



# Cybersecurity Curriculum

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**Note:** Applicants interested in this concentration will apply to our general Cybersecurity track in the graduate admissions portal. Once admitted, students will use the suggested pathways below to customize their course plans in accordance to their educational/professional background and aspiring career goals.

## Cybersecurity Pathways

To assist students coming in with experiences in science or business areas, we have created pathways within the Cybersecurity concentration to build on student's existing skills. All Cybersecurity students must take the core business and science (cybersecurity) courses, but within each pathway, students have recommended electives to assist in their professionally guided curriculum.

- For students with a background in Criminal Justice, Law Enforcement, defense background, security background, military background, psychology, criminology, forensics, Criminal Intelligence, and related areas, the student is guided towards our Digital Forensics pathway .
- For students with a background in Computer Science, IT, ECE, and related areas, the student is guided towards our traditional Technical Cybersecurity pathway .
- For students with a background, experience, or major in Management, Business, Training, and related areas, or 10+ years of experience in CS, IT, cybersecurity, or policing, the student is guided towards our Cybersecurity Management pathway .
- For students with a background in Analytics, Data Science, Databases, and related areas, the student is guided towards our Computer Forensics & Big Data pathway .
- For students with a background in Public Policy, Law, and related areas, the student is guided towards our Cybersecurity Management & Policy pathway.

Your advisor will work with you to come up with your professionally guided curriculum based on your experience, professional background, and career goals.

## Cybersecurity Overview

The Master of Business and Science is a 43 credit professional science master's program with 8 courses (24 credits) in science and 19 credits in business. In addition, students must attend 12 colloquium events to qualify for graduation. **As part of the cybersecurity concentration, students are expected to complete two certification courses such as CEH, CISSP.** Other certifications are also available.

A total of 19 credits are required in the business curriculum. Six courses are required - all but one of the courses are for 3 credits each. A total of 24 credits are required in the science curriculum. More details about core and elective courses can be found by Cybersecurity Pathway.

**Note** that "in-person" sessions or courses listed can usually be attended via remote technology.

### Business Core Courses - 5 courses (13 credits):

[16:137:530 Principles of Finance and Accounting \(3cr\)](#); [16:137:507 Market Assessment & Analysis \(3cr\)](#); [16:137:502 Principles of Communication & Leadership \(3cr\)](#); [16:137:500 Ethics \(1cr\)](#);

[16:137:600 Science & Technology Management Capstone \(3cr\)](#): (Prerequisite Courses: 16:137:502, 16:137:507, 16:137:530)

### Cybersecurity Core Courses - 5 courses (15 credits):

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**REQUIRED (2 courses = 6 credits):** [16:137:561 Essentials of Cybersecurity and Secure Systems \(3cr\)](#); [16:137:601 Linux Administration & Networking \(3cr\)](#).

**Take one course from the following on data privacy, compliance and law (1 course = 3 credits):**

- 17:610:567 Information Security Management (3cr) (Fall, Spring)
- 22:010:685 Cybersecurity Assurance (3cr) (Fall only)
- 16:137:538 Database and Data Warehousing (3cr) (Fall, Spring; in person and online)
- 26:198:643/22:544:643 Information Security (3cr) (Spring) **(in person in Newark only)**

**Take two courses from the following course on disaster recovery and security engineering (2 courses = 6 credits):**

- 16:790:xxx\* Global Politics of Internet Security (3cr) (Summer only)
- 16:790:558\* Politics of Cyber Warfare (3cr) ((Bi-annual, beginning Fall 2023; might not be available online)
- 16:137:650 CCPD/ONLINE TRAINING: Certified Ethical Hacker - FALL (3cr)
- 16:137:651 CCPD/ONLINE TRAINING: Certified Ethical Hacker - SPRING (3cr)
- 16:137:652 CCPD/ONLINE TRAINING: Certified Ethical Hacker - SUMMER (3cr)
- 16:137:650 CCPD/ONLINE TRAINING: Comp TIA A+, Network+, Security+ - FALL (3cr)
- 16:137:651 CCPD/ONLINE TRAINING: Comp TIA A+, Network+, Security+ - SPRING (3cr)
- 16:137:652 CCPD/ONLINE TRAINING: Comp TIA A+, Network+, Security+ - SUMMER (3cr)
- 16:137:650 CCPD/ONLINE TRAINING: Certified Information Systems Security Professional (CISSP) - FALL (3cr)
- 16:137:651 CCPD/ONLINE TRAINING: Certified Information Systems Security Professional (CISSP) - SPRING (3cr)
- 16:137:652 CCPD/ONLINE TRAINING: Certified Information Systems Security Professional (CISSP) - SUMMER (3cr)

For those without a computing background, the following must be taken the first semester, and is counted toward the degree as an elective:

- [16:137:552 Python Methodologies \(3cr\)](#).

*\*Please note that Political Science (16:790:xxx) special topics and topics course numbers change yearly.*

## Technical Cybersecurity Pathway

Admissions Requirements: A degree and/or work experience in computer science, IT, computer engineering, and related areas with programming experience.

### Cybersecurity Electives (3 courses = 9 credits)

- [16:137:552 Python Methodologies \(3cr\)](#).
- Choose your own/Free Elective (3cr)
- Choose your own/Free Elective (3cr)

### Business Electives (2 courses = 6 credits)

- [16:137:538 Database and Data Warehousing \(3cr\)](#).
- 17:610:557 Database Design and Management (3cr)
- [16:137:601 Project Management](#)
- Choose your own/Free Elective (3cr)

## Digital Forensics Pathway

Admissions Requirements: A degree and/or work experience in criminal justice, forensic science, computer science, cybersecurity, psychology, and related fields.

### Cybersecurity Electives: (3 courses = 9 credits)

- [16:137:552 Python Methodologies \(3cr\)](#).
- 16:790:xxx\* Cyber Security and Artificial Intelligence (3cr) (Special Topics in Political Science if and when taught)
- [16:137:550 Fundamentals of Analytics \(3cr\)](#).
- [16:137:538 Database and Data Warehousing \(3cr\)](#).
- 16:790:583 Public Health Infrastructure and National Security (3cr) (Fall)

Ask a question!

- 16:790:558\* Politics of Cyber Warfare (3cr) (Bi-annual, beginning Fall 2023; might not be available online)
- 16:830:320 Forensic Psychology (3cr)
- 16:790:xxx\* Global Politics of Internet Security (3cr) (Special Topics in Political Science if and when taught) (Summer)
- Choose your own/Free Elective (3cr)

### Business Electives

#### (2 courses = 6 credits)

- [16:137:601 Project Management](#)
- Choose your own/Free Elective (3cr)

### Cybersecurity Management Pathway

Admissions Requirements: A degree and/or work experience in criminal justice, forensic science, law enforcement or security fields (policing, FBI, DHS, CBP, and related areas), AND at least 10 years work experience in Policing or Cybersecurity fields.

### Cybersecurity Electives

#### (3 courses = 9 credits)

- [16:137:552 Python Methodologies \(3cr\)](#).
- [\(16:137:603\) Special Topics: Basics of Artificial Intelligence/Machine Learning](#)
- 16:790:558\* Politics of Cyber Warfare (3cr) (Bi-annual, beginning Fall 2023; might not be available online)
- 16:790:xxx\* Cyber Security and Artificial Intelligence (3cr) (Special Topics in Political Science if and when taught)
- Choose your own/Free Elective (3cr)

### Business Electives

#### (2 courses = 6 credits)

- [16:137:553 Business Intelligence with Visual Analytics \(3cr\)](#).
- 22:620:679 Corporate Strategy (3cr) (Summer)
- 22:553:621 Global Management Strategy (3cr) (Spring)
- 22:390:670 Information Risk Management (3cr)
- [16:137:601 Project Management](#)

### Computer Forensics & Big Data Pathway

Admissions Requirements: A degree and/or work experience in criminal justice, law enforcement, forensic science, computer science, data science, analytics, statistics, and related areas. A calculus course is required (Calc 1 or business calc).

### Cybersecurity Electives

#### (3 courses = 9 Credits)

- [16:137:539 Intro to Cloud Computing and Big Data \(3cr\)](#).
- [16:137:550 Fundamentals of Analytics \(3cr\)](#).
- [16:137:538 Database and Data Warehousing \(3cr\)](#).
- 17:610:557 Database Design and Management (3cr)
- Choose your own/Free Elective (3cr)

### Business Electives

#### (2 courses = 6 Credits)

- [16:137:601 Project Management](#)
- Choose your own/Free Elective (3cr)

### Cybersecurity Management & Policy Pathway

Admissions Requirements: A degree and/or work experience in law, political science, public policy, cybersecurity, computer science, and related areas.

### Cybersecurity Electives

#### (3 courses = 9 Credits)

- [16:137:552 Python Methodologies \(3cr\)](#).
- 16:790:558\* Politics of Cyber Warfare (3cr) (Bi-annual, beginning Fall 2023; might not be available online)
- 16:790:xxx\* Cyber Security and Artificial Intelligence (3cr) (Special Topics in Political Science if and when taught)

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- 16:790:583 Public Health Infrastructure and National Security (3cr) (Fall)
- Choose your own/Free Elective (3cr)

### **Business Electives** (2 courses = 6 Credits)

- 16:790:558\* Politics of Cyber Warfare (3cr) (Bi-annual, beginning Fall 2023; might not be available online)
- 22:390:670 (or equivalent) Risk Management (3cr)
- Choose your own/Free Elective (3cr)

### **Cyber Secure Supply Chains**

Admissions Requirements: A degree and/or work experience in criminal justice, law enforcement, security, computer science, supply chain, logistics, IT, management information systems, or related areas is required.

### **Cybersecurity Electives** (3 courses = 9 Credits)

- 34:970:591 Introduction to Geographic Information Systems for Planning and Policy (3) (Fall)
- 16:540:520 - Supply Chain and Logistics Engineering

### **Business Electives** (2 courses = 6 Credits)

- 16:137:606 — Special Topics: Sustainability: Supply Chain Management Green Purchasing (Cr. 3) (Spring)
- 16:137:525 - Introduction to Product Design and Development (Fall)

### **Cybersecurity & Corporate ESG (Environmental, Social, Governance)**

Admissions Requirements: A degree and/or work experience is required in law, political science, public policy, cybersecurity, computer science, criminal justice, security, IT, management information systems, business, finance, and related areas.

### **General Cybersecurity Electives** (3 courses = 9 Credits)

- 16:137:552 Python Methodologies (3cr)
- 16:790:558\* Politics of Cyber Warfare (3cr) (Bi-annual, beginning Fall 2023; might not be available online)
- 16:790:xxx\* Cyber Security and Artificial Intelligence (3cr) (Special Topics in Political Science if and when taught)
- 16:790:583 Public Health Infrastructure and National Security (3cr) (Fall)
- Choose your own/Free Elective (3cr)

#### **Including 1 Governance Course:**

- 22:010:627 Information Risk Management or 22:553:621 Global Management Strategies (3cr)
- Or Data Privacy / Compliance core course

#### **Including 1 Social Course:**

- 22:010:668 - Reporting and Measuring corporate social performance and innovation (may be online)
- 16:790:xxx\* Global Politics of Internet Security (Special Topics in Political Science if and when taught)
- 16:790:xxx\* Politics of Cyber Warfare (Bi-annual, beginning Fall 2023; might not be available online)
- 16:790:587:01 Special Topics: Public Healthcare Infrastructure & National Cybersecurity
- Ethical hacking course

### **General Business Electives** (2 courses = 6 Credits)

- 16:790:558\* Politics of Cyber Warfare (3cr) (Bi-annual, beginning Fall 2023; might not be available online)
- 22:010:627 Information Risk Management or 22:553:621 Global Management Strategy (3cr)
- Choose your own/Free Elective (3cr)

#### **Including 1 Environmental Course:**

- 16:137:554 - Fundamentals of Sustainability: The Practitioner Perspective

Ask a question!

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## Degree Requirements

In addition to 19 credits of business courses and 24 credits of science courses, all MBS concentrations require additional degree requirements. [See here for the full list of degree requirements.](#)

Cybersecurity students must also obtain one cybersecurity certification. The following options can be taken for course credit, and students must pass the certification exam.

- 16:137:650 CCPD/ONLINE TRAINING: Certified Ethical Hacker
- 16:137:650 CCPD/ONLINE TRAINING: Comp TIA A+, Network+, Security+
- 16:137:650 CCPD/ONLINE TRAINING: Certified Information Systems Security Professional (CISSP)

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If you have questions about the program curriculum, please contact the concentration coordinator(s) or [request an appointment with an advisor.](#)

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Ask a question!