

**COURSE OUTLINE**  
**CSCO-680**  
**Optimizing Converged Networks**  
**3 Credits**

**HOWARD COMMUNITY COLLEGE**

**Description**

This course teaches students to optimizing and providing effective QoS techniques in converged networks operating voice, wireless and security applications. Topics include implementing a VoIP network, implementing QoS on converged networks, specific IP QoS mechanisms for implementing the DiffServ QoS model, AutoQoS wireless security and basic wireless management. This course prepares students to pass one of CCNP certification, exam number 542-845 exam. Prerequisite: CSCO-272 or CCNA certification. (2 hours lecture and 3 hours lab)

**Overall Course Objectives**

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

1. Explains Cisco hierarchical network model as it pertains to an end-to-end enterprise network.
2. Describe specific requirements for implementing a VoIP network.
3. Describe the need to implement QoS and the methods for implementing QoS on a converged network using Cisco's routers and Catalyst Switches.
4. Identify the key IP QoS mechanisms used to implement the DiffServ QoS model.
5. Configure AutoQoS for Enterprise.
6. Describe and configure wireless security and basic wireless management.

**Major Topics**

- I. Converged Network Connectivity Requirements
  - A. The Evolution of Telephony in the Enterprise
  - B. Describe converged network requirements
  
- II. Cisco VoIP Implementations
  - A. Introducing VoIP networks
  - B. Digitizing and Packetizing Voice
  - C. Encapsulating Voice Packets for Transport
  - D. Calculating Bandwidth Requirements for VoIP
  - E. Implementing VoIP in an Enterprise Network
  
- III. Introducing IP QoS
  - A. Implementing Cisco IOS QoS
  - B. Selecting an Appropriate QoS Policy Model
  - C. Using MQC for Implementing QoS
  - D. Implementing QoS with Cisco SDM QoS Wizard

- IV. Implementing the DiffServ QoS Model
  - A. Using NBAR for classification
  - B. Introducing Queing Implementation
  - C. Configuring WFQ, CBWFQ and LLQ
  - D. Congestion Avoidance
  - E. Deploying End-to-End QoS
- V. Implement Cisco AutoQoS
- VI. Implement Wireless Scalability

### **Cisco Networking Academy Curriculum at HCC**

When a student takes a Cisco course at HCC, that student usually receives more instruction time than they would receive in other formats. Therefore, while taking Cisco Networking courses at HCC, the student may expect not only instruction from Cisco materials but additional academic and practical exercises and course work to better equip the student not only for the corresponding certification exam but for eventual utilization in their professional endeavors.

#### **Course Requirements**

Grading/exams: Grading procedures will be determined by the individual faculty member but will be calculated on the basis of tests, lab reports, quizzes and final exam. This course includes a comprehensive final exam and lab practical.

#### **Other Course Information**

This course is a course in the Computer Support Technology program and Telecommunications Technology program.

This course is also intended for students who wish to become a Cisco Certified Network Professional (CCNP).