MAJOR IN COMPUTER SCIENCE, NETWORKS AND SECURITY CONCENTRATION

Networks connect computers and other devices so they can share information. The Networks and Security concentration involves designing, building, and maintaining networks and protecting them from cyberattacks.

Network and security technology is vitally important to almost every modern field of human endeavor including biology, physics, agriculture, medicine, defense, and more.

There is explosive demand for professionals who can understand the underlying principles of networks and security, incorporate them into products and practices, and provide defensive capabilities against cyber threats.

The Networks and Security concentration provides students core and elective courses on computer networking, systems security (including the latest trends and technologies in cyber-security), ethical hacking, operating systems, databases, and software. Students will develop fundamental skills in security architecture and analysis, cryptography, system vulnerabilities and attack vectors, malware analysis and defense, intrusion detection and protection, network architecture, engineering and network software development. The *CSU Cyber-Security Center of Excellence* expands upon these course offerings with lab equipment, research topics, and certification opportunities.

Learning Objectives

Upon successfully completing this program, students will be able to:

1. Work effectively in teams to develop computational solutions to complex problems.
2. Develop products and technologies that provide network/cyber-security solutions or incorporate these technologies into products that require security or network capabilities.
3. Analyze technologies and situations for cyber vulnerabilities to develop improvements to attack and defense methodologies.
4. Communicate technical ideas effectively in writing and verbally.
5. Confidently pursue graduate studies or professional employment in networks and security and computer science.

Potential Occupations

In addition to the career opportunities open to all computer science graduates, the networks and security concentration opens career paths that include:

Software developer, software architect, network security analyst, software project manager, computer systems security analyst, computer and information systems manager, and R&D jobs for both cyber-security attack and defense.

Employers in a wide range of fields recognize the need for network and cyber-security architecture and implementations within their domains, which creates R&D and management opportunities across a wide job market.