

Course Title: Network Fundamentals
Course Number/Section: TECI 180-001
CRN#/Semester/MOD: 42276/Spring 2009
Credit Hours: 3.0 Class Times:



ARR: Or Mon, Weds, Fri - 3:00 - 3:50 **Instructor(s):** Jack Yon **Office**

Hours: M - F - 12:00 pm - 1:00 pm & appointments **Contact**

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Course Description: Required for the Networking Technician degree, this course is the first of the Cisco series. It is recommended for study in pursuit of acquiring a "Cisco Certified Networking Associate," CCNA industry standard certification. Prerequisite:

Reading Age Level (RAL) of 13

Basic computer literacy and awareness of the Internet This course should articulate into other CISCO programs throughout the State of Colorado Catalog Description: TECI 180, CISCO Networking I: The first of a four semester course in Cisco's Networking Academy curriculum. Concepts covered are: OSI model, internetworking devices, IP addressing, LAN media & topologies, structured cabling, electronics. The course has been designed for 70 contact hours. Approximately 35 hours will be designated to lab activities and 35 hours will be spent on curriculum content. A case study on structured cabling is required. Course Description, Objective and Goals: As reflected within the catalog description, CCNA 1: Networking Basics is the first of four CCNA courses leading to the Cisco Certified Network Associate (CCNA) designation. CCNA 1 introduces Cisco Networking Academy Program students to the networking field. Students will develop skills on networking terminology and protocols, local-area networks (LANS), wide-area networks (WANS), Open System Interconnection (OSI) models, router programming, Ethernet, Internet Protocol (IP) addressing, and network standards. A CCNA certified individual can perform the following tasks:

- Install and configure Cisco Switches and routers in multi-protocol internetworks using LAN and WAN interfaces.
- Provide Level 1 troubleshooting service
- Improve network performance and security
- Perform entry-level tasks in the planning, design, installation, operation, and troubleshooting of Ethernet and TCP/IP Networks.

Text Book and Materials: Network Fundamentals, CCNA Exploration Value Pack, Cisco Press, ISBN: 0131357700, Dye, McDonald, and Ruff

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

- I. Network -Centric World: basics of communication and how networks support the way we live
 - A. introduction to data networks
 - B. scalability

- C. quality of service (QoS)
- D. security issues
- E. network collaboration tools
- F. Packet Tracer.

II. Communicating over the network: the devices, media and protocols enabling network communications.

- A. OSI Model
- B. TCP/IP Model
- C. addressing and naming schemes
- D. data encapsulation,
- E. tools to designed to analyze and simulate network functionality.

III. Application Layer and Protocols: top of the network model layer.

- A. Interaction of protocols
- B. Services and applications
- C. HTTP
- D. DNS
- E. DHCP
- F. SMTP/POP
- G. Telnet
- H. FTP

IV. Transport Layer: role of the transport layer pdrividng end-to-end transfer of data between applications.

- A. TCP
- B. UDP

V. Network Layer: concepts of routing.

- A. Addressing
- B. Path determination
- C. Data packets
- D. IP

VI. Addressing the network: IPv4: netowkr addressing in detail.

- A. Address mask
- B. Prefix length
- C. Subnetworks
- D. Internet Control Message Protocol (ICMP)

VII. Data link layer: Preparation of packets for transmission and control access to the media

- A. Encapsulation processes
- B. LAN and WAN processes

VIII. Physical Layer: how data and signals are encoded for travel across the network.

- A. Function
- B. Standards
- C. Protocols

- D. Bandwidth
- E. Media types
- F. Connectors associated with media

IX. Ethernet: Technologies and operations

- A. Evolution of Ethernet technologies
- B. Media Access Control (MAC)
- C. Address Resolution Protocol (ARP)
- D. Carrier Sensing, Multiple Access, Collision Detection CSMA/CD

X. Planning and cabling networks:

- A. Design
- B. Function
- C. Addressing Scheme
- D. Testing

XI. Configuring and testing networks

- A. Connect
- B. Configure
- C. Cisco IOS Commands for routers
- D. Cisco IOS Command for switches

Grading: Unit Assessments 10% 90 - 100 = A Final exam 30% 80 - 90 = B Lab/Study Guide
20% 70 - 80 = C Skills Exam 30% 60 - 70 = D Participation/Assignments 10% < 60 = F
-----100%

- these percentages are college evaluation and course scoring and may not directly relate to the Networking Fundamentals, Exploration, Cisco Netacademy grade book.

Course Expectations: Meet and maintain the minimum conditions of the student handbook for Mesa State College .

Course Requirements: This course is a lecture/lab course.

1.) Participation: Participation in every scheduled class is expected. Participation will be graded either orally or by way of quizzes, above beyond those as listed in the Cisco Netacademy grade book

2.) Assignments: Problems will be assigned frequently throughout the course, collected, graded and returned to the student in the following class. It is the students' responsibility to ensure that each problem in the assignment is completed and understood. Answers to all assigned problems will be distributed within one week of the given assignment. Once these are made available for a particular problem, material covered by that problem is eligible quiz material.

3.) Quizzes: Quizzes will be given regularly. Quizzes will only be given on material which has been discussed in class and/or exemplified in supplied homework solutions. There will be no make-ups given on quizzes. To offset this, two lowest quiz grades will be dropped.

4.) Exams: All exams will be in class with books and notes unless otherwise specified. There will be **NO MAKE-UPS ON EXAMS WITHOUT PRIOR NOTIFICATION**. If you cannot attend class on an examination date, the instructor must be notified **BEFORE** the exam is given, either personally, by email or by telephone/answering machine.

5.) Labs: Lab assignments will follow the course schedule.

Schedule: Refer to additional web information pertaining to detailed schedule.

In coordination with Educational Access Services, reasonable accommodations will be provided for qualified students with disabilities. Please meet with the instructor the first week of class to make arrangements. Nancy Conklin, the Coordinator of Educational Access Services, can be contacted at 248-1826, or in person in Houston Hall, Room 101.

Tutorial Learning Center = TLC The TLC is a FREE academic service for all MSC students. Tutors are available on a walk-in basis for many courses. Needing to ask a quick question? Seeking homework clarification? Looking for feedback on a paper? Reviewing for a test? Come to Houston Hall 110 on Mondays through Thursdays from 8AM-7PM and Fridays from 8AM-5PM to meet with one of our peer tutors. Please call 970-248-1392 with any questions.

This syllabus is not a contract and the instructor retains the right to make changes in the course's schedule, policies, and requirements as necessary so long as those changes are consistent with the policies of MSC and do not affect transferability. The instructor will communicate the changes to the syllabi to the student in writing, and other course specific information may be provided as needed, depending on discipline.