M.S. in Cyber Security and Privacy

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The M.S. in Cyber Security and Privacy (https://cs.njit.edu/ms-cyber-security-and-privacy-ms-csp/) creates a strong foundation and detailed technical knowledge in security, privacy, and cryptography applied to computer systems, networks, and web applications. The program also has a Cyber Defense Option whose objective is to create leaders with strong communication and management skills in addition to the strong technical knowledge in security and privacy.

Prerequisites

Applicants should have a bachelor's degree from an accredited institution in a discipline related to computing (e.g., Computer Science, Computer Engineering, Information Sciences, or Information Technology). Applicants with a bachelor's degree in a STEM discipline or relevant professional experience can first take a graduate certificate (https://www5.njit.edu/graduatestudies/degree-programs/graduatecertificates/) and then apply to the M.S. program. Further information can be found on the program's webpage (https://cs.njit.edu/ms-cyber-security-and-privacy-ms-csp/).

Degree Requirements

- MS-CSP **(**p. 1**)**
- MS-CSP: Cyber Defense Option **(**p. 3**)**

MS-CSP: Degree Requirements

The program requires the completion of 30 credits. The requirement is most commonly satisfied by taking ten 3-credit graduate courses. These consist of:

- Five Core Courses required for all students (15 credits)
- Five Elective Courses from the combined lists of CS Electives, Foundational Courses and Courses from Other Departments (15 credits).
- Students can take at most two courses from the list of approved Foundational Courses and at most two courses from the list of approved Courses from Other Departments.

Project and Thesis Option: Students who want to pursue research have the option to earn up to 6 of the required 30 credits by taking as electives the CS 700B Master's Project, possibly followed by CS 701B Master's Thesis. These have special requirements described in the Section "Master's Project and Thesis Policies (p. 2)".

More specifically, the degree requirements are as follows:

Code	Title	Credits
Required Core Courses		**15**
CS 608	Cryptography and Security	
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	
Elective Courses		**15**
Select five courses with any combination of the following:		
CS Electives		
CS 633	Distributed Systems	
CS 634	Data Mining	
CS 643	Cloud Computing	
CS 648	Cyber Sec Investigations & Law	
CS 673	Software Design and Production Methodology	
CS 678	Topics in Smartphone Sec & Rel	
CS 680	Linux Kernel Programming	
CS 684	Software Testing and Quality Assurance	
CS 696	Network Management and Security [&1]	
or ECE 638	Network Management and Security	

CS 698	Special Emerging Topics: (Must be related to Cybersecurity. Advisor approval is required.)
CS 708	Advanced Data Security and Privacy
CS 755	Security and Privacy in Wireless Networks
CS 785	Seminar in Computer Science I (Must be related to Cybersecurity. Advisor approval is required.)
Courses from Other Departments	
At most 2 courses from this list:	
IS 601	Web Systems Development
IS/DS 650	Data Visualization and Interpretation
IS 657	Spatiotemporal Urban Analytics
IS 665	Data Analytics for Info System
IS 680	Information Systems Auditing
IS 681	Computer Security Auditing
IS 682	Forensic Auditing for Computing Security
IT 620	Wireless Networks Security and Administration
IT 640	Network Services Administration
ECE 636	Computer Networking Laboratory
ECE 683	Cloud and IoT Networking and Security
MGMT 688	Internet Law and Policy Issues
MGMT 691	Legal and Ethical Issues in a Digital World
MATH 661	Applied Statistics
YWCC 691	Graduate Capstone Project [&2]
Foundational Courses	
At most 2 courses from this list:	
CS 506	Foundations of Computer Science [&3]
CS 610	Data Structures and Algorithms
CS 630	Operating System Design
CS 631	Data Management System Design
Project and Thesis Option [&4]	
CS 700B	Master's Project
CS 701B	Master's Thesis
Total Credits	**30**

& **1.** Substitution is allowed only for students with ECE background and with the advisor permission.
2. YWCC 691 and CS 700B cannot apply simultaneously toward degree requirements.
3. CS 506 is recommended only to students without a typical CS background.
4. The Project or Thesis must be related to Cybersecurity.

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Master's Project or Thesis Policies

The contents of this section apply only to students who elect to do a Master's Project (CS 700B) or a Master's Thesis (CS 701B).

Students must first identify a research advisor who must be a tenure-track faculty (https://cs.njit.edu/faculty/) of the CS department, including faculty with a joint appointment. Tenure-track faculty are the department members including those who hold joint appointments with the rank of Assistant Professor, Associate Professor, Professor, and Distinguished Professor.

In order to identify a research advisor, students are encouraged to attend special presentations offered by the department or to directly contact professors. Professors may not always have availability for conducting an MS project/thesis. Students are therefore encouraged to start looking for an advisor as early as possible, especially if they are considering pursuing a Master’s Thesis that takes two semesters.

The students must be in close coordination with their research advisor who will determine the topic of the Project/Thesis and guide them to take specific elective courses that will prepare them for the research.

The Project or Thesis must be related to Cybersecurity. YWCC 691 cannot count toward degree requirements for students who elect to do a Master's Project or a Master's Thesis.

Registration

- **Master's Project:** With permission of their research advisor students must register in the CS 700BMaster's Project course. To register for a Master's Project, students must have completed at least 9 credits and must be in good standing.
- **Master's Thesis:** With permission of their research advisor, students must first register in the CS 700B Master's Project course. They must receive a satisfactory (S) grade in CS 700B before CS 701B Master's Thesis registration in the immediately following semester, with the same advisor. The MS topic should be continuation of the work done in CS 700B.

Thesis Requirements

- An MS Thesis Committee must be formed, according to these requirements (https://www5.njit.edu/graduatestudies/composition-master%E2%80%99s-thesis-committee/) set forth by the Office of Graduate Studies.
- A written thesis must be submitted. The thesis must adhere to the style requirements (https://www5.njit.edu/graduatestudies/thesis.php) set forth by the Office of Graduate Studies.
- An oral defense is required. The defense must take place before the last day of the Examination period

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MS-CSP: Cyber Defense Option: Degree Requirements

The objective of the Cyber Defense Professional Science Master (PSM), an option of the MS CSP, is to create leaders with strong communication and management skills in addition to the strong technical knowledge in security and privacy of computer systems, networks, and web applications. This PSM is designed for working professionals or students who have already acquired some professional experience. The Cyber Defense PSM is affiliated with the PSM National Office.

The PSM option requires the completion of 36 credits. The requirement is satisfied with:

- Six required Cybersecurity Core courses (18 credits)
- Two courses from the list of PTC (Professional and Technical Communications) Electives (6 credits)
- Two courses from the list of Management Electives (6 credits)
- Two courses from the list of Computing Electives (6 credits)

Among the required Cybersecurity Core Courses, the program includes YWCC 691 Graduate Capstone Project. This is a project course, supervised by a CS faculty member, and done in collaboration with industrial partners. These partners will propose projects, and they will co-supervise the students together with the instructor of the course. Students who have a job are allowed to work on projects from their companies, in which case their employer will be actively engaged in the project supervision. The projects will generally be done in teams of 3 students.

More specifically, the degree requirements are as follows:

Code	Title	Credits
Required Core Courses		**18**
CS 608	Cryptography and Security	
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	
YWCC 691	Graduate Capstone Project	
Professional and Technical Communication Electives		**6**
Select two of the following:		
ENGL 603	Speaking English in Professional Situations	
ENGL 621	Technical Writing for Graduate Students	
IS 661	User Experience Design	
Management Electives		**6**
Select two of the following:		
ACCT 615	Management Accounting	
EM 636	Project Management	

FIN 600	Corporate Finance I	
MGMT 641	Global Project Management	
MGMT 650	Knowledge Management	
MGMT 682	Business Research Methods I	
MGMT 688	Internet Law and Policy Issues	
MGMT 691	Legal and Ethical Issues in a Digital World	
Computing Electives		**6**
Select two of the following:		
CS 610	Data Structures and Algorithms	
CS 630	Operating System Design	
CS 631	Data Management System Design	
CS 632	Advanced Database System Design	
CS 634	Data Mining	
CS 643	Cloud Computing	
CS 648	Cyber Sec Investigations & Law	
CS 673	Software Design and Production Methodology	
CS 678	Topics in Smartphone Sec & Rel	
CS 684	Software Testing and Quality Assurance	
CS 696	Network Management and Security	
CS 698	Special Emerging Topics: (Must be related to Cybersecurity. Advisor approval is required.)	
CS 700B	Master's Project	
CS 708	Advanced Data Security and Privacy	
CS 755	Security and Privacy in Wireless Networks	
CS 785	Seminar in Computer Science I (Must be related to Cybersecurity. Advisor approval is required.)	
IS 601	Web Systems Development	
IS/DS 650	Data Visualization and Interpretation	
IS 657	Spatiotemporal Urban Analytics	
IS 665	Data Analytics for Info System	
IS 680	Information Systems Auditing	
IS 681	Computer Security Auditing	
IS 682	Forensic Auditing for Computing Security	
IT 620	Wireless Networks Security and Administration	
IT 640	Network Services Administration	
ECE 636	Computer Networking Laboratory	
ECE 683	Cloud and IoT Networking and Security	
MATH 661	Applied Statistics	
Total Credits		**36**

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