

EDINBORO UNIVERSITY OF PENNSYLVANIA
Department of Mathematics and Computer Science

Network Systems Operation and Administration

CSCI 425

3 Credit Hours

Catalog Description:

This course introduces students to the principles and practices of operating a small to medium sized network of computers. Topics include network services to support user accounts in a networked system. Network hardware installation and support is also discussed. Students will install and configure systems and services related to the topics discussed on multiple operating systems. Issues involving operating system interoperability and security will be explored.

Prerequisites CSCI 310 and CSCI 325.

Course Outline:

- I. Review of Computer Networking
 - A. History and Terminology
 - B. Requests for Comments (RFC)
 - C. Network Addresses and Domain Names
 - D. Routing
 - E. Current and Future Trends
- II. Directory Services
 - A. Motivation
 - B. Lightweight Directory Access Protocol
 - C. Active Directory
 - D. Other Systems
 - E. Operating System Interoperability
- III. Network Based File Systems
 - A. Overview of Operation
 - B. Unix/Linux: The Network File System (NFS)
 - C. Windows: Distributed File System (DFS)
 - D. Operating System Interoperability (Samba)
- IV. Domain Name System (DNS)
 - A. Overview of Operation
 - B. Obtaining a Domain
 - C. Planning and Creating Subdomains
 - D. Implementation
- V. Network Hardware
 - A. Dynamic Host Configuration Protocol (DHCP)
 - B. Networked Printers
 - C. Thin Clients
 - D. Remote Computer Installation and Configuration

- VI. Virtualization
 - A. Overview
 - B. Survey of Virtual Machine Software
 - C. Guest System Installation and Maintenance
- VII. Other Network Services
 - A. Secure Shell
 - B. Email Systems
 - C. Hardware and Software Firewalls
- VIII. Security
 - A. Network Security Issues
 - B. Network Security Awareness
 - C. Security Tools and Assessment Sites

Course Objectives and Assessments

Objective	Assessment
1. Demonstrate a working knowledge of the theoretical foundation of network services.	<ul style="list-style-type: none"> A. Students will answer questions related to network services. B. Students will present briefing papers and presentations discussing recent developments/trends in network services.
2. Install, configure and deploy network operating systems and their services.	<ul style="list-style-type: none"> A. Students will install, configure and deploy network services and associated client software on various operating systems.
3. Demonstrate a basic understanding of network system security.	<ul style="list-style-type: none"> A. Students will discuss the implications of deploying network services. B. Students will describe and implement basic security procedures to maintain a secure network computing environment. C. Students will investigate security flaws by attempting to exploit such flaws in a closed classroom system lab.