

AMRUTVAHINI COLLEGE OF ENGINEERING, SANGAMNER

DEPARTMENT OF ELECTRONICS ENGINEERING

TEACHING PLAN, 2020-2021

Subject:	Instrumentation Systems	Code:	304202
Class:	TE (Electronics)	Theory:	03 hrs / week

Lect. No.	Date	Topics to be covered	% Syllabus Coverage	Status Completed/ Not Completed	Methodology/ Pedagogy/ Learning Aid
01	02/07/20	General Introduction of the subject, syllabus, exam pattern, Course objectives and Outcomes, IEEE code of ethics.			Online mode, PPT
UNIT – I					
02	07/07/20	Definitions sensors & transducer, Classification of sensors & transducers	16%		Online mode, PPT Q&A
03	08/07/20	Sensor systems, Performance & Terminology: Range/Span, Errors & Accuracy, Non linearity			Online mode, PPT Q&A
04	09/07/20	Dead band & saturation, output impedance, repeatability, reliability, Sensitivity			Online mode, PPT Q&A
05	13/07/20	Resolution, Frequency response, Response time, Calibration			Online mode, PPT Q&A
06	15/07/20	Advantages, disadvantages & applications of sensors & transducers,			Online mode, PPT Q&A
07	16/07/20	Block diagram & description of Instrumentation system			Online mode, PPT Q&A
UNIT – II					
08	20/07/20	Temperature: resistance temperature detectors, thermistors, thermocouples	33%		Online mode, PPT Q&A
09	22/07/20	Temperature: resistance temperature detectors, thermistors, thermocouples			Online mode, PPT Q&A
10	23/07/20	Pyrometers, acoustics sensors			Online mode, PPT Data Sheet, Q&A
11	27/07/20	Pyrometers, acoustics sensors			Online mode, PPT Q&A
12	29/07/20	Semiconductor temperature sensing – LM75 block diagram, temperature compensated integrated phototransistor			Online mode, PPT Q&A
13	30/07/20	Semiconductor temperature sensing – LM75 block diagram, temperature compensated integrated phototransistor			Online mode, PPT Q&A
14	05/08/20	Signal conditioning circuit for RTD & thermocouple, interfacing technique of temperature sensors with microcontroller.			Online mode, PPT Q&A
15	06/08/20	Signal conditioning circuit for RTD & thermocouple, interfacing technique of temperature sensors with microcontroller.			Online mode, PPT Q&A
16	10/08/20	Humidity sensor, chemical sensors: classes of chemical sensors, characteristics of chemical sensors, biochemical sensors ** introduction to gas chromatograph, mass spectrometer			Online mode, PPT Q&A
17	12/08/20	Humidity sensor, chemical sensors: classes of chemical sensors, characteristics of chemical sensors, biochemical sensors ** introduction to gas chromatograph, mass spectrometer			Online mode, PPT Q&A
18	13/08/20	Electronics noses *applications of electronic noses			Online mode, PPT, Research Papers
19	17/08/20	Electronics noses *applications of electronic noses			Online mode, PPT, Research Papers

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UNIT – III					
20	19/08/20	Flow: Bernoulli's equation **applications of Bernoulli's equation (other than flow measurement)	50%		Online mode, PPT Q&A
21	20/08/20	Flow: Bernoulli's equation **applications of Bernoulli's equation (other than flow measurement)			Online mode, PPT, Flash animation, VLAB demo, Quiz
22	24/08/20	Differential head type flow meters (orifice, venture tube and flow nozzle), pitot static tube			Online mode, PPT, Flash animation
23	26/08/20	Differential head type flow meters (orifice, venture tube and flow nozzle), pitot static tube			Online mode, PPT Q&A
24	27/08/20	Variable area type flow meter – rotameter, vortex shedding, electromagnetic flow meters			Online mode, PPT Q&A
25	31/08/20	Variable area type flow meter – rotameter, vortex shedding, electromagnetic flow meters			Online mode, PPT Q&A
26	02/09/20	Ultrasonic flow meters. Open channel flow measurement – anemometers			Online mode, PPT Q&A
27	03/09/20	Ultrasonic flow meters. Open channel flow measurement – anemometers			Online mode, PPT Q&A
28	07/09/20	Level: float, DP cell, chain balanced float type, ultrasonic,			Online mode, PPT Q&A
29	09/09/20	Level: float, DP cell, chain balanced float type, ultrasonic,			Online mode, PPT Q&A
30	10/09/20	Capacitance probe type, hydrostatic pressure and nuclear level detection techniques			Online mode, PPT Q&A
31	14/09/20	Capacitance probe type, hydrostatic pressure and nuclear level detection techniques			Online mode, PPT Q&A
UNIT – IV					
32	16/09/20	Motion detectors: ultrasonic, capacitive detectors, LVDT, optoelectronics motion sensors,	66%		Online mode, PPT, Animation, Quiz
33	17/09/20	Motion detectors: ultrasonic, capacitive detectors, LVDT, optoelectronics motion sensors,			Online mode, PPT, Animation, Quiz
34	21/09/20	Acceleration sensors – accelerometer characteristics, capacitive accelerometers, piezoelectric accelerometer, piezoresistive accelerometer, thermal accelerometer.			Online mode, PPT, Animation, Q&A
35	23/09/20	Acceleration sensors – accelerometer characteristics, capacitive accelerometers, piezoelectric accelerometer, piezoresistive accelerometer, thermal accelerometer.			Online mode, PPT, Animation, Q&A
36	24/09/20	Tachometers – optical tachometer, rotary detectors.			Online mode, PPT Q&A
37	05/10/20	Tachometers – optical tachometer, rotary detectors.			Online mode, PPT Q&A
38	07/10/20	Light & radiation detectors : photo diodes, photo transistor,			Online mode, PPT Q&A
39	08/10/20	Light & radiation detectors : photo diodes, photo transistor,			Online mode, PPT Q&A
40	12/10/20	CCD, CMOS image sensors – advanced APD sensors,			Online mode, PPT Q&A
41	14/10/20	CCD, CMOS image sensors – advanced			Online mode, PPT


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		APD sensors,			Q&A
42	15/10/20	Gas flame detectors, radiation detectors – ionization detectors			Online mode, PPT Q&A
43	19/10/20	Gas flame detectors, radiation detectors – ionization detectors			Online mode, PPT Q&A
UNIT –V					
44	21/10/20	Magnetic field sensors – Hall effect and magneto-resistive elements (MRE),			Online mode, PPT Q&A
45	22/10/20	Magneto-transistors, piezoelectric (PZT) sensors and actuators.			Online mode, PPT Q&A
46	26/10/20	Microelectromechanical systems (MEMS) - Bulk micromachining, **MEMS applications (other than sensor systems)			Online mode, PPT Q&A
47	28/10/20	Micro-machined absolute pressure sensor,			Online mode, PPT Q&A
48	29/10/20	Surface Micromachining-Hot wire anemometer micro-miniature temperature sensor,			Online mode, PPT Q&A
49	02/11/20	Surface micro machined accelerometer and SMART sensors	84%		Online mode, PPT Q&A
UNIT – VI					
50	04/11/20	Pneumatic and hydraulic actuators-			Online mode, PPT Q&A
51	05/11/20	Directional control valves, Pressure control valves, Cylinders,			Online mode, PPT Q&A
52	09/11/20	Directional control valves, Pressure control valves, Cylinders,			Online mode, PPT Q&A
53	11/11/20	Process control valves -			Online mode, PPT Q&A
54	12/11/20	Mechanical switches, Solid state switches, Electrical actuators-Solenoids			Online mode, PPT Q&A
55	18/11/20	DC motors, AC motors and Stepper motors	100%		Online mode, PPT Q&A

* *Bridging the gap*

** *Beyond syllabus*


(Prof. S.B. Rahane)
Faculty In-Charge


(Prof. S.S. Gundal)
Head of the Department