

ECE 4325: Telecommunication Networks

Credit / Contact hours: 3/3

Course coordinator: Brian Nutter

Textbook(s) and/or other required material: Behrouz Forouzan, Data Communications and Networking, 4th Ed., 2006 (Recommended).

Catalog description: Networking and standards. Data and voice network architectures. Cellular, satellite & telephone networks. Protocols. Network modeling and optimization. Queuing theory.

Pre-requisite(s) or co-requisites: ECE 3323

Designation: Elective

Course learning outcomes: Upon completion of this course, students should be able to do the following:

1. Describe the operation of a typical telecommunication network intended for transportation of digital voice and data in a multiplexed mode of transmission.
2. Identify various modes of network switching and routing.
3. Analyze network performance and design network links.

Student outcomes addressed: a, b, c, e, j, and k.

Topics covered:

Introduction, area networks, telecommunication networks, transmission media - 4 hours

Signals and noise, coded transmission: source and channel coding - 3 hours

Network modeling, queuing theory - 8 hours

Packet switching - 4 hours

Circuit switching - 3 hours

Physical layer - 3 hours

Data layer - 3 hours

Network layer - 3 hours

SONET, ATM, frame relay - 5 hours

Serial communications - 3 hours

Tests and reviews - 3 hours