

COURSE	Name	: Introduction to Telecommunication Systems and Networks
	Code	: EE184302
	Credits	: 3
	Semester	: III

Description of Course

This course discusses basic concepts of Telecommunications Systems and Data Networks in general. It begins with study on basic components, system classification, type of information signal, type of transmission medium and various modulation techniques. Wireless system part discusses radio frequency spectrum classification and its propagation, as well as antenna & satellite functions. To give an overview of voice communication, Telephony Systems, Erlang traffic and multiplexing techniques are introduced. Concept of networks, network protocols, internet systems (TCP / IP) and processes that occur within each layer of the network are discussed in data transmission section. Finally, various disturbances and their effects on the performance of telecommunication systems and networks are studied.

Learning Outcomes

KNOWLEDGE

(P02) Mastering the concepts and principles of engineering, and implementing them in the form of procedures for analysis and design in power systems, control systems, multimedia telecommunications, or electronics Mastering the concepts and principles of engineering, and implementing them in the form of procedures for analysis and design in power systems, control systems, multimedia telecommunications, or electronics

(P05) Mastering the factual knowledge about information and communication technology, and the latest technology and its applications in power systems, control systems, multimedia telecommunications, or electronics .

SPECIFIC SKILL

(KK01) Able to formulate engineering problems in power systems, control systems, multimedia telecommunications, or electronics.

GENERAL SKILL

(KU01) Able to apply logical, critical, systematic and innovative thinking in the context of development or implementation of science and technology that concerns and implements the value of humanities in accordance with their area of expertise.

ATTITUDE

(S09) Demonstrating attitude of responsibility on work in his/her field of expertise independently

Course Learning Outcomes

KNOWLEDGE

Understanding the basic concepts of telecommunications systems and the principles of data networks in general

SPECIFIC SKILL

Understanding the working principle of internet networks and the position of Over The Top (OTT) internet information and content.

GENERAL SKILL

Understanding the potential of interference that arises and affects the performance of telecommunications systems and internet networks in general

ATTITUDE

Demonstrating of being responsible and wise in using telecommunication media, especially in internet networks (TCP / IP).

Main Subjects

1. Basic components, Classification of Systems and History of Telecommunications
2. Information Sources, Concepts of frequency & bandwidth and Types of information signal coding
3. Transmission Medium and Characteristics
4. Modulation Technique
5. Frequency spectrum & radio wave propagation
6. Erlang Telephony & Traffic System
7. Multiplexing technique
8. Network topology, Network Protocol and Internet System (TCP / IP).
9. Package concept, Error checking, Routing and Flow control
10. Disruption & Performance of Telecommunications Systems

Reference(s)

- [1] Roger L. Freeman, Fundamental of Telecommunications, Second Edition, John Wiley & Sons, 2005
- [2] Stallings, W., Data and Computer Communications, 10th Edition. Upper Saddle River, NJ, USA, Prentice Hall, 2014
- [3] Gupta, Prakash C., Data Communications and Computer Networks, Prentice Hall of India, New Delhi, 2006.
- [4] Andrew S. Tanenbaum, David J. Wetherall, Computer Networks, Fifth Edition, Pearson, 2013
- [5] Shanmugam, K.Sam, Digital and Analog Communication, John Wiley and Sons (WIE), International Edition, 1979.
- [6] Simon Saunders, Alejandro Aragón-Zavala, Antennas and Propagation for Wireless Communication Systems, 2nd Edition, John Wiley & Sons Ltd., 2007.

Prerequisite(s)

EW184001 Introduction to Electrical Technology
