

GUJARAT TECHNOLOGICAL UNIVERSITY
B. E. SEMESTER: V
FOOD PROCESSING TECHNOLOGY

Subject Name: Food Process Instrumentation and Control
Subject Code: 151402

Teaching Scheme				Evaluation Scheme		
Theory	Tutorial	Practical	Total	University Exam (Theory) (E)	Mid Sem Exam (Theory) (M)	Practical (I)
3	0	2	5	70	30	50

Sr. No.	Content	No. of Lectures
1	Introduction: Definitions - Instrument, Controller and recorder, Principle of measurement, Static and dynamic characteristics of instrument, Error analysis and its calibration.	06
2	Transducers: Types & classification and selection criteria, Basic principles, Construction and applications of transducer elements, Strain gauge with bridge circuits and calibration procedures.	06
3	Temperature Measurement: Mercury thermometers, Bimetal thermometers, Capillary type thermometers, Recording thermometers, Thermocouples, Resistance thermometers, Thermistors.	07
4	Pressure Measurement: Pressure gauge, Elastic deformation elements, Basic concept of pneumatic pressure transmitter, Pressure current and Pressure resistance transducers.	07
5	Flow Measurement: Positive displacement meter, Turbine type, Float type, Timed flow and magnetic meters.	04
6	Miscellaneous Measurements: Weight measurement - Mechanical scale, Electronic tank scale, Conveyor scale and measurement of specific gravity, Measurement of humidity, Measurement of viscosity, Measurement of density, Automatic valves.	08

7	Process Control: Simple system analysis, Dynamic behaviour of simple process, Laplace transforms, Process control hardware.	06
8	Frequency Response Analysis: Frequency response characteristics, Bode diagram and Nyquist plots and stability analysis.	04

Reference Books:

1. Manual for plant operators by Milk industry foundation, Washington, DC.
2. Process system analysis and control by Donald RC., Mc-Graw Hill.
3. Process Instrumentation by Patranobish., Tata Mc-Graw Hill.
4. Transducers and Instrumentation by Murty DVS., Prentice Hall of India.
5. Process Control Instrumentation Technology by Johnson C. Prentice Hall of India.