

JAMESTOWN COMMUNITY COLLEGE

State University of New York

INSTITUTIONAL COURSE SYLLABUS

Course Title: Introduction to Linux

Course Abbreviation and Number: CSC 2570

Credit Hours: 4

Course Type: Lecture

Course Description: This course provides comprehensive coverage of foundational Linux system management concepts. Students will develop practical skills in system installation, configuration, maintenance, user and service management, security hardening, automation, scripting, networking, virtualization, containerization, and troubleshooting. The course integrates hands-on labs and real-world scenarios to prepare students for effective Linux administration roles in diverse IT environments, emphasizing security best practices, modern automation, and performance optimization.

Prerequisite/Corequisite: CSC 1570 and CSC 2510.

General Education Requirements Met

Student Learning Outcomes:

Students who demonstrate understanding can:

1. Explain Linux system architecture and boot process.
2. Configure and manage storage, permissions and services using security best practices.
3. Set up, configure, and troubleshoot Linux network connections.
4. Write and troubleshoot shell scripts to automate and orchestrate IT tasks and deploy virtual environments.

Topics Covered:

1. System Management (23%)
 - Linux system architecture and boot sequence
 - Kernel modules management and hardware devices
 - Storage configuration: partitions, LVM, RAID, mount points
 - Network basics: configuring hosts, interfaces, DNS, and networking tools
 - Shell operations: navigation, editing, redirection, environment variables
 - Backup, archive, compression, and restore methods
 - Virtualization fundamentals: hypervisors, VM creation and disk image management
2. Services and User Management (20%)
 - File system permissions, links, and special file types
 - User and group account administration
 - Process monitoring, priority adjustment, job scheduling (cron, systemd timers)
 - Software/package management and configuration of repositories
 - Service management, logging, and maintenance
 - Container runtimes, image management, and container networking
3. Security (18%)
 - Authentication and authorization with PAM, LDAP, Kerberos
 - Firewall setup and management using iptables, nftables, UFW
 - Operating system hardening techniques: sudo, permissions, secure remote access
 - Account security: enforce password policies, shell restrictions, MFA
 - Cryptography: file encryption, hashing, certificate management
 - Compliance: integrity verification, auditing, vulnerability scanning
4. Automation, Orchestration, and Scripting (17%)
 - Task automation with Ansible, Puppet, CI/CD tools
 - Shell scripting fundamentals: variables, functions, control flow, troubleshooting
 - Python scripting basics for Linux system tasks
 - Version control workflows using Git, code tagging
 - AI code generation and prompt engineering best practices
5. Troubleshooting (22%)
 - System health monitoring, log review, and alerting techniques
 - Diagnosing hardware and storage issues: boot problems, mounting errors, repairs
 - Networking troubleshooting: firewall, routing, DNS, connectivity
 - Security troubleshooting: SELinux/AppArmor, permissions, vulnerabilities
 - Performance analysis and tuning: CPU, memory, disk I/O optimization

Information for Students

- Expectations of Students
 - [Civility Statement](#)
 - [Student Responsibility Statement](#)
 - [Academic Integrity Statement](#)
- Accessibility Services: <https://www.sunyjcc.edu/accessibility>
- Get Help: <https://www.sunyjcc.edu/gethelp>
- Emergency closings: <https://www.sunyjcc.edu/jccalert>
- Course grades are determined by the instructor based on a combination of factors, including but not limited to, homework, quizzes, exams, projects, and participation. Final course grade can be translated into a grade point value according to the following:

Letter Grade	A	B+	B	C+	C	D+	D	F
Numerical Grade	4.0	3.5	3	2.5	2	1.5	1	0

- Veterans and active-duty military personnel with special circumstances (e.g., upcoming deployments, drill requirements, VA appointments) are welcome and encouraged to communicate these to the instructor.

Effective Date: Fall 2026