

# Madhav Institute of Technology & Science, Gwalior

(A Govt. Aided UGC Autonomous & NAAC Accredited Institute Affiliated to RGPV, Bhopal)

## Department of Information Technology

### Modes of Teaching

### **SUBJECT: MOBILE COMPUTING (160733)**

UNIT	CONT ENT	MODES
Unit-I	Basic Concepts of Cellular Systems, Personal Communication Services (PCS)	Black Board Teaching
	Global System for Mobile Communication (GSM)	Black Board Teaching
	GSM Protocols	Black Board Teaching
	GSM Handover	Black Board Teaching
	GSM Data Services	Group based Learning
	Multiple Division Techniques	Black Board Teaching
Unit-II	General Packet Radio Services (GPRS)	Black Board Teaching
	GRPS Architecture	Black Board Teaching
	GPRS Network Nodes	Black Board Teaching
	Mobile Data Communication	Black Board Teaching
	Wireless LANs IEEE 802.11 Standard	Learning through projects
	Mobile IP	Group based Learning
Unit-III	Wireless Application Protocol (WAP)	Black Board Teaching
	Mobile Internet Standard	Learning through projects
	WAP Gateway and Protocols	Group based Learning
	Wireless Markup Languages (WML)	Learning through experimentation
Unit-IV	Third Generation (3G) Mobile Services	Learning through projects
	Introduction to IMT 2000	Black Board Teaching
	Wideband Code Division Multiple Access (W-CDMA)	Group based Learning
	CDMA 2000	Black Board Teaching
	Quality of Services in 3G	Black Board Teaching
Unit-V	Wireless Local Loop (WLL)	Black Board Teaching
	WLL Architecture	Group based Learning
	WLL Technologies	Learning through projects
	Global Mobile Satellite Systems: Case Study of IRIDIUM and GLOBALSTAR	Learning through projects
	Bluetooth Technology	Group based Learning

	Wi-Fi and Wi-Max	Group based Learning
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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
-	52%	26%	18%	-	4%	-	-

Dr. Akhilesh Tiwari  
 Professor & Head  
 Department of IT  
 MITS, Gwalior

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## Department of Information Technology

### Lecture Plan

#### **SUBJECT: MOBILE COMPUTING (160733)**

Teaching Session	Content to be covered	COs	Blooms Level (BL)	% Coverage (To be calculated based on the total syllabus)
1.	Basic Concepts of Cellular Systems, Personal Communication Services (PCS)	1	1,2	4
2.	Global System for Mobile Communication (GSM)	2,3	1,2	5
3.	GSM Protocols	4	2	3
4.	GSM Handover	4	2	2
5.	GSM Data Services	3	3	2
6.	Multiple Division Techniques	3	1	2
7.	General Packet Radio Services (GPRS)	2,5	2	3
8.	GRPS Architecture	3	4	4
9.	GPRS Network Nodes	3	4	4
10.	Mobile Data Communication	5	3	3
11.	Wireless LANs IEEE 802.11 Standard	5,6	4	4
12.	Mobile IP	5,6	6	4
13.	Wireless Application Protocol (WAP)	5	6	5
14.	Mobile Internet Standard	5	2	3
15.	WAP Gateway and Protocols	4	3	5
16.	Wireless Markup Languages (WML)	4	4	3
17.	Third Generation (3G) Mobile Services	3	3	3
18.	Introduction to IMT 2000	3	2	3
19.	Wideband Code Division Multiple Access (W-CDMA)	3	3	3
20.	CDMA 2000	3	3	4
21.	Quality of Services in 3G	5	2	3
22.	Wireless Local Loop (WLL)	6	5	5

<b>23.</b>	WLL Architecture	4	4	5
<b>24.</b>	WLL Technologies	3	6	4
<b>25.</b>	Global Mobile Satellite Systems: Case Study of IRIDIUM and GLOBALSTAR	6	6	4
<b>26.</b>	Bluetooth Technology	6	4	4
<b>27.</b>	Wi-Fi and Wi-Max	5,6	4	6



## Modes of Teaching Subject:

### IoT and its Applications

UNIT	CONTENT	MODE
<b>Unit-1</b>	Evolution of the Internet of Things (IoT), IoT Components	Online mode
	Impact of IoT, Challenges and security issues in IoT.	Online mode
	IoT World Forum (IoTWF) standardized architecture	Online mode
	Simplified IoT Architecture: Core IoT Functional Stack,	Offline/Blackboard Teaching
	IoT data management and compute stack (Cloud, edge, fog).	Offline/Blackboard Teaching
<b>Unit-2</b>	Communication Protocols: IEEE 802.15.4, Zigbee	Online mode
	6LoWPAN, Z-Wave	Online mode
	Bluetooth, RFID.	Online mode
	Networking Protocols: CoAP and MQTT.	Offline/Blackboard Teaching
<b>Unit-3</b>	Sensor: light sensor, moisture sensor, temperature sensor, etc.	Learning through demonstration
	Actuator: DC motor, different types of actuators.	Learning through demonstration
	Controllers: microcontrollers and their role as a gateway to interfacing sensors and actuators.	Online
	Raspberry pi, Arduino Board details	Learning through demonstration
	Introduction to Arduino IDE, Embedded 'C' Language basics, Interfacing sensors, LEDs.	Learning through experimentation
<b>Unit-4</b>	Introduction to Cloud Computing-Definition, Characteristics, Components	Online mode
	Cloud provider: Microsoft Azure, AWS, Google Cloud.	Learning through demonstration
	Structured Versus Unstructured Data, Data in Motion versus Data at Rest,	Learning through experimentation
	IoT Data Analytics Challenges, Data Acquiring, Organizing in IoT.	Online mode
<b>Unit-5</b>	Business models for the Internet of Things, Smart city, Smart mobility, and transport	Group based learning
	Industrial IoT, Smart health	Group based learning
	Environment monitoring and surveillance – Home Automation – Smart Agriculture	Learning through projects
	Examples for new trends – AI, ML penetration to IoT	Activity-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
40%	14%	9%	5%	18%	9%	5%	-



## LECTURE PLAN

Name of the course with code: IoT and its Applications (910203)			Class: VII sem		
Session: July-Dec 2023					
Teaching Session	Date	Content to be covered	COs	Blooms Level (BL)	% Coverage (to be calculated based on the total syllabus)
<b>UNIT 1: Introduction to IoT and network architecture</b>					
1		Evolution of the Internet of Things (IoT)	1	II	2
2		IoT Components	1	II	2
3		Impact of IoT, Challenges and security issues in IoT.	1	II	3
4		IoT World Forum (IoTWF) standardized architecture	1	II	4
5		Simplified IoT Architecture	1	II	3
6		Core IoT Functional Stack	1	II	3
7		IoT data management and compute stack (Cloud, edge, fog).	1	II	3
<b>UNIT 2: IoT Protocols</b>					
8		Communication Protocols: IEEE 802.15.4,	2	II	2
9		Zigbee, 6LoWPAN	2	II	4
10		Z-Wave	2	II	2
11		Bluetooth, RFID	2	II	4
12		Networking Protocols: CoAP	2	II	3
13		MQTT	2	II	3
<b>UNIT 3: Things in IoT and IoT Platform Overview</b>					
14		Sensor: light sensor	3	IV	2
15		Moisture sensor, temperature sensor, etc.	3	IV	3
16		Actuator: DC motor, different types of actuators.	3	IV	3
17		Controllers: microcontrollers and their role as a gateway to interfacing sensors and actuators.	3	IV	2
18		Raspberry pi details	3	IV	2
19		Arduino Board details	3	IV	2
20		Introduction to Arduino IDE, Embedded 'C' Language basics	3	III	4
21		Interfacing sensors, LEDs.	3	III	4
<b>UNIT 4: Cloud computing and data analytics in IoT</b>					
22		Introduction to Cloud Computing-Definition, Characteristics, Components	4	II	4
23		Cloud provider: Microsoft Azure	4	II	2
24		AWS, Google Cloud	4	II	4
25		Structured Versus Unstructured Data	4	III	3
26		Data in Motion versus Data at Rest	4	II	2
27		IoT Data Analytics Challenges	4	IV	2
28		Data Acquiring, Organizing in IoT.	4	II	3
<b>UNIT 5: IoT Applications</b>					
29		Business models for the Internet of Things	5	II	2
30		Smart city, Smart mobility, and transport	5	III	3
31		Industrial IoT, Smart health	5	VI	4
32		Environment monitoring and surveillance	5	VI	2
33		Home Automation	5	VI	3
34		Smart Agriculture	5	VI	3
35		Examples for new trends – AI, ML penetration to IoT	5	III	3



## Modes of Teaching

### Subject: **Software Testing (910204)**

UNIT	CONTENT	MODE
<b>Unit-1</b>	Importance and goals of software testing	Online mode
	Testing Life cycle and its phases	Offline / Black Board Teaching
	Role of testing in the software development process	Offline / Black Board Teaching
	Testing Principles and Fundamentals	Online mode
	V&V Model	Activity based learning
<b>Unit-2</b>	Bloc-box and White-box testing	Online mode
	Equivalence partitioning	Group based Learning
	Boundary value analysis	Offline / Black Board Teaching
	Decision table testing	Group based Learning
	State transition testing	Offline / Black Board Teaching
	Use case testing	Online mode
	Error guessing and exploratory testing	Learning through experimentation
<b>Unit-3</b>	Test case components	Online mode
	Test case design techniques	Group based Learning
	Test case prioritization	Group based Learning
	Test data management	Activity based learning
	Test coverage criteria	Online mode
	Tractability matrix	Offline / Black Board Teaching
	Test planning process	Online mode
	Test strategy and test plan development	Learning through demonstration
	Test estimation and scheduling	Offline / Black Board Teaching
	Test environment setup and management	Online mode
	Test metrics and reporting	Offline / Black Board Teaching
<b>Unit-4</b>	Unit testing	Online mode
	Integration testing	Learning Through Projects
	System testing	Learning through demonstration
	Acceptance Testing	Offline / Black Board Teaching
	Regression Testing	Online mode
	Performance Testing	Learning through experimentation
	Security Testing	Online mode
	Usability Testing	Activity based learning
	Compatibility Testing	Learning Through Projects
Localization Testing	Offline / Black Board Teaching	

<b>Unit-5</b>	Quality assurance process and activities	Online mode
	Code reviews and inspections	Activity based learning
	Static analysis and code coverage	Online mode
	Test-driven development and agile testing	Activity based learning
	Emerging trends in software testing	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
38%	21%	11%	5%	5%	7%	13%	---