



Madhav Institute of Technology & Science Gwalior (M.P.)
(A Govt. Aided UGC Autonomous & NAAC Accredited Institute Affiliated to RGPV, Bhopal)

Department of Information Technology

A report on In-house workshop on

“Deciding modes of teaching according to the Multiple Mode Teaching Learning Pattern (MMTLP)”

Date: 30th May 2022

An In-house workshop on “**Deciding modes of teaching according to the Multiple Mode Teaching Learning Pattern (MMTLP)**” was conducted on 20th May 2022 from 01:30 pm to 02:15 pm in the IoT lab of the department. Departmental faculty members participated in the workshop and concluded with the lecture plan & modes of teaching for few courses of next semester. The workshop was conducted by the committee of following faculty members:

1. Dr. Saumil Maheshwari (Co-ordinator)
2. Mr. Abhishek Dixit
3. Dr. Tej Singh
4. Dr. Bhagat Singh Raghuvanshi

Objectives of workshop:

- To identify innovative teaching modes for different types of syllabus content
- To enhance skill development through different modes of teaching-learning
- To include latest developments in the domain catering to the fast changing technological scenario
- To introduce a global perspective into the course

Following were discussed during the workshop:

- The HoD and the coordinator demonstrated various modes of teaching that can be considered for teaching and planning of the lecture plan accordingly.
- It was also discussed a free hand for faculty members for deciding the modes of teaching for their subject.
- Suggestive range for various types of modes of teaching is also discussed.
- Faculty members prepared lecture plan & modes of teaching for few courses of next semester.

(Dr. Saumil Maheshwari)
Workshop Coordinator

(Dr. Akhilesh Tiwari)
HoD, IT

Submitted to Dean Academics for kind information and needful

Enclosures:

1. Lecture plan and MMTLP for few courses
2. Attendance Sheet



Modes of Teaching Subject:

Network & Web Security

UNIT	CONTENT	MODE
Unit-1	Principles and attacks,	Offline / Black Board Teaching
	basic number theory , prime number, congruence's , modular exponentiation	Offline / Black Board Teaching
	fundamentals of cryptography, steganography, cryptanalysis,	Learning through demonstration
	code breaking, block ciphers and stream ciphers	Offline / Black Board Teaching
	substitution ciphers, transposition ciphers, caesar cipher, play-fair cipher, hill cipher	Learning through demonstration
	cipher modes of operation.	Group based Learning
Unit-2	Cryptography	Offline / Black Board Teaching
	Symmetric key cryptography	Offline / Black Board Teaching
	public key cryptography, principles of public key cryptosystem	Offline / Black Board Teaching
	classical cryptographic algorithms: des, rc4, blowfish	Offline / Black Board Teaching
	RSA	Offline / Black Board Teaching
	distribution of public keys and key management	Online mode
Unit-3	Hash functions, one way hash function, message digest	Online mode
	md5, sha	Online mode
	authentication: requirements, functions	Learning through experimentation
	kerberos, message authentication codes	Offline / Black Board Teaching
	ssh (secure shell)	Online mode
	digital signatures, digital certificates	Learning through demonstration
Unit-4	SSL, TLS	Offline / Black Board Teaching
	SET	Offline / Black Board Teaching
	IDS, Statistical Anomaly Detection and Rule-Based Intrusion Detection	Online mode
	Penetration testing, Risk management	Online mode
	Firewalls: Types, functionality and Polices.	Group based Learning
Unit-5	Phishing: Attacks and its types	Online mode
	Buffer overflow attack, Cross Site Scripting, SQL Injection Attacks, Session Hijacking	Learning through projects
	Denial of Service Attacks: Smurf attack, SYN flooding attack, Distributed Denial of Service.	Learning through projects
	Hacker: Hacking and types of hackers	Online
	Footprinting, Scanning: types, port, network vulnerability,	Learning through experimentation



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Modes of Teaching Subject: **Network & Web Security**

Teaching Session	Date	Content to be covered	COs	Blooms Level (BL)	% Coverage (to be calculated based on the total syllabus)
1.		Principles and attacks,	1	1	3.12
2.		basic number theory , prime number, congruence's , modular exponentiation	1,2,3	2	6.25
3.		fundamentals of cryptography	1,2,3	2	1.56
4.		steganography, cryptanalysis, code breaking	1,2,3	2	4.68
5.		block ciphers and stream ciphers	1,2	2	1.56
6.		substitution ciphers caesar cipher	1,2,3	3	1.56
7.		transposition ciphers, play-fair cipher	1,2,3	3	1.56
8.		hill cipher	1,2,3	3	1.56
9.		cipher modes of operation*	1,2,3	3	0.78
10.		cipher modes of operation	1,2,3	3	0.78
11.		Cryptography	1	2	1.56
12.		Symmetric key cryptography	1,2,3	2	1.56
13.		public key cryptography, principles of public key cryptosystem	1,2,3	2	3.12
14.		classical cryptographic algorithms: des,	1,2,3,4	4	1.56
15.		rc4	1,2,3,4	4	1.56
16.		blowfish	1,2,3,4	4	1.56
17.		RSA	1,2,3,4	4	1.56
18.		distribution of public keys and key management	1,2,3	3	1.56
19.		Hash functions, one way hash function,	1,2,3,4	3	4.68

		message digest			
20.		md5	1,2,3,4	3	1.56
21.		sha	1,2,3,4	3	1.56
22.		authentication: requirements, functions	1,2,3	3	3.12
23.		kerberos,	1,2,3,4	2	1.56
24.		message authentication codes	1,2,3,4	2	1.56
25.		ssh (secure shell)	1,2,3,4	3	1.56
26.		digital signatures,	1,2,3	3	1.56
27.		digital certificates	1,2,3	3	1.56
28.		SSL, TLS	1,2,3,4,5	3	3.12
29.		SET	1,2,3,4,5	3	3.12
30.		IDS, Statistical Anomaly Detection and Rule-Based Intrusion Detection	4,5,6	4	3.12
31.		Penetration testing, Risk management	4,5,6	4	3.12
32.		Firewalls: Types, functionality and Polices.	4,5,6	3	4.68
33.		Phishing: Attacks and its types	4,5,6	4	1.56
34.		Buffer overflow attack, Cross Site Scripting, SQL Injection Attacks, Session Hijacking	4,5,6	4	6.25
35.		Denial of Service Attacks: Smurf attack, SYN flooding attack	4,5,6	4	3.12
36.		Distributed Denial of Service.	4,5,6	4	1.56
37.		Hacker: Hacking and types of hackers	4,5,6	2	1.56
38.		Footprinting, Scanning: types, port, network vulnerability,	4,5,6	4	4.68
39.		Sniffing in shared and switched networks	4,5,6	4	3.12
40.		Sniffing detection & prevention, Spoofing	4,5,6	4	4.68

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Mode of Teaching

Subject: Introduction to Artificial Intelligence

Unit(s)	Content	Mode
Unit 1	Introduction, History of AI, AI Problem, Approaches, Goals, Purpose, Scope, Terminology, and Application Areas,	Online mode teaching
	Industrialization and its Impact, Cyber-Physical System, Evolution of Industry, Data Availability	Online mode teaching
	Relation between Artificial Intelligence, Machine Learning, Deep Learning and other Related Fields	Online Mode teaching
Unit 2	Conventional Vs Machine Learning Programming	Online Mode teaching
	Data/Information/Knowledge	Online Mode teaching
	Type of Data: Structure, Non-Structure, Semi Structure	Offline Black board teaching
	Images, Video, Temporal, Real Time	Learning through experimentation
	Data Types: Categorical/Nominal/Ordinal	Learning through demonstration
	Data Types Conversion	Online Mode teaching
	Model, Algorithm, Model Development Life Cycle	Group based Learning
	Learning, Training, Testing, Validation, Importance of Data	Learning through experimentation
AI Tools for Implementation	Learning through experimentation	
Unit 3	Basic Concepts of Machine Learning	Offline Black board teaching
	Types of Learning: Supervised, Unsupervised and Reinforcement Learning	Offline Black board teaching
	Categorical and Continuous Data, Skewness and Correlation,	Online mode
	Regression Analysis Vs Classification	Learning through demonstration
	Evolutionary Algorithms, Genetic Algorithms: Basic Concepts Optimization	Offline Black board teaching
	Need for Optimization	Learning through projects

	Membership Functions	Learning through experimentation
Unit 4	Introduction to Intelligent Agent, Characteristics and functionalities,	Offline Black board teaching
	Introduction to Expert System, Roles of Expert Systems,	Online Mode
	Logic and Reasoning in AI: Introduction to Logic	Learning through demonstration
	Basic of Boolean Algebra, Logic Gates, Propositional and Predicate	Offline Black board teaching
	Logic: Interpretation of Formulas, Syntax and Semantics of an Expression, Inference Rules	Offline Black board teaching
Unit 5	Artificial Intelligence in Real World: Speech Processing, Natural Language Processing,	Learning through demonstration
	Planning, Engineering and Expert Systems,	Offline Black board teaching
	Fuzzy Systems, Models of Brain and Evolution	Learning through experimentation
	AI in Healthcare, Defence and Agriculture, Cyber Security, Agriculture, E-Commerce, Gaming, Finance, Smart Devices	Learning through projects

Online	Offline						
	Black Board Teaching	Group based Learning	Learning through projects	Learning through demonstration	Learning through experimentation	Activity based Learning	Onsite/field -based learning
32.14%	25.00%	7.16%	7.14%	14.28%	14.28%	-	-

LECTURE PLAN

Name of Course with Code: Introduction to AIR (240101) Class: 1st Year, B. Tech (AIR) Session: July-December 2022					
Unit 1 Introduction to Artificial Intelligence					
Teaching Session	Date	Content to be covered	COs	Blooms Level (BL)	% Coverage (to be calculated based on the total syllabus)
Unit 1 Introduction to Artificial Intelligence					
1-3	XX/XX/2022	Introduction, History of AI, AI Problem, Approaches, Goals, Purpose, Scope, Terminology, and Application Areas,	CO1	BL-1	6 %
2-5	XX/XX/2022	Industrialization and its Impact, Cyber-Physical System, Evolution of Industry, Data Availability	CO1	BL-1, BL-2	7%
6	XX/XX/2022	Relation between Artificial Intelligence, Machine Learning, Deep Learning and other Related Fields	CO1, CO2	BL-2	7%
Unit 2 Conventional Learning and Machine learning					
7-8	XX/XX/2022	Conventional Vs Machine Learning Programming	CO1, CO2, CO5	BL-2	3 %
9-10	XX/XX/2022	Data/Information/Knowledge	CO1, CO2, CO5	BL-2	2%
11-13	XX/XX/2022	Type of Data: Structure, Non-Structure, Semi Structure	CO 1, CO 2, CO 3,	BL-1, BL-2	2%
14	XX/XX/2022	Images, Video, Temporal, Real Time	CO 1, CO 5,	BL-1	2%
15-16	XX/XX/2022	Data Types: Categorical/Nominal/Ordinal	CO 1, CO 2, CO 3,	BL-1	2%
16	XX/XX/2022	Data Types Conversion	CO 1, CO 2,	BL-2	2%
17	XX/XX/2022	Model, Algorithm, Model Development Life Cycle	CO 1, CO 3,	BL-2	3%
18-20	XX/XX/2022	Learning, Training, Testing, Validation, Importance of Data	CO 1, CO 3	BL-3	2%
21	XX/XX/2022	AI Tools for Implementation	CO 5,	BL-4	2%

			CO 6		
Unit 3 Introduction to Machine Learning					
22	XX/XX/2022	Basic Concepts of Machine Learning,	CO 2	BL-1	2%
23-25	XX/XX/2022	Types of Learning: Supervised, Unsupervised and Reinforcement Learning	CO 2, CO 4	BL-1, BL-2	2%
26-28	XX/XX/2022	Categorical and Continuous Data, Skewness and Correlation, Regression Analysis Vs Classification	CO 1, CO 2	BL-1, BL-2	2%
29-31	XX/XX/2022	Evolutionary Algorithms, Genetic Algorithms: Basic Concepts	CO 1, CO 3	BL-3	2%
32	XX/XX/2022	Optimization, Need for Optimization,	CO 2, CO 3	BL-4	2%
32	XX/XX/2022	Membership Functions	CO 2, CO 3,	BL-1	1%
Unit 4 Introduction to Intelligent Agent					
33	XX/XX/2022	Introduction to Intelligent Agent, Characteristics and functionalities,	CO 3, CO 4	BL-1	5%
34	XX/XX/2022	Introduction to Expert System, Roles of Expert Systems,	CO 3, CO 4	BL-1	4%
35	XX/XX/2022	Logic and Reasoning in AI: Introduction to Logic,	CO 3, CO 4	BL-1	4%
36	XX/XX/2022	Basic of Boolean Algebra, Logic Gates, Propositional and Predicate	CO 3, CO 4	BL-2	2%
37	XX/XX/2022	Logic: Interpretation of Formulas, Syntax and Semantics of an Expression, Inference Rules	CO 3, CO 4, CO 5	BL-2, BL-3	5%
Unit 5 Artificial Intelligence in Real World					
38	XX/XX/2022	Artificial Intelligence in Real World: Speech Processing, Natural Language Processing,	CO 1, CO 6	BL-4	4%
39	XX/XX/2022	Planning, Engineering and Expert Systems,	CO 4, CO 5	BL-4, BL-5	5%
40-41	XX/XX/2022	Fuzzy Systems, Models of Brain and Evolution	CO 3	BL-5, BL-6	4%
42	XX/XX/2022	AI in Healthcare, Defence and Agriculture, Cyber Security, Agriculture, E-Commerce, Gaming, Finance, Smart Devices	CO 1, CO 2, CO 5, CO 6	BL-5, BL-6	7%



Modes of Teaching

Subject: **Computer Networks and Protocols**

UNIT	CONTENT	MODE
Unit-1	Computer Network Types, OSI Reference Model & TCP/IP Reference Model, Frequency Division Multiplexing, Wavelength Division Multiplexing & Time Division Multiplexing	Offline / Black Board Teaching
	Data Transmission Modes, Network topologies	Learning through experimentation
	Line Coding, Synchronous & Asynchronous Transmission, Transmission Medium- Guided & Unguided, Networking Devices, Performance Criteria, ISDN, SONET.	Online mode
Unit-2	Introduction, Design Issues, Services, Framing, MAC Sub Layer- Channel Allocation Problem, Pure ALOHA ,Slotted ALOHA, IEEE 802.3, IEEE 802.4 and IEEE 802.5, HDLC.	Offline / Black Board Teaching
	Error Control, Flow Control,	Learning through experimentation
	ARQ Strategies	Activity based Learning
	Error Detection and Correction, Parity Bits, Cyclic Redundant Code (CRC), Hamming Codes, CSMA ,CSMA/CD	Online mode
Unit-3	Network Layer Protocols: Introduction, Design Issues, Services, Routing- Distance Vector Routing, Hierarchical Routing & Link State Routing, Routing Protocols,	Offline / Black Board Teaching
	Flooding, Connection Oriented & Connectionless Service, IP Addressing, IPV4, IPV6, Internet Protocol Datagram, Fragmentation, ICMP, IGMP.	Online mode
	Shortest Path Algorithm-Dijkstra's Algorithm & Floyd-Warshall's Algorithm,	Group based Learning
Unit-4	Transport Layer Protocols: Datagram Protocol (UDP) - Process To Process Communication, Port Number, Socket Address, User Datagram, UDP Operation. TCP Services, Process To Process Communication	Offline / Black Board Teaching
	Full Duplex Communication	Activity based Learning
	TCP Features-Numbering System, Flow Control, Error Control, Congestion Control , TCP Segment, Flow Control-Sliding Window Protocol, Silly Window Syndrome Error	Online mode
	Stream Delivery Service, Connection Oriented Service, Reliable Service	Learning through demonstration

Unit-5	Application Layer Protocols: Introduction, Design Issues, Presentation Layer. Session Layer – Dialog Control, Synchronization.	Offline / Black Board Teaching
	File Transfer & Electronic Mail. Domain Name System (DNS),	Learning through demonstration
	Encryption- Substitutions and Transposition Ciphers, Compression- Lossy and Lossless Translation, Application Layer- Remote Login, Telnet, FTP, TFTP, Email Protocol: SMTP, POP, IMAP.	Online mode

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Online	Offline						
	Black Board Teaching	Group based Learning	Learning through projects	Learning through demonstration	Learning through experimentation	Activity based Learning	Onsite/field based learning
35.32%	28.44%	9.26%	-	9.79%	11.44%	5.75%	-

LECTURE PLAN

Name of Course with Code: COMPUTER NETWORKS AND PROTOCOLS Class: 2nd Year, B. Tech Session: July-December 2022					
Unit 1: Introduction & Physical Link Layer					20/100
Teaching Session	Date	Content to be covered	COs	Blooms Level (BL)	% Coverage (to be calculated based on the total syllabus)
1	XX/XX/2022	Computer Network Types, OSI Reference Model , TCP/IP Reference Model	CO1	BL-1	2.5 %
2	XX/XX/2022	Circuit Switching, Message Switching & Packet Switching	CO1, CO2	BL-2	2.5 %
3	XX/XX/2022	Frequency Division Multiplexing, Time Division Multiplexing	CO2	BL-2	2.5 %
4	XX/XX/2022	ISDN, SONET	CO1	BL-2	3.5 %
5	XX/XX/2022	Data Transmission Modes, Network topologies	CO1, CO2	BL-1	2.5 %
6	XX/XX/2022	Line Coding, Synchronous & Asynchronous Transmission	CO1, CO2	BL-1	2.5 %
7	XX/XX/2022	Transmission Medium- Guided & Unguided,	CO1, CO2	BL-1	1.5%
8	XX/XX/2022	Networking Devices, Performance Criteria.	CO1, CO2	BL-2	2.5 %
Unit 2 : Data Link Layer					40/100
9	XX/XX/2022	Introduction, Design Issues	CO1, CO2, CO3	BL-2	2.5 %
10	XX/XX/2022	Services, Framing	CO1, CO2, CO3	BL-2	2.5 %
11	XX/XX/2022	Error Control, FlowControl, ARQ Strategies	CO3	BL-2	3.5%
12	XX/XX/2022	Error Detection and Correction, Parity Bits	CO3	BL-2	2.5 %
13	XX/XX/2022	Cyclic RedundantCode (CRC), Hamming Codes	CO2	BL-1	1.5 %
14	XX/XX/2022	MAC Sub Layer- Channel Allocation Problem, Pure ALOHA	CO2	BL-1	2.5%
15	XX/XX/2022	Slotted ALOHA, CSMA ,CSMA/CD	CO2, CO3	BL-1	1.5 %
17	XX/XX/2022	IEEE 802.3, IEEE 802.4 and IEEE 802.5, HDLC.	CO2, CO3	BL-2	3.5 %

Unit 3 :Network Layer Protocols					60/100
18	XX/XX/2022	Introduction, Design Issues, Services	CO4,CO5	BL-3	1.5 %
19	XX/XX/2022	Distance Vector Routing, Hierarchical Routing & Link State Routing	CO4,CO5	BL-3	2.5 %
20	XX/XX/2022	Dijkstra's Algorithm & Floyd–Warshall's Algorithm	CO4,CO5	BL-3	2.5 %
21	XX/XX/2022	Routing Protocols, Flooding, Connection Oriented & Connectionless Service	CO4,CO5	BL-3	3.5%
22	XX/XX/2022	IP Addressing, IPV4, IPV6	CO4,CO5	BL-3	2.5 %
23	XX/XX/2022	Internet Protocol Datagram, Fragmentation	CO4,CO5	BL-3	1.5%
24	XX/XX/2022	ICMP, IGMP	CO4,CO5	BL-3	3.5%
Unit 4 :Transport Layer Protocols					80/100
25	XX/XX/2022	Datagram Protocol (UDP) - Process To Process Communication,	CO3	BL-2 ,BL-3	3.5%
26	XX/XX/2022	Port Number, Socket Address, User Datagram, UDP Operation	CO3	BL-2 ,BL-3	2.5 %
27	XX/XX/2022	TCP Services, Process To Process Communication, Stream Delivery Service,	CO3	BL-2 ,BL-3	1.5%
28	XX/XX/2022	Full Duplex Communication, Connection Oriented Service, Reliable Service, TCP Features- Numbering System	CO3	BL-2 ,BL-3	3.5%
29	XX/XX/2022	Flow Control, Error Control	CO5	BL-2 ,BL-3	2.5 %
30	XX/XX/2022	TCP Segment, Flow Control- Sliding Window Protocol, Silly Window Syndrome	CO5	BL-2 ,BL-3	2.5 %
31	XX/XX/2022	Error Control- Checksum, Acknowledgement, Retransmission	CO5	BL-2 ,BL-3	2.5 %
32	XX/XX/2022	Congestion Control	CO5	BL-2 ,BL-3	1.5 %
Unit 5: Application Layer Protocols					100/100
33	XX/XX/2022	Introduction, Design Issues, Presentation Layer- Translation	CO5	BL-2 ,BL-3	2.5 %
34	XX/XX/2022	Encryption- Substitutions and Transposition Ciphers	CO5	BL-2 ,BL-3	2.5 %
35	XX/XX/2022	Compression- Lossy and Lossless. Session Layer	CO5	BL-2 ,BL-3	2.5 %
36	XX/XX/2022	Dialog Control, Synchronization	CO5	BL-2 ,BL-3	1.5 %

37	XX/XX/2022	Remote Login, File Transfer & Electronic Mail	CO6	BL-2 ,BL-3	2.5 %
38	XX/XX/2022	Domain Name System (DNS), Telnet	CO6	BL-2 ,BL-3	2.5 %
39	XX/XX/2022	FTP, TFTP,SMTP	CO6	BL-2 ,BL-3	3.5%
40	XX/XX/2022	POP, IMAP	CO6	BL-2 ,BL-3	2.5 %

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Department of Information Technology

Modes of Teaching

Subject: DESIGN & ANALYSIS OF ALGORITHMS

UNIT	CONTENT	MODES
Unit-1	Algorithms and its Importance	Online mode
	Recurrences and Asymptotic Notations	Learning through experimentation
	Mathematical Analysis of Non-Recursive and Recursive Algorithm	Offline / Black Board Teaching
	Review of Sorting & Searching Algorithms	Online mode
	B-Trees and Traversal Techniques	Activity based Learning
	Topological sort	Learning through demonstration
Unit-2	Divide and Conquer Method: Introduction and its Examples	Online mode
	Finding the Maximum and Minimum	Learning through experimentation
	Binary Search, Merge Sort & Quick Sort	Online mode
	Strassen's Matrix Multiplication	Offline / Black Board Teaching
	Additional real world problems on divide and conquer	Group based Learning
Unit-3	Introduction & Characteristics of Greedy Method	Online mode
	Dijkstra's single source shortest path algorithm	Offline / Black Board Teaching
	Minimum Cost Spanning Trees : Prims's and Kruskal's Algorithm	Learning through demonstration
	Knapsack Problem	Activity based Learning
	Optimal Storage on Tapes	Offline / Black Board Teaching
Unit-4	Introduction of Dynamic Programming	Online mode
	The Principle of Optimality	Group based Learning
	0/1 Knapsack	Activity based Learning

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Department of Information Technology

	Traveling salesman problem	Learning through experimentation
	Floyd's All Pairs Shortest Path	Learning through demonstration
	Longest Common Subsequence	Offline / Black Board Teaching
	Reliability Design	Offline / Black Board Teaching
	Matrix chain multiplication	Learning through demonstration
Unit-5	Backtracking: Concept and its Examples	Online mode
	4-Queen's Problem	Learning through experimentation
	Knapsack problem	Activity based Learning
	Hamiltonian Circuit Problem	Offline / Black Board Teaching
	Graph Coloring Problem	Activity based Learning
	Branch & Bound: Introduction and its Examples	Online mode
	Traveling Salesperson Problem	Learning through experimentation
	Introduction of Class P, NP, NP-Hard and NP-Complete Problems	Offline / Black Board Teaching
	Polynomial Reduction	Offline / Black Board Teaching

Online	Offline						
	Black Board Teaching	Group based Learning	Learning through projects	Learning through demonstration	Learning through experimentation	Activity based Learning	Onsite/field based learning
24.24%	27.27%	6.06%	-	12.12%	15.15%	15.15%	-

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Department of Information Technology

Lecture Plan

Design & Analysis of Algorithms (240301):		Class: AIR	Session: July-December 2022		
Teaching Session	Date	Content to be covered	COs	Blooms Level (BL)	% Coverage (to be calculated based on the total syllabus)
1		Algorithms and its Importance	1	BL 1	2%
2		Recurrences and Asymptotic Notations	2, 3	BL 2, 3	3%
3		Mathematical Analysis of Non-Recursive and Recursive Algorithm	2, 3	BL 2, 4	5%
4		Review of Sorting & Searching Algorithms	4	BL 1	4%
5		B-Trees and Traversal Techniques	4	BL 1	4%
6		Topological sort	1	BL 2, 3	2%
7		Divide and Conquer Method: Introduction and its Examples	1, 5	BL 1, 2	4%
8		Finding the Maximum and Minimum	5	BL 2, 3	4%
9		Binary Search, Merge Sort & Quick Sort	4, 5	BL 1	8%
10		Strassen's Matrix Multiplication	5	BL 1, 2	3%
11		Additional real world problems on divide and conquer	5	BL 2, 3	2%
12		Introduction & Characteristics of Greedy Method	5	BL 1	3%
13		Dijkstra's single source shortest path algorithm	1, 5	BL 2, 3, 4	4%
14		Minimum Cost Spanning Trees : Prims's and Kruskal's Algorithm	1, 5	BL 2, 3, 4	5%
15		Knapsack Problem	2, 5	BL 2, 3	5%
16		Optimal Storage on Tapes	2, 5	BL 2, 3, 4	3%
17		Introduction of Dynamic Programming	5	BL 1	2%
18		The Principle of Optimality	2, 5	BL 1, 2	2%

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19		0/1 Knapsack	2, 5	BL 2, 3	3%
20		Traveling salesman problem	2, 5	BL 2, 3, 4	3%
21		Floyd's All Pairs Shortest Path	2, 5	BL 2, 3, 4	3%
22		Longest Common Subsequence	2, 5	BL 2, 3, 4	3%
23		Reliability Design	2, 5	BL 2, 3	2%
24		Matrix chain multiplication	2, 5	BL 2, 3, 4	2%
25		Backtracking: Concept and its Examples	5	BL 1, 2	2%
26		4-Queen's Problem	2, 5	BL 2, 3	2%
27		Knapsack problem	2, 5	BL 2, 3	2%
28		Hamiltonian Circuit Problem	2, 5	BL 2, 3	3%
29		Graph Coloring Problem	2, 5	BL 2, 3, 4	2%
30		Branch & Bound: Introduction and its Examples	5	BL 1, 2	2%
31		Traveling Salesperson Problem	2, 5	BL 2, 3, 4	2%
32		Introduction of Class P, NP, NP-Hard and NP-Complete Problems	6	BL 2, 4	3%
33		Polynomial Reduction	6	BL 2, 4	2%

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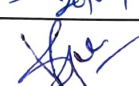
DEPARTMENT OF INFORMATION TECHNOLOGY

Attendance Sheet

Date: 20/05/2022

In-House department level workshop on

Deciding modes of teaching according to the
Multiple Mode Teaching Learning Pattern (MMTLP)

S. No.	Faculty Name	Signature
1.	Dr. Akhilesh Tiwari	Present
2.	Dr. Sanjiv Sharma	In Exam Duty
3.	Prof. Punit Kumar Johari	Mir 20/05/2022
4.	Prof. Vikas Sejwar	
5.	Prof. Abhilash Sonker	20/05/2022
6.	Prof. Rajeev Kumar Singh	← on leave →
7.	Prof. Neha Bhardwaj	NB
8.	Dr. Saumil Maheshwari	Saumil
9.	Dr. Vikram Rajpoot	Vikram 20/05/2022
10.	Dr. Dhananjay Bisen	Dhananjay 20/05/2022
11.	Dr. Tej Singh	Tej Singh 20/05/2022
12.	Dr. Pawan Dudev	Pawan 20/05/2022
13.	Prof. Abhishek Dixit	Abhishek Dixit 20/05/2022
14.	Dr. Bhagat Singh Raghuwansi	Bhagat Singh 20/05/2022
15.	Dr. Nidhi Saxena	Nidhi 20/05/2022
16.	Prof. Namrata Agrawal	Namrata
17.	Prof. Vishwas Srivastava	Vishwas 20/05/2022