JAMESTOWN COMMUNITY COLLEGE
State University of New York

INSTITUTIONAL COURSE SYLLABUS

Course Title: Advanced Networking & Computer Security

Course Abbreviation and Number: CSC 2480   **Credit Hours:** 3   **Course Type:** Lecture

Course Description: Students will gain a greater understanding of computer networks with an emphasis on network security. Topics will include law and ethics, network policies, IT audits, system inventorying, remote control, traffic monitoring and routing, malicious codes such as viruses, WAN interfacing, the Internet, addressing, TCP/IP utilities, RAS, VPN, firewalls, encryption, and security issues. Students will use a variety of software tools to evaluate the security effectiveness and operational efficiency of different computer systems and configurations.

Prerequisite: CSC 1570, CSC 1580, and CSC 2510.

Student Learning Outcomes:

Students who demonstrate understanding can:
1. Identify security risks and threats to computer networks
2. Design small local area networks and specify security safeguards
3. Specify and implement appropriate hardware and software safeguards
4. Troubleshoot and optimize computer networks

Topics Covered:
- Fundamentals of Network Communication
- General Network Design
  - Physical access control techniques and weaknesses
  - Logical access control techniques and weaknesses
  - Network Design; bridges, routers, switches, hardware and software
  - Network Analysis; traffic, load, performance, application monitoring
- Ethics and Social Issues
  - Crime
  - Privacy issues
  - Computer use policies
  - Security policies
  - Enforcement
- Network Transport Systems
  - TCP/IP
  - IP addressing, data grams and forwarding
  - IP encapsulation, fragmentation and re-assembly
- Packet Transmission
  - Packet switching and network performance
  - Virtual private networks
  - Routers
- Network Applications
  - Operating systems
  - Database applications
  - Internet applications
- Maintenance and Troubleshooting
  - Using maintenance tools
  - Monitoring the network
  - Installing and upgrading software
  - Resolving problems and performance issues
  - Disaster recovery
- Cryptography
  - Encryption theory and practice
  - Message confidentiality

- o Message authentication
- Network Security
  - o Email security
  - o Kerberos
  - o IP security
  - o Web security
- System Security
  - o Viruses
  - o Firewalls

Information for Students
- Expectations of Students
  - Civility Statement
  - Student Responsibility Statement
  - Academic Integrity Statement
- Accessibility Services
  Students who require accommodations to complete the requirements and expectations of this course because of a disability must make their accommodation requests to the Accessibility Services Coordinator.
- Get Help: JCC & Community Resources
- Emergency Closing Procedures
- Course grade is 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:

A=4.0	B+=3.5	B=3	C+=2.5	C=2	D+=1.5	D=1	F=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 2021