SECURITY INFORMATICS, MASTER OF SCIENCE

M.S.S.I. Graduate Program

The flagship educational experience offered by Johns Hopkins University in the area of information security and assurance is represented by the Master of Science in Security Informatics (M.S.S.I.) degree. A wide range of courses is available in support of this unique and innovative graduate program.

The M.S.S.I. is a full-time day program offered on the Homewood Campus in North Baltimore. Most students complete the program in three full-time semesters though some graduate students may finish their degree part-time after completing the required two consecutive semesters of residency as a full-time student.

Combined Undergraduate/ Graduate Program

A combined bachelor's/master's degree program including the M.S.S.I. is also available to Johns Hopkins University students. In this program, by the conclusion of the undergraduate junior academic year, a student can apply for combined admission into the M.S.S.I. program. If accepted, the student during each subsequent semester partitions their course load into courses that will count for the undergraduate degree and courses that will count for the M.S.S.I. degree. Usually with one additional year of study, the student can simultaneously satisfy both sets of degree requirements. For more information on the combined bachelor's/master's status, please visit https://engineering.jhu.edu/academics/combined-bachelors-masters/.

Program Requirements

Course Requirements for the M.S.S.I. Degree

The Master of Science in Security Informatics program has a course requirement of a minimum of 10 courses, plus a team-based capstone project including a report and presentation. Students must choose one of two tracks – Technology & Research Track or Policy & Management Track.

All courses supporting the M.S.S.I. are categorized into four areas of Technology, Policy, Health, and Management. Each course may be further classified into Core, Elective or Foundational category.

The Technology & Research Track program of study must satisfy the following course distribution requirements:

- Five Technology courses: at least four Core Technology courses including at least one Core Technology course in Cryptography.
- Three Core Policy/Management/Health courses: at least one Core Policy course and one Core Management course.
- Two additional courses from Core or Elective Technology categories; or when deemed appropriate relative to a student's background, interests, and goals AND with the prior approval of the faculty advisor and the program, from other course areas.

The Policy & Management Track program of study must satisfy the following course distribution requirements:

- Three Technology courses: at least two Core Technology courses including at least one Core Technology course in Cryptography.
- Five Core/Foundational Policy/Health/Management courses: at least one course from each of Core Policy/Management/Health categories and at least one Foundational Management course.
- Two additional courses from Core/Elective Technology or Core/Foundational Policy/Management/Health categories; or when deemed appropriate relative to a student's background, interests, and goals AND with the prior approval of the faculty advisor and the program, from other course areas.

Capstone Project Requirement for the M.S.S.I. Degree

The required M.S.S.I. Capstone Project will include both technology and non-technology components, and will be conducted within a team-structured environment comprising students and faculty mentors (plus external mentors or research assistants if appropriate). These projects can be sponsored by government/industry partners and affiliates, and can also be related to faculty research projects supported by grants and contracts. They should relate to real-world problems and exhibit both theoretical and practical significance. The project must be documented by a report and presentation, as well as other applicable deliverables including but not limited to system prototypes, utility libraries, experimental demonstrations, conference or journal submissions, and so on. It should follow the best practice of software engineering and research ethics including public disclosure of security vulnerability.

Students should actively initiate the project while communicating with a potential faculty mentor. They are expected to develop a project plan before the project starts. In addition to regular project meetings and briefings, a final presentation will be scheduled when the project concludes. The capstone faculty mentor should approve each milestone of the project. When the project is completed with all the deliverables, the faculty mentor determines whether the project is satisfactory for the M.S.S.I. degree requirement.

Additional Course Requirements

- All courses toward the degree requirement must be 600-level or above. Other courses can be used with the approval of the program.
- Courses not found on the area-specific lists (https://www.cs.jhu.edu/academic-programs/graduate-studies/ms-in-security-informatics/mssi-course-distribution/) can be used to meet area requirements with prior approval from the student's advisor and the program.
- At most two independent study courses can be counted toward the course requirements.
- No courses with grades of P may be counted with the exception of independent study courses.
- At most two courses may be transferred from other institutions. The student's faculty advisor and the M.S.S.I Director must approve such transfer courses.
- The overall grade point average of the courses counted towards the coursework requirements must be 3.00 or higher.
- At most two courses with grade less than B- may be counted towards the course work requirements. No courses with grade less than C- may be counted.
- A grade of D or F results in probation. A second D or F is cause for being dropped from the program.
- Every student must successfully complete EN.500.603 Graduate Orientation and Academic Ethics

- All master's students are required to complete the Responsible Conduct of Research AS.360.624 (https://e-catalogue.jhu.edu/search/?P=AS.360.624) online. Instructions for accessing and signing up for the course can be found here (https://engineering.jhu.edu/research/resources-policies-forms/responsible-conduct-of-research-training-for-students-and-postdoctoral-fellows-revised-spring-2020/).

MSSI Courses

Code	Title	Credits
EN.601.640	Web Security	3
EN.601.641	Blockchains and Cryptocurrencies	3
EN.601.642	Modern Cryptography	3
EN.601.643	Security & Privacy in Computing	3
EN.601.644	Network Security	3
EN.601.645	Practical Cryptographic Systems	3
EN.601.740	Language-based Security	3
EN.601.741	Advanced Topics in Secure and Censorship-Resistant Communications	3
EN.601.742	Advanced Topics in Cryptography	3
EN.601.743	Advanced Topics in Computer Security	3
EN.601.745	Advanced Topics in Applied Cryptography	3
EN.650.601	Introduction to Information Security	3
EN.650.614	Rights In Digital Age	3
EN.650.621	Critical Infrastructure Protection	3
EN.650.624	Network Security	3
EN.650.631	Ethical Hacking	3
EN.650.640	Moral & Legal Foundations of Privacy	3
EN.650.653	Financial Issues in Managing a Secure Operation	3
EN.650.654	Computer Intrusion Detection	3
EN.650.655	Implementing Effective Information Security Programs	3
EN.650.656	Computer Forensics	3
EN.650.658	Introduction to Cryptography	3
EN.650.660	Software Vulnerability Analysis	3
EN.650.663	Cloud Computing Security	3
EN.650.667	Mobile Device Forensics	3
EN.650.672	Security Analytics	3
EN.650.673	Mobile and Wireless Security	3
EN.650.681	Global Cybersecurity Trends and Practices	3
EN.650.683	Cybersecurity Risk Management	3
EN.650.757	Advanced Computer Forensics	3
EN.650.836	Information Security Projects	1
EN.650.837	Information Security Projects	1
EN.650.840	Information Security Independent Study	3

- For seven-week course modules, e.g., several courses offered through the Whiting School of Engineering Center for Leadership Education (CLE) (http://eng.jhu.edu/wse/cle/), two of them count as one course of 3 credit hours.
- For quarter-based courses, e.g., several courses of course numbers starting with ME from the School of Medicine Biomedical Informatics & Data Science (http://dhsi.med.jhmi.edu), two of them are equivalent of one WSE course of 3 credit hours.

Core Technology Courses

Code	Title	Credits
EN.601.640	Web Security	3
EN.601.642	Modern Cryptography	3
EN.601.643	Security & Privacy in Computing	3
EN.601.644	Network Security	3
EN.601.645	Practical Cryptographic Systems	3
EN.601.740	Language-based Security	3
EN.601.741	Advanced Topics in Secure and Censorship-Resistant Communications	3
EN.601.742	Advanced Topics in Cryptography	3
EN.601.743	Advanced Topics in Computer Security	3
EN.601.745	Advanced Topics in Applied Cryptography	3
EN.650.601	Introduction to Information Security	3
EN.650.624	Network Security	3
EN.650.631	Ethical Hacking	3
EN.650.654	Computer Intrusion Detection	3
EN.650.656	Computer Forensics	3
EN.650.658	Introduction to Cryptography	3
EN.650.660	Software Vulnerability Analysis	3
EN.650.663	Cloud Computing Security	3
EN.650.667	Mobile Device Forensics	3
EN.650.672	Security Analytics	3
EN.650.673	Mobile and Wireless Security	3
EN.650.757	Advanced Computer Forensics	3

Elective Technology Courses

Code	Title	Credits
EN.601.631	Theory of Computation	3
EN.601.633	Intro Algorithms	3
EN.601.641	Blockchains and Cryptocurrencies	3
EN.650.621	Critical Infrastructure Protection	3
EN.650.840	Information Security Independent Study	3
EN.695.637	Introduction to Assured AI and Autonomy	3
EN.695.715	Assured Autonomy	3

Core Policy Courses

Code	Title	Credits
EN.650.614	Rights In Digital Age	3
EN.650.640	Moral & Legal Foundations of Privacy	3
EN.650.681	Global Cybersecurity Trends and Practices	3
EN.595.731	Business Law for Technical Professionals	3
EN.635.672	Privacy Engineering	3

Core Health Courses

A list of School of Medicine courses may be taken to fulfill core health course requirements.[1]

Core Management Courses

Code	Title	Credits
EN.650.653	Financial Issues in Managing a Secure Operation	3
EN.650.655	Implementing Effective Information Security Programs	3
EN.650.683	Cybersecurity Risk Management	3
EN.595.660	Planning and Managing Projects	3

EN.635.775	Cyber Operations, Risk, and Compliance	3
EN.635.776	Building Information Governance	3

Foundational Management Courses

Code	Title	Credits
EN.663.644	Writing for Clarity	1.5
EN.663.645	Improving Presentation Skills for Graduate Students	1.5
EN.663.660	Managing People and Resolving Conflicts	1.5
EN.663.670	Project Management	1.5
EN.663.671	Leading Change	1.5
EN.663.673	Leading Teams in Virtual, International and Local Settings	1.5

[1] For additional information refer to http://isi.jhu.edu/mssi/course_distribution (https://www.cs.jhu.edu/academic-programs/graduate-studies/ms-in-security-informatics/mssi-course-distribution/)