CYBERSECURITY ANALYTICS AND OPERATIONS

Degree Requirements

Master of Professional Studies (M.P.S.)

Requirements listed here are in addition to Graduate Council policies listed under GCAC-700 Professional Degree Policies (https://gradschool.psu.edu/graduate-education-policies/).

The M.P.S. program requires a minimum of 33 credits at the 400, 500, 600, or 800 level, with at least 18 credits completed while enrolled in IST 594, or the capstone course IST 894.

Elective Courses

The elective courses for the M.P.S. will be selected from a list maintained by the program office.

Culminating Experience

The student may choose one of two culminating experiences for the degree: either the capstone project guided by the student's adviser and completed while enrolled in IST 594, or the capstone course IST 894.

The 33 credits are distributed among the following requirements. A student first takes 18 credits of core courses. The student then takes 12 credits of electives. Lastly, the student must complete a culminating experience.

Elective Courses

The elective courses for the M.P.S. will be selected from a list maintained by the program office.

Culminating Experience

The student may choose one of two culminating experiences for the degree: either the capstone project guided by the student's adviser and completed while enrolled in IST 594, or the capstone course IST 894.

These 30 credits are distributed among the following requirements:

- **Required Courses**
  - IST 543 Foundations of Software Security 3 credits
  - IST 554 Network Management and Security 3 credits
  - IST 815 Foundations of Information Security and Assurance 3 credits
  - IST 820 Cybersecurity Analytics 3 credits
  - IST 825 Technologies for Web and E-Commerce Application Security 3 credits
  - IST 830 Cybersecurity Project Management 3 credits

- **Electives**
  - Select 12 credits of electives from a list available from the program office.

Total Credits 30 credits

Master of Science (M.S.)

Requirements listed here are in addition to Graduate Council policies listed under GCAC-600 Research Degree Policies (https://gradschool.psu.edu/graduate-education-policies/).

The M.S. in Cybersecurity Analytics and Operations requires a minimum of 30 credits at the 400, 500, 600, or 800 level, with at least 18 credits in the 500 or 600 series combined; 27 of the 30 credits must be earned at Penn State (refer to GCAC-309 Transfer Credit (https://gradschool.psu.edu/graduate-education-policies/gcac/gcac-300/gcac-309-transfer-credit/)). Students will be able to complete the proposed Master's program in one calendar year (including summer) or two academic years. All of the courses listed below are three credit hour courses, unless otherwise noted. Students pursuing the one-year format must adhere to the following conditions:

- A research adviser must be assigned to students in their first semester, as selection and discussion of the student's research topic must begin as soon as possible.
- Students who need more time to complete the final paper must be allowed to complete the paper, and have it reviewed and approved after the third semester (Summer) has ended. Students are not required to remain in residence while they complete the final paper. However, extensions granted to students in this program must comply with the Graduate Council policy on deferred grades (https://gradschool.psu.edu/graduate-education-policies/gcac/gcac-400/gcac-401-grading-system/).

These 30 credits are distributed among the following requirements:

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>IST 543</td>
<td>Foundations of Software Security</td>
<td>3</td>
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<td>Cybersecurity Project Management</td>
<td>3</td>
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</tbody>
</table>

Electives

Select 9-12 elective credits from a list available from the program office.

**Culminating Experience**

Choose one of the following:

- IST 584 Cyber Simulation Event and Analysis 3 credits
- IST 594 Research Topics (Scholarly Paper) 3-6 credits
- IST 600 Thesis Research 6 credits

Total Credits 30 credits

**Thesis, Scholarly paper, or Capstone course (3-6 credits)**

Students may choose a thesis, scholarly paper or capstone course option. Students who choose the thesis option must register for 6 credits of IST 600 or IST 610, write a satisfactory thesis accepted by the master's committee, the head of the graduate program, and the Graduate School, and pass a thesis defense. The thesis should focus on a well-defined problem relevant to the information sciences. Students who choose the thesis option must also complete IST 505. Student who choose the scholarly paper option must register for 3 credits of IST 594 and complete the scholarly paper. The scholarly paper will be a focused piece of technical work that applies the student's expertise and knowledge base, and that is documented and presented as a scholarly paper report. Students who choose the capstone course option must register for IST 584 to complete the capstone course requirement. Students who choose the scholarly paper option or capstone course option must complete at least 18 credits at the 500 level.