

Program Change Request

Date Submitted: 09/29/20 3:56 pm

Viewing: **CC-CSP-MS : M.S. in Cyber Security and Privacy**

Last approved: 09/21/20 5:50 pm

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Changes proposed by: Reza Curtmola (crix)

Catalog Pages Using [M.S. in Cyber Security and Privacy](#)
this Program

Department(s) /
College(s)

Department	College
Computer Science (CS)	Ying Wu Coll of Computing (CC)

Name of Program M.S. in Cyber Security and Privacy

Academic Level(s) Graduate

Degree Designation MS

Campus(es) where
the program will be
offered

Newark

CIP Code

In Workflow

1. CS Chair
2. AIS
3. CC Dean
4. Vice Provost of Graduate Studies
5. President of the Faculty Senate
6. Provost's Office
7. Academic Issues Committee

Approval Path

1. 09/30/20 1:35 am
Baruch Schieber (sbar): Approved for CS Chair
2. 10/01/20 4:14 pm
Jessie Tsui (tsui): Approved for AIS
3. 10/01/20 5:53 pm
Ali Mili (mili): Approved for CC Dean

Effective Catalog 2020-2021

Edition

Faculty Senate

Review required?

Related

Department(s)

Department(s)

Computer Science (CS)

History

1. May 21, 2020 by
Reza Curtmola (crix)
2. Sep 21, 2020 by
Reza Curtmola (crix)

If the change involves altering the department's curriculum paradigm as currently outlined in the NJIT catalog, please attach existing and proposed paradigms.

Articulation with other institutions, if any

Objectives

Briefly summarize the program and indicate its objectives; e.g., the nature and focus of the program, the knowledge and skills students will acquire, any cooperative arrangements with other institutions or external agencies in offering this program, etc.

Need

Provide justification of the need for this program. If the program falls within the liberal arts and sciences and does not specifically prepare students for a career, then provide evidence of student demand and indicate opportunities for students to pursue advanced study (if the degree is not terminal with regard to further education). If the program is career-oriented or professional in nature, then in addition to student demand give evidence of labor market need and results of prospective employer surveys. Report labor market need as appropriate on local, regional, and national bases. Specify job titles and entry-level positions for program graduates, and/or indicate opportunities for graduates to pursue additional studies.

Relationship to the University and State Master Plans

Describe the relationship of the program to the following: institutional master plans and priorities.

Relationship to Similar Programs in the State and Region

List similar programs within the state and in neighboring states. How does this program compare to those currently being offered?

Distinguished Programs Nationally

For doctoral programs: Supply a select list of distinguished programs nationally in this discipline.

Students

Estimate anticipated enrollments from the program's inception until a steady state or optimum enrollment is reached.

Resources to Support the Program

Briefly describe the additional resources needed to implement and operate the program during the program's first five years, e.g., the number of full-time faculty, number of adjunct faculty, computer equipment, print and non-print material, etc.

Course

Development Plan

Names of faculty

involved

Libraries and
Computing
Facilities

Classrooms and
Laboratories Needs

Catalog Description (For PHD programs, include information about the qualifying exams, and other program milestones.)

Curriculum

Degree Requirements

An MSCSP course program must satisfy the following distribution requirement:

30 credits are required, which can be satisfied as either one of the following options:

Courses (30 credits)

Courses (27 credits) + MS Project (3 credits)

Courses (24 credits) + MS Thesis (6 credits)

All Core courses are required.

At most two courses can be Foundational courses.

At most two courses can be chosen from outside the Department of Computer Science.

If a student chooses the MS project or MS thesis option, the following two additional rules apply:

The project or thesis must be related to cyber security.

YWCC 691 cannot be taken as an elective course.

Students with non-computing STEM background may be accepted and required to take the following bridge courses (CS 506 may count toward the credits required for the MS degree):

Course List

Code	Title	Credits
Bridge Courses		
CS 280	Programming Language Concepts	3

Code	Title	Credits
CS 332	Principles of Operating Systems	3
CS 505	Programming, Data Structures, and Algorithms	3
CS 506	Foundations of Computer Science	3

M.S. in Cyber Security and Privacy (courses only)

Course List

Code	Title	Credits
Core Course Requirements		15
CS 608	Cryptography and Security	3
CS 645	Security and Privacy in Computer Systems	3
CS 646	Network Protocols Security	3
CS 647	Counter Hacking Techniques	3
CS 656	Internet and Higher-Layer Protocols 1	3
or ECE 637	Internet and Higher-Layer Protocols	
Electives and Foundational Courses		15
Elective Courses		
CS 633	Distributed Systems	3
CS 634	Data Mining	3
CS 643	Cloud Computing	3
CS 648	Cyber Sec Investigations & Law	3
CS 660	Digital Watermarking	3
CS 673	Software Design and Production Methodology	3
CS 678	Topics in Smartphone Sec & Rel	3
CS 680	Linux Kernel Programming	3
CS 684	Software Testing and Quality Assurance	3
CS 696	Network Management and Security 1	3
or ECE 638	Network Management and Security	
Electives and Foundation Courses		12
CS 708	Advanced Data Security and Privacy	3

Code	Title	Credits
CS 755	Security and Privacy in Wireless Networks	3
IS 601	Web Systems Development	3
IS 650	Data Visualization and Interpretation	3
IS 657	Spatiotemporal Urban Analytics	3
IS 665	Data Analytics for Info System	3
IS 680	Information Systems Auditing	3
IS 681	Computer Security Auditing	3
IS 682	Forensic Auditing for Computing Security	3
IS 687	Transaction Mining and Fraud Detection	3
IT 620	Wireless Networks Security and Administration	3
IT 640	Network Services Administration	3
ECE 636	Computer Networking Laboratory	3
MGMT 688	Information Technology, Business and the Law	3
MGMT 691	Legal and Ethical Issues	3
MATH 661	Applied Statistics	3
YWCC 691	Graduate Capstone Project	3

Foundational Courses

CS 610	Data Structures and Algorithms	3
CS 630	Operating System Design	3
CS 631	Data Management System Design	3

1 Substitution allowed only for students with ECE background and with the permission of the graduate advisor.

M.S. in Cyber Security and Privacy (Master's project option)

Course List

Code	Title	Credits
Core Course Requirements		15
CS 608	Cryptography and Security	3
CS 645	Security and Privacy in Computer Systems	3
CS 646	Network Protocols Security	3

Code	Title	Credits
CS 647	Counter Hacking Techniques	3
CS 656	Internet and Higher-Layer Protocols 1	3
or ECE 637	Internet and Higher-Layer Protocols	
Project		3
CS 700B	Master's Project 2	3
Electives and Foundation Courses		
Electives		9
Electives and Foundational Courses		12
Elective Courses		
CS 633	Distributed Systems	3
CS 634	Data Mining	3
CS 643	Cloud Computing	3
CS 648	Cyber Sec Investigations & Law	3
CS 660	Digital Watermarking	3
CS 673	Software Design and Production Methodology	3
CS 678	Topics in Smartphone Sec & Rel	3
CS 680	Linux Kernel Programming	3
CS 684	Software Testing and Quality Assurance	3
CS 696	Network Management and Security 1	3
or ECE 638	Network Management and Security	
CS 708	Advanced Data Security and Privacy	3
CS 755	Security and Privacy in Wireless Networks	3
IS 601	Web Systems Development	3
IS 650	Data Visualization and Interpretation	3
IS 657	Spatiotemporal Urban Analytics	3
IS 665	Data Analytics for Info System	3
IS 680	Information Systems Auditing	3
IS 681	Computer Security Auditing	3
IS 682	Forensic Auditing for Computing Security	3

Code	Title	Credits
IS 687	Transaction Mining and Fraud Detection	3
IT 620	Wireless Networks Security and Administration	3
IT 640	Network Services Administration	3
ECE 636	Computer Networking Laboratory	3
MGMT 688	Information Technology, Business and the Law	3
MGMT 691	Legal and Ethical Issues	3
MATH 661	Applied Statistics	3

Foundational Courses

CS 610	Data Structures and Algorithms	3
CS 630	Operating System Design	3
CS 631	Data Management System Design	3

1 Substitution allowed only for students with ECE background and with the permission of the graduate advisor.

2 The project must be related to cyber security.

M.S. in Cyber Security and Privacy (Master's thesis option)

Course List

Code	Title	Credits
Core Course Requirements		15
CS 608	Cryptography and Security	3
CS 645	Security and Privacy in Computer Systems	3
CS 646	Network Protocols Security	3
CS 647	Counter Hacking Techniques	3
CS 656	Internet and Higher-Layer Protocols 1	3
or ECE 637	Internet and Higher-Layer Protocols	
Thesis		6
CS 701C	Master's Thesis 2	6
Electives and Foundation Courses		6
Electives and Foundational Courses		9

Elective Courses

Code	Title	Credits
CS 633	Distributed Systems	3
CS 634	Data Mining	3
CS 643	Cloud Computing	3
CS 648	Cyber Sec Investigations & Law	3
CS 660	Digital Watermarking	3
CS 673	Software Design and Production Methodology	3
CS 678	Topics in Smartphone Sec & Rel	3
CS 684	Software Testing and Quality Assurance	3
CS 680	Linux Kernel Programming	3
CS 696	Network Management and Security 1	3
or ECE 638	Network Management and Security	
CS 708	Advanced Data Security and Privacy	3
CS 755	Security and Privacy in Wireless Networks	3
IS 601	Web Systems Development	3
IS 650	Data Visualization and Interpretation	3
IS 657	Spatiotemporal Urban Analytics	3
IS 665	Data Analytics for Info System	3
IS 680	Information Systems Auditing	3
IS 681	Computer Security Auditing	3
IS 682	Forensic Auditing for Computing Security	3
IS 687	Transaction Mining and Fraud Detection	3
IT 620	Wireless Networks Security and Administration	3
IT 640	Network Services Administration	3
ECE 636	Computer Networking Laboratory	3
MGMT 688	Information Technology, Business and the Law	3
MGMT 691	Legal and Ethical Issues	3
MATH 661	Applied Statistics	3
Foundational Courses		
CS 610	Data Structures and Algorithms	3

Code	Title	Credits
CS 630	Operating System Design	3
CS 631	Data Management System Design	3

1 Substitution allowed only for students with ECE background and with the permission of the graduate advisor.

2 The thesis must be related to cyber security.

Master of Science in Cyber Security and Privacy (CSP) - Cyber Defense Option

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 already have acquired some professional experience. The Cyber Defense PSM is affiliated with the PSM National Office.

A student in the MS CSP – Cyber Defense Option must satisfy the following distribution of requirements:

36 credits are required.

All Cybersecurity Core courses are required (**18** ~~21~~ credits)

The rest of **18** ~~15~~ credits must be taken from the combined list of PTC (Professional and Technical Communications), Management, and Computing electives, with at least 3 credits, and no more than 6, from each of the 3 elective lists

Among the required Cybersecurity Core courses, the program includes an MS Project, YWCC 691. These projects are part of 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.

Course List

Code	Title	Credits
Core Course Requirements:		18
CS 608	Cryptography and Security	3
CS 645	Security and Privacy in Computer Systems	3
CS 646	Network Protocols Security	3
CS 647	Counter Hacking Techniques	3
CS 656	Internet and Higher-Layer Protocols	3
YWCC 691	Graduate Capstone Project	3
PTC (Professional and Technical Communications) Courses		6
PTC 601	Advanced Professional and Technical Communication	3

Code	Title	Credits
PTC 620	Proposal Writing	3
PTC 622	Working in Teams: Collaborative and Interpersonal Communications	3
PTC 624	Professional and Technical Editing	3
PTC 628	Analyzing Social Networks	3
PTC 629	Theory and Practice of Social Media	3
PTC 632	Content Management and Information Architecture	3
Management Courses		6
Select two of the following:		
ACCT 615	Management Accounting	3
EM 636	Project Management	3
FIN 600	Corporate Finance I	3
MGMT 641	Global Project Management	3
MGMT 650	Knowledge Management	3
MGMT 682	Business Research Methods I	3
MGMT 688	Information Technology, Business and the Law	3
MGMT 691	Legal and Ethical Issues	3
Cybersecurity Elective Courses		6
CS 610	Data Structures and Algorithms	3
CS 630	Operating System Design	3
CS 631	Data Management System Design	3
CS 632	Advanced Database System Design	3
CS 634	Data Mining	3
CS 643	Cloud Computing	3
CS 648	Cyber Sec Investigations & Law	3
CS 660	Digital Watermarking	3
CS 673	Software Design and Production Methodology	3
CS 696	Network Management and Security	3
CS 700B	Master's Project	3
CS 708	Advanced Data Security and Privacy	3

Code	Title	Credits
CS 678	Topics in Smartphone Sec & Rel	3
CS 684	Software Testing and Quality Assurance	3
CS 708	Advanced Data Security and Privacy	3
CS 755	Security and Privacy in Wireless Networks	3
IS 601	Web Systems Development	3
IS 650	Data Visualization and Interpretation	3
IS 657	Spatiotemporal Urban Analytics	3
IS 665	Data Analytics for Info System	3
IS 680	Information Systems Auditing	3
IS 681	Computer Security Auditing	3
IS 682	Forensic Auditing for Computing Security	3
IT 620	Wireless Networks Security and Administration	3
IT 640	Network Services Administration	3
ECE 636	Computer Networking Laboratory	3
MATH 661	Applied Statistics	3

Is licensure required of program graduates to gain employment?

No

Will the institution seek accreditation for this program?

No

Add any additional information you would like brought to the attention of CUE/ CGE here

Moved CS 696 from the set of Core courses into the set of Elective courses in the MS CSP program and in the professional science master option of the program.
Also fixed several formatting issues per previous feedback from AIS.
Finally, fixed some typos and inconsistencies. ~~I have added the following electives to the Cyber Defense professional masters option: IS 601, IS 650, IS 657, IS 665, MATH 661~~

Attach any additional information you would like brought to the attention of CUE/ CGE here: Uploaded Files:

Reviewer
Comments