



MERCER
COUNTY COMMUNITY COLLEGE

COURSE OUTLINE

Course Number	Course Title	Credits
NET212	Linux	3
Hours: Lecture/Lab/Other	Pre-requisite	Implementation Semester & Year
2/2/0	NET102 or A+ Certification: NET104 or Network+ Certification	Fall 2022

Catalog description:

Study of current hardware and software components of two operating system environments: Linux and AS/400. Major concentration is on Linux with an introduction to AS/400. Hands-on lab projects reinforce selected Linux lecture topics.

General Education Category:
Not GenEd

Course coordinator:
Winston H. Maddox, Professor
Networking, Information Technology and Cybersecurity
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Required texts & Other materials:

Cisco Academy – Web Material ISBN:(OER Software)

Course Student Learning Outcomes (SLO):

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

1. An introduction to foundations of LINUX Operating Systems and Services. [Supports ILG # 4; PLO # 1, 3]
2. Develop an understanding of medium to large-scale computer systems, placing emphasis on the operating systems and the operator's role in a Linux environment. [Supports ILG # 2, 4, 9; PLO # 2, 3]
3. An introduction to understanding the structure of the LINUX operating system. An understanding of the LINUX commands used to establish user accounts and control user access. [Supports ILG # 4; PLO # 1, 4, 6]
4. Develop a sound understanding of selected LINUX commands and utilities needed to control, enter, schedule, initiate, initiate, stop, and monitor work in the system. [Supports ILG # 4, 11; PLO # 1, 5]
5. Explain and demonstrate the installation and maintenance of the LINUX operating system and software. [Supports ILG # 4; PLO # 2, 4, 5, 7]

Course-specific Institutional Learning Goals (ILG):

Institutional Learning Goal 2. Mathematics. Students will use appropriate mathematical and statistical concepts and operations to interpret data and to solve problems.

Institutional Learning Goal 4. Technology. Students will use computer systems or other appropriate forms of technology to achieve educational and personal goals.

Institutional Learning Goal 9. Ethical Reasoning and Action. Students will understand ethical frameworks, issues, and situations.

Institutional Learning Goal 11. Critical Thinking: Students will use critical thinking skills understand, analyze, or apply information or solve problems.

Program Learning Outcomes (PLO) for Information Technology – Cybersecurity Concentration (A.A.S.)

1. Describe the elements of information security, including possible threats and attack vectors as well as the motives, goals, and objectives of information security attacks;
2. Explain what steps can be taken to secure a system, and provide secure network management and reporting;
3. Secure routers and switches and their associated networks, including installing, troubleshooting, and monitoring network devices to maintain integrity, confidentiality, and availability of data and devices;
4. Prevent common security threats, including implementing firewall and VPN technologies and perimeter defenses, conducting vulnerability and penetration testing, and scanning networked systems;
5. Describe the security weaknesses inherent in wireless networks, and implement solutions to address them;
6. Use printed and online technical documentation, and demonstrate written and oral communication skills;
7. Work effectively individually and in workgroups to install and implement information security technology

Units of study in detail – Unit Student Learning Outcomes:

Unit I [INTRODUCTION TO LINUX] [Supports Course SLO # 1]

Learning Objectives

The student will be able to... Explain and Demonstrate

- Distributions
- Embedded Systems
- Differences Between Windows, OSX & Linux
- Distribution life Cycle management

Unit II [Working With Linux] [Supports Course SLOs # 2, 5]

Learning Objectives

The student will be able to... Explain and Demonstrate

- Linux In the Cloud
- Desktop & Server Applications
- Development Languages
- Introduction to Command Line
- Introduction to Management Tools and Repositories

Unit III [Open Source Software & Licensing] [Supports Course SLO # 2]

Learning Objectives

The student will be able to... Explain and Demonstrate

- Open Source Philosophy
- Introduction to Open Source Software
- Introduction to Open Source Licensing
- Free Software Foundation (FSF)
- Open Source Initiative (OSI)

Unit IV [Basic Command Line] [Supports Course SLO # 4]

Learning Objectives

The student will be able to... Explain and Demonstrate

- Introduction to Basic Shell
- Command Line Syntax
- Variables
- Quoting

Unit V [Managing User Assistance] [Supports Course SLO # 4]

Learning Objectives

The student will be able to...: Explain and Demonstrate

- Management Pages
- Information tools and Pages

Unit VI [Navigating Linux File System] [Supports Course SLO # 4]

Learning Objectives

The student will be able to... Explain and Demonstrate

- Introduction to Linux Files and Directories
- Case Sensitivity
- Simple Globing

Unit VII [Text Processing, Archiving and Scripting] [Supports Course SLO # 3]

Learning Objectives

The student will be able to... Explain and Demonstrate

- Introduction to Archiving
- Introduction to Compression
- File and Directories

Unit VIII [Working With Text Processing] [Supports Course SLO # 5]

Learning Objectives

The student will be able to... Explain and Demonstrate

- Command Line Pipes
- I/O Redirection
- Basic Regular Expression

Unit IX [Basic Scripting] [Supports Course SLO # 4, 5]

Learning Objectives

The student will be able to... Explain and Demonstrate

- Introduction to Basic Scripting
- Bash Scripting Logic
- Version Control Using Git
- Orchestration Processes and Concepts

Unit X [Hardware, Data and Networking] [Supports Course SLO # 3]

Learning Objectives

The student will be able to... Explain and Demonstrate

- Data Storage Concepts
- Programs and Configuration
- Processes, Memory Addresses
- System Messaging
- Logging

Unit XI [Networking Configuration] [Supports Course SLO # 4]

Learning Objectives

The student will be able to... Explain and Demonstrate

- Internet, Network and Routers
- Network Interface Configuration
- Querying DNS Client Configurations
- Querying Network Configurations
- Linux Firewalls

Unit XII [Security and User Security] [Supports Course SLO # 3, 4]

Learning Objectives

The student will be able to... Explain and Demonstrate

- Introduction to System and User Security
- Root and Standard Users
- User Security and Restrictions
- Develop User Group Commands
- Open SSH

Unit XIII [Creating Users and Groups] [Supports Course SLO # 3, 5]

Learning Objectives

The student will be able to... Explain and Demonstrate

- Develop Ownership and Permission
- Create File and Directory Permission and Ownership
- Create Special Directories and Files
- Using Temporary Files and Directories
- Use Symbolic Links

Unit XIV [Special Directories and Files] [Supports Course SLO #4, 5]

- Bash Scripting Logic
- Red Hat Package Manger (RPM)
- Debian Package Manger

Evaluation of student learning:

Evaluation of student learning: [Evaluates SLOs #1, 2, 3, 4, 5]

Students' achievement of the course objectives evaluated through use of the following:

- Cisco Lab assignments assessing students' hardware comprehension skills related to the unit objectives.
- Cisco Lab Chapter quizzes assessing students' comprehension of software computer concepts related to the unit objectives.
- Research and Final Research presentation assessing students' comprehension through the use of word, PowerPoint and graphics to demonstrate knowledge
- Basic programming Labs and Quizzes assignments assessing students' basic comprehension of cyber defense and analysis functions and skills related to the unit objectives.
- Exams and Final Research Presentation assessing students' comprehension of computer concepts and applications related to the unit objectives.

Grade Criteria

Item	Percent	Description
TESTOut Labs	10%	Activity-based lab Assignment Cyber Analysis
TESTOut Quizzes	10%	15 Question quiz for each unit of Cyber Defense Concepts
Exams	35%	3 Assignment based on your IT Topics leading to the final project
Final Research Presentation	45%	Professional Cyber Analysis Presentation