

# Network Engineering Courses

**NOTE:** Courses marked with an asterisk (\*) require special fees. See page 14.

■ **General Education Course**  
(Primary Competency Addressed)

## NTW 100 COMPUTER CONFIGURATIONS AND MAINTENANCE\*

This course covers knowledge and skills required to install, configure, upgrade and maintain PC-compatible hardware and software. In addition, students are introduced to basic PC networking concepts such as IP addressing, an LAN environment. The role and functions of hubs, switches, gateways, and routers are introduced. 1 c.u.

*Laboratory work is integrated within the class.*

*Students possessing CompTIA A+ certification will be granted credit for NTW 100.*

## NTW 115 INTRODUCTION TO COMPUTER NETWORKS\*

This course provides an introduction to features and functions of networking components. It provides the knowledge and skills needed to configure and troubleshoot basic networking hardware, protocol, and services. *Laboratory work is integrated within the class.* 1 c.u.

## NTW 125 MANAGING INTERNET DEVICES\*

This course provides an introduction to inter-networking technologies in today's networking environment. LAN and WAN connectivity issues, management of LANs, implementing a hierarchical design, IP address allocation, and OSI model, ISDN, and layer 2 switching are discussed and explained. Through lectures and lab exercises, students are provided with knowledge necessary to configure a multi-router environment and implement essential security features necessary to continuous operation of the network. 1 c.u.

*Includes one two-hour Laboratory per week.*

*Students possessing current Cisco CCNA certification will be granted credit for NTW 115.*

## NTW 200 INTERNETWORK PROGRAMMING I\*

This course provides the basis to design a network and build a functional configuration to support specified requirements. Use of appropriate commands to display functional parameters, detection of anomalies, and monitoring status of a network are emphasized. 1 c.u. *Laboratory work is integrated within the class.*

*Prerequisite: NTW 125.*



**NTW 220 ROUTING I\***

This course will cover and discuss all interior gateway protocols (IGP). The concepts, commands and advanced configuration of all IGP protocols that is required to design and implement large private networks will be discussed in great detail. IGP behavior and its scalability and limitations are presented through lectures and lab exercises. This course covers all advanced features of EIGRP, OSPF and router management as it pertains to configuration of enterprise networks. 1 c.u.

*Laboratory work is integrated within the class.*

*Prerequisite: NTW 200.*

**NTW 221 ROUTING II\***

This course will cover and discuss all exterior gateway protocols (EGP). The concepts, commands and advanced configuration of all EGP protocols that is required to design and implement service provider networks will be discussed in great detail. EGP behavior and its scalability are presented through lectures and lab exercises. This course covers all advanced features of BGP and ISIS and their manipulation and usage in service provider environment. 1 c.u.

*Laboratory work is integrated within the class.*

*Prerequisite: NTW 220.*

**NTW 222 SIMPLE MAIL TRANSFER PROTOCOL (SMTP)\***

In this course, students will learn to install and manage SMTP servers and the critical new features from a real-world perspective. The course provides an in-depth look into the knowledge and skills required to design, implement, and configure SMTP servers. 1 c.u.

*Prerequisite: NTW 200.*

**NTW 225 MANAGING LAN DEVICES\***

The course is intended to introduce students to tasks involved in implementing, managing, and maintaining server-based networks. These tasks include implementing routing; implementing, managing, and maintaining DHCP, DNS, and WINS; securing Internet Protocol (IP) traffic with Internet Protocol security (IPSec) and certificates; implementing a network access infrastructure by configuring the connections for remote access clients; and managing and monitoring network access. 1 c.u.

*Prerequisite: NTW 200.*

**NTW 300 BUILDING MULTILAYER SWITCHING NETWORKS\***

The goal of this r emphasis is on applications in medium-size to large networks. 1 c.u.

*Laboratory work is integrated within the class.*

*Prerequisite: NTW 200.*

**NTW 310 BUILDING REMOTE ACCESS NETWORKS\***

Principles and practices for building remote access networks to interconnect central sites, branch offices, and individual users (telecommuters) are the foci of this course. Strategies and methods for controlling access to the central site and for maximizing bandwidth utilization over the remote links. Students will learn how to assemble and configure equipment to establish appropriate WAN network connections. 1 c.u.

*Laboratory work is integrated within the class.*

*Prerequisite: NTW 220.*

**NTW 315 VOICE OVER IP\***

A suite of application protocols known as Voice over IP (VoIP) is covered in this course. Important protocols within that suite, including Real-time Transport Protocol (RTP), Media Gateway Control Protocol (MGCP) and Session Initiation Protocol (SIP) are described. Examples of network elements that are currently available will be examined as will the test equipment for use in their installation and maintenance. 1 c.u.

*Laboratory work is integrated within the class.*

*Prerequisite: NTW 220.*

**NTW 325 INTERNETWORK PROGRAMMING II\***

A continuation of INT 200, this course is a study of internetwork programming for the creation of complex and sophisticated stand-alone applications. Students learn how to design, test, and debug at an advanced level. 1 c.u.

*Laboratory work is integrated within the class.*

*Prerequisite: NTW 200.*

**NTW 330 NETWORK SECURITY\***

An introduction to network security administration and practical solutions for identifying, assessing, and countering external and internal threats to networks is the goal of this course. Topics include: risk analysis, security policies, network communication vulnerabilities, cabling and hardware for enhancing security, firewalls, packet filtering, network address translation (NAT), virtual private networks, and hacker exploits. 1 c.u.

*Laboratory work is integrated within the class.*

*Prerequisite: NTW 220.*

**NTW 391 NETWORK ENGINEERING INTERNSHIP**

This is an elective course designed to provide field experience in establishing, maintaining, and troubleshooting local area networks. Placements may include business settings, school districts, and the College's laboratories, administrative systems, and Advanced Technology Institute. 1 c.u.

*Prerequisite: NTW 200 or current CCNA certification.*

*May be repeated once for credit.*

*Credit may not be earned by life learning assessment.*

**NTW 410 FIREWALL TECHNOLOGY\***

The "Firewall Technology" course provides an in-depth explanation and operation of firewalls. Special attention is paid to Cisco PIX devices and the current models available. The theory of firewall operations is explained in detail. Basic and advanced configuration of firewalls is reviewed and best practices are critiqued. Firewall management for troubleshooting and configuration is reviewed as well as VPN configuration on firewalls as a head-end device or a terminator for VPN clients. 1 c.u.

*Laboratory work is integrated within the class.*

*Prerequisite: NTW 220.*

**NTW 420 NETWORK SYSTEM DEVELOPMENT PROJECT\***

A final, major independent project, under the supervision of Department faculty members forms a capstone experience for senior Network Engineering major students. 1 c.u.

*Prerequisite: Senior standing or consent of the Program Coordinator.*

**NTW 430 SPECIAL TOPICS IN NETWORK ENGINEERING\***

This course covers advanced topics in Network Engineering. It is offered only when there is an opportunity to present material not included in the curriculum. 1 c.u.

*Course may be repeated for credit as topics change.*

*Laboratory work is integrated within the class.*

*Prerequisite: Announced for each offering.*