

PLANNED SYLLABUS COVERAGE(Theory)

G P Kangra		Department: <u>Electrical Engg.</u> Subject <u>Electrical Circuits</u>					
SYLLABUS COVERAGE		Course <u>Program Core</u> Duration <u>06 months</u>					
		Total Periods <u>42(7), 42(10)</u> Theory <u>42</u>					
Sr. No.	Period Nos.	Topic	Details	Instruction Reference	Additional Study Recommended	Remarks	
01	09 (01 to 09)	Intro. & Basic Fundamentals	- Intro. to Elec. Ckt. (Overview) - Definition & Units of ↳ Voltage ↳ Current ↳ Power ↳ Power Factor ↳ Energy - Basic concepts of R-L-C - Basic concepts of Series & // combination of passive elements. - Basic concepts of AC & DC - Ohm's Law	Principles of Electrical Engg. & Electronics by V.K. Mehta (S. Chand) Elec. Tech.-I by B.L. Theraja (S. Chand)	Basic Electrical & Electronics Engg. by I.J. Nagelski & D.P. Kothari (Mc-Graw Hill)		
02.	09 (10 to 18)	Circuit Analysis + CT-I	↳ KCL ↳ KVL - Thevenin's Theorem - Norton's Theorem - Superposition Theorem - Max. Power Transfer Th.	- do -	- do -		
03.	08 (19 to 26)	Fundamentals of A.C. Ckt. + CT-II	- Instantaneous, Avg. & RMS Value of Voltage & Current - Form Factor & Peak factor - Concept of Power Triangle - Laws of Electromagnetic Induction - Basic concept of 1-ϕ & 3-ϕ Circuit	- do -	- do -		

To be approved from concerned HOD within seven days from beginning of semester & will be kept with the concerned teacher in his file.

D. J. Jaiswal
HOD (EE)

Sr. No.	Period Nos.	Topic	Details	Instruction Reference	Additional Study Recommended	Remarks
4	08 (27 to 34)	Transformers	- Transformers - Principle, Construction, Working - Types of Transformers ↳ step up & step down - Auto Transformer ↳ Theory, Adv. & Dis. Adv. and Applications.	- do -	- do -	
5.	08 (35 to 42)	AC/DC Drives	- DC Motor ↳ Principle, Construction, Working - AC Motor ↳ Principle, Basic operation of 1-ϕ I.M. - 3-ϕ Induction Motor ↳ Principle, Construction & Working.	- do -	- do -	

Extra Topics to be covered beyond the scope of the syllabus (as required by industry/ as recommended by Teacher which he/ she finds necessary)

Sr. No.	Period No.	Topic Covered	Instruction Reference	Additional Study recommended	Remarks
-	-	-	-	-	-

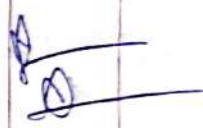
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Date 01/08/25	HOD Sign 
Date 01/08/25	Principal Sign 

Use additional sheets (if required).

Practical Planning & Coverage Status

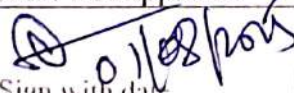
Department: Instan. Engg.
 Course: Program Coo.

Laboratory: Advanced Control Labs
 Subject: Electrical Circuits Labs

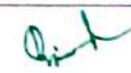
Sr. No.	Details of Practical	Availability of		Likely Turn/Date	Actual Date	Responsibility	HOD Sign.	Remarks
		Equipment Set up	STD Ref. Write up					
1.	Measurement of Voltage & Current in AC & DC Elec. Ckt.	Std. Electrical Ckt. Setup	Std. Books V.K. Mehta & B.L. Theraja	G1: Wed. G2: Thu.	06/08/2021 07/08/2021	From From		
2.	Measurement of Passive Component parameters - Resistance, Inductance & Capacitance.	- do -	- do -	G1: Thu. G2: Wed.	14/08/2021 13/08/2021	From From		
3.	Measurement of Power & Power Factor in 1- ϕ Elec. Ckt.	- do -	- do -	G1: Thu. G2: Wed.	21/08/2021 20/08/2021	From From		
4.	Verification of Ohm's Law in an Electrical Ckt.	- do -	- do -	G1: Thu. G2: Wed.	27/08/2021	From		
5.	Measurement of O/P voltage of any Step down Transformer	- do -	- do -	G1: Thu. G2: Wed.				

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HOD Sign with date


 01/08/2021

Principal Signature with date



Practical Planning & Coverage Status

Department: Instn. Engg.
 Course: Programmes

Laboratory: Advanced Control Lab.
 Subject: Electrical Circuits Lab.

Sr. No.	Details of Practical	Availability of		Likely Turn/Date	Actual Date	Responsibility	HOD Sign.	Remarks
		Equipment Set up	STD Ref. Write up					
06.	To observe the o/p variation of Auto Transformer by varying its no. of turns.	— do —	— do —	G1: Thu. G2: Wed.				
07.	Use of Voltmeter, Ammeter to verify KCL & KVL in an Electrical Circuit	— do —	— do —	G1: Thu. G2: Wed.				

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HOD Sign with date

Principal Signature with date

PLANNED SYLLABUS COVERAGE (Theory)

G.I. Ka		Department: Instrumentation Engineering					Subject : <u>Electrical & Electronic Instrumentation</u>	
SYL		Course : <u>Program Core</u>					Duration: <u>1 August 2025 to 26/11/25</u>	
CON		Total Period: <u>2: 28, DCS=14 = 42</u>					Theory : <u>3 Per Week x 14 weeks = 42 Total.</u>	
Sr. No.	Period Nos	Topic	Details	Instruction Reference	Additional Study Recommended	Remarks		
1	08 Hrs	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.	A Course in Electrical Measurement and Measuring Instruments ; AK Sawhney; Dhanpat Rai Pub	Internet			
2	10 Hrs	Electrical Measuring Instruments 1	PMMC Type Ammeter & Voltmeter. Dynamometer Type Wattmeter. Single Phase Induction Type Energy Meter.	Electronic Instrumentation; H.S. Kalsi; McGraw Hill				
3	8 Hrs	Electrical Measuring Instruments 2	Megger. Earth Tester. Power Factor Meter. Frequency Meter. Tong-Tester.		-----do-----			
4	6 Hrs	Instrument Transformer	Current Transformer and its need in measurement. Potential Transformer and its need in measurement.		-----do-----			
5	4 Hrs	Electronic instruments	Digital Multimeter. Cathode Ray Oscilloscope (CRO) or Digital Storage Oscilloscope (DSO). Function Generator.		-----do-----			

01/08/2025

no. 100

6	Gth.	Class Tests Revision Problem Solving.		-----do-----	
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Approved Date: 01/08/2015	HOD Sign. 
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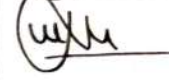
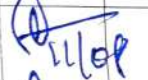
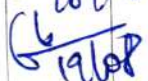
Practical Planning & Coverage Status

Instrumentation Engg Dept.

Measurement Lab.

Course: Diploma.

Subject: Electrical & Electronic Instruments.

Sr. No.	Details of Practical	Availability of		Likely Turn/Date	Actual Date	Responsibility	HOD Sign.	Remarks
		Equipment Set up	STD Ref. Write up					
1.	Use of Ammeters, Voltmeters, & Wattmeters in a Electric Circuit.	Ammeter Voltmeter Wattmeter Auto range for Rheostat	Book	Monday - GI Tuesday - GI GI - 1st GI - 1st	11/08/2025 12/08/2025	 	 	
2.	To observe the functionality & operation of Digital Multimeter	Multimeter Components	Manual & Internet	GI - 2nd GI - 2nd	18/08/2025 19/08/2025	 	 	
3.	To observe the functionality & operation of DSO/CRO.	DSO & Function Generator	Manual & Internet	GI - 3rd GI - 3rd				
4.	Measurement of voltage & freq. of a sinusoidal signal using CRO or DSO.	- do -	- do -	GI - 4th GI - 4th				
5.	To plot Lissajous patterns on CRO or DSO.	- do -	- do -	GI - 5th GI - 5th				
6.	Measurement of Energy using 1 ϕ Energy meter for Resistive load for certain time duration	1 ϕ Energy Meter, R _L Load.	Book & Internet	GI - 6th GI - 6th				
7.	To demonstrate the working of Meggar.	Megger & Motor.	Manual & Internet	GI - 7th GI - 7th				
8.	To demonstrate the working of Earth tester.	Earth Tester	do.	GI - 8th GI - 8th				

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PLANNED SYLLABUS COVERAGE(Theory)

G P Kangra		Department: <u>Instrumentation Engg</u> Subject <u>Transducers</u>				
SYLLABUS COVERAGE		Course <u>Program Core</u> Duration <u>6 months</u>				
Sr. No.		Total Periods <u>56</u> Theory <u>56</u>				
Period Nos.		Topic	Details	Instruction Reference	Additional Study Recommended	Remarks
1	1-11 (11)	Intro to Transducers	1.1 Intro to Instrumentation & generalized measurement system 1.2 Basics of sensors & Transducers 1.3 Classification of Transducer by 1.4.1 Variable resistance Transducer 1.4.2 Variable Inductance Tx 1.4.3 Variable Capacitance Tx 1.4.4 Piezoelectric Transducer basic properties Piezo crystals	An intro to measurement & instrumentation by Arun K. Gosh PHI	www.nptel.com	
2	12-25 (14)	Transducer based on resistive, capacitive & Inductive effects	2.1 Variable Resistance Tx 2.1.1 Potentiometer 2.1.2 Hot wire Anemometer 2.1.3 Photo resistor 2.1.4 Resistance thermometer 2.2 Variable Inductance Transducer LVDT 2.3 Variable capacitance Tx 2.3.1 Pressure measurement 2.3.2 Liquid level measurement	-do-	-do-	
3	26-33 (8)	Transducer based on Piezoelectric & Piezoresistive effect	3.1 Piezoelectric Transducer 3.2 Piezoresistive Transducer Strain Gauge 3.3 Application of strain gauge as Load Cell	-do-	-do-	
4	34-43 (10)	Other Transducers	4.1 Hall effect Transducer 4.2 Optical Shaft Encoder 4.3 Tachometer 4.4 Synchros 4.5 Concept of Smart Transducers	-do-	-do-	
5	44-55 (12)	Signal conditioning	5.1 Basic concept and need of signal conditioning 5.2 Basics of operational amplifier Inverting, & Non inverting config.	-do-	-do-	

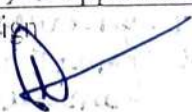
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01/08/2015
HOD (EE)

Sr. No.	Period Nos.	Topic	Details	Instruction Reference	Additional Study Recommended	Remarks
			5.3 Opamps with negative feedback 5.4 Applications of op-amp in signal conditioning 5.4.1 Voltage follower 5.4.2 Integrator 5.4.3 Differentiation 5.4.4 Summing amplifier 5.4.5 Difference amplifier 5.4.6 I to V & V to I converter			

Extra Topics to be covered beyond the scope of the syllabus (as required by industry/ as recommended by Teacher which he/she finds necessary)

Sr. No.	Period No.	Topic Covered	Instruction Reference	Additional Study recommended	Remarks
1	56 (1)	Soft sensors	Arjun K. Goesh Intro to Measurement & Instrumentation	www.nptel.com	

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Date	Principal Sign 

Use additional sheets (if required).

G P Kangra

Department: **Instrumentation Engg.** Practical Planning & Coverage Status
 Course: **Program Core** Laboratory: **Transducers Lab**
 Subject: **Transducers**

Sr. No.	Details of Practical	Availability of		Likely Turn/Date	Actual Date	Responsibility	HOD Sign.	Remarks
		Equipment Set up	STD Ref. Write up					
1	To observe the output of potentiometer with the variation of slider contact	Trainer Kit	Lab. Manual	G1: Wednesday G2: Thursday				
2	To observe the working of LVDT	Trainer Kit	Lab. Manual	G1: Wednesday G2: Thursday				
3	To observe the working of any variable capacitance transducer	Trainer Kit	Lab. Manual	G1: Wednesday G2: Thursday				
4	To observe the working of Synchros	Trainer Kit	Lab. Manual	G1: Wednesday G2: Thursday				
5	To demonstrate the working of strain gauge	Trainer Kit	Lab. Manual	G1: Wednesday G2: Thursday				
6	To observe the output of opamp as voltage follower	Trainer Kit	Lab. Manual	G1: Wednesday G2: Thursday				
7	To observe the output of opamp as summing amplifier	Trainer Kit	Lab. Manual	G1: Wednesday G2: Thursday				

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P. J. Jaiswal
 HOD Sign with date

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G P Kangra

Practical Planning & Coverage Status

Department: Instrumentation Engg.

Course: Program Core

Laboratory: Transducer Lab.

Subject: Transducers

Sr. No.	Details of Practical	Availability of		Likely Turn/Date	Actual Date	Responsibility	HOD Sign.	Remarks
		Equipment Set up	STD Ref. Write up					
8	To observe the output of op-amp as difference amplifier	Trainer Kit	Lab. Manual	G1: Wednesday G2: Thursday				

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HOD Sign with date

Principal Signature with date

PLANNED SYLLABUS COVERAGE(Theory)

G P Kangra		Department: <u>Instru. Engg</u> Subject <u>Digital Logic Design</u>				
SYLLABUS COVERAGE		Course <u>Program Core</u>	Duration <u>6 month</u>			
		Total Periods <u>56 (Th: 42) (Pr: 14)</u>	Theory <u>42 (Pr.)</u>	Practical		
Sr. No.	Period Nos.	Topic	Details	Instruction Reference	Additional Study Recommended	Remarks
01	08 (1-8)	Basics of digital logic.	Introduction to analog & digital signals, Comparison of digital & analog systems. Basic concepts of binary logic. Number system - Decimal, Binary, Octal, Hexadecimal. Concept of BCD & Gray code. Binary addition, Multiplication & division, Concepts of 1's & 2's Complement.	Digital Electronics by Menka Yadav	Digital System Principles & applications by Ronald Tocci Neal S. Widmer & Gregory L. Moss.	
02	14 (9-22)	Logic gates & Boolean algebra	Logic symbols, Boolean expression & Truth Table of NOT, AND, OR, NAND, NOR, Ex-OR & Ex-NOR Gate. Concepts of universal gates (i.e. NAND & NOR). Boolean laws - Commutative, Associative, Distributive, AND law, OR law, Inversion law, Principle of duality.	Digital Fundamentals by Thomas Floyd	NPTEL video course on digital electronic circuits	

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(Signature)
HOD (FE)

Sr. No.	Period Nos.	Topic	Details	Instruction Reference	Additional Study Recommended	Remarks
03	10 (23-32)	Combinational logic Circuits	Boolean Theorem - Duality Theorem, De-morgan's law, SOP, & POS representation for logical expressions. K-map simplifications - 2, 3, 4 variables. Introduction to combinational circuits, Half adder & full adder, Half subtractor & Full subtractor, Multiplexer 2:1, 4:1, 8:1, Demultiplexer 1:2, 1:4, 1:8, Encoders & Decoders.	Digital Electronics by R. P. Jain	NPTEL video course on Digital Electronic Circuits.	

Extra Topics to be covered beyond the scope of the syllabus (as required by industry/ as recommended by Teacher which he/she finds necessary)

Sr. No.	Period No.	Topic Covered	Instruction Reference	Additional Study recommended	Remarks
		NA			

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Date 01/08/2025	HOD Sign 
Date 01/08/2025	Principal Sign 

Use additional sheets (if required)

PLANNED SYLLABUS COVERAGE(Theory)

G P Kangra		Department: <u>Instru. Engg</u> Subject <u>Digital Logic Design</u>				
SYLLABUS COVERAGE		Course <u>Program Core</u> Duration <u>6th month</u>				
		Total Periods <u>56 (Th: 42) (Pr: 14)</u> Theory <u>42 (Pr: 14)</u> Practical				
Sr. No.	Period Nos.	Topic	Details	Instruction Reference	Additional Study Recommended	Remarks
04	14 (33 to 46)	Sequential Logic Circuits	Introduction to sequential circuits, Concepts of latch & 1-bit memory cell, concept of triggering, Flip-Flops, SR, JK, D-flip flop, Shift Registers, SISO, SIPO, PISO & PIPO, Counters - 3 bit Synchronous & Asynchronous (Up/down counter)	Digital principles and applications by Leach Malvino & Satoh	Digital System Principles & applications by Ronald Tocci, Neal Widmer & Gregory L. Moss.	
05	08 (47-54)	Analog - Digital Conversion	Concept of analog to digital conversion, sampling, quantization & encoding. Analog to digital converters - successive approximation & Dual-slope integrator ADC. Basics of digital to analog conversion - D/A converter - Binary, Weighted Resistor, DAC & R-2R Ladder DAC	Digital Electronics by R.P. Jain & Data sheets of selected devices	NPTEL video course on digital electronic circuits	

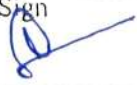
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01/08/2025
HOD (EE)

Sr. No.	Period Nos.	Topic	Details	Instruction Reference	Additional Study Recommended	Remarks
06	02 (55-56)	_____	Revision.	_____	_____	
		_____	End _____			

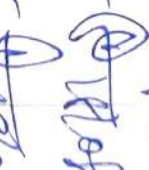
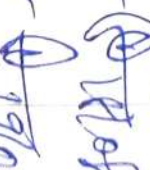
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Sr. No.	Period No.	Topic Covered	Instruction Reference	Additional Study recommended	Remarks
		NA			

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Date 01/08/2015	HOD Sign 
Date 01/08/2015	Principal Sign 

* Use additional sheets (if required)

P Kongra (Practical Training & Coverage Status)
 Department: Instru. Engrg.
 Course: Program Core
 Subject: Digital Logic Design

Sl. No.	Details of Practical	Availability of		Likely Turn/Date	Actual Date	Responsibility	HOD Remark
		Equipment	STD Ref.				
01	Verification of truth table of various logic gates (NOT, OR, AND, NAND, NOR, EXOR, EXNOR)	Setup kit ICs: 7400, 7401, 7402, 7403, 7404, 7405, 7406, 7407, 7408, 7409, 7410, 7411, 7412, 7413, 7414, 7415, 7416, 7417, 7418, 7419, 7420, 7421, 7422, 7423, 7424, 7425, 7426, 7427, 7428, 7429, 7430, 7431, 7432, 7433, 7434, 7435, 7436, 7437, 7438, 7439, 7440, 7441, 7442, 7443, 7444, 7445, 7446, 7447, 7448, 7449, 7450, 7451, 7452, 7453, 7454, 7455, 7456, 7457, 7458, 7459, 7460, 7461, 7462, 7463, 7464, 7465, 7466, 7467, 7468, 7469, 7470, 7471, 7472, 7473, 7474, 7475, 7476, 7477, 7478, 7479, 7480, 7481, 7482, 7483, 7484, 7485, 7486, 7487, 7488, 7489, 7490, 7491, 7492, 7493, 7494, 7495, 7496, 7497, 7498, 7499, 7500	Textbook	G1: 1 st & 2 nd G2: 1 st & 2 nd	G1: 4/8/25 G1: 11/8/25 G2: 5/8/25 G2: 12/8/25	Vasudevan Vasudevan Vasudevan Vasudevan	   
02	Verification of De-Morgan's theorem	do	do	G1: 3 rd & 4 th G2: 3 rd & 4 th	G1: 18/8/25 G2: 19/8/25	Vasudevan Vasudevan	 
03	To design and implement half adder & full adder using logic kit	do	do	G1: 5 th G2: 5 th			
04	To design and implement full adder circuit	do	do	G1: 6 th G2: 6 th			
05	To design and implement 4-to-1 multiplexer using logic kit	Multiplexer kit	do	G1: 7 th G2: 7 th			

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Principal Signature with date


Sl. No.	Details of Practical	Availability of		Likely Turn/Date	Actual Date	Responsibility	HOD Sign	Remarks
		Equipment Set up	STD Ref. Write up					
06	To design & implement any 4-to-1 multiplexer (i.e. n:1)	Max-Demux exper-imental kit	Text book	G1: 8 th G2: 8 th				
07	To design and implement R-S or J-K flip-flop	Flip-Flop experime-ntal kit	—do—	G1: 9 th , 10 th G2: 9 th , 10 th				
08	To design and implement a 3-bit up/down counter	Counter experim-ental kit	—do—	G1: 11 th G2: 11 th				
09	Revision	—	—	G1: 12 th G2: 12 th				
10	Revision	—	—	G1: 13 th G2: 13 th				
11	Revision	—	—	G1: 14 th G2: 14 th				

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HOD Sign with date

01/08/2024

Principal Signature with date

02

PLANNED SYLLABUS COVERAGE(Theory)

G I Ka gra		Department: <u>Instrumentation Engg</u> Subject <u>Electronic Circuits</u>				
SYLLABUS COVERAGE		Course <u>Program Core</u>		Duration <u>01.08.2025 to 26.11.2025</u>		
Sr. No.		Total Periods <u>56 Theory</u>		Theory <u>14 weeks X 04 = 56</u>		
Period Nos.		Topic	Details	Instruction Reference	Additional Study Recommended	Remarks
01	09 (01-09)	Basic Fundamentals	Basic Concept of Semiconductor Properties & Energy band description of Semiconductors Concept of Intrinsic and extrinsic Semiconductor, Basic concept of P-N Junction	Integrated Electronics : Jacob Millman and christos C. Halkias (TMH)	Basic Electrical and Electronics Engg: SK Bhattacharya (Pearson)	
02	09 (10-18)	Semiconductor Diode	Semiconductor diode-its Symbol, forward & Reverse biasing and VI characteristics Application of Semiconductor Diode as Hw/fw/Bridge Rectifier Zener diode, Applications of Zener diode as voltage stabilizer	—do—	—do—	
03	15 (19-33)	Bipolar Junction Transistors (BJT)	Basic concept of 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	—do—	—do—	
04	09 (34-42)	Transistor Amplifiers	Basic application of BJT as an Amplifier, Classification of Amplifiers, Basic concept of Multistage transistor Amplifier, Basic concept of feedback in Amplifiers	—do—	—do—	
05	08 (43-50)	Field effect transistor (FET)	Basics of FET - Principle & Working of JFET, Basic Concept of MOSFET, Comparison of BJT/FET/MOSFET Salient features of CMOS	—do—	—do—	
06	06 (51-56)	Class tests/ House test/ Revision	Class test :01, Class test :02 House test, Extra test, Revision			

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Sl. No.	Period Nos.	Topic	Details	Instruction Reference	Additional Study Recommended	Remarks

Extra Topics to be covered beyond the scope of the syllabus (as required by industry/ as recommended by Teacher which he/ she finds necessary)

Sl. No.	Period No.	Topic Covered	Instruction Reference	Additional Study recommended	Remarks

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Date 01.08.2025	HOD Sign  Pawan Chandel
Date 01/08/25	Principal Sign 

Practical Planning & Coverage Status

Measurement Lab.

Course: Instrumentation Engg.
Diploma

Subject: Electronic Circuit

Sr. No.	Details of Practical	Availability of		Likely Turn/Date Friday - 9I Saturday - 4II	Actual Date	Responsibility	HOD Sign.	Remarks
		Equipment Set up	STD Ref. Write up					
1.	To Identify the terminals of diode transistors and test P-N Junction diode, Zener diode, BJT (NPN/ PNP)	diode, BJT Zener diode Multimeter	Internet & BOOK	1 st - 9I 1 st - 4II	22/08/2025 23/08/2025			
2.	To plot VI characteristics of P-N junction diode (FW/RW)	VI charact diode kit	Manual	2 nd - 4II 2 nd - 4I	29/08/2025			
3.	To plot VI characteristics of Zener diode.	VI charact. diode kit	Manual	3 rd - 4II 3 rd - 4I				
4.	To observe the use of Zener diode as Voltage Regulator	VI character diode kit	Manual	4 th - 4I 4 th - 4II				
5.	To plot I/O characteristics of BJT in CB Configuration.	BJT Charact. kit	Manual	5 th - 4I 5 th - 4II				
6.	To plot I/O characteristics of BJT in CE Configuration.	BJT Charact. kit	Manual	6 th - 4I 6 th - 4II				
7.	To plot I/O characteristics of BJT in CC Configuration.	BJT Charact. kit	Manual	7 th - 4I 7 th - 4II				

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HOD Sign with date

Principal Signature with date