

I. CATALOG INFORMATION

A. Discipline: COMPUTER NETWORKING SYSTEMS ENGINEERING (CNSE)

B. Subject Code and Number: CNSE M01

C. Course Title: Networking Fundamentals

D. Credit Course units:

Units: 4

Lecture Hours per week: 4

Lab Hours per week : 0

Variable Units : No

E. Student Learning Hours:

Lecture Hours:

Classroom hours: 70 - 70

Laboratory/Activity Hours:

Laboratory/Activity Hours 0 - 0

Total Combined Hours in a 17.5 week term: 70 - 70

F. Non-Credit Course hours per week _____

G. May be taken a total of: 1 2 3 4 time(s) for credit

H. Is the course co-designated (same as) another course: No Yes

If YES, designate course Subject Code & Number: _____

I. Course Description:

Provides an overview of the architecture, structure, functions, components and models of the Internet and other computer networks. Covers topics such as IP (Internet Protocol) addressing, network technologies, media and topologies, protocols, the Open Systems Interconnection (OSI) Layer, Transmission Control Protocol (TCP) Layer, security, management tools, and Local Area Network (LAN) versus Wide Area Network (WAN) environments.

J. Entrance Skills

*Prerequisite: No Yes Course(s)

*Corequisite: No Yes Course(s)

Limitation on Enrollment: No Yes

Recommended Preparation: No Yes Course(s)

Other: No Yes

K. Other Catalog Information:

Prepares students for CompTIA.org Network+ certification. Formerly CNSE M10.

II. COURSE OBJECTIVES

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

		Methods of evaluation will be consistent with, but not limited by, the following types or examples.
1	describe and differentiate the devices and services used to support communications of different types of data networks and the Internet.	Quizzes Classroom project work demonstrating competency in this area Midterms Final exam
2	design, calculate and apply addressing in IPv4 and IPv6 environments including calculating subnets and subnet masks to fulfill networking addressing requirements.	Quizzes Classroom project work demonstrating competency in this area Midterms Final exam
3	describe how individual protocols work and the role of different protocols to move data across a network.	Quizzes Classroom project work demonstrating competency in this area Midterms Final exam
4	identify the 7 layers of the Open System Interconnection (OSI) model.	Quizzes Classroom project work demonstrating competency in this area Midterms Final exam
5	build an ethernet network using routers and switches and describe the various media, services, and operations.	Quizzes Classroom project work demonstrating competency in this area Midterms Final exam
		Quizzes Classroom project work

6	discuss the differences between repeaters, hubs, switches, bridges, routers, and gateways.	demonstrating competency in this area Midterms Final exam
7	perform configurations using command-line interface (CLI) commands to control routers and switches.	Quizzes Classroom project work demonstrating competency in this area Midterms Final exams
8	experiment with various network utilities and techniques used in troubleshooting and analyzing network traffic.	Quizzes Classroom project work demonstrating competency in this area Midterms Final exam
9	describe various network operating systems including server management.	Quizzes Classroom project work demonstrating competency in this area Midterms Final exam
10	describe the techniques used in small business network management.	Quizzes Classroom project work demonstrating competency in this area Midterms Final exam
11	describe various security tools used in securing networks.	Quizzes Classroom project work demonstrating competency in this area Midterms Final exam

III. COURSE CONTENT

Estimated %	Topic	Learning Outcomes
Lecture (must total 100%)		
8.00%	IP addressing (IPv4 and IPv6)	10
7.00%	Wireless standards and security methods, Small Office/Home Office (SOHO), and authentication methods	1, 2
9.00%	Carrier signals, media types, connector types, and network topologies	2, 3, 5, 6

8.00%	Computer protocols and services	3, 4
9.00%	The OSI and Transmission Control/Internet Protocol (TCP/IP) layered models	4
7.00%	LANs	5
8.00%	Monitoring and performance of networks resources	6
7.00%	WANs	7
7.00%	Computer network security, network access methods, and threats, vulnerabilities, and mitigation techniques	7, 11
7.00%	Installation and configuration of repeaters, hubs, switches, bridges, routers, wireless access points, firewall security appliances and gateways for given scenario	6
8.00%	Installation and configuration of routers and switches for given scenario	10
8.00%	Tools and techniques used in supporting and troubleshooting networks	9, 10, 11
7.00%	Domain Name System (DNS) and Dynamic Host Configuration Protocol (DHCP)	8, 9, 10, 11

IV. TYPICAL ASSIGNMENTS

A. Writing assignments

Writing assignments are required. Possible assignments may include, but are not limited to:	
1	short answer class assignments such as describing features of or comparisons between a switch, router, and firewall.
2	short answer class assignments with specific network solutions to various network configuration scenarios.

B. Appropriate outside assignments

Appropriate outside assignments are required. Possible assignments may include, but are not limited to:	
1	assigned readings that explain the various configuration options of networking equipment and explain the benefits of those configurations.
2	assignments on basic switch or router configuration.
3	exercises and problems on the network redesign.

C. Critical thinking assignments

Critical thinking assignments are required. Possible assignments may include, but are not limited to:	
1	design a subnet allocation model based on the number of hosts and networks based on LAN and WAN requirements.
2	design a new subnet using Variable Length Subnet Mask (VLSM) design requirements.
3	compare and contrast various security configurations.
4	access best practices in troubleshooting networks.
5	design solutions to providing a secure network including wireless users.

V. METHODS OF INSTRUCTION

Methods of instruction may include, but are not limited to:

- Distance Education – When any portion of class contact hours is replaced by distance education delivery mode (Complete DE Addendum, Section XV)
- Lecture/Discussion
- Laboratory/Activity
- Other (Specify) Lecture notes
Study guides
PowerPoint presentations
Sample "check for understanding" quizzes
Other instructor-approved online content
- Optional Field Trips
- Required Field Trips

VI. METHODS OF EVALUATION

Methods of evaluation may include, but are not limited to:

- Essay Exam
- Classroom Discussion
- Skill Demonstration
- Problem Solving Exam
- Reports/Papers/Journals
- Participation
- Objective Exams
- Projects
- Other (specify)

Quizzes on chapter content and assignments including the use of a network simulator which measures understanding of technical skills

VII. REPRESENTATIVE TEXTS AND OTHER COURSE MATERIALS

West Jill, Tamara Dean Tamara, and Jean Andrews . Network+ Guide to Networks. 7th ed. Course Technology, 2016.

Meyers, Mike. CompTIA A+ Certification; All-In-One Exam Guide. 9th ed. McGraw-Hill, 2016.

Testout.com. Testout.com, 1st ed.

Provides lecture, video demo, quiz bank and network simulator for labs, and provides one free certification attempt for each student.

VIII. STUDENT MATERIALS FEES

- No Yes

IX. PARALLEL COURSES

College	Course Number	Course Title	Units
Santa Barbara City	CNEE 110	Networking Essentials	3

College			
Mt. San Antonio College	CISN 11/11L	Telecommunications Networking and Lab	3/0.5
Los Angeles City College	CO TECH 15	Comp TIA Network + Certification Preparation	4
CSU Monterey Bay	CST 281	Intro to Communication Network	4
CSU San Bernardino	IST 275	Information Networking and Security	4

X. MINIMUM QUALIFICATIONS

Courses in Disciplines in which Masters Degrees are not expected:
 Any bachelor's degree and two years of related technical experience, or any associate degree and six years of related technical experience.

XI. ARTICULATION INFORMATION

A. Title V Course Classification:

1. This course is designed to be taken either:

- Pass/No Pass only (no letter grade possible); or
 Letter grade (P/NP possible at student option)

2. Degree status:

Either Associate Degree Applicable; or Non-associate Degree Applicable

B. Moorpark College General Education:

1. Do you recommend this course for inclusion on the Associate Degree General Education list?

Yes: No: If YES, what section(s)?

- A1 - Natural Sciences - Biological Science
- A2 - Natural Sciences - Physical Science
- B1 - Social and Behavioral Sciences - American History/Institutions
- B2 - Social and Behavioral Sciences - Other Social Behavioral Science
- C1 - Humanities - Fine or Performing Arts
- C2 - Humanities - Other Humanities
- D1 - Language and Rationality - English Composition
- D2 - Language and Rationality - Communication and Analytical Thinking
- E1 - Health/Physical Education
- E2 - PE or Dance
- F - Ethnic/Gender Studies

C. California State University(CSU) Articulation:

1. Do you recommend this course for transfer credit to CSU? Yes: No:

2. If YES do you recommend this course for inclusion on the CSU General Education list?

Yes: No: If YES, which area(s)?

- A1 A2 A3 B1 B2 B3 B4

C1 C2 D1 D2 D3 D4 D5

 D6 D7 D8 D9 D10 E

D. University of California (UC) Articulation:

1. Do you recommend this course for transfer to the UC? Yes: No:
2. If YES do you recommend this course for the Intersegmental General Education Transfer Curriculum (IGETC)? Yes: No:

IGETC Area 1: English Communication

- English Composition
- Critical Thinking-English Composition
- Oral Communication

IGETC Area 2: Mathematical Concepts and Quantitative Reasoning

- Mathematical Concepts

IGETC Area 3: Arts and Humanities

- Arts
- Humanities

IGETC Area 4: Social and Behavioral Sciences

- Anthropology and Archaeology
- Economics
- Ethnic Studies
- Gender Studies
- Geography
- History
- Interdisciplinary, Social & Behavioral Sciences
- Political Science, Government & Legal Institutions
- Psychology
- Sociology & Criminology

IGETC Area 5: Physical and Biological Sciences (mark all that apply)

- Physical Science Lab or Physical Science Lab only (non-sequence)
- Physical Science Lecture only (non-sequence)
- Biological Science
- Physical Science Courses
- Physical Science Lab or Biological Science Lab Only (non-sequence)
- Biological Science Courses
-

- Biological Science Lab course
- First Science course in a Special sequence
- Second Science course in a Special Sequence
- Laboratory Activity
- Physical Sciences

IGETC Area 6: Language other than English

- Languages other than English (UC Requirement Only)
- U.S. History, Constitution, and American Ideals (CSU Requirement ONLY)
- U.S. History, Constitution, and American Ideals (CSU Requirement ONLY)

XII. REVIEW OF LIBRARY RESOURCES

- A. What planned assignment(s) will require library resources and use?

The following assignments require library resources:

Possible research using the Library's print and online resources on network devices.

- B. Are the currently held library resources sufficient to support the course assignment?

YES: NO:

If NO, please list additional library resources needed to support this course.

XIII. PREREQUISITE AND/OR COREQUISITE JUSTIFICATION

CNSE M01: Not Applicable

XIV. WORKPLACE PREPARATION

Required for career technical courses only. A career technical course/program is one with the primary goal to prepare students for employment immediately upon course/program completion, and/or upgrading employment skills.

Detail how the course meets the Secretary of Labors Commission on the Achievement of Necessary Skills (SCANS) areas. (For a description of the competencies and skills with a listing of what students should be able to do, go to:

<http://www.ncrel.org/sdrs/areas/issues/methods/assment/as7scans.htm>)

The course will address the SCANS competency areas:

1. Resources: the students will identify, organize, plan and allocate resources through course work and application of theory to practice.
2. Interpersonal: the students will work together as a team to build, evaluate projects, and solve technical problem scenarios.
3. Information: the students will acquire and use information through a variety of assignments, network technology tools, and computer software used in computer network systems.
4. Systems: the students will employ a variety of computer tools to complete

projects or assess computer networking problems.

5. Technology: the students will use modern technology to acquire the skills needed to prepare for a career. Students will use various software tools to support instruction such as a network simulator.

The course also addresses the SCANS skills and personal qualities:

1. Basic Skills: the students will read, perform computer mathematic operations, listen and speak for weekly assignments and participate in classroom discussions.
2. Thinking Skills: the students will think creatively and make decisions in order to solve computer network problems and demonstrate reasonable problem solving skills.
3. Personal Qualities: the students will be required to display responsibility, self-management, integrity, and honesty throughout course work and classroom exercises.

XV. DISTANCE LEARNING COURSE OUTLINE ADDENDUM

1. Mode of Delivery

- Online (course will be delivered 100% online)
- Online with onsite examinations (100% of the instruction will occur online, but examinations and an orientation will be scheduled onsite)
- Online/Hybrid (a percentage of instruction will be held online and the remaining percentage of instruction will be held onsite)
 - Lab activities will be conducted onsite
- Televideo (Examinations and an orientation will be held onsite)
- Teleconference
- Other

2. Need/Justification

Improve general student access.

3. Describe how instructors teaching this course will ensure regular, effective contact with and among students.

The instructor will be available online and will monitor the Distance Learning online course. The instructor will use the available tools in the course management system (CMS) for two-way student/instructor communication. Instructor will use the CMS tools in order to provide assessments such as assignments and quizzes.

4. Describe how instructors teaching this course will involve students in active learning.

Discussion boards. Other tools, online and PC resident, and forums will be used so that students can practice their skills as it applies to the course material. Through the course management system (CMS), materials will be made available online for download. Assessments for measuring understanding and

student performance feedback will be made available through the CMS tools. Assignments, labs, and discussions will be available online.

5. Explain how instructors teaching this course will provide multiple methods of content representation.

All topics are available for research online and align with CompTia Network+ curriculum. Videos and online discussion boards.

6. Describe how instructors teaching this course will evaluate student performance.

Quizzes, Homework, Labs, and Exams.

XVI. GENERAL EDUCATION COURSE OUTLINE ADDENDUM

CNSE M01: Not Applicable

XVII. STUDENT MATERIALS FEE ADDENDUM

CNSE M01: Not Applicable

XVIII. REPEATABILITY JUSTIFICATION TITLE 5, SECTION 55041

CNSE M01: Not Applicable

XIX. CURRICULUM APPROVAL

Course Information:

Discipline:

COMPUTER NETWORKING SYSTEMS ENGINEERING (CNSE)

Discipline Code and Number: CNSE M01

Course Revision Category: Outline Update

Course Proposed By:

Originating Faculty Edmond Garcia 08/25/2017

Faculty Peer: Edmond Garcia 08/25/2017

Curriculum Rep: _____

Department Chair: Navreet Sumal 09/02/2017

Division Dean: Howard Davis 08/28/2017

Approved By:

Curriculum Chair: Jerry Mansfield 10/13/2017

Executive Vice President: Julius Sokenu 10/13/2017

Articulation Officer: Letrisha Mai 09/21/2017

Librarian: Mary LaBarge 09/20/2017

Implementation Term and Year: Fall 2018

Approval Dates:

Approved by Moorpark College Curriculum Committee: 10/03/2017

Approved by Board of Trustees (if applicable):

Approved by State (if applicable): 11/04/2017