

# Outcomes Mapping

TECHNOLOGY AND HEALTH DIVISION							
Program:	Computers & Networking Technology (AS Degree & Certificates)	# Courses: (if applicable)		Updated:	6/12/2015	Submitted by:	Kenneth Miller/ Jonathan Hymer

Institutional Level Outcomes (ILOs): <i>As a result of an educational experience with any aspect of the college, students will develop the following knowledge, skills, abilities, and attitudes:</i>										
1. Communication		2. Critical Thinking		3. Information and Technology Literacy		4: Personal, Social, Civic, and Environmental Responsibility				
Connect PLOs with an <b>I, P, or M</b> (see Key in Footer) identifying the level to which knowledge or a skill can be demonstrated following the completion of the program or educational experience.							PLO to ILO Alignment			
PLO Name	PLO Defined: <i>Upon successful completion of this program, students will be able to:</i>						1	2	3	4
<b>1. Computers as electronic systems</b>	Apply knowledge of fundamental electronics principles, including voltage, current, and signal levels, to the analysis and troubleshooting of computers and data-communications networks.							P		
<b>2. Component to system focus</b>	Apply knowledge of computers and their components to the development and implementation of interconnected systems of computers.							P		
<b>3. Computer systems</b>	Apply knowledge of computer technology, with an emphasis on hardware, to the development and deployment of complete computer networks.							P		
<b>4. Networks and servers</b>	Demonstrate an understanding of the physical and logical characteristics needed to support and secure network and server environments.							P		
<b>5. Career competencies</b>	Function effectively as a member of a technical team including documenting work, writing clearly and appropriately in an Information Technology context, respecting user data, and considering the ethical consequences of decisions.						P			
<b>6. Certification acquisition skills</b>	Articulate knowledge of the CompTIA certification processes, including potential exam content, philosophy, and test taking and study strategies.									P

See the Outcomes Assessment website for definitions and examples of Mt. SAC's ILOs: <http://www.mtsac.edu/instruction/outcomes/ilos.html>

## Key for Level of Learning

(Use for Mapping SLOs/MOs to PLOs to ILOs)

I = Knowledge/Skill Introduced

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# Outcomes Mapping

Student Learning Outcomes (SLOs), Measureable Objectives (MOs), Administrative Unit Objectives (AUOs)														
Course: CNET 50	Connect Outcomes with an <b>I, P, or M</b> (see Key in Footer) identifying the level to which knowledge or a skill can be demonstrated in that portion of the course or service.													
SLOs, MOs, AUOs	PLO 1	PLO 2	PLO 3	PLO 4	PLO 5	PLO 6	PLO 7	PLO 8	PLO 9	PLO 10	ILO 1	ILO 2	ILO 3	ILO 4
Students completing CNET 50 will demonstrate effective troubleshooting strategies for isolating faults in all major personal computer (PC) subsystems and components.		I										I		
Students in CNET 50 will be able to define common terms and recognize symbols used in PC systems.		I												
Students completing CNET50 will be able to add/remove input and output devices properly on computer systems running current operating systems.		I												
Define common terms and recognize symbols used in PC systems.		I												
Explain circuit operation of various PC circuits.	I													
Describe proper troubleshooting strategies of PC circuits.			I											
Demonstrate proper and safe test equipment usage on PC circuits.	I													
Describe proper preventative maintenance techniques on PCs and peripherals.		I												
Demonstrate computer logic and fault finding skills.		I												

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Student Learning Outcomes (SLOs), Measureable Objectives (MOs), Administrative Unit Objectives (AUOs)														
Course: CNET 52	Connect Outcomes with an <b>I, P, or M</b> (see Key in Footer) identifying the level to which knowledge or a skill can be demonstrated in that portion of the course or service.													
SLOs, MOs, AUOs	PLO 1	PLO 2	PLO 3	PLO 4	PLO 5	PLO 6	PLO 7	PLO 8	PLO 9	PLO 10	ILO 1	ILO 2	ILO 3	ILO 4
CNET 52 students will demonstrate the ability to obtain technical information from each Windows operating system.					I								I	
Students completing CNET 52 will be able to install Windows operating systems.			I											
Identify the operating system's functions, structure, major system files.		I												
Navigate the operating system to obtain needed technical information.					I									
Identify basic concepts and procedures for creating, viewing and managing files and directories.		I												
Identify typical memory conflict problems and methods of optimization.		I												
Identify procedures for installing and upgrading the various operating systems and bringing the software to a basic operational level.		I												
Compare and contrast procedures for loading and adding device drivers.		I										I		
Compare and contrast procedures for configuring, changing options and using the printing subsystem.		I										I		
Recognize and interpret the meaning of error codes relating to startup, printing and utilities.		I												
Identify the networking capabilities of the			I											

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various operating systems and their procedures for connecting to the network.														
Identify concepts and capabilities of open source operating systems.		I												
Demonstrate the installation, configuration, maintenance, and troubleshooting of the operating systems encountered as PC technicians.		I												

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Student Learning Outcomes (SLOs), Measureable Objectives (MOs), Administrative Unit Objectives (AUOs)														
Course: CNET 54	Connect Outcomes with an I, P, or M (see Key in Footer) identifying the level to which knowledge or a skill can be demonstrated in that portion of the course or service.													
SLOs, MOs, AUOs	PLO 1	PLO 2	PLO 3	PLO 4	PLO 5	PLO 6	PLO 7	PLO 8	PLO 9	PLO 10	ILO 1	ILO 2	ILO 3	ILO 4
Students completing CNET 54 will be able to identify component-level malfunctions in a typical personal computer.		P												
Students completing CNET 54 will be able to demonstrate proper use of specific and general-purpose diagnostic aids available to the PC technician.	P													
Describe and demonstrate the functions of the major components within the PC.		P												
Troubleshooting techniques and procedures.		P												
Demonstrate specific safety techniques associated with the major PC components.		P												
Use specific and general purpose diagnostic aids available to the PC technician and consumer.		P												
Manipulate the PC using various operating system commands.			P											
Isolate and identify problems and malfunctions at the software and hardware component level.		P												
Explain logical procedures for isolating malfunctions.		P												
Analyze and identify component level malfunctions for typical PCs.		P												

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Course: CNET 56	Connect Outcomes with an <b>I, P, or M</b> (see Key in Footer) identifying the level to which knowledge or a skill can be demonstrated in that portion of the course or service.													
SLOs, MOs, AUOs	PLO 1	PLO 2	PLO 3	PLO 4	PLO 5	PLO 6	PLO 7	PLO 8	PLO 9	PLO 10	ILO 1	ILO 2	ILO 3	ILO 4
Students completing CNET 56 will be able to identify and distinguish among the different media used in network communications.			M											
Students completing CNET 56 will be able to determine the most appropriate standards, protocols, and access methods for a given network.				M										
Students completing CNET56 will be able to correctly determine an IPv4 address, broadcast address, and network address from a binary IPv4 address and binary subnet mask.			M											
Identify components of a network and determine the type of network design appropriate for a given site.		P												
Identify and distinguish among the different media used in network communication, and determine how to use them to connect servers and clients in a network.			P											
Compare the various networking standards, protocols, and access methods and determine which would be the most appropriate for a given network.			P											
Recognize and identify the primary network architectures and their major characteristics,			P											

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and the most appropriate for a proposed network.														
Identify the primary functions of a network operating system and distinguish between a centralized computing environment and client/server environment.			P											
Implement and support the major networking components (including the server, operating system, and clients).			P											
Recommend a system for adequately securing data and protecting the system's components.			P								P			
Distinguish between LANs and WANs and identify the components used to expand a LAN into a WAN.			P											
Plan, lay out, configure, and troubleshoot networks for a specific applications.			P											

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Student Learning Outcomes (SLOs), Measureable Objectives (MOs), Administrative Unit Objectives (AUOs)														
Course: CNET 58	Connect Outcomes with an <b>I, P, or M</b> (see Key in Footer) identifying the level to which knowledge or a skill can be demonstrated in that portion of the course or service.													
SLOs, MOs, AUOs	PLO 1	PLO 2	PLO 3	PLO 4	PLO 5	PLO 6	PLO 7	PLO 8	PLO 9	PLO 10	ILO 1	ILO 2	ILO 3	ILO 4
Students completing CNET58 will be able to install and configure local and network storage systems including SAN, NAS, RAID, etc., using current technologies.				M										
Students completing CNET58 will be able to install current network operating systems on both physical and virtual environments.			M											
Describe different types of servers, and identify hardware and software components used in servers.		P												
Install servers into both physical and virtual network environments.				M										
Describe proper server configuration for optimal performance.				P										
Evaluate preventative measures to keep servers running at acceptable performance levels.				P										
Describe upgrade procedures of server hardware and software.				P										
Discuss environmental issues that pertain to server operation.			P											
Troubleshoot server hardware and software problems using a flow chart and diagnostic tools.		P												
Identify and explain disaster-recovery concepts and techniques.				P										

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Course: CNET 60	Connect Outcomes with an <b>I, P, or M</b> (see Key in Footer) identifying the level to which knowledge or a skill can be demonstrated in that portion of the course or service.													
SLOs, MOs, AUOs	PLO 1	PLO 2	PLO 3	PLO 4	PLO 5	PLO 6	PLO 7	PLO 8	PLO 9	PLO 10	ILO 1	ILO 2	ILO 3	ILO 4
Students completing CNET 60 will be able to analyze types of preventative maintenance products and procedures, and when to use/perform them.	I	I												
CNET 60 students will be prepared to take the A+ Certification Exam.						P								
Identify the primary hardware components of a computer system including installation, configuration, and upgrading.	I	I												
Describe appropriate troubleshooting procedures and practices.		I												
Analyze the purpose of various types of preventative maintenance products and procedures, and when to use or perform them.		I												
Identify the basic concepts of printers, printer operations, and printer components.		I												
Identify the unique components of portable computers and their problems.		I												
Analyze the basic networking concepts, how a network works, and the ramifications of repairs on a network.			I											
Compare and contrast the major functions, structure, major systems files and memory management features of legacy and current		I												

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operating systems.														
Install, configure, upgrade, and troubleshoot legacy and current operating systems to bring the software to an operational level.		I												
Compare and contrast the networking capabilities of operating systems, including the procedures for connecting to the network.		I												
Describe the concepts and capabilities relating to the Internet and the basic procedures for setting up a system for Internet access.			I											

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Course: CNET 62	Connect Outcomes with an <b>I, P, or M</b> (see Key in Footer) identifying the level to which knowledge or a skill can be demonstrated in that portion of the course or service.													
SLOs, MOs, AUOs	PLO 1	PLO 2	PLO 3	PLO 4	PLO 5	PLO 6	PLO 7	PLO 8	PLO 9	PLO 10	ILO 1	ILO 2	ILO 3	ILO 4
Students completing CNET 62 will be prepared to pass the CompTIA Network+ examination.						P								
CNET 62 students will demonstrate understanding of basic network structures.			I											
Explain the network structure, including the characteristics of the various topologies and their advantages and disadvantages.			I											
Identify the major network operating systems and their characteristics.			I											
Analyze the primary protocols with their functions.			I											
Define the layers of the OSI model and compare and contrast the protocols, services and functions that pertain to each layer.		I												
Recognize and describe the major characteristics of networking media and their connectors.		I												
Identify the attributes, purpose and function of various network elements.			I											

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Course: CNET 64	Connect Outcomes with an <b>I, P, or M</b> (see Key in Footer) identifying the level to which knowledge or a skill can be demonstrated in that portion of the course or service.													
SLOs, MOs, AUOs	PLO 1	PLO 2	PLO 3	PLO 4	PLO 5	PLO 6	PLO 7	PLO 8	PLO 9	PLO 10	ILO 1	ILO 2	ILO 3	ILO 4
Students completing CNET 64 will be able to install servers into a network environment.				P										
Students completing CNET 64 will be prepared to pass the CompTIA Server+ examination.						P								
CNET64 students will demonstrate understanding of storage system fault tolerance.		P												
Describe different types of servers, and identify hardware and software components used in servers.		P												
Install servers into a network environment.				P										
Describe proper server configuration for optimal performance.				P										
Evaluate preventative measures to keep servers running at acceptable performance levels.				P								P		
Describe upgrade procedures of server hardware and software.				P										
Discuss environmental issues that pertain to server operation.				P										
Troubleshoot server hardware and software problems using a flow chart and diagnostic tools.		P												
Identify and explain disaster-recovery concepts and techniques.				P										
Practice aspects of the server core exam in preparation for the CompTIA exam.						M								

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Course: CNET 66	Connect Outcomes with an <b>I, P, or M</b> (see Key in Footer) identifying the level to which knowledge or a skill can be demonstrated in that portion of the course or service.													
SLOs, MOs, AUOs	PLO 1	PLO 2	PLO 3	PLO 4	PLO 5	PLO 6	PLO 7	PLO 8	PLO 9	PLO 10	ILO 1	ILO 2	ILO 3	ILO 4
Students completing CNET 66 will be able to "harden" an operating system to protect computers from security threats.		P		P										
Students completing CNET 66 will be preped to pass the CompTIA Security+ examination.						P								I
Students completing CNET66 will be able to recommend risk mitigation and disaster recovery strategies to an organization.				P										I
Describe the various aspects of information security.				P									P	
Describe the various attacks to which a network is exposed.				P										
Describe the various components and the purpose of an infrastructure.		P												
Evaluate the types of Intrusion Detection System in use.				P										
Demonstrate the process of hardening an operating system.			P											
Implement the various aspects of physical security.				P										
Compare and contrast the common topologies and methods used in encryption.			P											
Describe the aspects of disaster recovery.				P										
Demonstrate techniques to remove security breaches.				P										

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