



PennState
College of Information
Sciences and Technology

Office of Graduate Programs

2026–2027

M.S. Degree Roadmap



IST Graduate Programs Contact Information

Dr. Andrea Tapia
Dean of Information Sciences and
Technology
axh50@psu.edu

Dr. Carleen Maitland
Associate Dean for Research and
Graduate Affairs
cfm12@psu.edu

Dr. Saeed Abdullah
Interim Director of Doctoral Programs
Associate Professor
sua425@psu.edu

Dr. Sarah Rajtmajer (Sabbatical 2026-2027)
Director of Doctoral Programs
Associate Professor
smr48@psu.edu

Dr. Edward Glantz
Director of Master's Programs
Professor
ejg8@psu.edu

Dr. Yubo Kou
Assistant Director, Master's Programs
Professor
yvk5270@psu.edu

Chrissie Fitzgerald
Academic Program Supervisor
Graduate Programs
cml195@psu.edu

Jenna Hart
Academic Program Coordinator
Graduate Programs
jns5431@psu.edu

Carly Marshall
Academic Program Coordinator
Graduate Programs
arc43@psu.edu

Lynne Bechdel
Academic Program Coordinator
Graduate Programs
leb242@psu.edu

College of Information Sciences and Technology
Office of Graduate Programs
413G Eric J. Barron Innovation Hub, State College, PA 16802
Phone: 814-863-0591

Contents

IST Graduate Programs Contact Information	2
About the College of Information Sciences and Technology	4
Penn State Policies on Graduate Education	5
Department Facilities	5
Grad Lab Seating	5
Student Expectations	6
Scholarship and Research Integrity (SARI) Training	6
Role of the Faculty Adviser	7
Review Process	8
Assistantships Overview	9
Research Assistantships (RA)	9
AEOCPT Requirement for International Students	10
International Student Registration Guidelines	11
Full-Time Enrollment Requirements	11
Distance and Online Education Restrictions	12
Summer Enrollment Policies	12
General Policies	13
Fox Graduate School Guidelines	17
Exam Format Options	18
General Dissertation/Thesis Requirements	18
Course Waiver Policy	25
Independent Study Policy	25
IST Graduate Student Termination Policy	26
Termination Process	27
Resources	28
Links to Fox Graduate School and University resources	29
Reporting and Assistance Resources	30

About the College of Information Sciences and Technology

Solving society's most challenging problems – from responding to natural disasters to improving human health and well-being; from protecting national security to developing and integrating AI into scientific and online community settings; from exploring the connections between health and technology to finding novel ways to use AI in socially responsible ways-calls for approaches that transcend traditional disciplinary boundaries. Precise computational models and algorithms are needed to learn from the vast datasets available. Scientific theory is needed to describe the complex relationships between technology and society, including complex and overlapping networks of virtual relations, collaborators, and customers.

At Penn State's College of Information Sciences and Technology (IST), you will receive a multidisciplinary education that prepares you to address complex issues arising from rapid technological change. Our graduate students come from a variety of backgrounds, including computer science, engineering, psychology, sociology, economics, philosophy, visual arts, and math. The students work with graduate faculty distributed across three areas: Human-Centered Computing and Social Informatics; Informatics and Intelligent Systems and Privacy and Cybersecurity Informatics.

The College of IST's faculty and graduate students engage in cutting-edge research in areas such as human-centered design of applications, devices and platforms; artificial intelligence and data science; computer security and information privacy; health- and bio-informatics; and technology use by children, to name just a few. We excel in cybersecurity research, exploring how we can better protect companies from cyber-attacks and nations from cyber war. We develop and apply AI algorithms to more quickly diagnose disease as well as improve outcomes for patients. We study youth as both developers and consumers of technology and how their experiences can inform designs of the future. To succeed in all of these areas, as a graduate student in IST you will develop important skills in the computer and data sciences, as well as in the social and behavioral sciences. You will learn how to analyze qualitative and quantitative data, and be able to understand, test, and contribute to scientific theory.

Rankings

Penn State is recognized worldwide for its impact. The university is ranked by the Times Higher Education Impact Rankings 2025 as No. 3 in the U.S. and No. 64 globally. We are proud to have a major impact on the U.N. Sustainable Development Goals. Penn State's graduate programs also consistently rank highly in disciplines relevant to IST by U.S. News & World Report. Among iSchools, a consortium of information schools dedicated to advancing the interdisciplinary information sciences field, IST at Penn State is unique in its breadth and depth in areas such as human-centered design, social informatics, cybersecurity, AI, and data and computational sciences.

The Graduate Student Roadmap summarizes the graduate program requirements, recommendations, and policies of the college.

Penn State Policies on Graduate Education

Requirements of the Graduate School, apply to all graduate degrees and procedures of the college. The complete listing of Graduate School policies and resources for students can be found on the following links:

<https://gradschool.psu.edu/academics/graduate-education-policies>

<https://gradschool.psu.edu/student-support/resource-library>

In case of conflicts between the program roadmap and Graduate School policies, the latter take precedence.

Students should be familiar with the Penn State academic calendar

(<https://www.registrar.psu.edu/academic-calendars/>) and with deadlines periodically announced by the Graduate School (<https://gradschool.psu.edu/academics/academic-dates-and-deadlines>).

Department Facilities

Departmental programs and activities are housed in the Westgate Building and Eric J. Barron Innovation Hub (EBIH). These facilities contain administrative and faculty offices, instructional facilities, conference, theses/dissertations, and reading rooms.

Grad Lab Seating

Students on assistantships or fellowships have priority for graduate student office space. Graduate students not receiving departmental or University financial support are provided with office space as available. Space limitations generally make it impossible to provide office space for students, not on assistantships.

Graduate students are expected to maintain a tidy and clean workspace, individually and collectively in their lab space. Personal effects should be kept to a minimum, limited to objects necessary for effective work. Regular (semesterly) disposal of outdated and unused materials help maintain a tidy work environment for all.

Student Expectations



ACADEMIC STANDARDS

Satisfactory Scholarship

Maintain minimum cumulative GPA (3.0) and degree milestones; unsatisfactory grades or progress can lead to academic warning or termination

Policy: [GCAC-404 - Satisfactory Scholarship](#)

Continuous Enrollment

Stay continuously enrolled and meet credit requirements



INTEGRITY STANDARDS

Academic Integrity

Avoid plagiarism, data falsification, and unauthorized collaboration

Research Integrity

Complete Responsible Conduct of Research training and follow best practices in data management



CONDUCT STANDARDS

Code of Conduct

Adhere to the Penn State Student Code of Conduct and University Policies

Respectful Behavior

Harassment and discrimination are not tolerated. Foster an inclusive environment

Professionalism

Conduct yourself professionally



ENGAGEMENT EXPECTATIONS

Active Participation

Engage in coursework, seminars, and meetings

Respectful Behavior

Maintain regular contact with advisors, committees, and program staff

Program Emails

Check PSU email for important deadlines, requests and updates. Respond to program emails promptly.

Scholarship and Research Integrity (SARI) Training

All graduate students are required to complete Scholarship and Research Integrity (SARI) training as outlined by their college. Penn State's SARI@PSU program provides multilevel training in the responsible conduct of research (RCR), tailored to address the issues specific to each discipline.

The training program includes two core components:

Online RCR training through the Collaborative Institutional Training Initiative (CITI)

Five hours of interactive, discussion-based RCR education (IST 590)



The College of IST requires all students to complete the following during their first semester:

- Human Subjects Research (IRB) Training
- Responsible Conduct of Research (RCR) Training
- Five hours of discussion-based training, integrated into IST 590: Graduate Colloquium

Detailed instructions for completing SARI training will be distributed to incoming students before the start of their first semester.

A record of each student's participation and training plan is maintained and available upon request from the Office for Research Protections.

Faculty Adviser

In IST, Integrated Undergraduate–Graduate (IUG) and M.S. students are encouraged to identify a member of the IST Graduate Faculty to serve as a faculty adviser, especially if pursuing the thesis option.

Students completing the program in one year without a faculty adviser may instead fulfill the scholarly paper or project capstone option, guided by course instructors and Graduate Programs Office communications.

For students pursuing the two-year thesis option, the following outlines the role of the faculty adviser, the process for identifying an adviser, and the annual review.

Role of the Faculty Adviser

The faculty adviser mentors thesis-option students on research and academic progress. This option typically requires two years to complete and involves forming a three-member thesis committee. During the first year, the adviser helps the student identify research topics, review relevant literature, and begin developing a research plan. Advisers provide ongoing feedback on research ideas, progress, and outcomes, and conduct an annual evaluation at the end of the first year. Advisers also support students with academic planning, program navigation, and career guidance.

Identifying a Faculty Adviser

Students considering the thesis option are encouraged to contact IST Graduate Faculty before or soon after arrival, or in the case of IUG students, during the semester of application. Students should familiarize themselves with faculty research and publications before requesting meetings.

All new graduate students arrive by mid-August for orientation, providing an opportunity to meet potential advisers in person. Students may also consult the Director of Master's Programs for assistance in identifying an adviser.

Students pursuing the thesis option are expected to secure an adviser by the end of their first semester, and no later than mid-second semester. The advising relationship is formalized by submitting a Student–Adviser Agreement form to the Graduate Programs Office.

Annual Review

Each M.S. and I.U.G. student pursuing the thesis option will participate in an **annual review** during **September or October** to assess academic and research progress.

Review Process

- **Student Preparation:** Each student must complete an online Annual Evaluation Form and update their curriculum vitae (CV).
- **Adviser Meeting:** Students will meet with their faculty adviser to review completed and planned coursework, research progress, and goals for the upcoming year.
- **Adviser Evaluation:** After the meeting, the adviser will assign a performance rating and provide written feedback.
- **Results:** Students will receive **formal written notification** of their evaluation results and any required actions.

Committee Oversight

The **Graduate Advisory Committee (GAC)** will review the evaluation materials submitted by both students and advisers to confirm that students are progressing appropriately within the program.

Addressing Concerns

If a student's progress is found to be unsatisfactory:

- The adviser, Master's Director, and/or GAC will identify the concern and develop a plan for improvement.
- The student will receive **formal written notification** outlining required actions and associated timelines.
- In some cases, a **change of adviser** may be recommended; in others, the student may be required to complete specific tasks on a stated timeline.

Academic Standing and Program Continuation

In cases of significant or continued academic difficulties:

- The student may be **terminated** from the program.
 - Prior to termination for academic reasons (e.g., unsatisfactory scholarship), the student will receive written notice of the deficiencies, in accordance with **Fox Graduate School policy GCAC-803**. This allows for the opportunity for appeal and/or corrective action.
-

Assistantships

Assistantships Overview

Master's and I.U.G. students in IST are rarely offered college-funded teaching assistantships (TAs). In limited cases where teaching support needs are high, a few M.S. or I.U.G. students may receive TA appointments. Some students may also qualify for research assistantships (RAs) on specific projects.

In other cases, students may be hired as **Instructional Assistants (IAs)** through wage-payroll positions. These roles provide hourly pay but do not include tuition waivers or health benefits. All TA, RA, and IA appointments end at the close of each semester and are not guaranteed for renewal.

Travel Requirements

All assistants (RA and TA) must remain available:

- The week before classes begin
- The final week of the semester
- The week immediately following the end of classes

Any exception requires advance approval from the supervisor and must be documented through the Graduate Programs Office. Failure to comply may result in a loss of funding.

Research Assistantships (RA)

RAs typically work under the supervision of their faculty adviser, who often funds the position. RA responsibilities may overlap with dissertation research, and workload expectations should be reasonable when combined with coursework or research credits.

Typical Responsibilities

- Conduct research, including data collection, analysis, and literature reviews
- Develop software, tools, or experimental designs
- Prepare reports, presentations, and manuscripts
- Assist with IRB submissions, funding proposals, and lab activities
- Attend meetings and collaborate with research teams

Supervision

The RA's supervisor will define expectations, oversee progress, and evaluate performance. Responsibilities may evolve as the RA demonstrates readiness for more advanced tasks.

Instructional Assistantships (IA)

IAs support the College's instructional mission by assisting with course delivery. Assignments are made each semester based on departmental needs and are supervised by the course instructor. Students selected as IAs typically have specialized skills or relevant experience.

Becoming an IA

Students interested in an Instructional Assistant position must submit the IA interest form through the College's TA & IA webpage (<https://ist.psu.edu/learning/ta-ia/application>) before the posted deadline each semester. Submitting an interest form does not guarantee a position. Offers are sent by email, typically about two weeks before the semester begins. Students should not contact instructors directly about IA positions.

Initial Requirements

- Meet with the assigned supervisor the week before the semester starts
- Review and sign a TA/IA Responsibility Agreement
- Obtain syllabus, course materials, and expectations

Typical Responsibilities

- Attend lectures/labs and support instruction
- Grade assignments, exams, and projects
- Hold office hours or review sessions
- Prepare materials, assist with exams, and process grades

Performance Evaluation

- Meet regularly with the supervisor throughout the semester
- Track hours worked and submit biweekly for payroll
- Mid-semester and end-of-semester evaluations are conducted by the supervisor and course students.

Absences

Notify your supervisor immediately in case of illness or emergencies and arrange for coverage of duties.

Training Requirement

Enrollment in IST 602: Supervised Experience in College Teaching is mandatory during the first semester serving as a TA or IA. This course, offered every fall and spring, helps new TAs and IAs develop effective teaching practices and address classroom challenges. Registration questions should be directed to the Office of Graduate Programs.

AEOCPT Requirement for International Students

Timeframe: First year

International students assigned to a TA or IA position must take the American English Oral Communication Proficiency Test (AEOCPT) upon arrival.

Per Pennsylvania law, no international student may begin TA duties until the AEOCPT is passed or required remedial English language coursework is completed. English courses taken for this purpose will not count toward degree requirements.

For details, contact the Department of Applied Linguistics.

International Student Registration Guidelines

(F-1 and J-1 Visa Holders)

Full-Time Enrollment Requirements

To maintain lawful immigration status, **F-1 and J-1 students** must be enrolled full-time each fall and spring semester.

- **Graduate students:** Required to enroll in at least **9 credits** per semester, with a maximum of **15 credits**.

Exceptions to Full-Time Enrollment

Exceptions to the full-time enrollment requirement must be **approved in advance** by the International Student Adviser.

- Submit the **Reduced Course Load (RCL) eForm** in **iStart** for consideration.
- Approved exceptions must be reported to the **Department of Homeland Security (DHS)** within 21 days.
- Upon resuming full-time enrollment, DHS must also be notified within 21 days.
- **Limits on exceptions:**
 - **Academic difficulties:** Limited to **one semester** during the entire program.
 - **Medical conditions:** Limited to a total of **12 months** throughout the program.

IMPORTANT NOTES

- Full-time enrollment exclusively in online or web-based courses is not permitted while in the U.S. under F-1 or J-1 status.
- Students on a reduced course load or in their final semester must include at least one resident instruction class.
- Students outside the U.S. may take online courses without needing F-1 or J-1 status.



INTERNATIONAL STUDENTS

**FAILURE TO MAINTAIN
FULL-TIME ENROLLMENT
OR TO OBTAIN PRIOR
APPROVAL WILL RESULT IN
A VIOLATION OF VISA STATUS.**



 Failure to maintain full-time enrollment or to obtain prior approval will result in a violation of visa status.

Distance and Online Education Restrictions

F-1 Students

- May count **only one 3-credit** online or distance education course per semester toward full-time enrollment.
- May take up to **10 total credits** through Penn State **World Campus**, but **not** for full-time fulfillment.
- Cannot change campus designation to World Campus.
- **At least one resident (in-person) course** is required each semester to maintain status.

J-1 Students

- Must enroll in **resident instruction** courses only.
 - Online or distance education credits do **not** count toward full-time enrollment.
-

Summer Enrollment Policies

Required Summer Enrollment

Students must enroll in **summer session** if they:

- Intend to **graduate** or complete their program in the summer.
- Are not returning for the **fall semester** (i.e., summer is the final term).

Enrollment requirements:

- Must include at least one **resident instruction course**.
- May take up to **3 credits of online coursework**, but it must be **in addition to** the in-person class.

Optional Summer Enrollment

Students who:

- **Continue** their program in the **fall semester**, and
- **Do not graduate** in summer

...are **not required** to enroll in summer. It is considered a **vacation period**.

Master's Degrees (M.S. and I.U.G.)

The College of IST offers three master's pathways:

- **M.S. in Cybersecurity Analytics and Operations**
- **M.S. in Informatics**
- **Integrated Undergraduate–Graduate (I.U.G.) Programs** (multiple options available)

Master's study builds on the undergraduate experience by engaging students in deeper research and scholarly inquiry. These degrees open advanced career opportunities in industry or serve as preparation for doctoral study. M.S. and I.U.G. students take many of the same courses as Ph.D. students and may choose to complete either a thesis (research-intensive), a scholarly paper, or a capstone course (depending on program). The programs may be completed in one or two years.

This handbook outlines degree requirements, expectations, and policies that govern graduate study in IST.

General Policies

Full-Time Matriculation

M.S. students are expected to enroll full-time and in residence at the University Park campus each fall and spring semester.

Time Limitation

All requirements including completion of the culminating experience (thesis, scholarly paper or capstone), must be met within two years of admission to the program.

Language and Communication

All students must demonstrate competence in English and the ability to communicate ideas effectively, both orally and in writing, at a professional level.

M.S. in Cybersecurity Analytics and Operations

The objectives of this M.S. degree are to create a deep understanding of cybersecurity analytics and operations, by blending education relating to technology, incident response, strategic planning, and crisis management.

Credit Requirements: Minimum 30 credits (400–800 level), including at least 18 credits at the 500–600 level; at least 27 credits must be earned at Penn State.

Core Courses (15 credits):

- IST 543: Foundations of Software Security
- IST 554: Network Management and Security
- IST 815: Foundations of Information Security and Assurance
- IST 820: Cybersecurity Analytics
- IST 825: Technologies for Web and E-Commerce Application Security

Electives (9–12 credits): Selected in consultation with the adviser to support the culminating experience. Options include courses in research design, human-centered design, social informatics, data mining, crisis management, cybersecurity management, and other IST special topics. Please see [degree audit sheet](#) for current list.

Culminating Experience (3–6 credits): Students choose one of the following:

- **Thesis (6 credits, IST 600):** Requires a written thesis, oral defense, and approval by the master's committee, program head, and Fox Graduate School. Also requires IST 505. Selecting the thesis option will require more than one year to complete.
- **Scholarly Paper (3 credits, IST 594):** A focused technical paper demonstrating expertise, documented and presented in report form.
- **Capstone Course (IST 584):** A cyber event simulation (Cyber Range) course applying prior knowledge to real-world scenarios. Students who choose the capstone course option will register for IST 584 to complete the capstone course requirement in their final semester. Offered **summer (1-year plan)** and **spring (2-year plan)**.

M.S. in Informatics

The M.S. is designed to build an understanding of how information and technology fundamentally impact (and are impacted by) people, organizations, and the world community.

Credit Requirements: Minimum 30 credits, with at least 20 earned at University Park.

- **Core Requirements:** 3–6 credits (IST 504 required; IST 505 strongly recommended for research-focused students).
- **Research Methods:** 6 credits in graduate-level methods courses (IST or elsewhere).
- **Specialty/Electives:** 12–18 credits tailored to the student's interests (IST or approved external areas). Up to 6 credits may be at the 400 level.

Culminating Experience (3–6 credits):

- **Thesis (6 credits, IST 600):** Requires a written thesis, oral defense, and approval by the master's committee, program head, and Fox Graduate School. Also requires IST 505. Selecting the thesis option will require more than one year to complete.
 - **Scholarly Paper (3 credits, IST 594):** A focused technical paper demonstrating applied expertise.
-

Integrated Undergraduate–Graduate (I.U.G.) Programs

The I.U.G. program allows highly qualified undergraduates to complete both a B.S. and M.S. in approximately five years. Students may count up to **12 credits** toward both degrees.

Requirements

- Students must satisfy all requirements for both the B.S. and M.S.
- The graduate portion of the program requires 30 credits, the same as the stand-alone M.S.
- Students may complete a thesis, scholarly paper, or (for Cybersecurity Analytics and Operations only) a capstone course.
 - Schreyer Honors College students are expected to complete the thesis option, which also fulfills the undergraduate honors thesis requirement.

Double-Counting of Credits

- Up to 12 credits may be double-counted.
 - At least half must be at the 500 or 800 level.
 - Six credits of graduate coursework are taken during the senior year.
 - Six additional credits may come from 400-level or higher undergraduate courses.
- Credits for IST 594 (scholarly paper) and IST 600 (thesis) may **not** be double-counted.

Reporting and Oversight

- An **I.U.G. Semester Report** must be filed each semester when a course is double-counted, to ensure proper credit toward both degrees.
- Students must maintain a **3.5 GPA in the senior year** or risk probation.
- Advisers and the Graduate Programs Office monitor progress continuously.

Committee and Culminating Experience

- I.U.G. students follow the same committee and thesis/scholarly paper requirements as M.S. students.
- Once a culminating option (IST 594 or IST 600) is selected, switching requires approval of both the adviser and the Master's Program Director.

Opting Out

If a student cannot complete the M.S., they may still graduate with the B.S., provided all undergraduate requirements are met.

Master's Thesis Information

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.

Master's Committee Selection (Thesis only):

An M.S. and I.U.G. degree-seeking student who selects the thesis option must formally select his or her Master's Degree Committee before scheduling your defense.

This committee will be composed of three members with at least two Penn State graduate faculty members. At least two of the committee members should be graduate faculty members of IST.

By the end of the first semester of study, the student should formulate a plan of research and begin to identify members of the Master's Degree Committee.

Master's Thesis Defense:

The objective of the Master's Thesis Defense is to assess an M.S. or I.U.G. candidate's research accomplishments based on the completion of a final draft of the candidate's thesis. This is to be facilitated by the M.S. or I.U.G. candidate submitting the final draft of the thesis to the Master's Committee and by presenting the thesis at a formal meeting of his or her committee that is open to the University community. Once the final thesis is approved, it will be submitted and archived electronically via eTD's to be accessible worldwide.

Fox Graduate School Guidelines

Any updates or changes to the official Fox Graduate School policies take precedence over the information presented here.

The M.S. or I.U.G. candidate who has satisfied all other degree requirements will schedule a Master's Thesis Defense. In particular, the deadline for submitting the thesis draft is very early in the semester. The date to upload the final draft is about one month before the end of the semester.

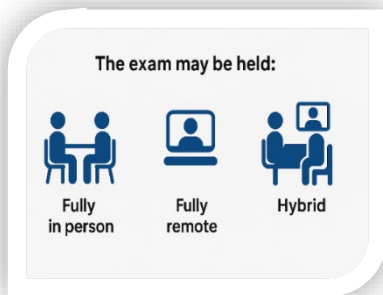
It is the candidate's responsibility to provide a copy of the dissertation to each committee member **at least two weeks prior** to the scheduled examination date. Both the adviser and the candidate share responsibility for completing a final draft of the dissertation and consulting with committee members in advance of the defense. The draft should include appropriate notes, bibliography, tables, and other supporting materials.

The Master's Thesis Defense is administered and evaluated by the full Master's committee. It consists of an oral presentation of the dissertation by the candidate and a period of questions and discussion. While the primary focus of the examination is on the dissertation, committee members may also examine the candidate on the broader scope of their program to assess general scholarly attainment. The portion of the examination in which the dissertation is presented is open to the university community.

A favorable vote of at least two-thirds of the members of the committee is required to pass the examination. The results are reported to the IST Graduate Programs via the Master's Thesis Defense form to be added to the student's record. If a student fails, it is the responsibility of the Master's Committee to determine whether or not another examination may be taken.

Exam Format Options

The Master's Thesis Defense may be held in one of the following modes:



Student preference for the mode of delivery should be strongly considered, but the student and adviser must agree

If they cannot agree, the Director of Master's Programs will make the final decision.

Either the student or adviser may appeal that decision to the Associate Dean for Research and Graduate Affairs.

General Dissertation/Thesis Requirements

The Fox Graduate School, in collaboration with the University Libraries and the Penn State graduate faculty, has established format standards that all dissertations and theses must meet before final approval as a graduate degree requirement. The Thesis Office, part of the Fox Graduate School, is responsible for certifying that dissertations and theses comply with these format regulations.

Every dissertation or thesis must be reviewed and approved by the Thesis Office staff. The office reviews documents for formatting only and does not edit for spelling, grammar, or punctuation. Submissions to the Thesis Office must meet the formatting and deadline requirements described in the most current edition of the [Thesis Guide](#).

Penn State provides additional resources to support dissertation and thesis preparation:

- **PSTT (Penn State Thesis Template):** Provided by Information Technology Services, this package includes styles, macros, toolbars, menus, and layouts.
- **Statistical Consulting Center:** Offers assistance with thesis-related statistical questions.
- **Graduate Writing Center:** Located in 111-H Kern Graduate Building, provides writing consultation for graduate students across disciplines.

All master's dissertations must be submitted to the University in electronic format. For details on electronic theses and dissertations (eTDs), visit the eTD website. <https://gwc.psu.edu/>

In all cases, the dissertation or thesis author holds ultimate responsibility for meeting Fox Graduate School requirements. The student must pay applicable fees, activate their intent to graduate, meet submission and correction deadlines, and obtain required faculty approvals.

Below is a summary of the dissertation/thesis submission requirements:

- Become familiar with format requirements by carefully reading the *Thesis Guide* and review all Fox Graduate School and Thesis Office deadlines as listed on the Thesis, Dissertation, Performance, and Oral Presentation Calendar.
 - Activate the intent to graduate in LionPATH during the semester you plan to graduate. Refer to the Thesis, Dissertation, Performance, and Oral Presentation Calendar for deadlines.
 - Upload a draft of your thesis for format review (Word or PDF file) to the eTD website by the specified deadline. Corrections and instructions will be sent to you by email within three weeks.
 - Defend the dissertation and make any changes required by the committee. This may occur before or after the format review, as long as all deadlines are met. Receive final approval from the committee through electronic signatures via the eTD system.
 - Review the dissertation one final time to ensure no additional changes are needed. No further edits can be made after final approval by the Thesis Office. Convert the final document to a PDF for eTD submission. If you need help with conversion, contact the Thesis Office.
 - Upload the final eTD to the eTD website, and submit the required supporting materials to the Thesis Office:
 - Signed Master's Committee Signatory Page
 - \$10 dissertation fee (payable through the Payment Portal)
 - *Note:* You may submit the dissertation and the supporting materials in any order.
 - Wait for email notification of thesis approval. If additional changes are needed, you will be notified. Your eTD will be available on the eTD website immediately after graduation unless you have restricted access (as noted on the Master's Signatory Page).
 - If you require bound copies, you may contact the Multimedia & Print Center on campus or any off-campus vendor. Providing bound copies is solely the student's responsibility; the Fox Graduate School does not supply them.
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Master's Scholarly Paper Information

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.

Master's Scholarly Paper Guidelines:

The Master's Scholarly Paper should be a focused piece of technical work that applies the student's expertise and knowledge base. This option is for those whose primary goal is to gain advanced knowledge and skills in the information sciences and technology field. The scholarly paper is not submitted to the Fox Graduate School's Thesis Office and is not archived.

Steps for Enrollment and Final Submission

Students interested in this option should follow these steps:

1. Enrollment

- Visit the Graduate Student section of the IST website: [IST Graduate Students – Current Students](#) and follow instructions for enrollment in the scholarly paper.

2. Final Submission Instructions

- At the beginning of the semester in which you are completing the scholarly paper, you will receive an email with detailed information about the final submission process.
 - This email will outline the required materials, deadlines, and steps for submitting your scholarly paper, for final approval. Late or incomplete submissions may delay graduation.
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College of IST Online Graduate Programs (World Campus)

Professional Master's Degrees (M.P.S., M.E.A, I.U.G.)

The College of IST offers several fully online graduate programs through Penn State World Campus. These programs are designed primarily for working professionals seeking advanced technical or managerial expertise while maintaining professional employment.

Unlike the residential M.S. programs, online professional degrees typically emphasize applied knowledge and professional practice rather than research, and they are generally completed on a part-time basis.

The College of IST offers three master's pathways:

- **M.P.S. in Cybersecurity Analytics and Operations**
- **M.E.A. in Enterprise Architecture and Business Transformation**
- **Integrated Undergraduate–Graduate (I.U.G.) Programs** (Cybersecurity only)

General Policies

Time Limitation

All requirements including completion of the culminating experience (scholarly paper or capstone), must be met within eight years of admission to the program.

Language and Communication

All students must demonstrate competence in English and the ability to communicate ideas effectively, both orally and in writing, at a professional level.

M.P.S. in Cybersecurity Analytics and Operations

The Master of Professional Studies (M.P.S.) in Cybersecurity Analytics and Operations is a professionally oriented degree designed to develop applied expertise in cybersecurity analytics, operations, and risk management. The program emphasizes technical and managerial skills relevant to cybersecurity practice in industry and government settings.

Credit Requirements: Minimum 33 credits (400–800 level), including at least 18 credits at the 500–800 level; at least 27 credits must be earned at Penn State.

Core Courses (15 credits):

- IST 543: Foundations of Software Security
- IST 554: Network Management and Security
- IST 815: Foundations of Information Security and Assurance
- IST 820: Cybersecurity Analytics
- IST 825: Technologies for Web and E-Commerce Application Security

Electives (9–12 credits): Elective courses allow students to tailor the program to professional interests, including areas such as cyber defense, threat intelligence, security risk analysis, and emerging cybersecurity technologies. Please see [degree audit sheet](#) for current list.

Culminating Experience (3–6 credits): Students choose one of the following:

- **Scholarly Paper (3 credits, IST 594):** A focused technical paper demonstrating expertise, documented and presented in report form.
- **Capstone Course (IST 894):** A cyber event simulation (Cyber Range) course applying prior knowledge to real-world scenarios.

M.E.A. in Enterprise Architecture and Business Transformation

The Master of Enterprise Architecture (M.E.A.) in Enterprise Architecture and Business Transformation is a professionally focused program that prepares students to align technology, systems, and business strategy. The program emphasizes enterprise-wide design, systems integration, and organizational transformation.

Credit Requirements: Minimum 33 credits (400–800 level), including at least 18 credits at the 500–800 level; at least 27 credits must be earned at Penn State.

Core Courses (15 credits):

- EA 871: Enterprise Architecture Foundations I
- EA 873: Enterprise Modeling
- EA 874: Enterprise Information Technology Architecture
- EA 876: Architecting Enterprise Security and Risk Analysis
- MBADM 571: Global Strategic Management
- **Choose 2** courses from the following list:
 - MBADM 816: Managing and Leading People in Organizations
 - MBADM 820: Financial Management
 - MGMT 831: Strategy Implementation and Organizational Change

Electives (9–12 credits): Select 6 credits only from the following categories:

Enterprise and Security Risk Courses

IST 554 Network Management and Security
IST 805 Cybersecurity Forensics and Management
IST 815 Foundations of Information Security and Assurance

Supply Chain

SCM 800 Supply Chain Management
SCM 801 Supply Chain Performance Metrics and Financial Analysis (PR=SCM 800)
SCM 812 Demand Fulfillment (PR=SCM 801)
SCM 822 Supply Management (PR=SCM 801)
SCM 842 Operations Management and Demand Fulfillment (PR=SCM 801)

Project Management

MANGT 510 Project Management
MANGT 515 Cost and Value Management (PR=MANGT 510)
MANGT 531 Organizations
MANGT 540 Interpersonal and Group Behavior (PR=MANGT 510)

Business Architecture

ENTR 810 Emerging Trends, Technology and Corporate Innovation

Please see [degree audit sheet](#) for current listings.

Culminating Experience (3 credits): Students choose one of the following:

- **Scholarly Paper - IST 594:** A focused technical paper demonstrating expertise, documented and presented in report form.
- **Capstone Course - EA 878:** Enterprise Architecture Leadership Develops additional capabilities for leading, communicating, and implementing enterprise architecture

College of IST Graduate Policies

Course Waiver Policy

In some cases, up to nine credits of graduate-level coursework from other accredited institutions may be accepted toward the methodology and specialization requirements, subject to the following guidelines:

1. The course must be from an accredited institution.
2. The student must have earned a grade of “A” or “B.”
3. The course may have been completed as part of a graduate degree program, but completion of the degree itself is not required.
4. The course must appear on an official graduate transcript.
5. The course must have been taken within five years prior to the student’s registration in the IST graduate program.
6. To request a course waiver, the student must submit the following materials to the Graduate Programs Office:
 - a. A completed IST Graduate Course Waiver Form with the adviser’s signature
 - b. An official transcript listing the course and grade, if not already on file
 - c. A syllabus for the course proposed for waiver

Independent Study Policy

The College of IST permits students to enroll in independent study courses with IST graduate faculty to explore topics not covered in regularly offered IST courses or graduate courses in other Penn State departments or programs. The following guidelines apply:

1. Students requesting an independent study course must submit a completed Independent Study Form to the Graduate Programs Office (available on the IST Graduate Student website).
<https://ist.psu.edu/current-students/graduate-students/course-and-thesis-scheduling>
2. A maximum of six independent study credits may be applied toward the degree program. Individual independent study courses may range from 1–3 credits, depending on the scope of the proposed work. These credits may count towards the specialization area requirements.
3. Independent study courses may not be used for Ph.D. dissertation research. They are intended for independent coursework on subjects not otherwise available through IST or Penn State graduate offerings.
4. The student must meet with the independent study instructor for the contact hours corresponding to the number of requested credits. For example, a three-credit independent study requires three contact hours per week.
5. The outcome of the independent study must be a deliverable agreed upon by both the student and the instructor that is relevant to the course topic.

IST Graduate Student Termination Policy

(Approved by the Graduate Advisory Committee, February 2017)

The College of IST Graduate Student Termination Policy is derived from the Fox Graduate Education Policies and applies to all Ph.D., M.S., M.P.S., M.E.A., and I.U.G. students.

Students may be terminated from a graduate program in the College of IST for unsatisfactory scholarship. This includes, but is not limited to, failing to meet minimum academic standards (such as GPA or required course grades) and violating ethical, moral, or professional standards. Violations of these standards may result in academic sanctions, including suspension or dismissal by the student's graduate program, or by the Fox Graduate School, which may bar continued or future enrollment in any Penn State graduate program.

Examples of unsatisfactory scholarship include (but are not limited to):

- Behavior failing to meet acceptable ethical, moral, or professional standards
- Violations of the academic integrity policy or other university policies
- Inadequate grade-point average
- Failure to earn satisfactory grades in required courses
- Lack of satisfactory progress in research or other activities related to the culminating experience
- Failing the qualifying, comprehensive, or final oral examination (for doctoral students)

Behavior that violates the Student Code of Conduct will be referred to the Office of Student Conduct. Once their review is complete, the graduate program will continue its review and determine any appropriate academic sanctions.

Termination Process

The termination process may be initiated by any of the following:

- The student's adviser
- The student's M.S. thesis/dissertation committee
- The student's research or teaching supervisor
- The Director of Master's Programs
- The College's Graduate Advisory Committee (GAC)

If a recommendation for termination is made, a letter describing the rationale will be sent to the Director of Master's Programs. The Director will review the recommendation, and if they concur, will notify the student that the termination process has been initiated. The recommendation will then be reviewed by the Graduate Advisory Committee.

If approved by the GAC, the student will receive a letter from the Graduate Program Head indicating:

- The reason for termination
- The effective date of termination
- Any other relevant information regarding the student's status

Appeal Process

Upon receiving the notice of termination, the student has the right to request a review. To initiate a review, the student must submit a **written appeal to the Associate Dean of Research and Graduate Affairs within ten days** of receiving the termination notice.

If the student believes they have experienced discrimination, they may file a complaint through the University's Office of Equal Opportunity and Access following the University's established discrimination complaint procedures.

The Associate Dean of Research and Graduate Affairs will then schedule a meeting within 30 days of receiving the student's appeal. The student will have the opportunity to meet with the faculty member(s) who made the termination recommendation, including members of the Graduate Advisory Committee.

Following this meeting, the Associate Dean of Research and Graduate Affairs will notify the student in writing within **five days** whether the termination decision has been sustained or reversed. If sustained, the program head will provide:

- The reasons for termination
- The evidence supporting the decision
- Information on the right to appeal further to the Fox Graduate School

The program head will also notify the Fox Graduate School of the decision. Termination will normally be effective at the end of the semester in which the final decision is made, unless circumstances require immediate removal from the program.

If the termination is based on failure to uphold the highest ethical, moral, or professional standards, the Fox Graduate School may have a determination to dismiss the student from continued or future enrollment in any graduate program at Penn State.

IST Forms

Forms used by the Ph.D., M.S., and I.U.G. programs vary. For the most up-to-date versions, please visit the “Current Graduate Students” page located on the IST website at:

<https://ist.psu.edu/current-students/graduate-students/policies-forms-and-resources>

Forms located at this site include:

- Audit Check Sheet
- Adviser Agreement Form
- Adviser Change Form
- Independent Study Form
- Internship Leave Form
- Research Methods Course Substitution Form
- Specialization Course Waiver Form

and others.

Accommodations for Students with Disabilities

Penn State is committed to providing access to students with disabilities to the university's graduate programs. The Office for Student Disability Resources (SDR) offers support specifically tailored to the needs of graduate students. The office considers the need for accommodations in the following areas: 1) graduate assistantship accommodations; 2) coursework accommodations; 3) lab, fieldwork, and clinical work accommodations; 4) qualifying / comprehensive exams accommodations; 5) thesis / dissertation accommodations. An overview of disability resources specific to graduate students can be found here: <https://equity.psu.edu/offices/student-disability-resources/graduate-students-with-disabilities>

To be considered for reasonable accommodations, students **are required** to contact the SDR office, participate in an intake interview, provide documentation, and complete the registration process. Students should be aware that it may take time to go through the intake process, and that they may not know in advance whether accommodations will be needed either for their coursework or for their milestone exams. We thus recommend that students register with SDR for any eligible disabilities in advance, ensuring that all documentation is in place should accommodations be needed at any point during their graduate program. Students can register with SDR and choose not to request accommodations once registered.

Once registered, students can approach course instructors (for course accommodations) and/or the DGS or PIC (for accommodations to other program requirements, including benchmark examinations) to request accommodations. For milestone examinations, this process is **required** for **each** milestone examination for which you request accommodations. Specific accommodations are determined through an interactive process and tailored to each student's needs with the goals of upholding rigor and disciplinary expectations in each of the distinct components of graduate education.

Students who would like accommodations for academic events (such as non-course-based department colloquia or seminars) that are not covered under the official SDR categories are encouraged to express these needs to the program leadership (e.g. DGS, PIC, or program head) and/or SDR.

Resources

Links to Fox Graduate School and University resources

a. General

- [Graduate student resource library](#)
- [University Libraries](#)
- [Office of the Vice Provost for Graduate Education and Dean of the Fox Graduate School](#)

b. Academic Resources

- [Fox Graduate School Academic resources](#)
- [Master's Thesis and Doctoral Dissertation Requirements](#)
- [Graduate Writing Center](#)
- [Fox Graduate School Ombudsperson Office](#)
- [Avenues for addressing graduate student concerns](#)

a. Career and Professional Development

- [Graduate Exhibition](#)
- [Three Minute Thesis](#)

b. Funding

- [Financial aid including Office of Student Aid](#)
- [Research and Conference Travel Funding Opportunities](#)
 - ♣ [International Travel Grants](#)

c. Health and Well-being

- [Health Insurance / SHIP](#)
- [Graduate Student Parental Leave](#)
- [Mental health support](#)
- [Child Care at Penn State](#)
- [Students in crisis](#)

d. Special Populations

- [Adult Learner Programs & Services](#)
- [Student Disability Services](#)
- **International Students**
 - ♣ [Penn State Global ISSA](#)
 - ♣ [English for Professional Purposes Intercultural Center \(EPPIC\) - support for language skills](#)

- o [Military students](#)
 - e. **Clubs and Organizations**
 - o [Graduate and Professional Student Association](#)
 - o [Discover](#) – for finding graduate student organizations
-

Reporting and Assistance Resources

As we welcome new and returning students to campus, all members of the Penn State community are asked to be mindful of their individual responsibility to help keep the University a safe and ethical institution and an accountable steward of University funds whether generated from state, federal, student, or any other sources.

The University does not condone wrongful conduct by any member of the Penn State community no matter what position he or she may hold.

Thus, all members of the University community are urged to speak up if they see or suspect illegal, unethical, or unsafe conduct. If you do so, be assured that the University will protect you from retaliation. See AD67 or contact the Office of Ethics & Compliance for more information.

The following resources are available for faculty, staff, students, and others:

TO MAKE A REPORT

Crime or emergency

- Contact the campus police or security office
- In an emergency, dial 911

Child abuse, including child sexual abuse

- Contact the Pennsylvania Child Welfare Services “ChildLine” at 800-932-0313
- If the child is in immediate danger, dial 911 first
- Penn State Authorized Adults (per AD72) are also to email AD72@psu.edu communication that a report has been made. More information on AD72

Behavioral threat

- Contact the Behavioral Threat Management Team at 855-863-BTMT (2868), 814- 863-BTMT (2868), reportBTMT@psu.edu

Bias or discrimination

- Contact the Affirmative Action Office at 814-863-0471
- Visit the Report Bias website
- Students at University Park should call the Lion Support Help Line at 814-863-2020 to report acts of intolerance
- Students at other campuses may contact their campus Student Affairs office to report acts of intolerance

Sexual Harassment and other forms of sexual misconduct

- Contact the Affirmative Action Office at 814-863-0471 or another appropriate office listed

- To file a complaint outside of the University contact:
- The Office for Civil Rights (Philadelphia Office) at (215) 656-8541 or email OCR.Philadelphia@ed.gov
- The Equal Employment Opportunity Commission (Philadelphia District Office) at 800- 669-4000
- The Pennsylvania Human Relations Commission (Harrisburg Regional Office) at 714-787-9780

Research-related

- Contact the Office for Research Protections at 814-865-1775 or ORProtections@psu.edu

Suspected ethical or policy violations

(Including fraud, theft, conflict of interest, retaliation, athletics compliance)

- Use Penn State Ethics and Compliance Hotline at 800-560-1637 or <https://psuethicsandcompliance.tnwreports.com> (Both are anonymous and available 24/7)

TO ASSIST VICTIMS

Sexual violence, sexual abuse or sexual harassment

- The Penn State Sexual Assault and Relationship Violence Hotline is available 24/7 at 800-550-7575 (TTY 866-714-7177)
- The University's Sexual Harassment and Assault Reporting Website
- The University-wide designated sexual harassment resource person for students, regardless of sex or gender, is the Director of the Center for Women Students at 814-863-2027
- The University-wide designated sexual harassment and sexual misconduct resource person for employees is the Vice Provost for Affirmative Action at 814-864-0471
- For University Park, the Centre County Women's Resource Center Hotline is available 24/7 at 814-234-5050 or 877-234-5050

All others

- Contact the Center for Counseling and Psychological Services (CAPS) at 814-863- 0395
- Contact the Employee Assistance Program (EAP) at 866-799-2728

RESOURCES

All employees should be aware of Penn State’s Conflict of Interest policy. Please see the following for more information:

- Policy [HR91](#) – Conflict of Interest
- Policy [RP06](#) - Disclosure and Management of Significant Financial Interests
- Policy [AD86](#) – Acceptance of Gifts and Entertainment

If it is not clear where to turn for assistance, any of these offices will guide the individual to someone who can help:

- [Office of Human Resources Employee Relations Division](#) at 814-865-1412
- [Office of University Ethics and Compliance](#) at 814-867-5088
- [Office of Affirmative Action and Title IX Coordinator](#) at 814-863-0471
- [Office of Student Conduct](#) at 814-863-0342
- [Office of Internal Audit](#) at 814-865-9596
- [Cleary Act](#) Compliance Manager at 814-863-1273
- Your campus, college, or unit’s Human Resources representative. Contact information is available at <https://hr.psu.edu/content/hr-strategic-partner-and-consultant-directory>
- [Office of Disability](#) at 814-863-1807

TRAINING

Training is available on many of the above topics. Contact the [Office of Human Resources Center for Workplace Learning and Performance](#) at 814-865-1473