MADHAV INSTITUTE OF TECHNOLOGY & SCIENCE, GWALIOR (M.P.)

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DEPARTMENT OF ELECTRONICS ENGINEERING

Multiple Mode Teaching Learning Pattern

Name of Course with Code: Analog Communication (3140320/3200320)			Class: B. Tech. II Year		Session: July-December2024
S. No.	Unit	Content to be Covered	Teaching Session		Mode
2.	Unit 1	Introduction to Fourier series	1		Offline & activity based learning
3.		Introduction to Fourier Transforms	2		Offline & Open discussions
4.		Fourier Transforms properties & problems	3-4		Offline & Experiment with problem solving in group based learning
5.		Fourier transform of important functions	5		Online & demonstration based learning
6.		Autocorrelation, Cross correlation and their properties	6		Offline & Open discussions
7.		Needs of modulation, Amplitude modulation,	7		Offline & problem solving based learning
8.		SSB, DSB,VSB suppressed carrier modulation,	8		Offline & problem solving based learning
9.		Modulation techniques their generation, detection and spectral analysis,	9		Offline & problem solving based learning
10.	Unit 2	Square law modulators, Switching modulator	10		Online & demonstration based learning
11.		Envelope and square law detector	11		Offline & problem solving based learning
12.		Balanced modulator & application	12		Offline & problem solving based learning
13.		Power calculation for AM, DSB-SC & SSB-SC	13-14		Offline & Experiment with problem solving in group based learning
14.		Relationship between Frequency and phase modulation	15		Offline& Onsite/ field visit based Learning
15.		Frequency and phase deviation, types of FM	16		Offline& Onsite/ field visit based Learning
16.	Unit 3	Comparison NBFM & AM signal	17		Offline & Open discussions
17.		Carson's rule, spectrum of FM signal,	18		Online & demonstration based learning
18.		Comparison of narrow band and wide band FM, generation of FM.	19-20		Offline & Onsite/ field visit based Learning

19.		Random variable	21	Offline & Open discussions
20.		Sample space and event	22	Online & demonstration based learning
21.	Unit 4	Probability and its properties, cumulative distribution function, probability density function	23-24	Online & demonstration based learning
22.		Statistical average, variance, moment	25	Offline & Open discussions
23.		Distributions: Binomial, Poisson density function	26	Online & demonstration based learning
24.		Gaussian and Rayleigh probability density function	27	Online & demonstration based learning
25.		Various sources of noise	28	Offline & Open discussions
26.		Types of noise with their characteristics	29	Offline & activity based learning
27.		Mathematical representation of noise figure	30	Online & demonstration based learning
28.		Noise bandwidth	31	Offline & Experiment with problem solving in group based learning
29.	Unit 5	Noise temperature	32	Offline & Open discussions
30.		Noise figure of amplifiers in cascades	33	Offline & Onsite/ field visit based Learning
31.		Figure of merit of modulation techniques	34	Offline & Onsite/ field visit based Learning
32.		Comparison of modulation scheme for noise.	35	Offline & Open discussions

Online	Offline						
	Black Board Teaching	Group based Learning	Learning through projects	Learning through demonstration	Learning through experimentation	Activity based Learning	Onsite/field based learning
20.93%	69.77%	37.21%	13.95%	27.90%	48.84.%	13.95%	9.30%

Dr. Karuna Markam   Prof. D K Parsediya   Dr. Shubhi Kansal

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DEPARTMENT OF ELECTRONICS ENGINEERING

Multiple Mode Teaching Learning Pattern

Name of Course with Code: Analog Integrated Circuit (3140322/3200322)		Class: B. Tech. II Year	Session: July-December 2024	
S. No.	**Unit**	**Content to be Covered**	**Teaching Session**	**Mode**
1.	Unit 1	Introduction of **Power Amplifiers**	1	Offline & Open discussions
2.		Amplifier classification	2	Offline & activity based learning
3.		Analysis and design of Class A,	3	Offline & Open discussions
4.		Class B, Class AB, class C amplifiers	4-5	Offline & Experiment with problem solving in group based learning
5.		Amplifier Distortion	6	Online & demonstration based learning
6.		Power Transistor	7	Offline & Open discussions
7.		Heat Sinking,	8	Offline & Open discussions
8.		Harmonic distortion	9	Online & demonstration based learning
9.		Push pull amplifiers	10	Online & demonstration based learning
10.	Unit 2	Classification of amplifiers	11	Offline & problem solving based learning
11.		Distortion in amplifiers	12	Offline & problem solving based learning
12.		Frequency response of an amplifier	13	Offline & problem solving based learning
13.		Step response of an amplifier	14	Online & demonstration based learning
14.		Types of coupling	15	Offline & problem solving based learning
15.		Low frequency response of an RC coupled stages	16	Offline & problem solving based learning
16.		Effect of an emitter bypass capacitor on low frequency response	17	Online & demonstration based learning
17.		Two Stage RC coupled Amplifier	18	Online & demonstration based learning
18.		The 555 IC Circuit	19	Offline & Experiment with

				problem solving in group based learning
19.		555 IC block diagram	20	Offline & Experiment with problem solving in group based learning
20.	Unit 3	Using the 555 IC as Astable and Monostable Multivibrator Circuits	21	Online & demonstration based learning
21.		Applications of 555	22	Online & demonstration based learning
22.		Phase Locked Loops	23	Online & demonstration based learning
23.		Phase Detectors	24	Offline & Open discussions
24.		Differential amplifier and analysis	25	Online & demonstration based learning
25.		Introduction of op-amp	26	Online & demonstration based learning
26.		Block diagram, characteristics and equivalent circuits of an op-amp	27	Offline & Open discussions
27.	Unit 4	Power supply configurations for op-amp, thermal drift	28	Online & demonstration based learning
28.		Effect of variation in power supply voltage	29	Offline & activity based learning
29.		Common-mode rejection ratio (CMRR), Slew rate and its Effect	30	Online & demonstration based learning
30.		Gain bandwidth product, frequency limitations and compensations.	31	Online & demonstration based learning
31.		OP AMP Application circuits such as: Inverting and non-inverting amplifier configurations,	32	Online & demonstration based learning
32.		Summing amplifier, Integrators and differentiators	33	Offline & activity based learning
33.		Schmitt Trigger, Logarithmic and anti-logarithmic amplifier	34	Offline & activity based learning
34.		Review of Unit-IV	35	Online & demonstration based learning
35.		Characteristics of filters	36	Online & demonstration based learning
36.		Classification of filters	37	Offline & activity based learning
37.		Magnitude and frequency response,	38	Online & demonstration based learning
38.	Unit 5	Butterworth 1st and 2nd order Low pass	39	Offline & Experiment with problem solving in group based learning
39.		High pass and band pass filters	40	Offline & Open discussions
40.		Chebyshev filter characteristics	41	Offline & Onsite/ field

				visit based Learning
41.		Band reject filters	42	Offline & Onsite/ field visit based Learning
42.		Notch filter; all pass filters, self-tuned filters.	43	Offline & Open discussions
43.		Review of Unit-V	44	Online & demonstration based learning

Online	Offline						
	Black Board Teaching	Group based Learning	Learning through projects	Learning through demonstration	Learning through experimentation	Activity based Learning	Onsite/field based learning
21%	70%	37%	14%	28%	48.84%	13.95%	9%

Prof. Madhav Singh   **Dr. Vandana Vikas Thakare**

Department of Electronics Engineering

Name of Course with Code: Communication Network (3200323/ 3140323)		Class: III Semester		Session: July-December2024
S. No.	Unit	Content to be Covered	Teaching Session	Mode
1.	Unit 1	Characteristic impedance, iterative impedance,	1	Offline & Open discussions
2.		Propagation constant, analysis of symmetrical T	2-3	Black Board Teaching
3.		analysis of symmetrical π	3-5	Black Board Teaching
4.		analysis of symmetrical Lattice network, Bridged-T networks,	6-8	Black Board Teaching
5.		image impedance, attenuators and their design.	9	Black Board Teaching & problem solving based learning
6.	Unit 2	Positive real function, LC, RL, RC and RLC network synthesis	10-13	Online & demonstration based learning
7.		Foster and Cauer form realization	14-15	Black Board Teaching & Group based Learning
8.		Minimum positive real function, Brune's method, Bott-Duffin method,	16	Online & demonstration Based learning
9.		Insertion Loss Synthesis, and Coefficient matching technique	17	Online & demonstration based learning
10.	Unit 3	Constant K prototype Filters: Low pass, high pass, band pass	18-21	Black Board Teaching & problem solving based learning
11.		band elimination filters, m-derived filters	21-22	Black Board Teaching & Learning through projects
12.		composite filters	23	Online & demonstration based learning
13.		frequency transformation	24-25	Black Board Teaching & problem solving based learning
16.	Unit 4	Voltage and current on a transmission line;	26	Black Board Teaching & Open discussions
17.		characteristic impedance and propagation constant of a transmission line,	27-28	Black Board Teaching & problem solving based learning
18.		Lossless & Distortion less line	29	Black Board Teaching / Slides &Group based Learning
19.		Reflection on a line, Standing wave ratio,	30-31	Black Board Teaching / Slides +Learning through experimentation
20.		Transient analysis of terminated transmission line	32	Black Board Teaching / Slides +Activity based Learning

21.		Dispersion less line, Input impedance of open circuit and short circuit line	33	Black Board Teaching & problem solving based learning
23.	Unit 5	Power and impedance measurement	34	Black Board Teaching & problem solving based learning
24.		$\lambda/8$, $\lambda/4$, $\lambda/2$ lines	35-36	Black Board Teaching & problem solving based learning
25.		Smith chart and application	37-38	Black Board Teaching & problem solving based learning
26.		Single stub and double stub matching.	39	Black Board Teaching & problem solving based learning

Online	Offline						
	Black Board Teaching	Group based Learning	Learning through projects	Learning through demonstration	Learning through experimentation	Activity based Learning	Onsite/field based learning
7.89%	65.75%	5.26%	2.66%	10.52%	5.26%	2.66%	--

Prof. D. K. Parsediya   **Prof. Rachit Jain**

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DEPARTMENT OF ELECTRONICS ENGINEERING

Multiple Mode Teaching Learning Pattern (MMTLP)

Name of Course with Code: Data Communication (3140324/3200324)		Class: B. Tech. EC II Year (III Sem)		Session: July-Dec 2024
S. No.	Unit	Content to be Covered	Teaching Session	Mode
1.	Unit 1	Introduction to Subject	1	Offline & open discussions
2.		Introduction to Switching Techniques-Circuit Switching	2	Offline & open discussions
3.		Message Switching & Packet Switching	3	Offline & open discussions
4.		Protocols, Network Architectures	4	Offline & open discussions
5.		OSI Model	5	Offline & open discussions
6.		TCP/IP Model	6	Offline & open discussions
7.		Physical layer transmission medium, RS 232 C, Modem	7	Offline & open discussions
8.		Topologies	8	Offline & open discussions
9.	Unit 2	Framing BSC, HDLC, ARQ	9	Offline & Problem solving based learning
10.		Stop and wait, Sliding window,Efficiency	10	Offline & Learning through experimentation
11.		Error detection and Error correction	11	Offline and open discussion, learning through project
12.		Hamming codes, Parity checks –CRC, Checksum, HARQ	12-15	Offline, Open discussions and problem solving based learning
13.	Unit 3	Introduction to MAC Sub Layer	16	Offline & problem solving based learning
14.		LAN Protocols	17	Offline & open discussions
15.		ALOHA, Slotted and pure ALOHA	18-20	Online &open discission
16.		CSMA, CSMA/CD, Token bus, TokenRing, TDMA, CDMA, FDMA	21-23	Offline & problem solving based learning
17.		Ethernet, Bridge, Router, Gateway,Switch.	24-26	Offline & open discussions
18.	Unit 4	Routing–Datagram and Virtual Circuit	27	Offline & demonstration-based l earning
19.		Distance vector routing and Link state Routing	28	Offline & problem solving based learning, group based learning
20.		Dijkstra's Algorithms	29	Offline & problem-solving based learning, group based learning
21.		Congestion Control: Leaky bucketalgorithm, Slow start	30	Offline & problem solving based learning, group-based learning
22.		ATM model and ATM traffic	31	Offline & open discussions

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		management – AAL, X.25		
23.		IP layer, IP addressing	32	Offline & open discussions
24.	Unit 5	Connection oriented transport protocol mechanism,	33	Offline & open discussions
25.		TCP, Transport flow regulation	34	Offline & open discussions
26.		UDP Segmentation & Reassemble,	35	Offline & open discussions
27.		Session and Transport Interaction, Synchronization, Session protocols	36	Offline & open discussions
28.		FTP, Remote login.	37	Offline & open discussions
29.		Signals and Transmission,	38	Offline & open discussions
30.		Data Encoding,	39	Offline & open discussions
31.		Transmission Media, Transmission Impairments,	40	Offline & open discussions
32.		Multiplexing, Transmission Modes,	41	Offline & open discussions
33.		Networking Devices, Error Detection and Correction,	42	Offline & open discussions
34.		Physical Layer Protocols,	43	Offline & open discussions
35.		Link Budget and Signal-to-Noise Ratio (SNR).	44	Offline & open discussions

Online	Offline						
	Black Board Teaching	Group based Learning	Learning through projects	Learning through demonstration	Learning through experimentation	Activity based Learning	Onsite/field-based learning
19%	64%	5%	2%	3%	-	7%	-

Dr. Jaydeep Singh Parmar   Prof. Prateek Bhadauria   Dr. Himanshu Singh