

TEACHING PLAN (TP)

Academic Year: 2025-26 (EVEN)

Institute Code and Name: 0078- K. K. Wagh Polytechnic, Nashik**Programme and Code:** Information Technology (IF)**Course and Code:** Wireless & Mobile Network (WMN)**Scheme:** K**Allocated Hrs.** 45**Semester:** Sixth**Course Index:** CO603**Course Code:** 316325**Name of Faculty:** Mrs. C. P. Borade**CLASS:** TYIF (PARAM)**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 - Explain 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					
				CL	TL	LL			FA-TH			SA-TH	Total		FA-PR		SA-PR		SLA			
													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. (Allo tted 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					
				17/12/2025	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					
				24/12/2025	31/12/2025				
		TLO 1.4	1.5. Types of area: Location area, Routing area,Tracking area 1.6 Network signaling: GSM protocol model	02 Lectures					
				01/01/2026	02/01/2026				

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Unit No. (Alloc ated Hrs.)	CO	TLO align ed 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					
				07/01/2026	09/01/2026				
		TLO 2.2	2.3 RFID (Radio Frequency Identification): Architecture,classification of RFID tags,applications, advantages and disadvantages	02 Lectures					
				14/01/2026	15/01/2026				
		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					
				16/01/2026	21/01/2026				
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					
				22/01/2026	23/01/2026				
			3.2 Wireless markup languages (WML) 3.3 International mobile telecommunications 2000 (IMT-2000) : Features and services	02 Lectures					
				24/01/2026	30/01/2026				

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Unit No. (Allocated Hrs.)	CO	TLO align 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		
				04/02/2026	05/02/2026					
		TLO 3.4	3.6 Introduction to 4G technology : Architecture and Features of 4G, Features of VoLTE, 4.5G	02 Lectures						
				06/02/2026	11/02/2026					
4 (09)	CO -4	TLO 4.1	Unit - IV Introduction to 5G Technology					Chalk, Board, PPT+ LCD, Videos, Google Classroom, MKCL ERA		
			4.1 Introduction to 5G: 5G network architecture, 5G enable technologies	02 Lectures						
				12/02/2026	13/02/2026					
		TLO 4.2	4.2 IMT 2020 standard: Specifications and features	02 Lectures						
				18/02/2026	20/02/2026					
		TLO 4.3	4.3 5G Radio spectrum: low band, medium band, millimeter wave (Ultrahigh) band, 5G service providers	02 Lectures						
				21/02/2026	25/02/2026					
		TLO 4.4	4.4 5G network slicing: Architecture, Advantages of Network Slicing for IoT Ecosystem	03 Lectures						
26/02/2026	04/03/2026									

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Unit No. (Alloc ated Hrs.)	CO	TLO align ed 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					
				05/03/2026	06/03/2026				
		TLO 5.2	5.2 Line coding techniques: Unipolar NRZ, Bipolar RZ and Manchester NRZ	02 Lectures					
				10/03/2026	11/03/2026				
		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					
				12/03/2026	18/03/2026				
			5.4 MANETs (Mobile Adhoc Networks): Topologies, features, applications, architecture	02 Lectures					
				20/03/2026	20/03/2026				
		TLO 5.4	5.5 WSN (Wireless Sensor Networks): Different types of architecture, characteristics, applications	03 Lectures					
				25/03/2026	28/03/2026				

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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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: Mrs. C. P. Borade

CLASS: TYIF (PARAM)

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-ra-myra-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

Mrs. C. P. Borade
(Name & Signature of Staff)

Ms. M. S. Karande
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