EECE2141	TELECOMMUNICATIONS FOR SOCIETY	L	T	P	S	J	C
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Pre-requisite	None						
Co-requisite	None						
Preferable exposure	None						

Course Introduction

A large number of telecommunication technologies are serving different needs of the society including landline telephones, mobile phones, Bluetooth, Wi-Fi, infrared, optical and satellite systems. This course gives a introductory overview of features, equipment, capabilities and operation of the above communication technologies.

Course Objectives:

- To acquaint the students to telephone network system using tradition, internet systems used for voice/fax communication
- To familiarize the students to cellular wireless networks, their evolution, services, data rates and systems
- To expose the student to different personal and medium-haul wireless networks including Bluetooth, Zigbee, Wi-fi and RFID systems
- To provide an understanding of optical networks that connect different telephone, wireless, ISPs and other networks together to provide ultra high data rate communication over long distances
- To familiarize the students to satellite communication systems that provide long distance over the horizon wireless communication, television broadcasting and location services

Module I **7hours**

Telecommunication Systems: Telephones, Telephone System, Facsimile, Internet Telephony.

Module II **7 hours**

Cell Phone Technologies: Cellular Telephone Systems, A Cellular Industry Overview, 2G and 3G Digital Cell Phone Systems, Long Term Evolution and 4G Cellular Systems, Base Stations and Small Cells.

Module III **7 hours**

Wireless Technologies: Wireless LAN, PANs and Bluetooth, ZigBee and Mesh Wireless Networks, WiMAX and Wireless Metropolitan-Area Networks, Infrared Wireless, Radio-Frequency Identification and Near-Field Communications, Ultrawideband Wireless, Additional Wireless Applications.

Module IV **7 hours**

Optical Communication: Optical Principles, Optical Communication Systems, Fiber-Optic Cables, Optical Transmitters and Receivers, Wavelength-Division Multiplexing, Passive Optical Networks, 40/100-Gbps Networks and Beyond.

Module V **7 hours**

Satellite Communication: Satellite Orbits, Satellite Communication Systems, Satellite Subsystems, Ground Stations, Satellite Applications, Global Navigation Satellite Systems

Text Book(s)

1. Louis E. Frenzel Jr., Principles of Electronic Communication Systems, 4/e, Mc Graw Hill Publications, McGraw-Hill Education, 2016.

References

1. Wayne Tomasi, Electronic Communication Systems, 5/e, Pearson Education, 2009.
2. Wayne Tomasi, Advanced Electronic Communication Systems, 4/e, Pearson Education, 2013.
3. Dennis Roddy, Electronic Communications, 4/e, Pearson Education, 2003.

Course Outcomes

Upon successful completion of the course, students will be able to

- Describe the landline telephone network system and enumerate the different services (L2)
- Explain the cellular wireless networking systems, their evolution, services, data rates and systems (L2)
- Identify the proper wireless communication technology for a given application depending on distance, datarate, portability requirements. (L3)
- List the different sources, channels and detectors for optical communication and enumerate the data rates achieved with different technologies (L3)
- demonstrate the knowledge, operation and services of different satellite and local technologies (L2)