NJIT@JerseyCity

M.S. in Cybersecurity & Privacy

M.S. in Cybersecurity & Privacy (30 credits)

Training Cybersecurity Professionals

In today's hyper-connected society, there is strong demand for **cybersecurity professionals** prepared to build and defend our networked infrastructure. With frequent data breaches exposing customer data for malicious intent, all sectors of industry and government are carefully examining their systems for vulnerabilities, and experts in this field are in demand as never before.

The M.S. in Cybersecurity & Privacy covers the construction and maintenance of secure software systems and tools to ensure the integrity of data and network communication. This spans topics from theoretical cryptographic protocols to government and corporate policy on data privacy. To be admitted to the program, we require a basic background in Mathematics (calculus, linear algebra), Statistics (probability and basic stats) and Software Development (programming, data structures and algorithms). A GRE score is not required.

This part-time degree program involves 10 courses of three credits each, (six core courses and four electives), typically taught over five semesters of 15 weeks each (including summer). Courses consist of formal lectures as well as hands-on programming, network administration, and counter-hacking projects.

The curriculum focuses on various techniques for mitigating the risk of data breaches and unauthorized access to networked devices and systems. Participants learn how to identify security vulnerabilities in local, networked, and cloud software systems, and develop rigorous data management and software development workflows.

The program curriculum covers tools and technologies such as OpenSSL, Wireshark, Rainbow tables, Blockchains and Certificate Transparency. Students work on homework assignments and projects covering both theory and applications on real data with guidance from the professor and teaching assistants.

Recommended part-time credit schedule:
Two courses **(six credits)** per semester over five consecutive semesters, including Summer. Start is possible in Fall, Spring or Summer semesters.

Core (required) courses:

- CS 608 Cryptography and Privacy
- CS 645 Security and Privacy in Computer Systems
- CS 646 Network Protocols Security
- CS 647 Counter Hacking Techniques
- CS 656 Internet and Higher Layer Protocols

Sample electives:

- CS 610 Data Structures and Algorithms
- CS 630 Operating Systems Design
- CS 631 Data Management System Design
- CS 634 Data Mining
- CS 643 Cloud Computing
- CS 673 Software Design and Production Methodology
- CS 680 Linux Kernel Programming
- CS 696 Network Management & Security
- IS 680 Information Systems Auditing
- IS 681 Computer Security Auditing
- IS 682 Forensic Auditing for Computer Security
- IT 620 Wireless Networks Security and Administration
- IT 640 Network Services Administration

NJIT
New Jersey Institute of Technology

Prerequisites and Admissions:

To be eligible for admission, a student must have a B.S. degree with a minimum GPA of 2.8 on a 4.0 scale and have the following background **(typically obtained through a B.S. in a STEM field)**:

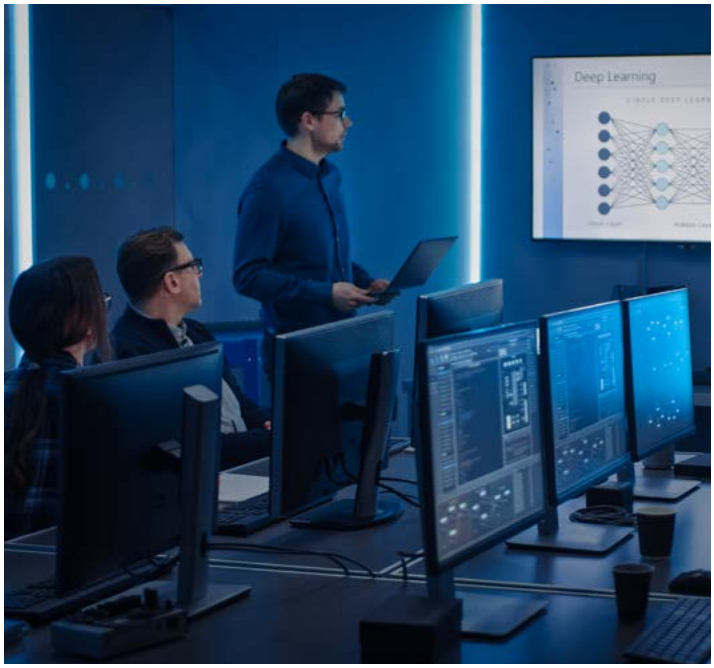
- **Calculus:** Derivatives, integrals, applications
- **Linear Algebra:** Vector spaces, dot products, matrices, linear systems
- **Probability and Statistics:** Random variables, probability distributions, basic statistics
- **Programming:** Basic programming constructs, writing and debugging programs, iteration, recursion, arrays, lists
- **Data Structures and Algorithms:** Basic data structures, search and sort, algorithm analysis

Applicants lacking this background may enroll in the Certificate in Foundations of Cybersecurity to acquire it and then continue to the M.S. program while transferring all credit, if they maintain a minimum GPA of 3.0 in the certificate program.

A GRE score is not required.

Program Outcomes:

- Design and build secure infrastructure for managing data and communication both in the cloud and on local servers.
- Provide expert insight on security standards and protocols in large-scale software development or data analytics projects.
- Perform ad-hoc analyses of data stored in corporate or government databases and propose solutions to potential vulnerabilities.
- Serve as a network administrator, using penetration testing and other ethical hacking techniques to harden the system against attack.



For more information and to apply, contact:
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