1.	Title of the course	Transducers
2.	Course number	EE517L
3.	Structure of credits	3-0-0-3
4.	Offered to	PG
5.	New course/modification to	Modification To EE5030/8
6.	To be offered by	Department of Electrical Engineering
7.	To take effect from	July 2022
8.	Prerequisite	Nil
9.	**Course Objective(s):** To familiarise the student about the different transducers and how to use them to make measurement on physical parameters such as displacement, velocity, temperature, torque and speed.	
10.	**Course Content:** Transducers and their characteristics: definition of terminologies, generalized performance characteristics; Resistive transducers: resistance potentiometer, noise, resolution, signal conditioning, strain gauges and associated electrical circuitry, temperature compensation, load cells, torque and pressure measurement using strain gauges, resistive temperature device (RTD), three-lead arrangement, thermistors, linearization - hot-wire anemometers, measurement of direction of flow, peizo resistive transducers; Inductive transducers: self-inductance transducers, transverse armature and plunger type, sensitivity and linearity, signal conditioning circuits, choice of components, linear variable differential transducer: lead and lag compensation; Capacitive transducers: single, push-pull, angle transducer, humidity sensor, parasitic effects, solutions, signal conditioning circuits; Miscellaneous transducers: peizo electric, thermo couples, mass-spring accelerometer; Applications of transducers: measurement of displacement (linear and angular), velocity, acceleration, force, torque, pressure, flow, temperature.	
11.	**Textbook(s):** 1. Neubert H K, *Instrument transducers-an introduction to their performance and design*, Oxford (2003).	
12.	**Reference(s):** 1. Doeblin E O, *Measurement systems: Application and Design*, McGraw - Hill (2004). 2. Pallas-Areny R and Webster J G, *Sensors and signal conditioning*, Wiley (2013).	