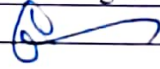


GP Kangra		Department: Instrumentation Engg.		Subject: Electric Circuits		Remarks
SYLLABUS COVERAGE		Course : Diploma		Duration: 3 Yrs.		
		Total Periods: 42		Theory : 42		
Sr No.	Period Nos	Topic	Details	Instruction Reference	Additional Study Recommended	
1	(09)	Basic Fundamentals	1.1 Definition & Units of-Voltage, Current, Power, Energy & Power Factor. 1.2 Basic Concept of Resistance, Inductance & Capacitance. 1.3 Basic Concept of Series & Parallel Combination of Passive Elements. 1.4 Basics Concept of AC & DC. 1.5 Ohm's Law.	Principles of Electrical Engineering & Electronics; V.K. Mehta; S.Chand Publications	Internet: nptel.ac.in	
2.	(08)	Circuit Analysis	2.1 KCL and KVL. 2.2 Thevenin's Theorem 2.3 Norton's Theorem 2.4 Superposition Theorem 2.5 Maximum Power Transfer Theorem.	-do-		
3.	(08)	Fundamentals of AC Circuit	3.1 Instantaneous, Average & RMS Value- Voltage/Current 3.2 Form Factor & Peak Factor. 3.3 Concept of Power Triangle. 3.4 Laws of Electromagnetic Induction 3.5 Basic Concept of Single Phase & Three Phase Circuit.	-do-		
4.	(08)	Transformers	4.1 Transformer- Principle, Construction & Working of Transformer. 4.2 Types of Transformers- Step Up & Step Down. 4.3 Auto-Transformer- Theory, Advantage, Disadvantage & Applications.	-do-		
5.	(9)	AC & DC Motors	5.1 DC Motor- Principle, Construction & Working of DC Motor. 5.2 AC Motor- Basic Operation of Single Phase Induction Motor 5.3 Three Phase Inductor Motor-	-do-		

			Principle, Construction & Working.			
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Approved	HOD Sign.
Date: 19/08/2023	

PLANNED SYLLABUS COVERAGE (Theory)

GP Kangra		Department: Instrumentation Engineering Instruments		Subject: Electrical & Electronic		Remarks
SYLLABUS COVERAGE		Course : Diploma		Duration: 3 Yrs.		
		Total Period: 28 (2 per week * 14 weeks)-T 14 (1 per week*14 weeks)-DCS		Theory : 42, Practical: 42		
Sr. No.	Period Nos	Topics	Details	Instruction Reference	Additional Study Recommended	
1.	10HRS (1-10)	Basics of Electrical Instruments	Electrical quantities and instruments for their Measurements. Types of Electrical Measuring Instruments– Indicating, Integrating and Recording Instrument.Essentials of Indicating Instruments- Deflecting, Controlling and Damping Torques.Classification of Instruments:- PMMC, Moving Iron, Electrodynamometer, Hot Wire, Thermocouple, Induction, Electrostatic & Rectifier Type. PMMC Type Ammeter & Voltmeter. Dynamometer Type Wattmeter. Single Phase Induction Type Energy Meter. CTI	A Course in Electrical Measureme nt and Measuring Instruments; AK Sawhney; Dhanpat Rai Publication	Internet	
2.	10HRS (11-20)	Electrical Measuring Instruments 1		Electronic Instrumentat ion and Measureme nt Technique; W. D. Cooper &A.D.Helfri ck; Pearson.		
3.	10HRS (21-28)	Electrical Measuring Instruments 2	Megger. Earth Tester. Power Factor Meter. Frequency Meter. Tong-Tester.	Electronic Instrumentat ion; H.S. Kalsi; McGraw Hill		
	10HRS (29-36)	Instrument Transforme r	Current Transformer and its need in measurement. Potential Transformer and its need in measurement. CTII			
5.	10HRS (37-42)	Electronic instruments	Digital Multimeter. Cathode Ray Oscilloscope (CRO) or Digital Storage Oscilloscope (DSO). Function Generator.			
Approved Date: 09/08/2023			HOD Sign. 			

Lesson Plan

Name of the Institute : Government Polytechnic Kangra, HP

Department : Instrumentation Engg.

Subject: Transducer , Course : Diploma ,

Duration: 3 years

Name of the faculty : Varun

Sr No.	Period	Topic	Details	Instruction Reference	Additional Study Material	Remark
1.	12 (1 to 12)	Introduction to Transducers	Introduction to Instrumentation and Generalized Measurement System, Basics of Sensors & Transducers Classification of Transducers Basic Principles of a) Variable Resistance Transducers b) Variable Inductive Transducers c) Variable Capacitive Transducers d) Piezoelectric Transducer -> Basic Properties of Piezoelectric crystals.	A course in electrical measurement & measuring Instruments by A.K. Sawhney	Measurement System by E.O. Doebelin	

Sr. No.	Period	Topic	Details	Instruction Reference	Additional Study Material	Remarks
2	10 (13 to 22)	Transducers based on Resistive, Capacitive & Inductive effects	Variable Resistive Transducers - • Potentiometer • Hot wire anemometer • Photo Resistor • Resistance Thermometer Variable Inductance Transducers - • LVDT Variable Capacitance Transducers - • Pressure measurement • Liquid level measurement	Transducers and Instrumentation by D.V.S Murthy	Instrument Transducers by H.K.P Neubert	
3	10 (23 to 32)	Transducers based on Piezoelectric & Piezoresistive effect	Piezo-electric Transducers - Piezo-resistive Transducer - Strain Gauge Application of Strain Gauge as load cell	— do —	— do —	
4	10 (33 to 42)	Other Transducers	Hall effect Transducer Optical shaft encoder Tachometer Synchros Concept of Smart Transducers	— do —	— do —	

Sr No.	Period	Topic	Details	Instruction Reference	Additional Study Material	Remark
5	14 (43 to 56)	Signal Conditioning	Basic concept and need of signal conditioning, Basics of operational amplifiers - Inverting and Non-inverting Configuration Op-amps with negative feedback Applications of op-amps in signal conditioning • Voltage follower • Integrator • Differentiator • Summing Amplifier • Difference amplifier • I to V & V to I Converter.	Microelectronic Circuit: Theory and application by Adel S. Sedra Kenneth C. Smith	Neptel course Content on Electronics for Analog signal Processing.	

④ HOD (IE)
17/08/2023

Govt Polytechnic Kangra (HP)
Department of Instrumentation Engineering
Planned Syllabus (Lesson Plan for Academic Session August-Dec 2023)
Subject: Digital Logic Design; Semester: 3rd

Planned Theory: 14 Week *4 hour/Week=56 hour ;Planned Practical:14 Week*03Hour/Week= 42 Hour

Sr No.	Period No.	Topic	Detail Content	Instruction Reference
1	10 Hour	Basics of Digital Logic	Introduction to Analog & Digital Signals, Comparison of Digital & Analog Systems, Basic Concept of Binary Logic, Number Systems- Decimal, Binary, Octal, Hexadecimal, Concept of BCD & Gray Code, Binary Addition, Multiplication & Division Concept of 1's & 2's Complement, Revision and Discussion	*Digital Design; M. Morris Mano; Pearson *Modern Digital Electronics; R P Jain; Mc-Graw Hill
2	14 Hour	Logic Gates & Boolean Algebra	Logical Symbol, Boolean Expression & Truth Table of NOT Gate, AND Gate, OR Gate, NAND Gate, NOR Gate, Ex-OR Gate, Ex-NOR Gate, Concept of Universal Gate (NAND & NOR), Boolean Laws- Commutative Law, Associative Law, Distributive Law, AND Law, OR Law, Inversion Law, Principle of Duality, Boolean Theorems- Duality Theorem, De-Morgan's Law, SOP & POS Representations for Logical Expressions, K-Map Simplifications- 2, 3 & 4 Variable, Revision and Discussion	-Same as Above-
3	10 Hour	Combinational Logic Circuits	Introduction to Combinational Circuits, Half Adder & Full Adder, Half Subtractor & Full Subtractor, Multiplexer- 2:1, 4:1, 8:1, De-Multiplexer- 1:2, 1:4, 1:8, Encoders & Decoders, Revision and Discussion	-Same as Above-
4	14 Hour	Sequential Logic Circuits	Introduction to Sequential Circuits, Concept of Latch & 1-bit Memory Cell, Concept of Triggering, Flip-flops- SR, JK, T & D Flip Flop, Shift Registers- SISO, SIPO, PISO & PIPO, Counters- 3 Bit Synchronous & Asynchronous (UP/Down Counter), Revision and Discussion	-Same as Above-
5	08 Hour	Analog-Digital Conversion	Concept of Analog to Digital Conversion -Sampling, Quantization & Encoding, A/D Converter- Successive Approximation ADC & Dual Slope Integrator ADC, Basics of Digital to Analog Conversion D/A Converter - Binary Weighted Resistor DAC & R-2R Ladder DAC Revision and Discussion	-Same as Above-

A HOD (IE)
09/01/2023

Govt Polytechnic Kangra (HP)
Department of Instrumentation Engineering
Planned Syllabus (Lesson Plan for Academic Session August-Dec 2023)
Subject: Electronic Circuits; Semester: 3rd

Planned Theory: 14 Week *4 hour/Week=56 hour ;Planned Practical:14 Week*02Hour/Week= 28 Hour

Sr No.	Period No.	Topic	Detail Content	Instruction Reference
1	09 Hour	Basic Fundamentals	Basic Concept of Semiconductor, Properties & Energy Band Description of Semiconductors, Concept of Intrinsic & Extrinsic Semiconductor, Basic concept of pn Junction, Revision and Discussion	*Analog Electronics; J.B. Gupta; S.K. Kataria *Electronic Devices & Circuits; Millman Halkias; Mc Graw Hill
2	09 Hour	Semiconductor Diode	Semiconductor Diode- its symbol, forward & reverse biasing and V-I characteristics, Application of Semiconductor Diode as Half Wave, Full Wave & Bridge Rectifier, Zener Diode, Application of Zener Diode as Voltage Stabilizer, Revision and Discussion	-Same as Above-
3	17 Hour	Bipolar Junction Transistor	Basic Concept of Bipolar Junction Transistor, BJT- Symbol, npn & pnp configuration, their working, Basics of Transistor Biasing, Basic application of transistor- Transistor as a Switch, Transistor Connections- CB, CE & CC Configuration, Revision and Discussion	-Same as Above-
4	11 hour	Transistor Amplifiers	Basic Application of Bipolar Junction Transistor as an Amplifier, Classification of Amplifiers, Basic Concept of Multistage Transistor Amplifier, Basic Concept of Feedback in Amplifiers, Revision and Discussion	-Same as Above-
5	10 Hour	Field Effect Transistor	Basics of FET- Principle and Working of JFET, Basic Concept of MOSFET, Comparison of BJT & FET, Comparison of FET & MOSFET, Salient Features of CMOS, Revision and Discussion	-Same as Above-

Ritika
Ritika Sharma
Lecturer
Instrumentation Engineering
Govt Polytechnic Kangra (HP)
09 August 2023

① HOD (IE)
09/08/2023