

**University of Arkansas – Fort Smith
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General Syllabus

CSCE 10404 Foundations of Networking

Credit Hours: 4

Lecture Hours: 4

Laboratory Hours: 0

Prerequisite: MATH 11003 College Algebra or higher math, or exemption by
placement Effective Catalog: 2018-2019

I. Course Information

A. Catalog Description

Provides the basic knowledge and skills to implement a simple local area network, including the OSI and TCP/IP network models, topologies, transmission media, network devices, Ethernet technologies, IP addressing, and subnets.

B. Additional Course Information

A key component to the discipline of information technology is the understanding and the advocacy of the user in the development of IT applications and systems. IT graduates must develop a mind-set that recognizes the importance of users and organizational contexts.

II. Student Learning Outcomes

A. Subject Matter

Upon successful completion of this course, the student will be able to:

1. Explain the functionality of protocols used in networking and place them within the context of the OSI layer model.
2. Understand the pros and cons of utilizing various network technologies in commonly encountered contexts.
3. Create a network that has internal synergy and that is appropriate for its assigned task.

B. University Learning Outcomes

This course enhances student abilities in the following areas:

Analytical Skills

Critical Thinking Skills - Students will identify a network problem, break it down into its component parts. Students will generate a solution that they have assessed and justified as an appropriate solution to the problem.

Quantitative Reasoning - Students will analyze data, apply appropriate numeric models in the appropriate number system (binary, decimal or hexadecimal), and support conclusions based on sound mathematical reasoning.

III. Major Course Topics

- A. Networking basics
- B. LANs, WANs, and the Internet
- C. Network Convergence
- D. Network Security
- E. Network Reliability
- F. Routing and Switching fundamentals
- G. OSI Model – Data Link Layer
- H. Ethernet
- I. Basic Switching Concepts
- J. OSI Model – Network Layer
- K. Internet Protocol
- L. IP addressing – IPv4 and IPv6
- M. Subnetting IP Networks
- N. Physical layer
- O. Electrical media and data transmission
- P. Optical media and data transmission
- Q. Radio Frequency media and data transmission
- R. Network Management
- S. Configuring client network operating systems
- T. Configuring switch network operating systems
- U. Configuring router network operating systems
- V. Building Networks
- W. Application areas
- X. Network ports
- Y. Transmission Control Protocol
- Z. User Datagram Protocol