

Branch Name:	Electronics and Communication Engineering/ ICT
Semester/Year:	Semester V / Third Year
Subject Title:	Sensors and Transducers (Open Elective)
Subject Code:	1ET1040506
Pre-requisite:	Basic Knowledge of electronics and Instrumentation

Course Objectives:

To enable the students fundamentally to know about transducers and about the types of transducers and various transducers used for the measurement of various physical quantities

Teaching Scheme (Hours per week)				Evaluation Scheme (Marks)				
Lecture (L)	Tutorial (T)	Practical (P)	Credit	Theory (Marks)		Practical (Marks)		Total (Marks)
				University Assessment	Continuous Assessment	University Assessment	Continuous Assessment	
01	00	02	02	35	15	30	20	100

Subject Contents				
Sr. No	Topic	Total Hours	Weight (%)	
1	Qualities of Measurements: Introduction, Performance Characteristics, Static Characteristics, Error in Measurements, Types of Static error, Sources of Error, Dynamic characteristics, Statistical Analysis, Standard, Electrical Standards	02	20%	
2	Resistive Transducers and Inductive Transducers: Introduction, Electrical Transducers, Selecting Transducers, Resistive Transducers, Resistive Position Transducers, Strain gauge, Resistance Thermometer, Thermistor, Inductive Transducers, Differential output transducers, Linear Variable Differential Transducers	05	30%	
3	Miscellaneous Transducers: Load Cell, Piezo Electric Transducers, Photo Electrical Transducers, Photo Volatic Transducers, Semiconductor Photo diode, Photo Transistor, Temperature Transducers, Frequency generating Transducers, Digital transducers	04	30%	
4	Sensors: Introduction, Smart Sensors, Fiber optic sensors, Film Sensors, MEMS, Nano Sensors	02	20%	

Course Outcome:

Students can understand various types of Sensors & Transducers and their working principle

Text Book:

- (1) Kalsi H.S “Electronic Instrumentation” second edition, The McGraw-Hill Companies

Reference Books:

- (1) Sawhney. A.K, “A Course in Electrical and Electronics Measurements and Instrumentation”, 18th Edition, Dhanpat Rai & Company Private Limited, 2007.

List of Suggested Practical:

1. Characteristics of Strain gauge
2. Characteristics of Capacitive Transducers
3. Characteristics of thermistor
4. Characteristics of RTD
5. Characteristics of Thermocouple
6. Characteristics of LDR
7. Loading effect of Potentiometer
8. Characteristics of Synchros
9. Characteristics of LVDT
10. Study of Smart Sensors
11. Study of smart transducers