Modes of Teaching
Subject: Computer Architecture & Microprocessor

UNIT	CONTENT	MODE
Unit-1	CPU structure and functions,	Online mode
	Processor organization, ALU, data paths, internal registers, status flags	Offline / Black Board Teaching
	System bus structure: Data, address and control buses.	Online mode
	Processor control, instruction fetch	Online mode
	Micro-operations	Offline / Black Board Teaching
	Hardwired control, microprogrammed control	Online mode
	Microinstruction sequencing and execution.	Activity based learning
Unit-2	Instruction set principles, machine instructions	Online mode
	Types of operations and operands, encoding an instruction set	Group based Learning
	Addressing modes and formats	Offline / Black Board Teaching
	Assembly language programming	Learning through experimentation
Unit-3	I/O organization; I/O techniques: interrupts, polling, DMA; Synchronous vs. asynchronous I/O.	Online mode
	Memory system, internal and external memory	Group based Learning
	Memory hierarchy, cache memory and its working, virtual memory concept.	Group based Learning
Unit-4	8085 microprocessor architecture	Online mode
	Instruction set, instruction types and formats	Learning through experimentation
	Instruction execution	Learning through demonstration
	Instruction cycles, different types of machine cycles and timing diagram.	Offline / Black Board Teaching
	8086 architecture, registers, memory segmentation,	Online mode
	Addressing in 8086	Activity based learning
Unit-5	8255	Online mode
	Interfacing with LED's, ADC, DAC, stepper motors	Activity based learning
	I/O & Memory Interfacing	Online mode
	8254, 8259, 8251	Online mode

Online	Offline						
	Black Board Teaching	Group based Learning	Learning through projects	Learning through demonstration	Learning through experimentation	Activity based Learning	Onsite/field based learning
44%	19%	14%	-	2%	10%	11%	-

Madhav Institute of Technology & Science, Gwalior

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LECTURE PLAN

Name of the course with code: Computer Architecture And Microprocessor (270401/280401)
Class: IT (AIDS/AIML-IV semester)
Session: January-July 2023

Teaching Session	Content to be covered	COs	Blooms Level (BL)	% Coverage (to be calculated based on the total syllabus)
1	CPU structure and functions,	1	I	2
2	Processor organization, ALU, data paths,	1	I	4
3	Internal registers, status flags	1	I	4
4	System bus structure: Data, address and control buses.	1	I	4
5	Processor control, instruction fetch,	1	I	4
6	Micro-operations	1	I	3
7	Hardwired control	1	I	2
8	Microprogrammed control	1	I	2
9	Microinstruction sequencing and execution.	1	I	2
10	Instruction set principles	2	II	2
11	Machine instructions	2	II	2
12	Types of operations and operands	2	II	2
13	Encoding an instruction set	2	II	2
14	Addressing modes and formats	2	II	3
15	Assembly language programming	4	III	2
16	Assembly language programming	4	III	2
17	I/O organization;	3	II	2
18	I/O techniques: interrupts, polling,	3	II	2
19	DMA; Synchronous vs. asynchronous I/O.	3	II	3
20	Memory system	3	II	2
21	Internal and external memory	3	II	2
22	Memory hierarchy	3	II	2
23	Cache memory and its working	3	II	2
24	Virtual memory concept.	3	II	2
25	8085 microprocessor architecture	4	II	3
26	Instruction set	4	III	3
27	Instruction types and formats	4	III	3
28	Instruction execution, instruction cycles,	4	III	3
29	Different types of machine cycles and timing diagram.	4	III	4
30	16-bit microprocessors, 8086 architecture	4	II	3
31	Registers, memory segmentation	4	II	2
32	Addressing in 8086	4	III	3
33	8255	5	III	2
34	Interfacing with LED's	5	VI	2
35	Interfacing with ADC, DAC	5	VI	2
36	Interfacing with stepper motors	5	VI	2
37	I/O & Memory Interfacing	5	VI	3
38	8254	5	III	2
39	8259	5	III	2
40	8251	5	III	2

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Modes of Teaching

Subject: Machine Learning and Optimization 270404

Unit	Content	Mode
Unit-1	Introduction to ML	Offline / Black Board Teaching
	Statistical Learning, Supervised vs Unsupervised Learning	Offline / Black Board Teaching
	Regression vs Classification Problems,	Offline / Black Board Teaching
	Formulation of Design Problems as Mathematical Programming Problem	Offline / Black Board Teaching
	Linear Regression	Offline / Black Board Teaching
	Multiple Linear Regression	Offline / Black Board Teaching
	Logistic Regression	Offline / Black Board Teaching
	K-Nearest Neighbour Classification	Online mode
Unit-2	Decision Tree Learning	Online mode
	Decision Tree Representation,	Online mode
	Appropriate Problems for Decision Tree Learning	Online mode
	Random Forest	Online mode
	Issues in Decision Tree Learning	Online mode
	Naïve Bayes Classifier	Online mode
	Support Vector Machines	Online mode
Unit-3	Artificial Neural Network	Offline / Black Board Teaching
	Neural Network Representation	Offline / Black Board Teaching
	Neural Networks as a Paradigm for Parallel Processing	Online mode
	Linear Discrimination	Online mode
	Pairwise Separation	Online mode
	Gradient Descent	Group based Learning
	Perceptron, Training A Perceptron	Online mode
	Multilayer Perceptron	Offline / Black Board Teaching
	Back Propagation Algorithm	Offline / Black Board Teaching
	Dynamically Modifying Network Structure.	Offline / Black Board Teaching
Unit-4	Unsupervised Learning: Clustering, Common Distance Measures	Offline / Black Board Teaching
	Hierarchical Algorithms – Agglomerative and Divisive Partitioning Algorithms–K-Means and Derivatives	Offline / Black Board Teaching
	Design and Analysis of Machine Learning Experiments	Group based Learning

	Guidelines for Machine Learning Experiments, Factors, Response, and Strategy of Experimentation	Learning through experimentation
	Ensemble Methods, Bagging and Boosting	Learning through experimentation
	Cross-Validation and Resampling Methods	Online mode
	Measuring Classifier Performance, Assessing a Classification Algorithm's Performance (ROC Curve),	Group based Learning
	Measuring Classifier Performance, Assessing a Classification Algorithm's Performance (ROC Curve),	Group based Learning
	Comparing Two Classification Algorithms, Comparing Multiple Algorithms :Analysis of Variance, Comparison over Multiple Datasets	Group based Learning
Unit-5	Optimization Algorithms, Engineering Applications of Optimization Algorithms	Offline / Black Board Teaching
	Objective Function, Optimization Algorithms for Differentiable and Non-Differentiable Objective Functions	Learning through Projects
	Stationary and Critical Point, Functions of Single and Two Variables	Offline / Black Board Teaching
	Global Optimum, Single Variable Optimization, Two Variable Optimizations	Learning Through Projects
	First Order Algorithms, Local Descent Algorithms, Bracketing Algorithms	Offline / Black Board Teaching
	Stochastic Algorithms, Population Based Algorithms: Introduction, Genetic Algorithms.	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
35%	45%	10%	5%	--	5%	--	--

Dr. Vibha Tiwari

Assistant Professor IT

Department

LECTURE PLAN

Name of Course with Code: Machine learning and optimization 270404
Class: Artificial Intelligence & Data Science (IV Sem)
Session: January-June 2023

Teaching Session	Content to be covered	COs	Blooms Level (BL)	% Coverage (to be calculated based on the total syllabus)
1	Introduction to ML	CO1	Understanding	2%
2	Statistical Learning, Supervised vs Unsupervised Learning	CO1	Understanding	2%
3	Regression vs Classification Problems,	CO1	Understanding	2.5%
4	Formulation of Design Problems as Mathematical Programming Problem	CO1	Understanding	2.5%
5	Linear Regression	CO1	Understanding	2.5%
6	Multiple Linear Regression	CO1	Understanding	2.5%
7	Logistic Regression	CO1	Understanding	2.5%
8	K-Nearest Neighbour Classification	CO1	Understanding	2%
9	Decision Tree Learning	CO2	Creating	2%
10	Decision Tree Representation,	CO2	Creating	3%
11	Appropriate Problems for Decision Tree Learning	CO2	Creating	3%
12	Random Forest	CO2	Creating	3%
13	Issues in Decision Tree Learning	CO2	Creating	3%
14	Naïve Bayes Classifier	CO2	Creating	2.5%
15	Support Vector Machines	CO2	Creating	3%
16	Artificial Neural Network	CO5	Analyzing	2%
17	Neural Network Representation	CO5	Analyzing	3%
18	Neural Networks as a Paradigm for Parallel Processing	CO5	Analyzing	3%
19	Linear Discrimination	CO6		2%
20	Pairwise Separation	CO6		3%
21	Gradient Descent	CO6		3%
22	Perceptron, Training A Perceptron	CO5	Analyzing	3%
23	Multilayer Perceptron	CO5	Analyzing	3%
24	Back Propagation Algorithm	CO6		3%
25	Dynamically Modifying Network Structure.	CO5	Analyzing	2%
26	Unsupervised Learning: Clustering, Common Distance Measures	CO4	Analyzing	2%
27	Hierarchical Algorithms – Agglomerative and Divisive Partitioning Algorithms–K- Means	CO4	Analyzing	2%
28	Design and Analysis of Machine Learning	CO4	Analyzing	2%
29	Guidelines for Machine Learning Experiments, Factors, Response, and Strategy of Experimentation	CO4	Analyzing	3%

30	Ensemble Methods, Bagging and Boosting Ensemble Methods, Bagging and Boosting	CO4	Analyzing	3%
31	Cross-Validation and Resampling Methods	CO4	Analyzing	3%
32	Measuring Classifier Performance, Assessing a Classification Algorithm's	CO4	Analyzing	3%
33	Measuring Classifier Performance, Assessing a Classification Algorithm's Performance (ROC	CO4	Analyzing	2%
34	Comparing Two Classification Algorithms, Comparing Multiple Algorithms :Analysis of Variance, Comparison over Multiple	CO4	Analyzing	2%
35	Optimization Algorithms, Engineering Applications of Optimization	CO3	Applying	3%
36	Objective Function, Optimization Algorithms for Differentiable and Non-Differentiable Objective Functions	CO3	Applying	3%
37	Stationary and Critical Point, Functions of Single and Two Variables	CO3	Applying	3%
38	Global Optimum, Single Variable Optimization, Two Variable	CO3	Applying	3%
39	First Order Algorithms, Local Descent Algorithms, Bracketing Algorithms	CO3	Applying	3%
40	Stochastic Algorithms, Population Based Algorithms: Introduction, Genetic Algorithms.	CO3	Applying	3%

Dr. Vibha Tiwari

Assistant Professor

IT Department

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

Subject: IoT Architechture and Protocols

Unit	Content	Mode
Unit - I	IoT architecture outline, standards	Offline/Blackboard Teaching
	IoT Technology Fundamentals-Devices and	Offline/Blackboard Teaching
	Local and wide area networking	Group based Learning
	IoT Communication models	Group based Learning
	Data management	Offline/Blackboard Teaching
	Business processes in IoT	Group based Learning
	Everything as a Service(XaaS)	Online
	M2M and IoT Analytics	Learning through Demonstration
Unit - II	Introduction, Functional View	Offline/Blackboard Teaching
	Information View	Group based Learning
	Deployment and Operational View	Group based Learning
	Other Relevant architectural views	Group based Learning
	Real-World Design Constraints- Introduction	Offline/Blackboard Teaching
	Technical Design constraints	Offline/Blackboard Teaching
Unit - III	PHY/MAC Layer, 3GPP MTC	Offline/Blackboard Teaching
	IEEE 802.11, IEEE 802.15	Online
	Wireless HART, Zwave	Online
	Bluetooth Low Energy, Zigbee Smart Energy	Online
	DASH7	Online
	Network Layer, IPv4	Activity based Learning
	IPv6, 6LoWPAN	Group based Learning
	6TiSCH,ND, DHCP	Offline/Blackboard Teaching
	ICMP, RPL	Offline/Blackboard Teaching
	CORPL, CARP	Offline/Blackboard Teaching
Unit - IV	Transport Layer, TCP	Activity based Learning
	MPTCP, UDP	Group based Learning
	DCCP, SCTP	Offline/Blackboard Teaching
	TLS, DTLS	Offline/Blackboard Teaching
	Session Layer, HTTP	Learning through Demonstration
	CoAP, XMPP	Offline/Blackboard Teaching
	AMQP, MQTT	Offline/Blackboard Teaching
Unit - V	Service Layer, oneM2M	Offline/Blackboard Teaching
	ETSI, M2M	Offline/Blackboard Teaching
	OMA, BBF	Online
	Security in IoT Protocols	Learning through Demonstration
	MAC802.15.4	Activity based Learning
	6LoWPAN, RPL	Online
	Application Layer, UPnP	Online
	SCADA	Activity based Learning
	Authentication Protocols	Group based Learning

Online	Offline						
	Blackboard Teaching	Group based Learning	Learning through Projects	Learning through Demonstration	Learning throughExperimentation	Activity based Learning	Onsite/field based
20%	40.00%	22.50%	-	7.50%	-	10%	-

Lecture Plan				
Name of Course with Code: IoT Architecture and Protocols (230404)		**Class: IT IoT IV Sem**		**Session: January - June 2023**
Teaching Session	**Content to be Covered**	**COs**	**Blooms Level**	**% Coverage (to be calculated based on the total syllabus)**
UNIT-I: Introduction				
1	IoT architecture outline, standards	1	2	2.94
2	IoT Technology Fundamentals-Devices and gateways	1	2	2.94
3	Local and wide area networking	1	2	2.94
4	IoT Communication models	2	4	1.47
5	Data management	3	6	1.47
6	Business processes in IoT	3	6	1.47
7	Everything as a Service(XaaS)	3	6	1.47
8	M2M and IoT Analytics	3	6	2.94
Unit-II: IoT Reference Architecture				
9	Introduction, Functional View	1	2	2.94
10	Information View	1	2	1.47
11	Deployment and Operational View	1	2	2.94
12	Other Relevant architectural views	1	2	1.47
13	Real-World Design Constraints- Introduction	6	6	1.47
14	Technical Design constraints	6	6	1.47
Unit III: IoT Data Link Layer and Network Layer Protocols				
15	PHY/MAC Layer, 3GPP MTC	2	4	2.94
16	IEEE 802.11, IEEE 802.15	2	4	2.94
17	Wireless HART, ZWave	2	4	2.94
18	Bluetooth Low Energy, Zigbee Smart Energy	2	4	2.94
19	DASH7	2	4	1.47
20	Network Layer, IPv4	2	4	2.94
21	IPv6, 6LoWPAN	2	4	2.94
22	6TiSCH,ND, DHCP	2	4	4.41
23	ICMP, RPL	2	4	2.94
24	CORPL, CARP	2	4	2.94
Unit IV: IoT Transport and Session Layer				
25	Transport Layer, TCP	4	6	2.94
26	MPTCP, UDP	4	6	2.94
27	DCCP, SCTP	4	6	2.94
28	TLS, DTLS	4	6	2.94
29	Session Layer, HTTP	4	6	2.94
30	CoAP, XMPP	4	6	2.94
31	AMQP, MQTT	4	6	2.94
Unit V: IoT Service Layer Protocol and Security Protocol				
32	Service Layer, oneM2M	5	4	2.94
33	ETSI, M2M	5	4	2.94
34	OMA, BBF	5	4	2.94
35	Security in IoT Protocols	5	4	1.47
36	MAC802.15.4	5	4	1.47
37	6LoWPAN, RPL	5	4	2.94
38	Application Layer, UPnP	5	4	2.94
39	SCADA	5	4	1.47
40	Authentication Protocols	5	4	1.47

Name of Course with Code: Cloud Computing (240402)

Teaching Session	Content to be Covered	Modes of Teaching
	UNIT-I: Cloud Architecture and Model	
1	Technologies for Network-Based System	Offline / Black Board Teaching
2	System Models for Distributed and Cloud Computing	Online mode
3	NIST Cloud Computing Reference Architecture	Learning through experimentation
4	Cloud Models:- Characteristics, Cloud Services	Online mode
5	Cloud models (IaaS, PaaS, SaaS)	Learning through demonstration
6	Public vs Private Cloud, Cloud Solutions Cloud ecosystem	Group based Learning
7	Service management, Computing on demand	Offline / Black Board Teaching
	Unit-II: Virtualization	
8	Basics of Virtualization	Learning through demonstration
9	Types of Virtualization	Learning through demonstration
10	Implementation Levels of Virtualization	Learning through demonstration
11	Virtualization Structures	Offline / Black Board Teaching
12	Tools and Mechanisms	Group based Learning
13	Virtualization of CPU, Memory, I/O Devices	Offline / Black Board Teaching
14	Virtual Clusters and Resource management	Offline / Black Board Teaching
15	Virtualization for Data-center Automation	Offline / Black Board Teaching
	Unit III: Cloud Infrastructure	
16	Architectural Design of Compute and Storage Clouds	Learning through demonstration
17	Layered Cloud Architecture Development	Group based Learning
18	Design Challenges	Offline / Black Board Teaching
19	Inter Cloud Resource Management	Learning through demonstration
20	Resource Provisioning	Learning through demonstration
21	Platform Deployment	Learning through demonstration
22	Global Exchange of Cloud Resources	Offline / Black Board Teaching
	Unit IV: Programming Models	
23	Parallel and Distributed Programming Paradigms	Offline / Black Board Teaching
24	MapReduce	Group based Learning
25	Twister and Iterative MapReduce	Offline / Black Board Teaching
26	Hadoop Library from Apache	Offline / Black Board Teaching
27	Google App Engine (GAE)	Learning through demonstration
28	Amazon Web Service (AWS)	Learning through demonstration
29	Smart Cloud, Public Clouds	Learning through demonstration
30	Service Offerings	Offline / Black Board Teaching
31	Microsoft Windows Azure	Offline / Black Board Teaching
	Unit V: Security in the Cloud	
32	Security Overview	Learning through demonstration
33	Cloud Security Challenges and Risks	Group based Learning
34	Software-as-a-Service Security	Offline / Black Board Teaching
35	Security Governance	Learning through demonstration
36	Risk Management, Security Monitoring	Learning through demonstration
37	Security Architecture Design	Learning through demonstration
38	Data Security, Application Security	Offline / Black Board Teaching
39	Virtual Machine Security	Learning through demonstration
40	Identity Management and Access Control	Offline / Black Board Teaching

Blackboard Learning	Group based Learning	Learning through Demonstration	Online
40%	15%	35%	10%

Lecture Plan				
Name of Course with Code: Cloud Computing (240402)		**Class: IT AIDS & AIML IV Sem**		**Session: January - June 2023**
Teaching Session	**Content to be Covered**	**COs**	**Blooms Level**	**% Coverage (to be calculated based on the total syllabus)**
UNIT-I: Cloud Architechture and Model				
1	Technologies for Network-Based System	1	1	1.85
2	System Models for Distributed and Cloud Computing	1	1	3.7
3	NIST Cloud Computing Reference Architecture	2	2	1.85
4	Cloud Models:- Characteristics, Cloud Services	2	2	3.7
5	Cloud models (IaaS, PaaS, SaaS)	2	2	5.55
6	Public vs Private Cloud, Cloud Solutions Cloud ecosystem	1,2	1,2	3.7
7	Service management, Computing on demand	2	2	3.7
Unit-II: Virtualization				
8	Basics of Virtualization	1	1	1.85
9	Types of Virtualization	1	1	1.85
10	Implementation Levels of Virtualization	3	3	1.85
11	Virtualization Structures	3	3	1.85
12	Tools and Mechanisms	3	3	1.85
13	Virtualization of CPU, Memory, I/O Devices	3	3	5.55
14	Virtual Clusters and Resource management	3	3	3.7
15	Virtualization for Data-center Automation	6	6	1.85
Unit III: Cloud Infrastructure				
16	Architectural Design of Compute and Storage Clouds	2	2	3.7
17	Layered Cloud Architecture Development	2	2	1.85
18	Design Challenges	2	2	1.85
19	Inter Cloud Resource Management	2	2	1.85
20	Resource Provisioning	2	2	1.85
21	Platform Deployment	2	2	1.85
22	Global Exchange of Cloud Resources	2	2	1.85
Unit IV: Programming Models				
23	Parallel and Distributed Programming Paradigms	4	3	3.7
24	MapReduce	4	3	1.85
25	Twister and Iterative MapReduce	4	3	1.85
26	Hadoop Library from Apache	4	3	1.85
27	Google App Engine (GAE)	4	3	1.85
28	Amazon Web Service (AWS)	4	3	1.85
29	Smart Cloud, Public Clouds	4	3	1.85
30	Service Offerings	6	6	1.85
31	Microsoft Windows Azure	4	3	1.85
Unit V: Security in the Cloud				
32	Security Overview	5	4	1.85
33	Cloud Security Challenges and Risks	5	4	1.85
34	Software-as-a-Service Security	5	4	1.85
35	Security Governance	5	4	1.85
36	Risk Management, Security Monitoring	5	4	3.7
37	Security Architecture Design	5	4	1.85
38	Data Security, Application Security	5	4	3.7
39	Virtual Machine Security	5	4	1.85
40	Identity Management and Access Control	6	6	3.7

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Department of Information Technology

Modes of Teaching

SUBJECT: COMPUTER GRAPHICS & MULTIMEDIA (160411)

UNIT	CONTENT	MODES
Unit-1	Introduction to Computer Graphics	Black Board Teaching
	Interactive Computer Graphics	Black Board Teaching
	Application of Computer Graphics	Black Board Teaching
	Random and Raster Scan Displays	Learning through Demonstration
	Storage Tube Graphics Display	Learning through Demonstration
	Calligraphic Refresh Graphics Display	Black Board Teaching
	Flat Panel Display	Learning through Demonstration
	Refreshing	Learning through Experimentation
	Flickering	Learning through Experimentation
	Interlacing	Black Board Teaching
	Resolution	Learning through Experimentation
	Bit Depth	Black Board Teaching
	Aspect Ratio	Black Board Teaching
Unit-2	Scan Conversion Technique	Black Board Teaching
	Image representation	Learning through Demonstration
	Line drawing	Learning through Experimentation
	DDA	Learning through Experimentation
	Bresenham's Algorithm	Learning through Experimentation
	Circle Drawing	Learning through Experimentation
	Mid-Point	Learning through Experimentation
	DDA	Learning through Experimentation
	Bresenham's Circle Generation Algorithm	Learning through Experimentation
	Ellipse Generation Algorithm	Black Board Teaching
	Curves	Black Board Teaching
	Parametric Function	Black Board Teaching
	Bezier Method	Black Board Teaching

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Department of Information Technology

Modes of Teaching

SUBJECT: COMPUTER GRAPHICS & MULTIMEDIA (160411)

UNIT	CONTENT	MODES
Unit-2	B-Spline Method	Black Board Teaching
Unit-3	2D & 3D Transformations	Learning through Projects
	Translation	Learning through Projects
	Rotation	Learning through Projects
	Scaling	Learning through Projects
	Reflection	Learning through Projects
	Shearing	Learning through Projects
	Inverse Transformation	Black Board Teaching
	Composite Transformation,	Black Board Teaching
	World Coordinate System	Black Board Teaching
	Viewing Transformation	Black Board Teaching
	Representation of 3D object on Screen	Learning through Experimentation
	Parallel and Perspective Projections	Learning through Demonstration
Unit-4	Clipping	Black Board Teaching
	Point Clipping	Black Board Teaching
	Line Clipping	Learning through Experimentation
	Simple Visibility Line Clipping Algorithm	Black Board Teaching
	Polygon Clipping	Black Board Teaching
	Hidden Surface Elimination	Black Board Teaching
	Z- Buffer algorithm and Painter's Algorithm	Black Board Teaching
	Area Filling	Black Board Teaching
	Basic Illumination Models	Black Board Teaching
	Diffuse Reflection	Black Board Teaching
	Specular Reflection	Black Board Teaching
	Phong Shading	Black Board Teaching

Madhav Institute of Technology & Science, Gwalior

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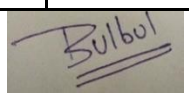
Department of Information Technology

Modes of Teaching

SUBJECT: COMPUTER GRAPHICS & MULTIMEDIA (160411)

UNIT	CONTENT	MODES
Unit-4	Gouraud Shading	Black Board Teaching
	Color Models	Black Board Teaching
	RGB	Black Board Teaching
	YIQ	Black Board Teaching
	CMY	Black Board Teaching
	HSV	Black Board Teaching
Unit-5	Multimedia System	Black Board Teaching
	An Introduction	Black Board Teaching
	Multimedia hardware and software	Learning through Demonstration
	Multimedia System Architecture	Black Board Teaching
	Multimedia Applications and evolving technologies	Black Board Teaching
	Multimedia Authoring	Black Board Teaching
	Data & File Format Standards	Group based Learning
	Sampling	Black Board Teaching
	Compression Standards	Black Board Teaching
	Compression Through Spatial and Temporal Redundancy	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
-	62.68%	1.49%	8.95%	8.95%	17.91%	-	-

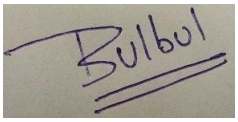


Bulbul Agrawal
Assistant Professor
Department of IT
MITS, Gwalior

Lecture Plan				
Teaching Session	**Content to be covered**	**COs**	**Blooms Level (BL)**	**% Coverage (To be calculated based on the total syllabus)**
1.	Introduction to Computer Graphics	1	BL 2	2%
2.	Interactive Computer Graphics	1	BL 2	1%
3.	Application of Computer Graphics	1	BL 2	1%
4.	Random and Raster Scan Displays	1	BL 1	2%
5.	Storage Tube Graphics Display	1	BL 1	2%
6.	Calligraphic Refresh Graphics Display	1	BL 1	2%
7.	Flat Panel Display	1	BL 1	2%
8.	Refreshing	1	BL 2	1%
9.	Flickering	1	BL 3	1%
10.	Interlacing	1	BL 2	1%
11.	Resolution	1	BL 3	1%
12.	Bit Depth	1	BL 3	1%
13.	Aspect Ratio	1	BL 3	1%
14.	Scan Conversion Technique	2	BL 1	1%
15.	Image representation	3	BL 5	2%
16.	Line drawing	2	BL 3	1%
17.	DDA	2	BL 3	2%
18.	Bresenham's Algorithm	2	BL 3	2%
19.	Circle Drawing	2	BL 3	2%
20.	Mid-Point	2	BL 3	2%
21.	DDA	2	BL 3	2%

22.	Bresenham's Circle Generation Algorithm	2	BL 3	2%
23.	Ellipse Generation Algorithm	2	BL 3	2%
24.	Curves	2	BL 3	2%
25.	Parametric Function	2	BL 3	1%
26.	Bezier Method	2	BL 3	2%
27.	B-Spline Method	2	BL 3	2%
28.	2D & 3D Transformations	3	BL 2	2%
29.	Translation	3	BL 3	1%
30.	Rotation	3	BL 3	1%
31.	Scaling	3	BL 3	1%
32.	Reflection	3	BL 3	1%
33.	Shearing	3	BL 3	1%
34.	Inverse Transformation	3	BL 3	2%
35.	Composite Transformation,	3	BL 3	1%
36.	World Coordinate System	3	BL 3	2%
37.	Viewing Transformation	3	BL 3	2%
38.	Representation of 3D object on Screen	3	BL 4	2%
39.	Parallel and Perspective Projections	3	BL 4	2%
40.	Clipping	4	BL 3	1%
41.	Point Clipping	4	BL 3	2%
42.	Line Clipping	4	BL 3	2%
43.	Simple Visibility Line Clipping Algorithm	4	BL 3	1%
44.	Polygon Clipping	4	BL 4	2%
45.	Hidden Surface Elimination	5	BL 3	2%
46.	Z- Buffer algorithm and Painter's Algorithm	5	BL 3	2%
47.	Area Filling	5	BL 3	2%
48.	Basic Illumination Models	5	BL 2	2%
49.	Diffuse Reflection	5,6	BL 2	1%
50.	Specular Reflection	5,6	BL 2	1%
51.	Phong Shading	6	BL 2	1%
52.	Gouraud Shading	6	BL 2	1%

53.	Color Models	6	BL 4	1%
54.	RGB	6	BL 4	1%
55.	YIQ	6	BL 4	1%
56.	CMY	6	BL 4	1%
57.	HSV	6	BL 4	1%
58.	Multimedia System	6	BL 2	1%
59.	An Introduction	6	BL 2	1%
60.	Multimedia hardware and software	6	BL 4	1%
61.	Multimedia System Architecture	6	BL 4	2%
62.	Multimedia Applications and evolving technologies	6	BL 2	2%
63.	Multimedia Authoring	6	BL 1	2%
64.	Data & File Format Standards	6	BL 5	2%
65.	Sampling	6	BL 3	1%
66.	Compression Standards	6	BL 4	1%
67.	Compression Through Spatial and Temporal Redundancy	6	BL 3	1%



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Lecture Plan for SOFTWARE ENGINEERING (160412)

No. of Teaching Session	Unit	Content to be covered	CO	Bloom's Level	Mode of Teaching	% Coverage
1	I	Software Characteristics and Components	1	2	Black Board Teaching	2
1	I	Software Development of Life Cycle Model	1	2	Learning through demonstration	3
1	I	The Waterfall Model	1	6	Learning through demonstration	3
1	I	Iterative Waterfall and Prototyping Model	1	6	Learning through demonstration	4
2	I	Spiral Model and RAD Model	1	6	Learning through demonstration	4
2	I	Selection Criteria of Model	4	4	Activity based Learning	4
1	II	Requirement Engineering Activities	1	2	Black Board Teaching	3
1	II	Types of Requirements	1	2	Black Board Teaching	3
2	II	Requirement Elicitation Methods	2	3	Learning through demonstration	4
2	II	Requirement Analysis Methods	2	3	Learning through demonstration	4
1	II	Requirement Documentation	5	6	Activity based Learning	3
1	II	Requirement Validation & Management	2	4	Group based Learning	3
1	III	Fundamentals of Software Design	2	2	Black Board Teaching	4
2	III	Effective Modular Design	2	4	Black Board Teaching	4
1	III	Design Representations	5	6	Learning through demonstration	4
1	III	Coupling	2	4	Learning through experimentation	4
1	III	Cohesion	2	4	Learning through experimentation	4
1	IV	Software Measurement	1	2	Black Board Teaching	2
1	IV	Software Metrics	3	2	Black Board Teaching	2
1	IV	Project Management	1	2	Learning through demonstration	2
1	IV	Software Project Estimation	3	5	Activity based Learning	2
1	IV	Line of Code based estimation	3	3	Activity based Learning	3
1	IV	Function Point Estimation	3	3	Learning through experimentation	3
2	IV	COCOMO Model	3	3	Learning through experimentation	4
1	IV	Project Scheduling Techniques	3	3	Learning through demonstration	2
1	V	Introduction to Software Testing	1	2	Black Board Teaching	2
1	V	Software Testing Life Cycle	4	3	Learning through demonstration	2
1	V	Test Case Design	6	2	Learning through demonstration	2
1	V	Software Verification & Validation	6	2	Black Board Teaching	2
1	V	Criteria for Completion of Testing	6	4	Group based Learning	3
1	V	Unit, Integration and system Testing	6	4	Learning through demonstration	3
1	V	Black Box Testing Techniques	6	3	Learning through experimentation	2
1	V	White Box Testing Techniques	6	3	Learning through experimentation	2
1	V	Acceptance Testing	6	3	Learning through projects	2

Black Board Teaching	Learning through demonstration	Activity based Learning	Group based Learning	Learning through experimentation	Learning through projects
24%	37%	12%	6%	19%	2%

COURSE OUTCOMES

After completion of the course students would be able to:

CO1. explain the various fundamental concepts of software engineering.

CO2. develop the concepts related to software design & analysis.

CO3. compare the techniques for software project management & estimation.

CO4. choose the appropriate model for real life software project.

CO5. design the software using modern tools and technologies.

CO6. test the software through different approaches.

Mir Shahnawaz Ahmad

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Lecture Plan

SUBJECT: NETWORK AND WEB SECURITY (240405)

Branch: Artificial Intelligence and Robotics (IT-AIR)			**Session: July-Dec 2022**	
S.No.	**Teaching Session**	**Topics**	**COs**	**Blooms Level (BL)**
		UNIT -I		
01.	2	Security: Principles and Attacks, Basic Number Theory: Prime Number, Congruence's, Modular Exponentiation,	2,4	BL 1,2,3
02.	2	Fundamentals of Cryptography, Steganography, Cryptanalysis, Code Breaking,	1,2,3	BL 2,3
03.	1	Block Ciphers and Steam Ciphers, Substitution Ciphers,	1	BL 1,2
04.	3	Transposition Ciphers, Caesar Cipher, Play-Fair Cipher, Hill Cipher, Cipher Modes of Operation.	1,2,3	BL 5,6
		UNIT -II		
05.	1	Cryptography: Symmetric Key Cryptography, Public Key Cryptography,	1,2,3	BL 4,5,6
06.	2	Principles of Public Key Cryptosystem, Classical Cryptographic Algorithms: DES,	1,6	BL 3,4
07.	3	Classical Cryptographic Algorithms: RC4, Blowfish, RSA,	3,4,5	BL 3,4,5
08.	1	Distribution of Public Keys and Key Management,	5,6	BL 1,2
09.	1	Diffie-Hellman Key Exchange.	5	BL 3,4
		UNIT -III		
10.	3	Hash Functions: Hash Functions, One Way Hash Function, SHA (Secure Hash Algorithm).	1,2,3	BL 3,4

11.	2	Authentication: Requirements, Functions, Kerberos,	1,4,5	BL 2,3
12.	1	Message Authentication Codes, Message Digest: MD5,	1,3	BL 3,4
13.	2	SSH (Secure Shell), Digital Signatures,	1,5	BL 2,3,4
14.	1	Digital Certificates.	5,6	BL 2,3
UNIT -IV				
15.	1	IP & Web Security Overview: SSL (Secure Socket Layer),	3,4,6	BL 3, 5, 6
16.	2	TLS (Transport Layer Security), SET (Secure Electronic Transaction).	3,4,6	BL 3, 5, 6
17.	2	IDS (Intrusion detection system): Statistical Anomaly Detection and Rule-Based Intrusion Detection,	4,5	BL 3, 5, 6
18.	1	Penetration Testing, Risk Management.	5	BL 1,2
19.	1	Firewalls: Types, Functionality and Polices.	2,5	BL 2,3
UNIT -V				
20.	1	Phishing: Attacks and its Types, Buffer Overflow Attack,	2,4	BL 3,4
21.	2	Cross Site Scripting, SQL Injection Attacks, Session Hijacking.	2,4,5	BL 3,4
22.	2	Denial of Service Attacks: Smurf Attack, SYN Flooding, Distributed Denial of Service.	5,6	BL 3,4
23.	1	Hacker: Hacking and Types of Hackers, Foot Printing,	5,6	BL 3,4
24.	2	Scanning: Types: Port, Network, Vulnerability), Sniffing in Shared and Switched Networks, Sniffing Detection & Prevention, Spoofing.	4,5,6	BL 3, 5, 6

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Modes of Teaching

SUBJECT: NETWORK AND WEB SECURITY (240405)

UNIT	CONTENT	MODES
Unit-1	Security: Principles and Attacks,	Black Board Teaching
	Basic Number Theory: Prime Number, Congruence's,	Black Board Teaching
	Basic Number Theory: Modular Exponentiation,	Black Board Teaching
	Fundamentals of Cryptography,	Black Board Teaching
	Steganography,	Learning through demonstration
	Cryptanalysis,	Learning through demonstration
	Code Breaking,	Learning through demonstration
	Block Ciphers and	Learning through demonstration
	Steam Ciphers,	Learning through demonstration
	Substitution Ciphers,	Learning through demonstration
	Transposition Ciphers,	Learning through demonstration
	Caesar Cipher,	Group based Learning
	Play-Fair Cipher,	Group based Learning
	Hill Cipher,	Group based Learning
	Cipher Modes of Operation.	Group based Learning
Unit-2	Cryptography: Symmetric Key Cryptography,	Black Board Teaching
	Cryptography: Public Key Cryptography	Black Board Teaching
	Principles of Public Key Cryptosystem,	Learning through projects
	Classical Cryptographic Algorithms: DES,	Learning through projects
	Classical Cryptographic Algorithms: RC4,	Learning through projects
	Blowfish,	Group based Learning
	RSA,	Learning through demonstration
	Distribution of Public Keys and Key Management,	Black Board Teaching
	Diffie-Hellman Key Exchange.	Black Board Teaching

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Modes of Teaching

SUBJECT: NETWORK AND WEB SECURITY (240405)

UNIT	CONTENT	MODES
Unit-3	Hash Functions: Hash Functions,	Black Board Teaching
	One Way Hash Function,	Black Board Teaching
	SHA (Secure Hash Algorithm).	Learning through demonstration
	Authentication: Requirements,	Black Board Teaching
	Functions, Kerberos,	Learning through experimentation
	Message Authentication Codes,	Learning through experimentation
	Message Digest: MD5,	Learning through experimentation
	SSH (Secure Shell),	Learning through experimentation
	Digital Signatures,	Learning through experimentation
	Digital Certificates.	Learning through demonstration
Unit-4	IP & Web Security Overview:	Activity based Learning
	SSL (Secure Socket Layer),	Black Board Teaching
	TLS (Transport Layer Security),	Black Board Teaching
	IDS (Intrusion detection system):	Black Board Teaching
	Statistical Anomaly Detection and	Group based Learning
	Rule-Based Intrusion Detection,	Activity based Learning
	SET (Secure Electronic Transaction).	Black Board Teaching
	Penetration Testing,	Black Board Teaching
	Risk Management.	Black Board Teaching
	Firewalls: Types,	Black Board Teaching
	Functionality and	Learning through experimentation
	Polices.	Black Board Teaching

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Modes of Teaching

SUBJECT: NETWORK AND WEB SECURITY (240405)

UNIT	CONTENT	MODES
Unit-5	Phishing: Attacks and its Types,	Black Board Teaching
	Buffer Overflow Attack,	Black Board Teaching
	Cross Site Scripting,	Activity based Learning
	SQL Injection Attacks,	Learning through experimentation
	Session Hijacking.	Black Board Teaching
	Denial of Service Attacks: Smurf Attack,	Black Board Teaching
	SYN Flooding,	Black Board Teaching
	Distributed Denial of Service.	Learning through demonstration
	Hacker: Hacking and Types of Hackers,	Learning through demonstration
	Foot Printing,	Black Board Teaching
	Scanning: Types: Port, Network, Vulnerability,	Black Board Teaching
	Sniffing in Shared and Switched Networks,	Learning through demonstration
	Sniffing Detection & Prevention,	Learning through demonstration
	Spoofing.	Learning through demonstration

Online	Offline						
	Black Board Teaching	Group based Learning	Learning through projects	Learning through demonstration	Learning through experimentation	Activity based Learning	Onsite/ field based learning
-	45%	10%	6.66%	22.66%	10%	5.66%	-