CS 82.41B Course Outline as of Fall 2015

CATALOG INFORMATION

Dept and Nbr: CS 82.41B Title: TELECOMMUNICATIONS - 2
Full Title: Telecommunications - 2
Last Reviewed: 1/24/2011

Units		Course Hours per Week		Nbr of Weeks	Course Hours Total	
Maximum	1.50	Lecture Scheduled	1.50	17.5	Lecture Scheduled	26.25
Minimum	1.50	Lab Scheduled	0	4	Lab Scheduled	0
		Contact DHR	0		Contact DHR	0
		Contact Total	1.50		Contact Total	26.25
		Non-contact DHR	0		Non-contact DHR	0

Total Out of Class Hours: 52.50 Total Student Learning Hours: 78.75

Title 5 Category:	AA Degree Applicable
Grading:	Grade or P/NP
Repeatability:	00 - Two Repeats if Grade was D, F, NC, or NP
Also Listed As:	
Formerly:	CIS 78.11B

Catalog Description:
This course continues an in-depth introduction into the electronic transmission of information. The topics include T-carriers, multiplexing, errors and error control, standards and protocols, networks, data privacy and security, and the structure and hierarchy of the Internet.

Prerequisites/Corequisites:
Course Completion or Current Enrollment in CS 82.41A (or CIS 78.11A)

Recommended Preparation:
Eligibility for ENGL 100 or ESL 100

Limits on Enrollment:

Schedule of Classes Information:
Description: This course continues an in-depth introduction into the electronic transmission of information. The topics include T-carriers, multiplexing, errors and error control, standards and protocols, networks, data privacy and security, and the structure and hierarchy of the Internet. (Grade or P/NP)
Prerequisites/Corequisites: Course Completion or Current Enrollment in CS 82.41A (or CIS 78.11A)

Recommended: Eligibility for ENGL 100 or ESL 100
Limits on Enrollment:
Transfer Credit:
Repeatability: Two Repeats if Grade was D, F, NC, or NP

ARTICULATION, MAJOR, and CERTIFICATION INFORMATION:

AS Degree:	**Area**	Effective:	Inactive:
CSU GE:	**Transfer Area**	Effective:	Inactive:
IGETC:	**Transfer Area**	Effective:	Inactive:

CSU Transfer:	Effective:	Inactive:
UC Transfer:	Effective:	Inactive:

CID:

Certificate/Major Applicable:
Certificate Applicable Course

COURSE CONTENT

Outcomes and Objectives:
Upon completion of the course, student will be able to:
1. Delineate the integration of voice technologies with data technologies.
2. Differentiate the basics of T-carrier systems, frame relay, asynchronous transfer mode, DSL, cable modems, and ISDN and will be able to compare and contrast their characteristics.
3. Analyze the basic operating procedures of the Internet and how it relates to data and voice communications.
4. Document the characteristics of local area networks, including bus, star and ring topologies.

Topics and Scope:

1. T-Carriers and Standards
   a. North American
   b. European
   c. Intergrated Services Digital Network (ISDN)
2. Multiplexing
   a. Frequency Division Multiplexing
   b. Time Division Multiplexing
   c. Dense Wavelength Division Multiplexing
3. Errors, Error Detection, and Error Control
   a. Noise and Errors
   b. Error Prevention
   c. Error Detection Techniques
   d. Error Control
4. Network Architecture Models
   a. The Open Systems Interconnection Model (OSI)
   b. The Internet Model
   c. Logical and Physical Connections

5. Local Area Networks (LAN)
   a. Functions of LANs
   b. Advantages and Disadvantages
   c. Basic Network Topologies
   d. Medium Access Control Protocols
   e. Medium Access Control Sublayer
   f. Institute of Electrical and Electronics Engineers (IEEE) 802 Frame Formats
   g. Local Area Network Systems
6. Local Area Networks and Internetworking
   a. Why Interconnect?
   b. Internetworking Devices and the OSI Model
      1) Bridges
      2) Hubs
      3) Switches
      4) Network servers
      5) Routers
7. Local Area Networks (Software and Support Systems)
   a. Network Operating Systems (NOS)
   b. NOS Utilities, Tools, and Applications
   c. Software Licensing Agreements
   d. LAN Support Devices
   e. bus, star, and ring topologies
8. Network Security
   a. Basic Security
   b. Standard System Attacks
   c. Basic Encryption and Decryption
   d. Public Key Infrastructure
   e. Firewalls
9. Introduction to Wide Area Networks (WANs)
   a. Basics
   b. Routing
   c. Network Congestion
   d. High-speed Telecommunications Systems
      1) Frame Relay
      2) Asynchronous Transfer Mode (ATM)
      3) DSL
      4) Cable modems
   e. Structure and Hierarchy of the Internet
      1) Network Access Points (NAPs)
      2) High-speed backbones
      3) Point of Presence (POP)
10. Network Design and Management
   a. Systems Development Life Cycle
   b. Network Modeling
   c. Feasibility Studies
   d. Capacity Planning
   e. Creating a Baseline
   f. Network Management Skills
   g. Generating Useable Statistics
   h. Managing Operations
   i. Network Diagnostic Tools
11. Integration of voice technologies with data technologies

Assignment:

1. Short written responses to end-of-chapter questions.
2. 2-3 one page reports on current events articles with links or references.
3. Final group or individual projects such as telecommunications infrastructure, logical design of a network, and/or shopping for networking/telecommunications equipment for a business application.
4. Three to six tests and/or quizzes.
5. Weekly vocabulary review.

Methods of Evaluation/Basis of Grade:

Writing: Assessment tools that demonstrate writing skills and/or require students to select, organize and explain ideas in writing.

Written homework, reports on articles	Writing 20 - 40%

Problem Solving: Assessment tools, other than exams, that demonstrate competence in computational or non-computational problem solving skills.

Group or individual projects	Problem solving 20 - 40%

Skill Demonstrations: All skill-based and physical demonstrations used for assessment purposes including skill performance exams.

None	Skill Demonstrations 0 - 0%

Exams: All forms of formal testing, other than skill performance exams.

Exams: multiple choice, true/false, matching items, completion	Exams 40 - 60%

Other: Includes any assessment tools that do not logically fit into the above categories.

Attendance and participation	Other Category 0 - 10%

Representative Textbooks and Materials:
Introduction to Telecommunications, by Anu Gokhale - Delmar/Thomson Learning 2nd edition 2005.
The Telecommunications Fact Book and Illustrated Dictionary, by Ahmed Khan - Delmar Publishers 2nd edition 2006.