# Master of Science in Cybersecurity Analytics and Operations Two Year Curriculum Plan (30 credits)

**First Year Courses**

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| **Fall Semester Courses** | **Credits** |
| IST 543 – Foundations of Software Security | 3 |
| IST 815 – Foundations of Information Security and Assurance | 3 |
| Elective (choose from list) | 3 |
| **Total Semester Credits** | 9 |
| **Spring Semester Courses** | **Credits** |
| IST 554 – Network Management and Security | 3 |
| IST 820 – Cybersecurity Analytics | 3 |
| IST 825 – Foundations of Web and E-Commerce Application Security | 3 |
| **Total Semester Credits** | 9 |

**Second Year Courses**

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| **Fall Semester Courses** | **Credits** |
| Elective (choose from list) | 3 |
| Elective (choose from list) | 3 |
| Elective (choose from list) | 3 |
| **Total Semester Credits** | 9 |
| **Spring Semester Courses** | **Credits** |
| IST 584\*\* **OR** IST 594\*\* **OR** IST 600\*\* | 3 |
| **Total Semester Credits** | 3 |

*Course availability subject to change.*

* *At least 18 credits must be in the 500 or 600 series, combined.*
* *WC – World Campus, a maximum of 10 credits may be taken online*

**Cybersecurity Analytics and Operations Elective Course List**

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| **Course** | **Credits** |
| IST 505 – Foundations of Research Design in Information Sciences and Technology | 3 |
| IST 520 – Foundations in Human-Centered Design | 3 |
| IST 521 – Human-Computer Interaction: The User and Technology | 3 |
| IST 525 – Computer-Supported Cooperative Work | 3 |
| IST 526 – Development Tools and Visualizations for Human-Computer Interaction | 3 |
| IST 530 – Foundations in Social Informatics | 3 |
| IST 541 – Qualitative Research in Information Sciences and Technology | 3 |
| IST 557 – Data Mining: Techniques and Applications | 3 |
| IST 558 – Data Mining II | 3 |
| IST 564 – Crisis, Disaster and Risk Management | 3 |
| IST 577 – Human Factors of Security and Privacy | 3 |
| IST 597 – Special Topic: Topics Vary | 3 |
| IST 805 – Cybersecurity Forensics and Management (online – spring only) | 3 |
| IST 830 – Cybersecurity Project Management | 3 |
| \*If you find a course outside of IST that you would like to take as an elective, please reach to request a substitution. |  |

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| **Scholarship and Research Integrity (SARI) Requirements** |  |
| Each student must complete the SARI training – prior to starting the program or by the end of August. | **Date completed & submitted to** **ISTgradprograms@psu.edu** |
| **Institutional Review Board (IRB) training** |  |
| **Responsible Conduct of Research (RCR) training** |  |

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

Students may choose athesis, scholarly paper or capstone course to fulfill the culminating experience.

**Thesis**

Students who choose the thesis option must register for 6 credits of IST 600, 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. Selecting the thesis option may require more than 1-year to complete. Students who choose the thesis option must also complete IST 505.

**Scholarly Paper**

Students 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.

**Capstone Course**

Students who choose thecapstone courseoption must register for IST 584 to complete the capstone course requirement. This course uses a Cyber event simulation (often referred as Cyber Range), which by its nature, allows for a variety of real-world Cybersecurity scenarios/problems to be simulated for students. Students are expected to utilize the knowledge and skills gained in previous coursework to solve each Cybersecurity scenario/problem in a given week of the class.

**This course is only offered during summer (1yr plan) and spring (2yr plan).**

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| **Typical Course Offerings\*** |
| **Fall Offerings** | **Spring Offerings** |
| IST 504 – Foundations of Theories and Methods | DS 560 E/O |
| IST 520 – Foundations in Human-Centered Design | IST 503 – Foundations of IST Research |
| IST 530 – Foundations in Social Informatics | IST 505 – Foundations of Research Design |
| IST 543 – Foundations of Software Security | IST 510 – Foundations in Computational Informatics |
| IST 557 – Data Mining: Techniques and Applications | IST 521 – Human-Computer Interaction: The User and Technology |
| IST 577 – Human Factors of Security & Privacy | IST 525 – Computer-Supported Cooperative Work |
| IST 597 – Topics Vary | IST 526 – Development Tools and Visualizations for Human-Computer Interactions |
| IST 815 – Foundations of Information Security and Assurance | IST 541 – Qualitative Research in IST |
| IST 830 E/O – Cybersecurity Project Management – next offerings Fall 2025, Fall 2027, Fall 2029. | IST 554 – Network Management and Security |
|  | IST 558 – Data Mining II |
|  | IST 561 – Data Mining Driven Design |
|  | IST 564 – Crisis, Disaster, Risk Management |
|  | IST 584 (also summer) – Cyber Simulation Event |
|  | IST 594 (also summer) – Research (Scholarly Paper) |
|  | IST 597 – Topics Vary |
|  | IST 820 – Cybersecurity Analytics |
|  | IST 825 – Technologies for Web and E-Commerce Application Security |

\*Course offerings subject to change