

# UTKALMANI GOPABANDHU INSTITUTE OF ENGINEERING, ROURKELA



## LESSON PLAN

**SUBJECT-INSTRUMENT AND CHEMICAL ANALYSIS**



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DEPARTMENT OF CHEMICAL  
ENGINEERING**

	<b>Topics covered</b>
WEEK 1	Instruments and its importance
	Standards of measurement
	Functional elements of instruments
	Performance characteristics of an instrument
WEEK 2	Performance characteristics of an instrument
	Measurement of viscosity by Red Wood Viscometer
	Measurement of viscosity by Falling Sphere Viscometer
WEEK 3	Measurement of viscosity by Continuous Viscometer
	Principle and uses of spectrophotometer
	Principle and uses of spectrophotometer
WEEK 4	Principle and uses of spectrophotometer
	Principle and uses of polarimeter
	Principle and uses of polarimeter
	Measurement of refractive index by Refractometer
WEEK 5	Measurement of refractive index by Refractometer
	Measurement of pH
	Measurement of pH
	Measurement of electrical conductivity
WEEK 6	Measurement of electrical conductivity
	Measurement of electrical conductivity
	Different temperature scales
	Different temperature scales
WEEK 7	Different methods of temperature measurement
	Different methods of temperature measurement

	Temperature measurement by liquid in glass thermometer
WEEK 8	Temperature measurement on thermocouple.
	Resistance thermometer
	Resistance thermometer
WEEK 9	Optical pyrometer
	Radiation pyrometer.
	Different types of pressure
WEEK 10	Different types of pressure
	Different methods of measurement of pressure
	Different methods of measurement of pressure
WEEK 11	Pressure measurement by Bourdon tube, Bellows
	Pressure measurement by Bourdon tube, Bellows
	Pressure measurement by Bourdon tube, Bellows
WEEK 12	Maintenance and repair of pressure measuring instruments
	Maintenance and repair of pressure measuring instruments
	Maintenance and repair of pressure measuring instruments
	Automatic control system and explain the application with example
WEEK 13	Automatic control system and explain the application with example
	Automatic control system and explain the application with example
	Automatic control system and explain the application with example
WEEK 14	Transfer functions for 1 <sup>st</sup> order system and time constant
	Transfer functions for a first order system and time constant
	Transfer functions for a first order system and time constant
	Transfer functions for a first order system and time constant
WEEK 15	Transfer functions for a first order system and time constant
	Block diagram and components of Process Control system
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WEEK 16	Types of process control system
	Process control system, advantages and disadvantages
	Elementary idea about different types of automatic controllers
	Principle of PLC
WEEK 17	Computer Aided measurement and control
	Principle of PLC, computer Aided measurement and control
	REVISION
	REVISION

**BOOKS FOR REFERENCE:**

- Chemical Technology by C Dryden, Tata Mc Grawhill Publication
- Chemical Process Industries by N Shreeve, Tata Mc Grawhill Publication

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