



2018 - 2019
Career Technical Programs

Computer Information
Technology Department
541.463.5221

lanecc.edu

Computer Network Operations

Associate of Applied Science Degree
Career Pathway Certificate, Computer Network Monitoring and Management
Career Pathway Certificate, Computer Network Security

Program Coordinator Joseph Colton, Bldg. 19, Room 144,
541.463.5249, coltonj@lanecc.edu

Purpose To train entry-level network support technicians and more advanced network administrators in specific computer networking skills and general troubleshooting of hardware and software related problems.

Learning Outcomes The student who successfully completes all Computer Network Operations requirements will:

- install and configure workstations and servers.
- install and configure internetworking devices such as switches and routers.
- install and configure a variety of network operating systems and provide for interoperability between them.
- administer an organization's computer network infrastructure.
- demonstrate an understanding of network security issues and tools.
- demonstrate an understanding of the basic features of wireless networking.
- develop skills for doing network performance monitoring.
- interpret the concepts of a computer network related problem-solving task.
- use appropriate library and information resources to research network management issues and tools and support lifelong technical learning.

Cooperative Education (Co-op) Co-op is a required and important part of the Computer Network Operations program. It provides relevant field experience that integrates theory and practice while providing opportunities to develop skills, explore career options, and network with professionals and employers in the computer network field. Contact Gerry Meenaghan, Cooperative Education Coordinator, Bldg. 19, Rm. 154, 541.463.5883.

Job Openings Projected through 2020

Lane County openings - 18 annually
Statewide openings - 256 annually
Lane County average hourly - \$21.93; average annual - \$45,632
Oregon average hourly - \$25.12; average annual - \$52,261

Costs Estimate based on 2017-18 tuition and fees. Consult Lane's website for updated tuition.

Books	\$1,501
Program Specific Fees.....	\$208
Resident Tuition and General Student Fees.....	\$11,609
Total Estimated Cost	\$13,318

*Course fees may change during the year. See the online credit class schedule for fees assigned to courses.

Course Requirements

- Prerequisites are required for some courses. See course descriptions.
- All courses must be completed for a letter grade of C-, except for the Communications, Writing, Math, PE/Health, and Human Relations requirements and CS 206 which may be completed with a "Pass" grade.
- Students planning to pursue a bachelor's degree in Computer Science are advised to also complete the following courses in mathematics: MTH 111 College Algebra and MTH 231, 232, 260 Discrete Mathematics 1, 2, 3.
- The Computer Network Operations degree contains 3 second-year CS/CIS/GIS electives. Students may want to consider using electives to take a sequence of courses from the Network Security certificate curriculum, or from one of the other degrees or certs.
- For more information about electives, students should contact the program lead to help determine what elective courses best fit their goals.
- Second Year Requirements - A personal laptop is recommended for second-year students in the degree program. Please contact the Program Lead for options and system requirements.
- Instead of CS 133P and CS 233P the student may take any two required programming courses that are a sequence from one of the other CIT degree programs: - CS 161C+ and CS 162C+ - CS 133JS and CS 233JS - CS 133 N and 233N - CS 275 and CS 276

First Year

Elective: CIS 140W Introduction to Operating Systems:	
Windows Clients.....	4
CIS 100 Computing Careers Exploration	1
CS 179 Introduction to Computer Networks	4
Choice of:	
MTH 082 Math for Network Operations -	
MTH 111 College Algebra or higher	4 - 5

Fall

Winter

CS 240W Advanced Windows: Server Management.....	4
CS 133P Beginning Programming: Python.....	4
CS 206 Co-op Ed: Computer Information Technology	
Seminar	2
PE/Health Requirement	3
CS 279 Essentials of Network Administration.....	4

Spring

Human Relations Requirement - CG 203 Human Relations at Work	3
CS 233P Intermediate Programming: Python	4
CS 273 Introduction to Virtualization and Cloud Computing.....	4
Choice of:	
WR 121 Academic Composition	
WR 121_H Academic Composition - Honors	4

Computer Network Operations

Second Year

	Fall
CIS 125D Software Tools 1: Databases	4
CIS 140U Introduction to Unix/Linux.....	4
CS 284 Network Security Fundamentals	4
CS/CIS/GIS/Math Elective - CS188 Wireless Networking	4

Winter

Choice of:

CIS 225 Computer End-User Support	4
CIS 245 Project Management.....	4
WR 227 Technical Writing	4
CS 289 Cisco Router and Switch Administration	4
CS 240U Advanced Unix/Linux: Server Management	4

Spring

CS 280CN Co-op Ed: Computer Network Operations.....	3
CS/CIS/GIS/Math Elective - CS 285 Operating Systems Hardening.....	4
CS/CIS/GIS/Math Elective - CS 286 Firewalls and VPNs	4
CS 288 Network Monitoring and Management	4

Computer Network Monitoring and Management

Offered by the Computer Information Technology Department, 541.463.5221

Career Pathway Certificate

Program Coordinator Joseph Colton, Bldg. 19, Room 144, 541.463.5249, coltonj@lanecc.edu

Purpose Prepare graduates to manage and monitor modern network operating systems and the services provided by current, industry-standard platforms, including troubleshooting and proactive management for growth.

Learning Outcomes The student who successfully completes all Computer Network Monitoring and Management requirements will:

- understand the performance fundamentals required to keep computer networks efficient.
- install and configure Windows and Linux servers and Cisco routers and switches.
- identify sources of network performance problems and resolve them.
- implement the SNMP protocol on various networked devices.
- understand the importance of proactive management and planning for growth.
- install and configure an enterprise network monitoring package to track performance and availability of services.
- learn how to implement event handlers and notification/alert systems.
- learn to use protocol analysis software to monitor traffic and solve network problems.

*Course fees may change during the year. See the online credit class schedule for fees assigned to courses.

Course Requirements

- All courses must be completed with a letter grade of "C-" or better.

CS 240W Advanced Windows: Server Management	4
CS 240U Advanced Unix/Linux: Server Management	4
CS 288 Network Monitoring and Management	4
CS 289 Cisco Router and Switch Administration	4

Computer Network Security

Offered by the Computer Information Technology Department, 541.463.5221

Career Pathway Certificate

Program Coordinator Don Easton, Bldg.19 Rm. 148

Purpose To train those who already have networking skills to secure workstations, servers, and other networking devices.

Learning Outcomes The student who successfully completes all Computer Network Security requirements will:

- understand the security fundamentals required to help safeguard computer networks.
- implement wireless network security protections.
- identify and counteract attacks on workstations, servers, and other networking devices.
- identify vulnerabilities, discuss their resolutions, and generate vulnerability reports.
- install and utilize various security industry accepted tools.
- install and configure firewalls and VPNs.
- troubleshoot security issues and implement and test resolutions.

*Course fees may change during the year. See the online credit class schedule for fees assigned to courses.

Course Requirements

- All courses must be completed with a letter grade of "C-" or better.

CS 188 Wireless Networking.....	4
CS 284 Network Security Fundamentals	4
CS 285 Operating System Hardening	4
CS 286 Firewalls and VPNs	4