SECTION I

SUBJECT AREA AND COURSE NUMBER

COMP 602

COURSE TITLE	ALTERNATE NAME
LOCAL AREA NETWORK DESIGN	CISCO ACADEMY COURSE 3; SWITCHING BASICS & INT ROUTING

TYPE COURSE

NON-FEE   VOCATIONAL

CATALOG COURSE DESCRIPTION

This course presents fundamentals in LAN (Local Area Network) design, configuration and internetworking structure and theory, a review of OSI model layers and functions, LAN switching, VLANS (Virtual LANs), routing protocols, routing configuration, monitoring and troubleshooting. Students will learn through theory and hands on application to design, configure, install and implement a LAN. (FT)

LECTURE HOURS	LABORATORY HOURS
40	80

ADVISORIES

COMP 601 or equivalent.

RECOMMENDED SKILL LEVEL

10th grade reading level; ability to communicate effectively in the English language; knowledge of math concepts at the 10th grade level; basic computer literacy; normal color perception and above average manual dexterity.

INSTITUTIONAL STUDENT LEARNING OUTCOMES

1. Social Responsibility
   SDCE students demonstrate interpersonal skills by learning and working cooperatively in a diverse environment.
2. Effective Communication
   SDCE students demonstrate effective communication skills.

INSTITUTIONAL STUDENT LEARNING OUTCOMES (CONTINUED)

3. Critical Thinking
   SDCE students critically process information, make decisions, and solve problems independently or cooperatively.
4. Personal and Professional Development
   SDCE students pursue short term and life-long learning goals, mastering necessary skills and using resource management and self-advocacy skills to cope with changing situations in their lives.

COURSE GOALS

Provide instruction in the practical application and theory of design, configuration, installation, implementation, access control, and troubleshooting of a Local Area Network. This course will prepare the student to take exams like the CCNA Certification Exam (Cisco Certified Network Associate). Students will learn to show a spirit of cooperation and team work by completing assigned group tasks. Completion of these tasks will enhance the students' reading, writing, communication and mathematical competencies. Interpretation of technical terms used in networking and telecommunications technology, both verbal and written, is covered. Students who successfully complete this course will be prepared to move on to the fourth phase of networking training, which can include the Cisco Networking Academy continuing their preparation to take the CCNA Certification Exam.

COURSE OBJECTIVES

Upon successful completion of this course, students will demonstrate through theory and practical application, problem solving, critical thinking, written and oral communication and mathematical ability and be able to:

1. Describe LAN switching modes and methods.
2. Demonstrate knowledge of common LAN topologies and protocols.
3. Demonstrate knowledge of VLANS and VLAN implementation.
4. Design a Local Area Network.
5. Analyze the Network requirements, design the Network and generate the necessary network documentation.
6. Configure the network routing protocols.
7. Configure and setup routing protocols.

SECTION II

COURSE CONTENT AND SCOPE

1. Review
   1.1 OSI model
   1.2 Physical layer
   1.3 Data link layer
   1.4 Network layer

1.5   Path determination
1.6   Transport layer
1.7   Routing
1.8   Routing protocols
1.9   LAN-to-LAN routing
1.10 Router configuration
2. LAN Switching
2.1   LAN switching
2.2   LAN performance
2.3   Delay & transmission times (latency)
2.4   Segmentation
2.5   Full/half duplex
2.6   Benefits of switching
2.7   Asymmetric/symmetric switching
2.8   Memory switching modes
2.9   Switching methods
2.10 Spanning tree algorithm
3. Virtual Local Area Network
3.1   Summary
3.2   Virtual LANs
3.3   Switching HUBS
3.4   VLAN implementation
3.5   Benefits of VLANS
4. Local Area Network Design
4.1   LAN design
4.2   Analyzing network requirements
4.3   Collision domain & broadcast domain
4.4   Network design
4.5   Layer 1 media & topology
4.6   Layer 2 LAN switching
4.7   Layer 3 routing
4.8   File servers and traffic patterns
4.9   Network documentation
5. Routing Protocols
5.1   Network layers basics
5.2   Routing protocols
5.3   Distance vectoring and link-state network configuration
5.4   Configuring static routing

APPROPRIATE READINGS

Appropriate readings may include, but are not limited to, periodicals, magazines, instructor-written materials, manuals, instructor selected URL's, and other publications related to design and implementation of networks.

WRITING ASSIGNMENTS

Appropriate writing assignments my include, but are not limited to, preparing text for an assigned project, keeping a journal on all laboratory and project work, completing all assigned reports, performing mathematic calculations as assigned, and completing all written assignments.

OUTSIDE ASSIGNMENTS

Outside assignments may include, but are not limited to, reading texts, reference resources or handouts; Internet sites, and research as needed to complete projects; and organizing and preparing written answers to assigned questions.

APPROPRIATE ASSIGNMENTS THAT DEMONSTRATE CRITICAL THINKING

Assignments that demonstrate critical thinking may include, but are not limited to; analysis and evaluation of reading assigned text and eLearning materials and utilize this analysis in classroom discussions, writing assignments, and in performing laboratory activities. Students must select and use appropriate methods and materials needed to complete laboratory assignments.

EVALUATION

A Student's grade will be based on multiple measures of performance. The assessment will measure development of independent critical thinking skills and will include evaluation of student's ability to:

1. Perform the manipulative skills of the craft, as required.
2. Apply theory to laboratory assignments.
3. Complete all eLearning lessons.
4. Successfully complete all online exams.
5. Successfully complete the online final exam.
6. Successfully complete assigned hands-on labs.
7. Perform on written, oral, or practical examinations.
8. Contribute to class discussions.
9. Maintain attendance per current policy.
10. Successfully complete group case study.

Satisfactory completion of the course requires completion of a culminating activity, which may include, but not limited to, one of the following:

1. Case study written report.
2. Classroom presentation.
3. Practical lab projects, which include practical demonstrations of designing, configuring, installing and troubleshooting a Local Area Network, router configuration.

EVALUATION (CONTINUED)

Upon successful completion of each individual course a Certificate of Course Completion will be issued. Upon successful completion of all courses in the program a Certificate of Program Completion will be issued.

METHOD OF INSTRUCTION

Methods of instruction will include, but not limited to, lecture, eLearning from Cisco, self-paced lab, demonstration, individualized study, use of multimedia presentations, group/team work, tutorials, and other unique instruction requirements, such as, outside assignments, field trips, and guided student job assignments.

This course, or sections of this course, may be offered through distance education.

TEXTS AND SUPPLIES

Texts:

Cisco Network Academy CCNA3 Companion Guide, current edition

URLs:

www.cisco.com
www.cisco.netacad.net

Supplies:

USB drive or personal storage device

PREPARED BY ___Carol L. Akey_____ DATE _August 2, 1999_

REVISED BY ___Don Aragon and Maria Reyes_____ DATE _February 17, 2007_

REVISED BY _Instructional Services/SLO's Added_____ DATE __May 30, 2013___

REVISED BY _Don Aragon_____ DATE _January 2, 2019_

Instructors must meet all requirements stated in Policy 3100 (Student Rights, Responsibilities and Administrative Due Process), and the Attendance Policy set forth in the Continuing Education Catalog.

REFERENCES:

San Diego Community College District Policy 3100
California Community Colleges, Title 5, Section 55002
Continuing Education Catalog