

ESTD-1954

GOVERNMENT COLLEGE FOR MEN (A), KADAPA
(Affiliated to Sri YOGI VEMANA UNIVERSITY, KADAPA)



ELECTRONICS SYLLABUS
III YEAR B.Sc. (V SEMESTER)
w.e.f. 2025-2026
Electronics Minor



Course Structure:**Semester – V**

Year	Semester	Course	Paper	Hours per week	Credits	Max. Marks (60+40)
	V	5	Cellular Mobile Communication	03	3	100
			Cellular Mobile Communication Practical Course	02	1	50
		6	Computer Network	03	3	100
			Computer Network Practical Course	02	1	50

**B.Sc., Electronics Minor
SEMESTER-V**

COURSE 5: CELLULAR MOBILE COMMUNICATION

(w.e.f 2025-26)

Theory

Credits: 3

3 hrs/week

Course Objectives

The objectives of this course are to:

1. Provide fundamental knowledge of **advanced mobile phone services, GSM, digital cellular systems, cordless telephony, and third-generation (3G) wireless systems.**
2. Introduce the concepts of **cellular structure, handoff, roaming management, interference, channel assignment techniques, and authentication mechanisms** in mobile communication.
3. Develop understanding of **GSM architecture, including network signaling, mobility management, short message service (SMS), international roaming, and operational aspects.**
4. Familiarize students with the **Wireless Application Protocol (WAP), including its architecture, transport/security layers, session/transaction protocols, and application environment using Wireless Markup Language (WML).**
5. Explore the features and applications of **third-generation mobile services, wireless local loop (WLL), and Bluetooth technology** as part of modern wireless communication systems.

UNIT-I (10 Hrs)

Advanced mobile phone service - Global system for mobile communication - Digital cellular system - Cordless telephony - Third generation wireless systems.

UNIT-II (15 Hrs)

7 Cell structure - Hand off - roaming management - Hand off detection - Channel assignment techniques - Interference - ACI, CCI - Intersystem hand off and authentication - Network signaling - Cellular digital packet data

UNIT-III (10 Hrs)

GSM - Network signaling, mobility management, short message service(SMS) - International roaming, administration and operation.

UNIT-IV (15 Hrs)

Wireless application protocol - Architecture - Datagram - Transport layer securities - Transaction protocol – Session protocol- wireless markup language (WML) - Script wireless telephony applications.

UNIT-V (10 Hrs)

Third generation mobile services - Wireless local loop - Bluetooth technology.

Text Books

1. Mobile Communications - *Jochen Schiller, 7/e*, Pearson Education, 2003.
2. Principles of Wireless Networks - *Kauch Pahalavan & Prahanet Krishnamoorthy, 2/e*, Pearson Education, 2004.

Reference Books

1. Wireless and Mobile Networks Architecture - *Yi-Bing Lin & Imnch Chlantee*, JohnWiley, 2001.
2. Wireless and Mobile Communication - *Rapparport*, Pearson Education, 2001.

Model Question Paper

GOVT. COLLEGE FOR MEN (AUTONOMOUS), KADAPA
B.Sc Third Year Degree V Semester Examination
Part II – Electronics(Minor)
COURSE 5: CELLULAR MOBILE COMMUNICATION
(w.e.f 2025-26)

Time: 3 hours

Max. Marks: 60

Section A

Answer any FIVE of the following. Each carries 4 marks. 5X4 = 20 marks

1. Define Advanced Mobile Phone Service (AMPS) and write its features.
2. What is cordless telephony? Give two examples.
3. Define handoff and its types.
4. Differentiate between adjacent channel interference(ACI) and Co-channel Interference(CCI).
5. Define Short Message Service (SMS).
6. Differentiate between administration and operation in GSM networks.
7. Explain WML in brief.
8. List the features of third-generation(3G) mobile services.

SECTION B

Answer any FIVE of the following. Each carries 8 marks. 5X8 = 40 marks

9. Explain the architecture and working of GSM with a neat diagram.
10. Explain the salient features and applications of 3G wireless systems.
11. Explain the cell structure and frequency reuse concept in detail.
12. Write about Cellular Digital Packet Data (CDPD) and its applications.
13. Explain GSM network signalling and mobility management.
14. Explain WAP architecture with neat diagram.
15. Discuss the working of transaction protocol and session protocol in WAP.
16. Write about wireless local loop and Bluetooth technology.

B.Sc., Electronics Minor
SEMESTER-V

COURSE 6: COMPUTER NETWORK
(w.e.f 2025-26)

Theory

Credits: 3

3 hrs/week

Course Objectives:

The main objectives of this course are to:

1. Provide fundamental knowledge of network structures, topologies, and switching techniques, along with the OSI reference model and its layered functions.
2. Introduce the physical layer concepts, including transmission media, channel allocation methods, and various LAN protocols (IEEE 802.x standards).
3. Develop understanding of the data link layer mechanisms, such as framing, error detection/correction, and flow control protocols.
4. Explain the network layer functions, including routing algorithms, congestion control, and the role of devices such as repeaters, bridges, routers, and gateways in internetworking.
5. Familiarize students with the transport, session, presentation, and application layers, focusing on coding, compression, cryptography, and the role of high-performance networks (ATM, Fast Ethernet).

UNIT-I (15 Hrs)

Network structure Point to Point, Broadcast, Multicast - Horizontal and vertical distribution – network types – Network topologies(Bus,Star, Ring,Mesh, and Tree structures) - OSI 7 layer model - Architecture - Functions of layers – Circuit switching and packet switching.

UNIT-II (10 Hrs)

Physical layer - Transmission media - Channel allocation methods - ALOHA, S- ALOHA,- LAN Protocols IEEE802.3, 802.4, 802.5, 802.6 and 802.11.

UNIT-III (10 Hrs)

Data link layer - Framing - Error detection - Error correction - CRC - Stop and wait - Go band N - Sliding window Protocol.

UNIT-IV (15 Hrs)

Network layer - Routing algorithms and congestion control algorithms - Repeaters, Bridges, Routers and Gateways, Inter networking - Introduction to transport layer and session layer.

UNIT-V (10 Hrs)

Presentation layer - coding, compression and cryptography - Introduction to Application layer - High performance networks – ATM and Fast Ethernet.

Text Books

1. Computer Networks - *Andrew S. Tanenbaum*, 4/e, Pearson Education, 2005.
2. Data and Computer Communication - *W. Stallings*, 7/e, Pearson Education, 2006.

Reference Books

1. Introduction to Data Communications and Networking - *Behrouz & Forouzan*,4/e, McGraw Hill Book Company, 2004.
2. Telecommunication Networks - Protocols Modeling and Analysis - *Misha Stewart*,2/e, Pearson Ed

Model Question Paper

**GOVT. COLLEGE FOR MEN (AUTONOMOUS), KADAPA
B.Sc Third Year Degree V Semester Examination**

Part II – Electronics(Minor)

**COURSE 6: COMPUTER NETWORK
(w.e.f 2025-26)**

Time: 3 hours

Max. Marks: 60

Section A

Answer any FIVE of the following. Each carries 4 marks. 5X4 = 20 marks

1. Define point to point and broadcast network structures with examples.
2. Write a short note on circuit switching.
3. List the different transmission media used in computer networks.
4. Write a short note on wireless LAN (IEEE 802.11).
5. Differentiate between error detection and error correction.
6. Define framing and list its methods.
7. List the types of routing algorithms.
8. What is cryptography? Give examples.

SECTION B

Answer any FIVE of the following. Each carries 8 marks. 5X8 = 40 marks

9. Explain the Bus, Star, Ring and Mesh topologies with neat diagrams.
10. Explain the different types of networks with neat diagrams.
11. Discuss the OSI 7 layer model in detail with the functions of each layer.
12. Explain pure ALOHA and Slotted ALOHA.
13. Explain the sliding window protocol with advantages and disadvantages.
14. Explain the working of routers and gateways with neat diagrams.
15. Explain the application layer protocols and their importance in networking.
16. Explain the high performance networks ATM and Fast Ethernet.
