K-1

Maharashtra State Board of Technical Education, Mumbai

TEACHING PLAN (TP)

Academic Year: **2025-26 (EVEN)**

Institute Code and Name: 0078- K. K. Wagh Polytechnic, Nashik **Semester**: Sixth
Programme and Code: Information Technology (IF) **Course Index: CO603**
Course and Code: Wireless & Mobile Network (WMN) **Course Code:** 316325
Scheme: K **Allocated Hrs. 45** **Name of Faculty:** Mr.Shinde R.J.
CLASS: TYIF (CRAY)

COURSE LEVEL LEARNING OUTCOMES (COS)

- CO1 - Identify various terminologies used in GSM network systems.
- CO2 - Establish wireless network with the given technology.
- CO3 - Differentiate between various generations of mobile network.
- CO4 - Explains 5G network system architecture.
- CO5 - Establish wireless sensor networks for the given application.

TEACHING-LEARNING & ASSESSMENT SCHEME

Course Code	Course Title	Abbr	Course Category	Learning Scheme					Credits	Paper Duration	Assessment Scheme										Total Marks
				Actual Contact Hrs./Week			SLH	NLH			Theory				Based on LL & TSL Practical				Based on SL		
											FA-TH	SA-TH	Total		FA-PR		SA-PR		SLA		
				CL	TL	LL					Max	Max	Max	Min	Max	Min	Max	Min	Max	Min	
316325	Wireless & Mobile Network	WMN	DSC	3	-	4	1	8	4	3	30	70	100	40	25	10	--	--	25	10	150

Total IKS Hrs. for Sem.: 0 Hrs.

Abbreviations: CL- Classroom Learning , TL- Tutorial Learning, LL-Laboratory Learning, SLH-Self Learning Hours, NLH-Notional Learning Hour FA -Formative Assessment, SA -Summative assessment, IKS - Indian Knowledge System, SLA - Self Learning Assessment Legends: @ Internal Assessment, # External Assessment, *# On Line Examination , @$ Internal Online Examination

SUGGESTED COS - POS MATRIX FORM

Course Outcomes (COs)	Programme Outcomes (POs)							Programme Specific Outcomes (PSOs)	
	PO-1 Basic and Discipline Specific Knowledge	PO-2 Problem Analysis	PO-3 Design/ Development of Solutions	PO-4 Engineering Tools	PO-5 Engineering Practices for Society, Sustainability and Environment	PO-6 Project Management	PO-7 Life Long Learning	PSO-1	PSO-2
CO1	3	-	-	1	2	1	2		
CO2	3	-	3	2	3	1	2		
CO3	3	-	-	2	2	1	3		
CO4	3	-	2	3	3	3	3		
CO5	3	2	2	3	2	3	3		
Legends :- High:03, Medium:02,Low:01, No Mapping: -									

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Chap No. (Allotted Hrs.)	CO	TLO	Unit Name and Learning Content Title/ Details	Plan (No. Of Lectures)		Actual Execution		Pedagogy Used	Remark
				From	To	From	To		
1 (08)	CO -1		**Unit-I: Introduction to GSM**					Chalk, Board, PPT+ LCD, Videos, Google Classroom , MKCL ERA	
		TLO 1.1 TLO 1.3	**1.1** Global System for Mobile communication (GSM) architecture, GSM frequency spectrum, GSM radio aspects, GSM Supplementary services, GSM channel types **1.2** Call processing in GSM Registration /location update, mobile terminated call and mobile originate call	03 **Lectures**					
				18/12/2025	19/12/2025				
		TLO 1.2	**1.3** Mobility management : Location update procedure: Inter LA movement, Inter MSC movement, Inter VLR movement **1.4** Concept of roaming	03 **Lectures**					
				27/12/2025	01/01/2026				
		TLO 1.4	**1.5**. Types of area: Location area, Routing area,Tracking area **1.6** Network signaling: GSM protocol model	02 **Lectures**					
				02/01/2026	02/01/2026				

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Unit No. (Allocated Hrs.)	CO	TLO aligned to COs	Title/ Details	Plan (No. Of Lectures)		Actual Execution (From-To & No. of Lectures)		Pedagogy Used	Remark
				From	To	From	To		
2(08)	CO -2		**Unit - II GPRS and Mobile Data communication**					Chalk, Board, PPT+ LCD, Videos, Google Classroom, MKCL ERA	
		TLO 2.1	**2.1** General packet radio services (GPRS) architecture, GPRS services **2.2** GPRS network nodes, mobility management and routing in GPRS	**03 Lectures**					
				08/01/2026	**09/01/2026**				
		TLO 2.2	**2.3** RFID (Radio Frequency Identification): Architecture,classification of RFID tags,applications, advantages and disadvantages	**02 Lectures**					
				15/01/2026	**16/01/2026**				
		TLO 2.3 TLO 2.4	**2.4** Wi-Fi : Classification, architecture, applications in business and healthcare domain **2.5** Wi-Max: Need of WMAN and applications in smart cities and public safety domain,Advantages and disadvantages	**03 Lectures**					
				22/01/2026	**24/01/2026**				
3(08)	CO -3		**Unit -III Wireless application protocols and 3G mobile services**					Chalk, Board, PPT+ LCD, Videos, Google Classroom, MKCL ERA	
		TLO 3.1	**3.1** Mobile internet standard, Wireless application protocol (WAP):Model, WAP Protocol stack	**02 Lectures**					
				30/01/2026	**30/01/2026**				
			3.2 Wireless markup languages (WML) **3.3** International mobile telecommunications 2000 (IMT-2000) : Features and services	**02 Lectures**					
				05/02/2026	**06/02/2026**				

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Unit No. (Allocated Hrs.)	CO	TLO aligned to COs	Title/ Details	Plan (No. Of Lectures)		Actual Execution (From-To & No. of Lectures)		Pedagogy Used	Remark
				From	To	From	To		
3(08)	C0-3	TLO 3.2 TLO 3.3	**3.4** Wideband Code Division Multiple Access (W-CDMA) and CDMA 2000: Specifications and features **3.5** UMTS (Universal Mobile Telecommunication System) technology: Features, architecture, applications and advantages	**02 Lectures**				Chalk, Board, PPT+ LCD, Videos, Google Classroom, MKCL ERA	
				06/02/2026	**12/02/2026**				
		TLO 3.4	**3.6** Introduction to 4G technology : Architecture and Features of 4G, Features of VoLTE, 4.5G	**02 Lectures**					
				13/02/2026	**13/02/2026**				
4 (09)	CO-4		**Unit - IV Introduction to 5G Technology**					Chalk, Board, PPT+ LCD, Videos, Google Classroom, MKCL ERA	
		TLO 4.1	**4.1** Introduction to 5G: 5G network architecture, 5G enable technologies	**02 Lectures**					
				19/02/2026	**20/02/2026**				
		TLO 4.2	**4.2** IMT 2020 standard: Specifications and features	**02 Lectures**					
				20/02/2026	**26/02/2026**				
		TLO 4.3	**4.3** 5G Radio spectrum: low band, medium band, millimeter wave (Ultrahigh) band, 5G service providers	**02 Lectures**					
				27/02/2026	**28/02/2026**				
		TLO 4.4	**4.4** 5G network slicing: Architecture, Advantages of Network Slicing for IoT Ecosystem	**03 Lectures**					
				05/03/2026	**06/03/2026**				

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Unit No. (Allocated Hrs.)	CO	TLO aligned to COs	Title/ Details	Plan (No. Of Lectures)		Actual Execution (From-To & No. of Lectures)		Pedagogy Used	Remark
				From	To	From	To		
5(12)	CO - 5		**Unit - V Wireless Network Technologies**					Chalk, Board, PPT+ LCD, Videos, Google Classroom, MKCL ERA	
		TLO 5.1	**5.1** Mobile IP: Operational Principle, Home agent ,Foreign Agent	**02 Lectures**					
				12/03/2026	**13/03/2026**				
		TLO 5.2	**5.2** Line coding techniques: Unipolar NRZ, Bipolar RZ and Manchester NRZ	**02 Lectures**					
				13/03/2026	**15/03/2026**				
		TLO 5.3	**5.3** Binary amplitude shift keying, Binary phase shift keying, Binary frequency shift keying, PCM (Pulse code modulation), DM(Delta Modulation)	**03 Lectures**					
				19/03/2026	**20/03/2026**				
			5.4 MANETs (Mobile Adhoc Networks): Topologies, features, applications, architecture	**02 Lectures**					
				26/03/2026	**27/03/2026**				
		TLO 5.4	**5.5** WSN (Wireless Sensor Networks): Different types of architecture, characteristics, applications	**03 Lectures**					
				27/03/2026	**04/04/2026**				

ASSESSMENT METHODOLOGIES/TOOLS

Formative assessment (Assessment for Learning)

- Continuous assessment based on process and product related performance indicators. Each practical will be assessed considering 1) 60% weightage is to process 2) 40% weightage to product

Summative Assessment (Assessment of Learning)

- End semester examination, Lab performance, Viva voce

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SUGGESTED LEARNING MATERIALS / BOOKS

Sr. No	Author	Title	Publisher
1	Theodore S. Rappaport	Wireless Communications Principles & Practice	Pearson Education India : 2nd edition (1January 2010), ISBN : 978-8131731864
2	Lin YI-Bang, Clamtac Emrich	Wireless and Mobile Network Architecture	John Wiley & Sons, New Delhi, 2001 ISBN 978-81-265-1560-8
3	William C.Y. Lee	Mobile Cellular Telecommunications	McGraw Hill Education (India) Private Limited. ISBN : 978-0070635999
4	T.L.Singal	Wireless Communications	McGraw Hill Education (1 July 2017)(India) Private Limited,ISBN : 978-0070681781

LEARNING WEBSITES & PORTALS

Sr. No	Link / Portal	Description
1	https://www.ericsson.com/en/reports-and-papers/white-papers/advanced-antenna-systems-for-5g-networks	5G-networks
2	https://mobilepacketcore.com/lte-4g-network-architecture/	LTE 4G architecture
3	https://www.linkedin.com/pulse/applications-5g-technology-ramya-chandran-swprc	Applications of 5G
4	https://www.spirent.com/products/automated-wireless-testing-wi-fi-5g	Wi-Fi Testing
5	https://mobilepacketcore.com/lte-4g-network-architecture/	4G architecture

Mr.Shinde R.J.
(Name & Signature of Staff)

Ms. M. S. Karande
(Name & Signature of HOD)