GP Kangra	Department: **ECE** Subject: **PoEC**	
	Course: Diploma Duration : **03 Years**	
Syllabus Planned	Total Periods: **56(T) + 42(P)**	

SYLLABUS PLANNED

Sr. No.		Period No.	Topic Covered	Instruction Reference	Additional Study recommended	Remarks
1		1-10	**Analog Modulation:** Concept of frequency translation, Amplitude Modulation: Description of full AM, DSBSC, SSB and VSB in time and frequency domains, methods of generation & demodulation, descriptions of FM signal in time and frequency domains.	Communication Systems: Analog & Digital by RP Singh & SD Sapre And Analog Communication Systems by A. Chakrabarti		
2		11-23	**Pulse Analog Modulation:** Ideal sampling, Sampling theorem, aliasing, interpolation, natural and flat top sampling in time and frequency domains.			
3		24-33	**PCM & Delta Modulation Systems:** Uniform and Non-uniform quantization. PCM and delta modulation, Signal to quantization noise ratio in PCM and delta modulation.			
4		34-46	**Digital Modulation:** Baseband transmission: Line coding (RZ, NRZ), inter symbol interference (ISI), pulse shaping, Nyquist criterion for distortion free base band transmission, raised cosine spectrum. Pass band transmission:Geometric interpretation of signals, orthogonalization.			
5		47-56	**Spread-Spectrum Modulation:** Introduction, Pseudo-Noise sequences, direct sequence spread spectrum (DSSS) with coherent BPSK, processing gain, probability of error, frequency-hop spread spectrum (FHSS). Application of spread spectrum: CDMA.			

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Date:	10/8/23

GP Kangra	Department: **ECE** Subject: **Electronic Devices & Circuits**	
	Course: Diploma Duration : **03 Years**	
Syllabus Planned	Total Periods: **56(T) + 42(P)**	

SYLLABUS PLANNED

Sr. No.		Period No.	Topic Covered	Instruction Reference	Additional Study recommended	Remarks
1		1-11	**Semiconductor and Diodes:** Definition, Extrinsic/Intrinsic, N-type & P-type. PN Junction Diode – Forward and Reverse Bias Characteristics. Zener Diode – Principle, characteristics, construction, and working. Diode Rectifiers – Half Wave and Full Wave. Filters – C, LC, and PI Filters.			
2		12-23	**Bipolar Junction Transistor (BJT):** NPN and PNP Transistor – Operation and characteristics. Common Base Configuration – characteristics and working. Common Emitter Configuration – characteristics and working. Common Collector Configuration – characteristics and working. High frequency model of BJT. Classification of amplifiers, negative feedback.			
3		24-34	**Field Effect Transistors:** FET – Working Principle, Classification. MOSFET Small Signal model. N-Channel/ P-Channel MOSFETs – characteristics, enhancement, and depletion mode, MOS- FET as a Switch. Common Source Amplifiers. Uni-Junction Transistor – equivalent circuit and operation.			
4		35-46	**SCR DIAC & TRIAC:** SCR – Construction, operation, working, characteristics. DIAC - Construction, operation, working, characteristics. TRIAC - Construction, operation, working, characteristics. SCR and MOSFET as a Switch, DIAC as bidirectional switch. Comparison of SCR, DIAC, TRIAC, MOSFET.			
5		47-56	**Amplifiers and Oscillators:** Feedback Amplifiers – Properties of negative Feedback, impact of feedback on different parameters. Basic Feedback Amplifier			

			Topologies: Voltage Series, Voltage Shunt, Current Series, Current Shunt, Oscillator – Basic Principles, Crystal Oscillator, Non-linear/ Pulse Oscillator .			

Approved	HOD Sign
Date: 21/8/2023	

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

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

Approved	HOD Sign
Date	

PLANNED SYLLABUS COVERAGE (THEORY)

G P Kangra	Department: ----------Subject----------			
	Course ----------Duration ----------			
SYLLABUS COVERAGE	Total Periods---------- Theory ----------			

Sr No	Period Nos.	Topic	Details	Instruction Reference	Additional Study Recommended	Remarks
1	1 – 10	**1. Number Systems & Boolean Algebra:**	Introduction to different number systems – Binary, Octal, decimal, Hexadecimal. Conversion from one number system to another. Boolean variables – Rules and laws of Boolean algebra. De-Morgan's Theorem. Karnaugh Maps and their use for simplification of Boolean expressions			
2	11-19	**2. Logic Gates:**	Logic Gates – AND, OR, NOT, NAND, NOR, XOR, XNOR: Symbolic representation and truth table. Implementation of Boolean expressions and Logic Functions using gates. Simplification of expressions.			
3	20-30	**3. Combinational Logic Circuits:**	Arithmetic Circuits – Addition, Subtraction, 1's &2's Complement, Half Adder, Full Adder, Half Subtractor, Full Subtractor, Parallel and Series Adders Encoder, Decoder. Multiplexer – 2 to 1 MUX, 4 to 1 MUX, 8 to 1 MUX and their Applications, Demultiplexer – 1-2 DEMUX, 1-4 DEMUX, 1- 8 DEMUX.			
4	31-46	**4. Sequential Logic Circuits:**	Flip Flops – SR, JK, T, D, JK-MS, Triggering. Counters – 4bit Up – Down Counters, Asynchronous/ Ripple Counter, Decade Counter- Mod 3, Mod 7 Counter, Johnson Counter, Ring Counter. Registers – 4bit Shift Register: Serial In Serial Out, Serial In Parallel Out, Parallel In Serial Out, Parallel In Parallel Out.			
5.	47-56	**5. Memory Devices:**	Classification of Memories – RAM Organization, Address Lines and Memory Size, Static RAM, Bipolar RAM, Cell Dynamic RAM, D RAM, DDR RAM. Rad only memory – ROM organization, Expanding memory, PROM, EPROM, EEPROM, Flash memory. Data Converters – Digital to Analog converters, Analog to Digital Converters			

APPROVED	SIGN HOD
DATE ----------	

G P Kangra

Practical Planning & Coverage Status

Department: Electronics and communication Egg. **Laboratory: Digital Electronics Lab**

Course: Diploma **Subject: Digital Electronics Lab**

Sr. No.	Details of Practical	Availability of		Likely Turn/Date	Actual Date	Responsibility	HOD Sign.	Remarks
		Equipment Set up	STD Ref. Write up					
1.	1. To verify the truth tables for all logic fates – NOT OR AND NAND NOR XOR XNOR using CMOS Logic gates and TTL Logic Gates.	Standard Trainer kits						
2.	2. Implement and realize Boolean Expressions with Logic Gates.							
3.	3. Implement Half Adder, Full Adder, Half Subtractor, Full subtractor using ICs.							
4.	4. Implement parallel and serial full-adder using ICs.							
5.	5. Design and development of Multiplexer and De-multiplexer using multiplexer ICs.							
6.	6. Verification of the function of SR,D, JK and T Flip Flops.							

7.	7. Design controlled shift registers.							
8	8. Construct a Single digit Decade Counter (0-9) with 7 segment display							
9	9. To design a programmable Up-Down Counter with a 7-segment display.							
10	10. Study of different memory ICs .							
11	11. Study Digital- to – Analog and Analog to Digital Converters.							
12	12. Simulate in Software (such as PSpice) an Analog to Digital Converter							

PLANNED SYLLABUS COVERAGE (Theory)

GP Kangra	Department: ECE	Subject: ELECTRONIC INSTRUMENTS AND MEASUREMENT			
	Course : Diploma	Duration: 3 Yrs.			
SYLLABUS COVERAGE	Total Period: Theory : 56	Practical: 28			

Sr. No.	Period Nos	Topic	Details	Instruction Reference	Additional Study Recommended	Remarks
1.	1 TO 8	Basics of Measurements and Bridges	1.1 Accuracy, precision, and Resolution. 1.2 Types of Errors 1.3 DC Bridges - Wheatstone Bridge. Kelvin Double Bridge. 1.4 AC Bridges – Maxwell's Bridge Hay's Bridge, Anderson Bridge, De-Sauty's Bridge.	Electronics Measurement and Instrumentation by AKSawhney, Dhanpat Rai and Sons, New Delhi Electronics Measurement and Instrumentation by Oliver, Tata McGraw Hill Education Pvt Ltd, New Delhi	Electronics Instrumentation by Cooper, Prentice Hall of India, New Delhi	
2.	9 TO 17	Potentiometer	2.1 Basic DC slide wire Potentiometer. 2.2 Crompton's DC Potentiometer 2.3 Applications of DC Potentiometer. 2.4 AC Potentiometers 2.5 Applications of AC Potentiometers.	Electronics Measurement and Instrumentation by AK Sawhney, Dhanpat Rai and Sons, New Delhi Electronics Measurement and Instrumentation by Oliver, Tata McGraw Hill Education Pvt Ltd, New Delhi	Electronics Instrumentation by Cooper, Prentice Hall of India, New Delhi	

3.	**18 TO 26**	Measuring Instruments:	3.1 Permanent Magnet Moving Coil Instruments (PMMC). 3.2 Moving Iron type Instruments (MI). 3.3 Electro Dynamo Type Instruments. 3.4 Single Phase Energy Meter.	Electronics Measurement and Instrumentation by AK Sawhney, Dhanpat Rai and Sons, New Delhi Electronics Measurement and Instrumentation by Oliver, Tata McGraw Hill Education Pvt Ltd, New Delhi	Electronics Instrumentation by Cooper, Prentice Hall of India, New Delhi	
4.	**28 TO 34**	Electronic Instruments:	4.1Electronic Voltmeter and Digital Voltmeter 4.2Electronic Multimeters. Q – Meter. 4.3Vector Impedance Meter.	Electronics Measurement and Instrumentation by AK Sawhney, Dhanpat Rai And Sons, New Delhi Electronics Measurement and Instrumentation by Oliver, Tata McGraw Hill Education Pvt Ltd, New Delhi	Electronics Instrumentation by Cooper, Prentice Hall of India, New Delhi	
5.	**35 TO 46**	Oscilloscopes	5.1 Cathode ray tube : construction, operation, screens, graticules. Vertical deflection system, Horizontal deflection system, Delay line, Measurement of frequency, time delay, phase angle and modulation index (trapezoidal method). 5.2 Oscilloscope probe: Structure of 1:1 and 10:1 probe. Multiple Trace CRO.	Electronics Measurement and Instrumentation by AK Sawhney, Dhanpat Rai and Sons, New Delhi Electronics Measurement and Instrumentation by Oliver, Tata McGraw Hill Education Pvt Ltd, New Delhi	Electronics Instrumentation by Cooper, Prentice Hall of India, New Delhi	

G P Kangra

Practical Planning & Coverage Status

Department: Electronics and Communication Engineering **Laboratory:** EIM LAB

Course: Diploma **Subject:** ELECTRONIC INSTRUMENTS AND MEASUREMENT

Sr.No.	Details of Practical	Availability of		Likely Turn/Date	Actual Date	Responsibility	HOD Sign.	Remarks
		Equipment Set up	STD Ref. Write up					
1	Measure unknown inductance using following bridges (a) Anderson Bridge (b) Maxwell Bridge	bridges Anderson Bridge Maxwell Bridge	Trainer Kit Manual	G_1: G_2:	G_1: G_2:			
2	Measure Low resistance by Kelvin's Double Bridge	Kelvin's Double Bridge	-----do-----	G_1: G_2:	G_1: G_2:			
3	Calibrate an ammeter using DC slide wire potentiometer	DC slide wire potentiometer	-----do-----	G_1: G_2:	G_1: G_2:			
4	Calibrate a voltmeter using Crompton potentiometer .	Crompton potentiometer .	-----do-----	G_1: G_2:	G_1: G_2:			
5	Measure low resistance by Crompton potentiometer	Crompton potentiometer .	-----do-----	G_1: G_2:	G_1: G_2:			
6	Calibrate a single-phase energy meter by phantom loading .	single-phase energy meter	----do-----	G_1: G_2:	G_1: G_2:			

Date-

7	Study the working of Q-meter and measure Q of coils	Q-meter	Trainer Kit Manual	G_1: G_2:	G_1: G_2:			
8	Study working and applications of (i) C.R.O. (ii) Digital Storage C.R.O. & (iii) C.R.O. Probes	Digital Storage C.R.O	---do---	G_1: G_2:	G_1: G_2:			
9.	Measurement of displacement with the help of LVDT.	LVDT.	---do---	G_1: G_2:	G_1: G_2:			
10.	Draw the characteristics of the following temperature transducers (a) RTD (Pt-100) (b) Thermistor	temperature transducers (a) RTD (Pt-100) (b) Thermistor	---do---	G_1: G_2:	G_1: G_2:			
11.	Measurement of strain/force with the help of strain gauge load cell	strain gauge load cell	---do---	G_1: G_2:	G_1: G_2:			

Approved	HOD Sign.
Date: 9/8/23	

GP Kangra	Department: **ECE**	Subject: **ECN**	
	Course: Diploma	Duration : **03 Years**	
Syllabus Planned	Total Periods: **56(T)**	Theory: **56**	

SYLLABUS PLANNED

S. N.		Period No.	Topic Covered	Instruction Reference	Additional Study recommended	Remarks
1		1-12	**Basics of Network and Network Theorem:** Node and Mesh Analysis, Superposition Theorem, Thevenin Theorem, Norton Theorem, Maximum Power transfer theorem, Reciprocity Theorem	Network & Systems D. Roy Choudhury Wiley Eastern Ltd	Netwok Theory by A.K. Choudhary	
2		13-18	**Two Port Network:** Introduction of the Two Port Network and the various network parameters i.e., Open Circuit Impedance Parameters. Short Circuit Admittance Parameters. Transmission Parameters, Introduction of Hybrid Parameters.			
3		19-27	**Graph Theory:** Concept of Graph, Node Tree of network, and incidence matrix and Analysis of resistive network using cut-set and tie-set, Duality Theorem and their application in the electrical circuits.			
4		28-42	**Time Domain and Frequency Domain Analysis:** Solution of first and second order differential equations for Series and parallel R-L, R-C, R-L-C circuits. Initial and Final conditions in network elements. Forced and Free response, time constants. Steady State and Transient State Response. Analysis of electrical circuits using Laplace Transform for standard inputs (unit, Ramp, Step).			
5		43-56	**Trigonometric and exponential Fourier series:** Discrete spectra and symmetry of waveform. Steady state response of a network to non-sinusoidal periodic inputs, power factor, effective values. Fourier transform and continuous spectra.			

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

S. N.		Period No.	Topic Covered	Instruction Reference	Additional Study recommended	Re
1		1-2	KVL, KCL, Network Basics.	Network & Systems D. Roy Choudhury Wiley Eastern Ltd	Introduction to Electrical Technology by BL Theraja & AK Theraja	
2		28-29	AC & DC source application in RL, RC, RLC circuits			

Approved	HOD Sign
Date	