

**EMBRY-RIDDLE AERONAUTICAL UNIVERSITY  
COURSE OUTLINE FOR**

**Course No.:** CEC460  
**Cross Reference:** CS460

**Title:** Telecommunications Systems

**Cr Hrs:** 3

**Lecture Hours:** 3

**Laboratory Hours:** 0

**COURSE DESCRIPTION:**

Techniques and applications in telecommunications. Types of data communication versus line discipline methodology. Hardware requirements and constraints. Speed versus quality. Security and encoding algorithms. Prerequisite: Permission of the instructor

**GOALS:**

**PERFORMANCE OBJECTIVES:**

1. Understand techniques and applications of data communications in telecommunications.
2. Understand the physical constraints of telecommunications systems, be able to compute the required data rate to support given data streams, the channel capacity, and discuss the appropriate technology.
3. Know the types of data communications versus line discipline methodology and be able to recommend appropriate solutions to data communications environments.
4. Understand the basics of routing, flow control, error control, and switching algorithms. Be able to associate the appropriate algorithms with each of the common core technologies in use.
5. Know the tradeoffs of speed versus quality and the techniques to improve performance and transmission volume based on such methods as data compression and multiplexing.
6. Understand security and encoding algorithms and be able to identify, discuss, and recommend data protection methods.

**Department of Computing and Mathematics**  
**COURSE OUTLINE FOR CEC460, Continued**

**TEXTBOOK:**

Stallings, William, *Data & Computer Communications*, 6ed, 2000, Prentice Hall

**SUGGESTED SUPPLEMENTAL MATERIALS:**

none

**PREREQUISITE KNOWLEDGE BY TOPIC:**

1. Basic computer operation and input/output.
2. Common computer applications software
3. Use of telephone systems

**TOPICS:**

1. OSI networking model
2. Basic transmission system theory and transmission impairments
3. Protocol structure and function
4. Analog and digital data and modulation
5. Data encoding
6. Data communications interface structure and standards
7. Flow control, error detection and control, congestion control and recovery
8. Multiplexing theory and practice
9. Circuit switching, routing algorithms, and control signaling
10. Packet switching, routing algorithms, and protocols
11. Detailed study of common protocols in use today
12. Network security
13. Distributed applications

**LABORATORY:**

none

**COMPUTER USAGE:**

none

**GRADING SYSTEM:**

Flat grading (no "curve")

**ESTIMATED CONTENT:**

Skills: % 0  
Content: % 100