II

COURSE OVERVIEW

The lab will provide knowledge on the design and implementation of the signal conditioning and conversion circuits for various measuring instruments like RTD, Thermistor, Thermocouple pressure sensors…

COURSE TEACHING AND LEARNING ACTIVITIES			
S.No.	**Week**	**Topic**	**Mode of Delivery**
1	I	1. Design of temperature transmitter using RTD. 2. Design of cold junction compensation circuit for Thermocouple. 3. Design of IC temperature transmitters. 4. Design of Linearization circuit for thermistor. 5. Study of zero elevation and suppression in differential pressure transmitter 6. Measurement of level using differential pressure transmitter. 7. Design of alarms and annunciators for process variable measurements. 8. Design of pressure/force transmitter	Experiment
2	II		
3	III		
4	IV		
4	V		
5	VI		
6	VII		
7	VIII		
8	IX	Compensation Lab	Experiment

COURSE ASSESSMENT METHODS (shall range from 4 to 6)

S.No.	Mode of Assessment	Week	Duration	% Weightage
1	Observation and Record Maintainance	Every class	---	50
2	End semester Examination	XII	2 hours	50

ESSENTIAL READINGS :

Reference books

1. Doebelin E.O, Measurement Systems: Application and Design, McGraw Hill, 5th Edition, 2004.

2. Patranabis D, Principles of Industrial Instrumentation, Tata McGraw Hill, 3rd Edition, 2010.

3. Roy D.Choudary and Shail Jain, Linear Integrated Circuits, New Age International, 2010.

COURSE EXIT SURVEY

- Direct feedback from the students.
- Students performance in each lab will be used to assess the understanding level.

COURSE POLICY

- 75% of attendance is must inclusive of on duty on any grounds. However 5% of relaxation can be considered on medical grounds. Students those who got below 75% have to Redo the course.
- Relative grading will be followed. The passing minimum for the course will be either class maximum/ 3 or class average/ 2 whichever is lower.
- Students who absent for any lab (due to medical/ OD and other genuine reasons) will be given compensation or repeat lab.
- Students who fail in End Semester Examination will have to write Reassessment and absolute grading will be followed.
- Those who fail to clear the Reassement have to do Formative assessment for this course.
- The Assessment date and time will be fixed by the faculty in consultation with class representative as per the evaluation schedule.

MODE OF CORRESPONDENCE (email/ phone etc)

ssraju@nitt.edu

FOR APPROVAL

SSRaju (S. SRINIVASULURAJU)

Course Faculty _____ **CC-Chairperson** _____ **HOD** _____ 27/4/18