माधव प्रौद्योगिकी एवं विज्ञान संस्थान, ग्वालियर (म.प्र.), भारत
MADHAV INSTITUTE OF TECHNOLOGY & SCIENCE, GWALIOR (M.P.), INDIA
Deemed to be University
(Declared under Distinct Category by Ministry of Education, Government of India)
NAAC ACCREDITED WITH A++ GRADE

Department of Electronics Engineering

LECTURE PLAN

Name of Course with Code: Linear Control Theory (14242105)	**Class: B. Tech. IInd Year**	**Session: July-December 2025**

Teaching Session	Content to be Covered	CO's	Blooms Level (BL)	% Coverage	Mode
1.	Basic control system terminology	CO1	L2	2.9%	Blackboard Teaching
2.	Open-loop and closed-loop systems	CO1	L3	2.9%	Blackboard Teaching
3.	Feedback control and its significance	CO1	L4	2.9%	Online
4.	Feedback control and its significance Modeling of physical mechanical systems	CO1	L5	2.9%	Blackboard Teaching
5.	Transfer function of linear systems	CO1	L4	2.9%	Blackboard Teaching
6.	Block diagram algebra and signal flow graphs	CO1	L2	2.9%	Blackboard Teaching
7.	Effects of negative feedback on system behavior	CO1	L3	2.9%	Online
8.	Time response of first-order and second-order systems	CO2	L3	2.9%	Blackboard Teaching
9.	Steady-state error and error constants	CO2	L2	2.9%	Blackboard Teaching
10	Time response specifications (Type 0, 1, and 2 systems)	CO2	L3	2.9%	Group-based Learning
11	Steady-state error and error constants	CO2	L5	2.9%	Blackboard Teaching
12	Impact of adding poles and zeros on the response	CO2	L3	2.9%	Online
13	Concept and importance of system stability	CO3	L1	2.9%	Learning through Experimentation
14	Concept and importance of system stability	CO3	L4	2.9%	Blackboard Teaching
15	Stability in relation to closed-loop pole locations	CO3	L1	2.9%	Blackboard Teaching

16	Stability in relation to closed-loop pole locations	CO3	L2	2.9%	Blackboard Teaching
17	Routh-Hurwitz stability criterion and applications	CO3	L4	2.9%	Online
18	Routh-Hurwitz stability criterion and applications Problems	CO3	L3	2.9%	Blackboard Teaching
19	Routh-Hurwitz stability criterion and applications Problems (Gate)	CO3	L5	2.9%	Activity-based Learning
20	Root locus plots and analysis	CO3	L3	2.9%	Online
21	Root locus plots and analysis Problems	CO3	L5	2.9%	Blackboard Teaching
22	Root locus plots and analysis Problems (Gate)	CO3	L5	2.9%	Blackboard Teaching
23	Bode plots	CO4	L4	2.9%	Blackboard Teaching
24	Polar plots	CO4	L3	2.9%	Blackboard Teaching
25	Nyquist criterion	CO4	L5	2.9%	Blackboard Teaching
26	Introduction to Controllers: Proportional,	CO4	L1	2.9%	Blackboard Teaching
27	Introduction to Controllers: Integral,	CO4	L5	2.9%	Blackboard Teaching
28	PD Controllers	CO4	L2	2.9%	Blackboard Teaching
29	PID Controllers	CO4	L4	2.9%	Blackboard Teaching
30	PI Controllers	CO4	L4	2.9%	Online
31	Introduction to PLC	CO5	L2	2.9%	Blackboard Teaching
32	Introduction to PLA	CO5	L3	2.9%	Blackboard Teaching
33	Ladder programming	CO5	L4	2.9%	Online
34	SCADA	CO5	L3	2.9%	Blackboard Teaching
35	SCADA and its applications in industrial robotics.	CO5	L4	2.9%	Learning through Experimentation

Online	**Offline**				
	Black board teaching	**Group based Learning**	**Learning through experimentation**	**Activity based Learning**	**Onsite/field-based learning**
20%	63%	11%	4%	3%	0 %

Dr. Jaydeep Singh Parmar

Name of Course with Code: Communication Systems (14242103)	Class: (EC A & B) III Sem.	Session: July-December 2025

Department of Electronics Engineering

LECTURE PLAN

Teaching Session	Content to be Covered	CO's	Blooms Level (BL)	% Coverage	Mode
1.	Amplitude modulation	CO1	L2	2%	Offline Teaching
2.	Power calculation for AM	CO1	L3	2%	Problem based Learning
3.	Amplitude modulation Generation	CO1	L2	3%	Offline Teaching
4.	Demodulation techniques	CO1	L3	3%	Learning through experiments
5.	DSB-SC modulation and demodulation techniques	CO1	L3	4%	Learning through experiments
6.	SSB-SC modulation and demodulation techniques	CO1	L2	2%	Offline Teaching
7.	VSB-SC modulation and demodulation techniques	CO1	L2	1%	Offline Teaching
8.	QAM	CO1	L2	3%	Offline Teaching
9.	Angle modulation	CO2	L2	2%	Offline Teaching
10.	Types of FM, Carson's rule,	CO2	L2	2%	Problem based Learning
11.	FM modulation technique	CO2	L2	3%	Offline Teaching
12.	FM demodulation	CO2	L3	3%	Learning through experiments
13.	Various sources of noise, types of noise	CO2	L2	3%	Offline Teaching
14.	Comparison of modulation scheme for noise.	CO2	L3	3%	Open Discussion
15.	Sampling theorem	CO3	L4	4%	Offline Teaching

16.	Reconstruction of signal	CO3	L3	2%	Learning through demonstration
17.	Quantization	CO3	L3	3%	Problem based Learning
18.	Generation and detection of PAM, PPM, PWM	CO3	L4	3%	Learning through experiments
19.	PCM	CO3	L2	4%	Offline Teaching
20.	DPCM	CO3	L2	3%	Offline Teaching
21.	Delta modulator and ADM	CO3	L3	3%	Offline Teaching
22.	GSOP	CO4	L3	3%	Offline Teaching
23.	ASK, FSK generation and detection	CO4	L2	5%	Offline Teaching
24.	PSK and QPSK generation and detection	CO4	L2	5%	Offline Teaching
25.	QAM generation and detection	CO4	L2	3%	Learning through experiments
26.	Optimum filter,	CO4	L2	4%	Offline Teaching
27.	Matched filter, Correlator detector	CO4	L4	3%	Offline Teaching
28.	5G & 6G Communication	CO5	L2	3%	Offline Teaching
29.	Modulation techniques for 5G & 6G Communication	CO5	L2	4%	Offline Teaching
30.	Software Defined Radio	CO5	L2	2%	Problem based Learning
31.	Cognitive Radio	CO5	L2	2%	Open Discussion
32.	Reconfigurable intelligence surface	CO5	L2	2%	Offline Teaching
33.	Spectral Efficiency and Bandwidth Trade-offs in Modulation Schemes	CO5	L2	2%	Offline Teaching
34.	Orthogonal Frequency Division Multiplexing (OFDM) and its Variants	CO5	L2	2%	Offline Teaching
35.	Multi-Carrier ModulationTechniques	CO5	L2	2%	Offline Teaching

Online	**Offline**				
	Black board teaching	**Group based Learning**	**Learning through experimentation**	**Activity based Learning**	**Onsite/field-based learning**
0 %	61.7 %	9.9 %	17.3 %	11.1 %	0 %

Dr. Mukesh Mishra

Department of Electronics Engineering

LECTURE PLAN

Name of Course with Code: Cyber Security (14242111)	**Class: B. Tech (EC) II Year**	**Session: July-December 2025**

Teaching Session	**Content to be Covered**	**CO's**	**Blooms Level (BL)**	**% Coverage**	**Mode**
1.	Overview of Cyber Security, Goals of Cyber Security (Confidentiality, Integrity, Availability)	CO1	L2	3%	Offline / Black Board Teaching/ Interactive Learning
2.	Types of cyber-attacks: Phishing, Malware, ransomware	CO1	L3	3%	Offline / Black Board Teaching
3.	Social Engineering, Malicious Softwares.	CO1	L4	3%	Open discussion
4.	Hacker and its types. Real-world incidents and their impact, Cyber Ethics and Legal Aspects.	CO1	L3	3%	Offline / Black Board Teaching
5.	Internetworking devices, Topologies OSI and TCP/IP models	CO1	L3	3%	Offline mode
6.	IP address, DNS, TCP, IP, HTTP	CO1	L3	3%	Offline / Black Board Teaching
7.	HTTPS, Web Browser, Web Server.	CO1	L3	3%	Offline / Black Board Teaching
8.	Firewalls, Anti-virus, Intrusion Detection Systems (IDS), intrusion Prevention Systems (IPS),	CO1	L3	3%	Open discussion
9.	Encryption and Decryption: Symmetric and Asymmetric, Cryptanalysis, Digital Signature,	CO1	L3	2%	Offline / Black Board Teaching
10	Authentication: Passwords, Biometrics, Multi-Factor Authentication	CO2	L3	2%	Offline / Black Board Teaching
11	Operating System security basics. Securing mobile devices and apps.	CO2	L5	3%	Offline / Black Board Teaching
12	Web application vulnerabilities: SQL Injection, XSS, CSRF. Secure coding practices.	CO2	L5	3%	Offline / Black Board Teaching
13	Cybercrime, Forensics, and Incident Response: Types of cybercrimes: Identity Theft, Financial Fraud, Cyberbullying.	CO2	L2	3%	Offline / Black Board Teaching
14	Basics of digital forensics. Cyber law and IT Act (India) overview. Incident response	CO2	L2	2%	Offline / Black Board Teaching

	lifecycle and reporting.				
15	Cyber threats in microcontroller-based systems	CO2	L2	3%	Offline / Black Board Teaching

16	Protecting electronic devices, networks, and data from cyber threats.	CO3	L2	3%	Offline / Black Board Teaching
17	Hardware security, IoT Security. Jamming.	CO3	L2	3%	Offline / Black Board Teaching

Online	**Offline**				
	Black board teaching	**Group based Learning**	**Learning through experimentation**	**Activity based Learning**	**Onsite/field-based learning/Open discussion**
-	85%	-	-	-	15%

Dr. Varun Mishra
Assistant Professor
Department of Electronics Engineering

DEPARTMENT OF ELECTRONICS AND TELECOMMUNICATION ENGINEERING

Multiple Modes Teaching Learning Pattern

Name of Course with Code: Integrated Circuit (20242104)	**Class: B. Tech. ET-II Year**	**Session: July-Dec 2025**

S. No.	Unit	Content to be Covered	Teaching Session	CO Level	Mode
1.	**Unit 1**	Differential amplifier configurations	1	1	Offline Teaching
2.		Block diagram of Op-amp	2	1	Offline Teaching
3.		Features of practical (IC-741) and ideal op-Amp	3	1	Open discussion
4.		PSRR, CMRR, Slew rate and its Effect	4-5	1	Activity /Problem based Learning
5.		Input and output offset voltages	6	1	Activity /Problem based Learning
6.		Open and Closed loop configuration of Op-amp	7	1	Activity /Problem based Learning
7.		Inverting and non- inverting amplifier	8	1	Learning through experiment/Problem based Learning
8.		Summing amplifier	9	1	Learning through experiment/Problem based Learning
9.		Integrators and differentiators	10	1	Learning through experiment/Problem based Learning
10.		Logarithmic and anti-logarithmic amplifier	11	1	Learning through experiment/Problem based Learning
11.		Schmitt Trigger	12	1	Learning through experiment/Problem

					based Learning
12.	**Unit 2**	Characteristics and classifications of filters	13	2	Offline Teaching
13.		Magnitude and frequency response	14	2	Offline Teaching
14.		Frequency response of an amplifier	15	2	Learning through experiment/Problem based Learning
15.		1^{st} and 2^{nd} order Low pass and High pass filters	16	2	Learning through experiment
16.		Band pass filter	19	2	Learning through experiment

17.		Band reject filter	20	2	Offline Teaching
18.	**Unit 3**	**Oscillators**: Phase shift oscillator	21	3	Offline Teaching
19.		Clapp oscillator	22	3	Open discussion
20.		Wien bridge oscillator	23	3	Offline Teaching
21.		Hartley Oscillator	24	3	Offline Teaching
22.		Colpiit's oscillator	25	3	Open discussion
23.		Crystal oscillator using Op-amp	26	3	Offline Teaching
24.		**Multivibrators**: Introduction to 555 timer IC	27	4	Offline Teaching
25.		Block diagram	28	4	Open discussion

26.	**Unit 4**	Astable Multivibrator Circuits using 555 timer IC and their applications.	29	4	Learning through projects
27.		Monostable Multivibrator Circuits using 555 timer IC and their applications.	36	4	Learning through projects
28.		n Bistable Multivibrator Circuits using 555 timer IC and their applications.	37	4	Learning through projects
29.	**Unit 5**	**Integrated Circuits for Industrial Applications**	38	5	Learning through projects
30.		Low noise instrumentation amplifier for Signal Processing	39	5	Learning through projects
31.		Integrated Circuits in AI Edge Devices	40	5	Learning through projects
32.		EV Electronics	41	5	Learning through projects
33.		Review of Unit-V	42	5	Offline Teaching

Online	Offline						
-	Offline Teaching	Group based Learning	Learning through projects	Learning through demonstration	Learning through experiment	Activity /Problem based Learning	Onsite/ field-based learning/ Open Discussion
	30%	-	21.21%	-	27.27%	9%	12.12%

Dr. Hemant Choubey

Assistant Professor
Dept. of Electronics Engineering
MITS, Gwalior

Name of Course with Code: Data Structures (14242102)	Class: (EC A & B) III Sem.	Session: July-December 2025

Department of Electronics Engineering

LECTURE PLAN

Teaching Session	Content to be Covered	CO's	Blooms Level (BL)	% Coverage	Mode
1.	Introduction to Data Structures and Algorithms	CO1	L2	2%	Offline Teaching
2.	Characteristics of Algorithms, Time and Space Complexity, Asymptotic Notations	CO1	L3	2%	Offline Teaching
3.	Array Representations and Index to Address Translation	CO1	L3	2%	Offline Teaching
4.	Introduction to Linked List and Implementation	CO1	L3	2%	Learning through Demonstration
5.	Types of Linked Lists (Singly, Doubly, Circular) and Operations	CO1	L4	2%	Group-based Learning
6.	Discussion on Unit I	CO1	L2	1%	Open Discussion
7.	Introduction to Stack and its Operations	CO2	L2	2%	Offline Teaching
8.	Applications of Stack: Infix to Postfix, Evaluation of Postfix	CO2	L3	3%	Offline Teaching
9.	Concept of Recursion and its Applications	CO2	L3	3%	Offline Teaching
10.	Introduction to Queue and its Types (Linear, Circular, Priority, Dequeue)	CO2	L2	3%	Offline Teaching
11.	Queue Implementations and Operations	CO2	L3	3%	Group-based Learning
12.	Discussion on Unit II	CO2	L2	2%	Open Discussion
13.	Trees: Types, Terminologies, Binary Tree, Traversals	CO3	L2	3%	Offline Teaching
14.	Binary Search Tree (BST) and Threaded Binary Tree	CO3	L3	3%	Learning through Demonstration
15.	AVL Tree: Rotations and Balancing	CO3	L4	3%	Offline Teaching

16.	Graphs: Terminology, Representations (Adjacency List, Matrix)	CO3	L2	3%	Offline Teaching
17.	Graph Traversals: BFS and DFS	CO3	L3	3%	Group-based Learning
18.	Minimum Spanning Trees: Prim's and Kruskal's Algorithm	CO3	L4	3%	Learning through Demonstration
19.	Discussion on Unit III	CO3	L2	2%	Open Discussion
20.	Searching: Linear and Binary Search	CO4	L2	3%	Offline Teaching
21.	Hashing: Techniques and Collision Resolution	CO4	L3	3%	Offline Teaching
22.	Sorting Techniques: Bubble, Selection, Insertion Sort	CO4	L3	3%	Learning through Demonstration
23.	Time Complexity Comparison of Sorting Algorithms	CO4	L4	3%	Offline Teaching
24.	Discussion on Unit IV	CO4	L2	2%	Open Discussion
25.	Introduction to Advanced Data Structures and Applications in Big Data, AI, etc.	CO5	L2	3%	Offline Teaching
26.	Use of Hashing in Large Scale Systems	CO5	L3	3%	Offline Teaching
27.	Graph-based Structures in Real-time Industrial Systems	CO5	L4	3%	Learning through Demonstration
28.	Introduction to Concurrent and Distributed Data Structures	CO5	L3	3%	Offline Teaching
29.	Final Discussion on Advanced Concepts	CO5	L2	2%	Open Discussion
30.	Time and Space Trade-offs in Algorithm Design	CO5	L4	2%	Offline Teaching
31.	Real-world Applications of Stacks and Queues in OS and Compilers	CO5	L3	2%	Offline Teaching
32.	Tree-based Indexing in Databases (B-Trees and B+ Trees)	CO5	L4	2%	Offline Teaching

Online	**Offline**				
	Black board teaching	**Group based Learning**	**Learning through experimentation**	**Activity based Learning**	**Onsite/field-based learning**
0 %	61.7 %	9.9 %	17.3 %	11.1 %	0 %

Dr. Shailendra Singh