Department of Mathematics, Computer Science and Information Systems

A. Protocol

Course Name: CISCO CCNA 1  
Course Number: CIS 341  
Credits: 4 (2 hours lecture, 3 hours lab)  
Prerequisites: None  
Maximum Class Size (face-to-face): 24  
Maximum Class Size (online): 35  
*Justification for online class size is due to the highly-technical nature of the course.

B. Objectives of the Course:
Upon completion of this course the student will be able to:

a. Analyze various network topologies.
b. Discuss the various network models.
c. Calculate subnet masks.
d. Calculate collision domains and broadcast domains.

C. Catalog Description:

This course is designed for the Information Systems major. It is the first in a series of four CCNA (CISCO Certified Networking Associate) courses. It provides the student with a thorough understanding of basic computer networking concepts. Prerequisite: None. Four credits.

D. Outline of the Course:
1) Connecting to the Internet
2) Network Math
   a. Binary representation of data
   b. Base 10 number system
   c. Base 2 number system
   d. Hexadecimal
   e. Converting between number bases
   f. Boolean logic
   g. IP addresses and network masks
3) Network Terminology
   a. Networking topologies
   b. Data networks
   c. Network devices
   d. Network protocols
   e. LANs
   f. WANs
   g. MANs
   h. Intranets
   i. Extranets
4) Networking Models
   a. OSI model
   b. OSI layers
   c. Peer-to-peer communications
   d. TCP/IP model
e. TCP/IP Layers

5) Networking Media
   a. Copper
   b. Optical
   c. Wireless

6) Cable Testing

7) Cabling LANs and WANs
   a. LAN physical layer
   b. Various LAN hardware
   c. WAN physical layer
   d. Routers and their connections

8) Ethernet Fundamentals
   a. Ethernet naming rules
   b. Ethernet and the OSI model
   c. Ethernet frame structure
   d. Ethernet timing
   e. Ethernet errors
   f. Error handling
   g. Collisions

9) Switching
   a. Layer 2 bridging
   b. Layer 2 switching
   c. Switch modes
   d. Latency

10) Collision and Broadcast Domains
    a. Segmentation
    b. Layer 2 broadcasts
    c. Network segments

11) IP Protocol Suite and IP Addressing
    a. Introduction to TCP / IP
    b. Internet addressing
    c. Obtaining an IP address

12) Routing Fundamentals and Subnets
    a. Routed protocol
    b. IP routing protocols
    c. Subnetting

E. Teaching Methodology:

1) Traditional Classroom Methodology

   This course will be taught using some lecture/discussion method followed with a majority of class time using hands-on lab activities on the presented concepts. Some cooperative group method will be employed during appropriate sections of the course.

2) Online Methodology

   This course will be taught using a variety of methods including lecture videos, activities, group collaborative learning, and discussion boards.

   Quality Matters™ Statement – The online course follows the standards of the Quality Matters™ rubric. An online homework system is required in this course.

F. Text

   All material will be provided online via the CISCO Networking Academy Website (cisco.netacad.net).
G. Assessment Activities:

1) Traditional Classroom Assessment

Various assessment methods are used, at the discretion of the instructor, and can include exams, quizzes, tutorials, homework assignments, programs/projects/labs. An online homework submission system is used in this course.

2) Online Assessment

Various assessment methods are used, at the discretion of the instructor, and can include exams, quizzes, tutorials, homework assignments, programs/projects, wikis, online journals and labs. An online homework system is required in this course.

H. Accommodations for Students with Disabilities:

OSD
Revised December 2012

STUDENTS WITH DISABILITIES

Students with disabilities:

- Reserve the right to decide when to self-identify and when to request accommodations.
- Will register with the Office for Students with Disabilities (OSD) each semester to receive accommodations.
- Might be required to communicate with faculty for accommodations, which specifically involve the faculty.
- Will present the OSD Accommodation Approval Notice to faculty when requesting accommodations that involve the faculty.

Office for Students with Disabilities

Requests for approval for reasonable accommodations should be directed to the Office for Students with Disabilities (OSD). Approved accommodations will be recorded on the OSD Accommodation Approval notice and provided to the student. Students are expected to adhere to OSD procedures for self-identifying, providing documentation and requesting accommodations in a timely manner.

Contact Information:

- Location: Azorsky Building – Room 105
- Phone: (724) 938-5781
- Fax: (724) 938-4599
- Email: osdmail@calu.edu
- Web Site: www.calu.edu (search “disability”)

I. Supportive Instructional Materials, e.g. library materials, web sites, etc.

Library Materials:
Books located in the PILOT catalogs, library databases (Ebscohost, CIOS, Proquest, Lexis-Nexis) which include books, journals, magazines, and newspapers. Examples of holdings at the Louis L. Manderino Library are:


Hayden, Matt, *Teach yourself networking in 24 hours* (Indianapolis, IN: Sams Pub. 1998)


Information for Course Proposals

J. Proposed Instructors: Dr. Gina Boff, Dr. Gary DeLorenzo, Dr. Lisa Kovalchick, Dr. Tony Rodi or any other tenure-track CIS faculty from the Department of Mathematics, Computer Science and Information Systems.

K. Rationale for Course: Course already exists and being updated for Global Online delivery.

L. Specialized Equipment or Supplies Needed: None

M. Answer the following questions using complete sentences:
   1. Does the course require additional human resources? No, the course is already being taught.
   2. Does the course require additional physical resources? No. The current physical resources on campus can accommodate the teaching of this course.
   3. Does the course change the requirements in any particular major? No.
   4. Does the course replace an existing course? No, this course does not replace any existing courses.
   5. How often will the course be taught? This course will be taught once every year.
   6. Does the course duplicate an existing course in another Department or College? No.
   7. What is the recommended maximum class size for this course? Recommended class size for this course is 35 for online sections, due to the highly-technical nature of the course.

N. If the proposed course includes substantial material that is traditionally taught in another discipline, you must request a statement of support from the department chair that houses that discipline. This course does not include substantial material from another discipline.

O. Please identify if you are proposing to have this course considered as a menu course for General Education. If yes, justify and demonstrate the reasons based on the categories for General Education. The General Education Committee must consider and approve the course proposal before consideration by the UCC. No; this course will not be offered on the GenEd menu.