

SARDAR PATEL UNIVERSITY

Programme: B.Sc (Physics)

Semester: VI

Syllabus with effect from: November/December-2013

Unit	Description in detail	Weighting (%)
I	CRO and Transducer Elements Introduction to Cathode Ray Oscilloscope, Cathode Ray Tube, Deflection system in CRT, Analog Transducers, Electromechanical Type Transducer, Potentiometric resistance type, Inductive Type, Capacitive Type, Piezo-Electric Transducer, Dynamic Characteristics of Piezo-Electric Transducers, Resistance Strain Gauges, Unbounded Strain Gauge, Bonded Strain Gauge, Resistance Strain Gauge Bridges, Balanced Bridge, Unbalanced Bridge	
II	Transducer Elements, Pressure Measurements Transducer Elements: Ionization Transducers, Mechno-Electronic Transducer, Opto-Electrical Transducer, Photo-emissive Transducer, Photo-conductive Transducer, Photo-voltaic Transducer Pressure Measurements: Introduction, Moderate Pressure Measurements, Manometers, High Pressure Measurements, Low Pressure (Vacuum) measurements, McLeod Gauge, Thermal conductivity or Pirani Gauge, Ionization Gauge, Knudsen Gauge	
III	Temperature Measurements Measurements of Temperature, Non-Electrical Methods, Solid Rod Thermometer, Bimetallic Thermometer, Electrical Methods, Electrical Resistance Thermometer, Metallic Resistance Thermometers, Semiconductor Resistance Sensors, Thermoelectric Sensors, Thermoelectric materials, Radiation Methods, Total radiation pyrometer, Selective radiation pyrometer	
IV	Acoustic Measurement and Optical Fiber Sensors Microphones, Capacitor type microphone, Piezo-electric crystal type microphone, Electrodynamical type microphone, Carbon microphone, Measurements of environmental air pollution parameters, Orsat apparatus for exhaust gas analysis, Gas chromatography, Non—dispersive infrared gas analyzer, Smoke density measurements, Optical Fiber Sensors, Advantages of Optical Fiber Sensors, Types of Optical Fiber Sensors, Biosensors, Smart Sensors	

Basic Text & Reference Books :-

- Instrumentation Measurement and Analysis
B C Nakra and K K Chaudhary
Tata McGraw Hill, New Delhi
- Biomedical Instrumentation
R S Khandpur
Tata McGraw Hill, New Delhi.
- Electronic Instrumentation and Measurement Techniques
W D Cooper and A D Helfrick
Prentice Hall of India, New Delhi
- Basic Electronics (Solid State)
B L Theraja
S. Chand Pub. Ltd, New Delhi

