Carnegie Mellon University

HeinzCollege

INFORMATION SYSTEMS • PUBLIC POLICY • MANAGEMENT

Student Handbook	2019 – 2020

Master of Science in Information Security Policy and Management (MSISPM)

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1 MASTER OF SCIENCE IN INFORMATION SECURITY POLICY AND MANAGEMENT (MSISPM) CURRICULUM

Information contained in the MSISPM handbook contains program specific requirements. It is the responsibility of each student to be familiar with the contents in this document as well as Carnegie Mellon University and Heinz College policies and guidelines. The following resources are available to assist you in understanding community expectations:

- The Heinz College Handbook: College-Wide Student Handbook
- Academic Integrity Website: http://www.cmu.edu/academic-integrity

1.1 MSISPM Program Requirements

Students will complete the MSISPM program in four semesters, full-time, at the Pittsburgh, PA campus, taking 48 units per semester. The MSISPM curriculum is structured with required courses, security electives, and general electives.

In order to successfully complete the MSISPM program, students must complete the following:

- 192 units of course credit (minimum);
- all required courses (unless you exempt them);
- required summer internship (minimum 10 weeks or 300 hours)
- 30 units of security elective courses;
- 30 units of general elective courses if pursuing the capstone project option or 24 units of general electives if you choose the thesis option; and
- all other standards for graduation, including meeting a minimum grade point average of 3.0.

1.2 Required Courses

The following table lists all the required core courses MSISPM students must complete.

Course Number	Course Title	Units
90-812	Introduction to Programming with Python[1]	6
94-700	Organizational Design & Implementation	6
95-710	Economic Analysis	6
95-717	Writing for Information Systems Management[2]	6
95-752	Introduction to Information Security Management	12
95-760	Decision Making Under Uncertainty	6

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[1] Students may choose to take 95-888 (Data Focused Python)

[2] Students will be placed into Business Writing (95-701) or Writing for ISM based upon their standardized test scores

95-796	Statistics for IT Managers	6
94-806 OR 95-818 OR 95-878	Privacy in the Digital Age[3] OR Privacy Policy, Technology, and Law OR Engineering Privacy in Software	6 12 12
95-718	Professional Speaking[4]	6
95-719	Accounting and Finance Foundations[5]	6
95-723	Managing Disruptive Technologies	6
95-748	Software and Security	6
95-758	Network and Internet Security	12
95-744	Cybersecurity Policy and Governance I	6
95-743	Cybersecurity Policy and Governance II	6
95-755	Information Security Risk Management I	6
95-749	Cryptography	6
95-720[6]	Capstone Project / Thesis	18/24

1.3   Exemption Exams

During orientation week, in-coming students are provided an opportunity to take up to 4 exemption exams to demonstrate proficiency in a topic that is considered core to the MSISPM program. A student is NOT required to take any of the exams. Upon passing an exam, a student will be granted an exemption from the class(es). A student will be required to select an alternate security or general elective course to replace the exempted course (and corresponding number of units) to reach the 192 units required for graduation. Exemption exams available to MSISPM students:

- 90-812 Intro to Programming with Python   (Does not require pre-registration)
- 95-710 Economic Analysis   (Does not require pre-registration)
- 95-717 Writing for Information Systems Mgmt (Requires pre-registration)
- 95-796 Statistics for IT Managers   (Does not require pre-registration)
- 95-719 Accounting and Finance Foundations   (Requires pre-registration)

 Information regarding exemption exams is available on the Placement Exam and Exemption Information Website, https://www.heinz.cmu.edu/admitted-students/full-time/placement-exams-and-exemption-information .

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[3] 94-806 (Privacy in the Digital Age) aims at combining social science perspectives on privacy (such as economics and behavioral decision research) with technological perspectives. 95-818 (Privacy Policy, Technology, and Law) or 95-878 (Engineering Privacy in Software) are more technically oriented classes
[4] Students must complete 95-717 and 95-718 prior to the summer internship.
[5] Students are to take 95-719 in the spring semester. Fall offerings are reserved for other MISM programs.
[6] Capstone requirement is satisfied by the Information Security Project or Master Thesis.

1.4   Elective Courses

Students in the MSISPM Program are required to take at least 30 units of security elective courses and at least 30 units of general electives (24 if pursuing the Thesis option). A number of courses offered by the MSISPM Program and the Heinz College will satisfy this requirement. *Some* of the courses are listed below. In addition, the School of Computer Science, The Information Networking Institute (INI) and other Carnegie Mellon departments offer courses that may satisfy security and/or general elective requirements. Check with your advisor before registering for a course from another academic department if you wish to have it serve as an elective. Only graduate-level courses, (typically) those with a course number greater than 700, will satisfy the security and general elective requirements.

1.4.1   (Sample) Security Electives

95-702 Distributed Systems	12 units
95-736 Advanced Relational Database Management	6 units
95-756 Information Security Risk Management II	6 units
95-757 Information Security Policy & Management	6 units
95-759 Malicious Code Analysis	6 units
95-810 Blockchain Fundamentals	6 units
95-855 Network Traffic Analysis	6 units
95-883 Ethical Penetration Testing	6 units
95-884 Network Defenses	6 units
95-889 Applied Threat Analytics	12 Units

1.4.2   (Sample) General Electives

94-800 Negotiation	6 units
94-801 Acting for Management	6 units
94-802 Geographic Information Systems	12 units
94-823 Measurement & Analysis Social Media Initiatives	12 units
94-832 Business Intelligence & Data Mining SAS	6 units
94-840 Lean Entrepreneurship	6 units
95-702 Distributed Systems for IS Management	12 units
95-703 Database Management	12 units
95-705 Telecommunications Management	12 units
95-712 Object Oriented Programming in JAVA	12 units
95-722 Digital Transformation	6 units
95-729 E-Commerce Tech, Analytics, and Bots	6 units
95-733 Internet of Things	6 units
95-737 NoSQL Database Management	6 units
95-771 Data Structures and Algorithms	12 units
95-775 IT Business Leadership	6 units

95-791 Data Mining	6 units
95-797 Data Warehousing	6 units
95-799 Linux and Open Source	6 units
95-808 IT Project Management	6 units
95-818 Privacy, Policy Law & Technology	12 units
95-859 Innovation & Technology	6 units
95-869 Big Data and Large-scale Computing	6 units

2   INTERNSHIP REQUIREMENT

MSISPM students are required to pursue an internship, to be completed during the summer between their first and second years. Minimally, the internship is ten weeks (or 300 hours) of full-time employment that has formal supervision, is professional in nature, includes work that is of importance to the organization, and has significant educational value.

Before beginning the internship, students must complete the online form Report Your Internship / Apprenticeship for approval.

The internship will be verified with the students' supervisors and then approved. Students must notify their Academic Advisor and Heinz Career Services of any significant changes in their internships, such as length, location, hours of work, etc.

Once the internship has been approved, students will be registered for the zero-unit internship course. Students will not receive academic credit for the internship, but it will be reflected on their transcript as a course with P/F grade. If a student plans to exempt[7] the internship, they will need to complete the Petition for Course Exemption form. Near the end of the internship, the Career Services Office will request supervisors to complete a Student Performance Evaluation Form.

At the end of your internship your Career Services Advisor will request that your supervisor complete an evaluation form about your internship performance. You are also required to complete an evaluation survey as well as a self-reflection statement describing how your internship fulfilled the educational goals of the program. If you do not successfully complete an eligible internship along with your survey and self-evaluation, you will not fulfill your internship requirement necessary for graduation.

Students are required to complete 95-717[8] Writing for Information Systems Management and 95-718 Professional Speaking prior to enrolling in the internship.

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[7] A (possible) reason for exemption is when a student is on a sabbatical from an organization to pursue a master's degree and they will return to that organization after graduation.

[8] 95-717 or 95-701 (Business Writing)

F1 Visa Students: You must apply for Curricular Practical Training (CPT) employment authorization for your summer internship. CPT authorization is required regardless of the internship being paid or unpaid. CPT is only available to F-1 students who have not graduated and who have been enrolled on a full-time basis for one full academic year (i.e. fall and spring.) If your degree program requires you to complete a summer internship, you can qualify for CPT. Processing CPT may take up to 2 weeks and you cannot begin employment until you receive authorization. Guidelines, forms and instructions can be found at the Office of International Education's website (https://www.cmu.edu/oie/).

2.1   Securing an Internship

Students are responsible for securing a suitable internship. Career Services will provide assistance through counseling, workshops on resume preparation and interview skills, and listings of potential internships. Students can make an appointment to discuss their situation and are encouraged to come to workshops that cover the essential skills for finding the right internship.

3   **CAPSTONE PROJECT / THESIS**

The *MSISPM Project* or *Thesis* is designed to capture the essence of knowledge gained by the students from the coursework and apply it towards research or new application initiatives. The project or thesis should be on a topic in an area of research or application that is interesting and relevant to information security. Research may include working on existing projects, designing new areas of research, or assisting faculty with their current research.

A *MSISPM Project* will consist of a group of 4 or more students working on a security related problem. Projects are held during the final semester of study and are subject to approval from the Associate Dean and Program Director. Students can work with:
- A Carnegie Mellon faculty member on his/her research interests related to security
- A vendor of security related products sponsored /advised by a faculty member
- Or, an outside firm be it consulting, government or any other organization working on a security related problem sponsored/advised by a faculty member

A *MSISPM Thesis* will consist of a student working by himself/herself on research related topics with sponsorship from a Carnegie Mellon faculty member. A thesis can be taken during the Fall, Spring, or Summer semesters. It is the responsibility of the student to complete required paperwork, receive approval of thesis topic, and obtain a faculty advisor.

Approximately mid-way through your third semester, your advisor will contact you to confirm your intention to complete a MSISPM Project or MSISPM Thesis.

4   **NUMBER OF UNITS PER SEMESTER**

Students typically take between 48 – 54 units per semester, with a maximum of 54 units per semester. If students are interested in taking an excess of 54 units, then they need to petition the Program Director by completing the Online General Petition Form.

5   **SUMMER COURSES**

Students who are completing their internship in Pittsburgh during the summer semester are permitted to take one, in-person (non-distance) Heinz College course, either 6 units or 12 units. Prior to enrolling in the course, please obtain approval from the Program Director, and after enrollment, please inform the Program Director to ensure proper crediting of your student bill for the summer tuition. There is no additional cost to take the one course during the summer semester.

6   **ACADEMIC POLICIES**

6.1   Adding / Dropping Courses

Students may choose to add or drop a course after the beginning of the semester. Please note that the add/drop deadline for mini courses (6 units) is 5 days after the beginning of the course and 10 days after the beginning of the semester for a full-semester (12 units) course. You must obtain approval from your faculty advisor prior to adding or dropping a core course for the MSISPM program. Additions or dropping of classes after the posted deadlines must be approved by the program director and are generally not permitted except under extenuating circumstances. A General Petition Form (Count course as selective, late add/drop a course, increase in units) is available on the Heinz Website.

6.2   Independent Study

Twelve (12) units of an independent study that will count towards the 192 units required for graduation are permitted, but must be approved by the program director prior to enrolling. It is the responsibility of the student to identify a faculty member to supervise the independent study and submit an Independent Study Contract, available on the Heinz Website.

6.3   Pass / Fail

Twelve (12) units of courses may be taken with a grading option of Pass / Fail that may count towards the 192 units required for graduation. These courses will not impact the QPA of the student and ONLY elective courses are eligible. A separate request is to be made for each course by completing the "Request for P/F" form to be reviewed and approved by the program director. Failure to submit the P/F for will result in the course being taken for a grade rather than P/F. It is suggested that students consider taking P/F courses during their busiest

semester. The deadline to change the grading option for a course is consistent with the Add/Drop deadline, mini courses (6 units) is 5 days after the beginning of the course and 10 days after the beginning of the semester for a full-semester (12 units) course

6.4   Audits

Students are permitted to audit courses and any non-core or elective course is eligible. Courses that are taken with the audit option do not count towards the 192 units required to graduate and require approval from the course instructor. Students must request approval from the program director by completing the "Petition to Audit a Heinz College Course" form. Failure to obtain approval from the course instructor and program director will result in the course being taken with a grade option. Courses approved for audit will not affect a student's QPA. The units assigned to courses taken for audit will be counted towards the maximum of 54 units per semester.

6.5   Receiving an Incomplete

If extenuating circumstances beyond a student's control prevent them from completing all requirements for a course by the end of the semester, a student may ask the instructor for permission to take an incomplete and complete the work after the semester. Students should submit a signed contract ***BEFORE*** the end of the semester and must complete the work by the end of the following semester. Failure to do so will result in the student receiving the default grade for the course.

6.6   Course Approval for non-ISM Courses

Students may take courses elsewhere on campus as elective courses (security or general) but may not request that a non-Heinz course replace any of the core-MSISPM courses. Students must obtain approval from the program director prior to registering for the course by completing and submitting the "General Petition Form". Most, but not all, graduate courses will be approved, provided the course meets the criteria for a security or general elective.

7   **CONTACT INFORMATION**

Mr. Randall Trzeciak	Program Director	randallt@cmu.edu	412.268.7040
Mr. Andrew Wasser	Assoc. Dean	awasser@cmu.edu	412.268.7639
Ms. Katie Cassarly	Career Services	katiecassarly@cmu.edu	412.268.3055
Ms. Stefanie Oldfield	Academic Coordinator	srv@cmu.edu	412.268.2555

8   **STATEMENT OF ASSURANCE**

Carnegie Mellon University does not discriminate in admission, employment, or administration of its programs or activities on the basis of race, color, national origin, sex, handicap or disability, age, sexual orientation, gender identity, religion, creed, ancestry, belief, veteran status, or genetic information. Furthermore, Carnegie Mellon University does not discriminate and is required not to discriminate in violation of federal, state, or local laws or executive orders.

Inquiries concerning the application of and compliance with this statement should be directed to the Vice President for Campus Affairs, Carnegie Mellon University, 5000 Forbes Avenue, Pittsburgh, PA 15213, telephone 412-268-2056.

Obtain general information about Carnegie Mellon University by calling 412-268-2000.

The Statement of Assurance can also be found online at:
http://www.cmu.edu/policies/documents/SoA.html