

**SARDAR PATEL UNIVERSITY**  
**Programme & Subject: B.sc (Instrumentation)**  
**Semester: IV**  
**Syllabus with Effect from: November/December- 2012**

<b>Paper Code: US04CINS01</b>	<b>Total Credit: 3</b>
<b>Title Of Paper: Signal Conditioning Systems</b>	

Unit	Description in detail	Weighting (%)
I	<b>Measurement, Errors and Standard of measurement</b> Definitions, Accuracy and Precision, Significant figures, types of error, statistical analysis, probability of error, limiting errors	25%
II	<b>Signal Conditioning</b> Introduction, Operational amplifier: Block Diagram, Op-Amp Parameters, Ideal Op-Amp, non-inverting Amplifier, Inverting Amplifier, Integrating Amplifier, Differentiating Amplifier, Summing Amplifier, Subtraction/Difference Amplifier, Comparator. Voltage to Current converter, Current to Voltage converter, Basic instrumentation Amplifier: Instrumentation Amplifier, Basic Instrumentation System, Instrumentation Amplifier using Transducer Bridge	25%
III	<b>Bridges</b> Introduction DC Bridges: Wheatstone bridge (Measurement of Resistance), Sensitivity of a Wheatstone Bridge, Unbalance Wheatstone Bridge, Applications, Limitations, Kelvin's Bridge, AC Bridges: Capacitance Comparison Bridge, Inductance Comparison Bridge, Maxwell Bridge, Hay Bridge, Schering Bridge, Wein Bridge, Wagner Ground Connection, Precautions to be taken while using a Bridge	25%
IV	<b>ADC &amp; DAC</b> Introduction, Digital to analog conversion: parameters, Digital to Analog Converters: the R-2R ladder DAC, the Weighted Resistor type DAC, Analog to Digital Conversion: Counter type ADC, Tracking ADC, Flash ADC, Dual Slope ADC, Successive Approximation ADC, specific ADC, Voltage to frequency ADC	25%

**Basic Text & Reference Books:-**

- Electronic Instrumentation by Kalsi
- Fundamentals of Digital Electronics by Anand Kumar
- Instrumentation Measurement and Analysis by Nakra and Chaudhri (tata McGraw Hill)
- Electronic instrumentation and measurement techniques by Helfric and Copper (Eastern Economy Edition)

