GOVERNMENT POLYTECHNIC, VAISHALI

ELECTRONICS ENGINEERING, SEMESTER – Vth

LECTURE PLAN FOR SYLLABUS EFFECTIVE FROM 1-08-2020

SUBJECT:- **ELECTRONICS MEASUREMENT – II(Subject Code - 1621502)**

SUBJECT TEACHER –ASHISH VERMA

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1. COURSE OVERVIEW

The scope of instrumentation engineering is vast, and appears to be growing, in part due to the increased use of automatic control in manufacturing and process plants. Growth is also tied to the development of more accurate and more robust sensors, which allow us to detect phenomena of interest.

2.COURSE OBJECTIVE:

1	To introduce the basic principles of all measuring instruments
2	To deal with the measurement High Frequency Measurement., Electronic Measurement., Digital Measuring Instrument., Instruments for Generation and Analysis of waves., Transducers and Sensors,Optical Measuring Instruments. , Data Acquisition System (DAS).

2.COURSE OUTCOMES: At the end of the course the student will be in a position to –

1: Apply knowledge and skills to provide solutions to Electrical and Electronics Engineering problems in industry and governmental organizations or to enhance student learning in educational institutions

2: Work as a team with a sense of ethics and professionalism, and communicate effectively to manage cross-cultural and multidisciplinary teams

3: Update their knowledge continuously through lifelong learning that contributes to personal, global and organizational growth

UNIT	TOPIC TO BE COVERED	NO. OF PERIOD	BOOK
1	Over view of course	L1	Power point presentation (PPP)/video
	HIGH FREQUENCY MEASUREMENT:	L1,L2 -L11	PPP/video/ Hand written Pdf notes T1,T3
	01.01 Introduction.		
	01.02 Resonance method.		
	01.03 Measurement of inductance by reactance variation method.		
	01.04 Measurement of capacitance by reactance variation method		
	01.05 Measurement of effective resistance by variation method.		
	01.06 T Net work.		
	01.07 Parallel T network		
	01.08 Bridge T network.		
	01.09 Q measurement.		
	01.10 Measurement of frequency.		
	01.11 Radio receiver characteristics measurement.		
	01.11.01 Sensitivity.		
	01.11.02 Selectivity.		
	01.11.03 Fidelity.		

	01.11.04 Noise figure.		
2	**ELECTRONIC MEASUREMENT:**	L12 to L20	PPP/video/ Hand written Pdf notes T1,T3
	02.01 Electronic voltmeters (average and peak reading) VTVM.		
	02.02 Rectifier-Amplifier and amplifier-rectifier type VTVM.		
	02.03 Transistor voltmeters.		
	02.04 Differential voltmeter.		
	02.05 Small current measurement.		
3	**DIGITAL MEASURING INSTRUMENT:-**		PPP/ /Hand written notes,/video T2,T3
	03.01 Digital Vs. analog systems.	L21-30	PPP/ /Hand written notes,/video T2,T3
	03.02 Diode matrix.		
	03.03 Digital display system.		
	03.04 Digital read out system		
	03.05 Digital frequency meter.		
	03.06 Period measurement.		
	03.07 Time interval measurement.		
	03.08 Digital voltmeter: Introduction and types.		
	03.08.01 Potentiometer etc. type.		
4	**INSTRUMENTS FOR GENERATION AND ANALYSIS OF WAVES:**	L31-L36	PPP/video/ Hand written Pdf notes T2,T3
	04.01 Basic oscillator circuit.		
	04.02 Pulse and square wave generator.		
	04.03 Signal/function generator.		
	04.04 Signal/function wave analyser.		
	04.05Harmonic distortion anlyser.		
	04.06Spectrum analyser.		
5	**TRANSDUCERS AND SENSORS:**	L37-L44	PPP/video/ Hand written Pdf notes T2,T3
	05.01 Introduction and classification.		
	05.02 Electrical phenomenon employed in transducer.		
	05.03 Linear variable differential transformer.		
	05.04 Rotary variable reluctance transducer.		
	05.05Variable reluctance transducer.		
	05.06Synchros resolvers.		
	05.07Strain gauges.		
	05.08.01 Wire wound.		
	05.08.02 Pirani gauge.		
	05.08.03 Semi Conductor types.		
	05.09. Seismic accelerometer		
	05.10. Thermisters.		
	05.11 Microphones (different type of introduction only)		
6.	**OPTICAL MEASURING INSTRUMENTS:**	L45-L50	PPP/video/ Hand written Pdf notes T2,T3, https://www.sciencedirect.com/topics/engineering/blackbody
	06.01 Black body.		
	06.02 Primary and secondary standards.		
	06.03 Measurement of lumen intensity		
	06.04 Photo emissive cell.		
	06.05 Photo conductive cell.		
	06.06 Photo voltaic cell.		
7.	**DATA ACQUISITION SYSTEM (DAS):**	L51-	PPP/video/

	07.01 Classification.	L60	Hand written Pdf notes T2,T3,
	07.02 Components of analog DAS.		
	07.03 Components of digital DAS.		
	07.04 Uses of DAS.		
	07.05 Digital to analog converter.		
	07.06 Analog to digital converter.		
	07.07 Multiplexing equipment.		

Text /Reference Books:

Titles of the Book	Name of Authors	Name of the Publisher
T1:- Electronic Instrument and Measurement Techniques	**Cooper**	Prentice hall by India private limited
T2:- Course in Electrical and Electronic Measurement and Instrumentation	A.K.Sawhney	DHANPAT RAI & SONS EDUCATIONAL AND TECHNICAL PUBLISHERS
T3:- Electrical and Electronic Measurements and Instrumentation	**R.K. RAJPUT**	S.CHAND & COMPANY PVT.LTD.
T4: 3. Electric and Electronics Measurement	**Goldi**	