



PRINCETON **COMPUTER SCIENCE**

B.S.E. Majors

Independent Work & Thesis Handbook Computer Science Department Princeton University 2026-2027 Academic Year

Updated August 2026

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Preface

This handbook describes the independent work (IW) requirements for B.S.E. majors in the Department of Computer Science (COS).

Undergraduate independent work and theses are an integral feature of the Princeton academic experience. Independent work provides students the opportunity to work closely with a Princeton faculty member on an in-depth project they feel passionate about. Students will develop valuable transferable skills as well as something interesting to talk about in grad school applications or job interviews.

Because of the broad range of topics within computer science and the diverse interests of undergraduates, students may major in computer science through either the A.B. or B.S.E. degree program. Computer Science is the only department in the university with this flexibility.

This handbook is for B.S.E. COS majors doing independent work. For the A.B. handbook, please visit <https://www.cs.princeton.edu/ugrad/independent-work> or email mhornstein (@princeton.edu).

Portrait of the Discipline

In a computer science program, students can anticipate gaining a comprehensive understanding of foundational principles and advanced concepts in computing. They will delve into programming languages, algorithms, data structures, software development methodologies, and various specialized areas such as artificial intelligence, databases, and networking. A noteworthy aspect of such a program lies in the value of independent work projects. Through these projects, students cultivate problem-solving skills, creative thinking, and the ability to apply theoretical knowledge to practical situations. These projects empower students to design, implement, and refine their own software solutions, fostering a deeper grasp of real-world challenges and technological innovation. This hands-on experience not only hones technical expertise but also nurtures teamwork, project management, and the perseverance necessary for success in the dynamic landscape of computer science.

Learning Goals for COS Independent Work

- Students will be able to read and comprehend technical literature in computer science;
- Students will be able to plan and complete a one- or two-term project in an area of computer science of their choice;
- Students will be able to identify, isolate and solve important technical subproblems that lead to a solution to a more significant problem;
- Students will be able to present technical ideas in computer science clearly, both orally and in written form;
- Students will be able to identify and assess related work in their area of study;
- Students will demonstrate an ability to work independently in accomplishing all of the above goals.

IW and Thesis Management Tools

In order to assist students and advisers in managing independent work and thesis projects, the department uses the following tools that will be referenced in this handbook:

- COS IW Portal - Used to complete enrollment forms and submit required assignments
- Ed Discussion via Canvas - Used for communication including announcements, assignment reminders, and asking questions of the various IW instructors and staff

COS IW Portal

All IW and thesis students must complete a sign-up form in the IW Portal. The IW Portal is also where students submit all assignments.

[Click here for the COS IW Portal.](#)

Ed Discussion via Canvas

All general communication about IW and thesis will be posted to Ed Discussion via Canvas. IW seminar instructors may also use Canvas for communication and to collect weekly progress reports or other homework-type assignments.

Students are encouraged to use Ed Discussion on the General IW Canvas site to ask questions that may be applicable to others.

The IW Administrator will post reminders about upcoming assignments and information sessions through Ed Discussion.

[Click here to access Canvas.](#)

COS B.S.E. Independent Work Requirements & Restrictions

Requirements

COS B.S.E. majors are required to complete at least one term of independent work. One additional term of independent work may count as a 300- or 400-level departmental elective course. COS B.S.E. majors are also welcome, but not required, to complete a two-term senior thesis. All independent work courses taken count toward the number of required courses to graduate.

Restrictions

- COS sophomores are not eligible to enroll in COS independent work courses.
- Students may not take two independent work courses in the same term.
- Students may take a maximum of four courses of COS independent work.

Overview of B.S.E. Independent Work Options

COS B.S.E. majors have several options to fulfill the independent work requirement. A brief overview of each option is below with links to more in-depth information.

IW Seminars

The independent work seminars allow a small group of students and a faculty adviser with shared interests to meet and work on related projects.

IW seminars are recommended for students who would like to have a bit more structure built into an independent work project. In the IW seminars, students meet weekly with their instructor/adviser and get regular feedback from peers.

Note: Students do not direct-enroll in IW seminars. Students will be assigned to an IW seminar based on the information filled out in the IW portal sign-up form. We try our best to accommodate students into one of their top three seminar preferences, but this is subject to available seats, seminar popularity, and individual IW requirements. **Students are not guaranteed a spot in a particular seminar.**

[Click here for more information about IW seminars.](#)

Single-Term One-on-One Independent Work Projects

Students doing one-on-one IW projects make arrangements with a [Princeton faculty member](#) for one-on-one advising work on their own and schedule meetings with an adviser independently.

We find that students are most successful in one-on-one IW projects when they are self-motivated, proactive, organized, responsible, resourceful, passionate about the project, and able to work independently.

Single-term one-on-one projects are available to both B.S.E. juniors and seniors in both the fall and spring terms. Juniors interested in working on the same project in both fall and spring must complete the requirements for two separate terms of independent work.

[Click here for more information about one-on-one IW projects.](#)

Two-Term Senior Thesis

COS B.S.E. majors are also welcome, but not required, to complete a two-term senior thesis on a topic of their choosing.

As with single-term one-on-one projects, thesis students are responsible for making arrangements with a [Princeton faculty member](#) for thesis advising, working on their own, and scheduling regular meetings with their advisers independently.

[Click here for more information about senior thesis projects.](#)

Grading Information

Grades Earned, by Course Number

All single-term independent work must be taken for a letter grade (A-F). Senior Thesis I (COS 498B) earns a P/D/F, and Senior Thesis II (COS 499B) earns an A-F letter grade.

Junior Independent Work (Single-Term)			
Course #	Description	Term	Grade
COS 397	Single-Term Junior Independent Work Seminar	Fall and/or Spring	A-F
COS 398	Single-Term Junior Independent Work One-on-One	Fall	A-F
COS 399	Single-Term Junior Independent Work One-on-One	Spring	A-F
Senior Independent Work (Single-Term)			
Course #	Description	Term	Grade
COS 497	Single-Term B.S.E. Senior Independent Work, Seminar or One-on-One	Fall and/or Spring	A-F
Two-Term Senior Thesis			
Course #	Description	Term	Grade
COS 498B	B.S.E. Senior Thesis I	Fall	P/D/F
COS 499B	B.S.E. Senior Thesis II	Spring	A-F

Note: Grades are recommended by advisers/seminar instructors, and confirmed by the IW Coordinators.

Letter Grade Standards

A+: Exceptional. Significantly exceeds the highest expectations for undergraduate work. The work should reflect an exceedingly high degree of originality, independence, and understanding by the student. Project results are unimpeachable and of the highest impact. Oral presentation

and paper are impeccably prepared, and their delivery is of the highest quality. Projects earning this grade typically have gained some outside recognition and/or impact through presenting at a conference, having an accepted publication, releasing widely adopted software, getting a startup funded, etc.

A : Outstanding. Meets the highest standards for the assignment. The work reflects originality, independence, and a comprehensive understanding of the topic. Project results are clear and impactful. The oral project presentation exhibits a high level of preparation and delivery, and the project paper is error-free in concept and is very carefully prepared.

A-: Excellent. Meets very high standards for the assignment. There is originality in the approach, and a clear contribution was made based on independent work effort by the student. Understanding of the topic was appropriate, and the oral presentation and written paper were understandable and clear, and mostly error-free.

B+: Very Good. Meets high standards for the assignment. The student was able to formulate a reasonable approach and achieved good results. A little guidance from the advisor was needed to keep the student's project on track. The student showed an understanding of the topic, but the project could have benefitted from more work on the project's implementation and/or evaluation components. The oral presentation and paper were of high quality, but some editing would have improved them.

B: Good. Meets most of the standards for the assignment. The work lacks some originality but is well executed with some interesting results. Substantive interactions with the advisor were necessary to define, refine, and carry out the project. Understanding of the topic improved over time, but more work would have improved the results. The oral presentation and project paper were mostly accurate, but both could have been improved with more attention to detail.

B-: More Than Adequate. The student shows a reasonable command of the material. Substantial and repeated direction from the advisor and others was necessary. Work is lacking in originality, and some content was missing or incomplete. Results were achieved, but there may have been some gaps in execution or data analysis. The oral presentation and project paper were of fair quality.

C+: Acceptable. Meets basic standards for the assignment. The student has command of some reasonable amount of the material. Independence of thought and action was lacking. The advisor was driving the project rather than the student. Understandable content was there, but it showed significant gaps. Results showed signs of incompleteness and a lack of data analysis skills. Oral Presentation and paper were completed.

C: Somewhat Acceptable. Meets some of the basic standards for the assignment. The student did some work, but it was clearly lacking in originality, innovation, and independence. Oral presentation and paper were finished, but the results were minimal and prosaic.

C-: Acceptable but Lacking Key Qualities. Did not meet several important standards. Nothing interesting was attempted. The student showed only a rudimentary understanding of the scope of the work. Oral presentation and/or paper were incomplete in some significant ways.

D: Minimally Acceptable. The student tried to do something. Oral presentation and paper were submitted. Lowest passing grade.

F: Not acceptable. Work not submitted, or if work was submitted, it failed to meet minimal standards for content.

Grading Penalties

All final papers submitted after the deadline will incur a 1/3 grade penalty.

Single-Term Independent Work in Detail

There are two types of single-term independent work available to B.S.E. students: independent work seminars or one-on-one independent work projects. Both IW types have the same required assignments and due dates.

Independent Work Seminars

IW seminars are open to A.B. juniors and COS B.S.E. juniors or seniors. **For B.S.E. students, seminars may be taken in the fall and/or spring term of junior and/or senior year.**

The IW seminars provide a way for students working on similar projects to have more interaction, assistance, and feedback from peer students. Each student chooses and works on their own project, just as any other IW. The only difference is that meetings occur with faculty and other students, seminar-style, once per week at a scheduled time. During the meetings, students discuss what they are doing, provide feedback to other students, and generate ideas for future work. The seminars provide a forum for honing small-group presentation and discussion skills that will be essential after graduation. Individual meetings with the faculty adviser are also possible by arrangement.

Within these seminars, it is possible for groups of 2-3 students to work on different parts of the same large-scale project. As an example, a few students might work together on a system for collaborative grading of assignments in MOOCs (massive open online courses), with one student developing the user interface, another designing the algorithms for assigning problems to graders, and a third implementing a system for integrating grader responses in the back-end server. **Every student is responsible for writing a paper and making presentations individually**, but it might be possible to achieve much more with a collaborative effort than with a set of individual ones (the whole is greater than the sum of parts). In any case, team efforts could be more fun and engaging for the participating students. Please see the [Collaboration Policy](#) section below for more information about group IW projects.

Seminar Themes

The seminar offerings change year-to-year. The titles, faculty advisers, expected meeting times, and abstracts for the IW seminars are released each term at the COS Advising Fair and are updated on the [IW seminar webpage](#).

Note: Students are required to undertake a project directly related to the seminar theme. Those intending to pursue an unrelated project will not be permitted to participate in the seminar.

Required Assignments

All students enrolled in an IW seminar must complete the following assignments:

- Written project proposal, 1-2 pages
- Mid-term checkpoint form, minimum 3 paragraphs
- Attendance at the How to Give an IW Talk and How to Write an IW Paper information sessions (required of first time IW students, only)
- Video-recorded oral presentation and slides, 9-minute presentation
- Written final report, approximately 20-25 pages

Additional Requirements

- Regular attendance of the weekly seminar meetings
- Some IW seminar instructors may also require weekly homework or weekly progress update reports

Who Should Enroll in an IW Seminar?

All students who plan to do independent work for the first time should consider signing up for an IW seminar. **Though the seminars target first-time IW students, they are open to any COS junior or senior who is not working on a senior thesis.** The content of the IW seminars includes not only independent work on a project but also guidance about how to choose projects, evaluate progress, design experiments, collaborate with others, make presentations, and other project management skills. These skills are essential for becoming an effective researcher and provide great training for working in a company or startup. Thus, the seminars are perfectly suited for students doing their first term of independent work.

Note: Students do not direct-enroll in IW seminars. Students will be assigned to an IW seminar. We try our best to accommodate students into one of their top three seminar preferences, but this is subject to available seats, seminar popularity, and individual IW requirements. **Students are not guaranteed a spot in a particular seminar.** For detailed seminar enrollment information, [click here](#).

One-on-One IW Projects

One-on-one IW projects are open to A.B. juniors and COS B.S.E. juniors or seniors. **For B.S.E. students, one-on-one IW projects may be taken in the fall and/or spring term of junior and/or senior year.** For detailed single-term one-on-one enrollment information, [click here](#).

Students who have already done a previous term of independent work, or who want to work on a project outside the scope of the topics offered in the IW seminars, can make arrangements with a Princeton faculty member for one-on-one IW advising.

For B.S.E. students, single-term one-on-one projects are available to both juniors and seniors. **Juniors interested in working on the same project in both fall and spring must complete**

the requirements for two separate terms of independent work. For seniors interested in working on the same project in both fall and spring, that structure is considered a senior thesis and must follow the senior thesis requirements and deliverables.

Students doing one-on-one IW must work on their own and schedule meetings with their advisers independently.

[Click here for a list of COS faculty advisers and research topics.](#)

Required Assignments

All students enrolled in a one-on-one IW project must complete the following assignments:

- Written project proposal, 1-2 pages
- Mid-term checkpoint form, minimum 3 paragraphs
- Attendance at the How to Give an IW Talk and How to Write an IW Paper information sessions (required of first time IW students, only)
- Video-recorded oral presentation and slides, 9-minute presentation
- Written final report, approximately 20-25 pages

Additional Requirements

- Confirm your adviser before the beginning of your IW term
- Regular meetings and consistent communication with your IW adviser
- Some advisers may also require regular progress update reports and/or presentations to their lab/grad student(s)/research group

Who Should Enroll in a One-on-One IW?

Students are most successful in one-on-one IW projects when they are self-motivated, proactive, organized, responsible, resourceful, passionate about the project, and able to work independently.

For detailed single-term one-on-one enrollment information, [click here](#).

Senior Thesis Projects in Detail

COS B.S.E. majors are also welcome, but not required, to complete a senior thesis on a topic of their choosing.

The senior thesis is [intrinsic to a Princeton education](#) and provides students the opportunity to work independently and in-depth on a topic of interest. All thesis projects must have a strong computer science component, but beyond that are wide open. Students will use the skills they have developed over the first three years at Princeton and apply them to application development, entrepreneurial adventures, educational projects, community service, academic research, data analysis, interdisciplinary studies, analysis of public policy, or other pursuits that are challenging and enriching.

The B.S.E. Senior Thesis (498B-499B) is a year-long project in which students complete a substantial piece of research and scholarship under the supervision and advisement of a Princeton faculty member. While a year-long thesis is due in the student's final semester of study, the work requires sustained investment and attention throughout the academic year.

As with single-term one-on-one projects, students are responsible for making arrangements with a Princeton faculty member for thesis advising, and are also responsible for scheduling regular meetings with their advisers independently.

[Click here for a list of COS faculty advisers.](#)

Required Assignments

All students enrolled in a senior thesis must complete the following assignments:

- Written project proposal, 1-2 pages
- Mid-term checkpoint form, minimum 3 paragraphs
- Confirm a second reader
- Midpoint thesis report, 5-10 pages
- Attendance at the How to Give an IW Talk and How to Write an IW Paper information sessions (only required for students with no previous IW, encouraged for others who want a refresher)
- Draft written report, 10-15 pages
- Written final report, approximately 40-50 pages
- Oral presentation slides and live 12-minute oral presentation

Additional Requirements

- Confirm your adviser before the beginning of the academic year
- Regular meetings and consistent communication with your IW adviser

- Some advisers may also require regular progress update reports and/or presentations to their lab/grad student(s)/research group
- Students must submit a digital copy of their final paper to the [Mudd Library's thesis archive](#)

Restrictions

- Students will earn a P/D/F grade for Senior Thesis I and an A-F letter grade for Senior Thesis II.
- Students may drop the thesis or reduce to a single-term IW project prior to the [fall drop deadline \(usually the ninth week of the term\)](#).
 - Students who reduce to a single-term IW project must work with the Registrar and the COS IW Administrator to drop COS 497 and add COS 498B to their fall schedule before the drop deadline.
- Students who do not drop COS 498B by the [fall drop deadline \(usually the ninth week of the term\)](#) are required to complete the full senior thesis, including enrolling in COS 499B in the spring term.

Who Should Enroll in a Senior Thesis?

Any B.S.E. student who is interested in doing so, may opt into a senior thesis. A thesis is strongly recommended for any students who are considering applying to graduate programs.

For detailed senior thesis enrollment information, [click here](#).

Enrolling in COS B.S.E. Single-Term Independent Work

All COS B.S.E. students enrolling in single-term independent work must complete **both** of the following enrollment steps:

1. **Enroll in the appropriate COS Independent Work course through Stellic.**
2. **Complete the COS IW Sign-Up Form in the COS IW Portal.**

Both steps are required to complete your enrollment.

Step One: Enroll in Stellic

During course selection or the add/drop period:

1. Enroll in the appropriate COS Independent Work course code in **Stellic**.
2. Wait approximately **24 hours** for the COS IW Portal to sync with Stellic.

Junior Independent Work (Single-Term)				
Course #	Description	Term	Grade	Course Credit
COS 397	Single-Term Junior IW Seminar	Fall and/or Spring	A-F	1
COS 398	Single-Term Junior IW One-on-One	Fall	A-F	1
COS 399	Single-Term Junior IW One-on-One	Spring	A-F	1
Senior Independent Work (Single-Term)				
Course #	Description	Term	Grade	Course Credit
COS 497	Single-Term B.S.E. Senior Independent Work, Seminar or One-on-One	Fall and/or Spring	A-F	1

Note: [As previously stated in this handbook](#), students may only enroll in one IW course code per term

Step Two: Complete the COS IW Sign-Up Form

After waiting 24 hours from your Stellic course enrollment:

1. Log into the [COS IW Portal](#) using your Princeton NetID and password.
2. Open the **IW Sign-Up Form** for the appropriate term.
3. Complete the portion of the form that corresponds to your Independent Work type:
 - **IW Seminar**
 - **One-on-One Project**

If You Are Enrolling in an IW Seminar

How It Works

Unlike most Princeton courses, students **do not enroll directly into a specific seminar section**. Instead, students indicate their seminar preferences via the IW Sign-Up Form. **Students are then assigned to a seminar** by the IW Coordinators and IW Administrator. Both COS A.B. and B.S.E. majors have access to the IW seminars.

Although the department cannot guarantee every student placement in their first-choice seminar, seminar preferences, academic interests, and scheduling constraints are accommodated whenever possible.

Completing the IW Sign-Up Form

After enrolling in COS 397, S99 (juniors) or COS 497, S99 (seniors) in Stellic and allowing 24-hours for the IW portal to sync with Stellic:

- Sign in to the [IW Portal](#) with your netID and password.
- Click the “Click to complete form” button under the “IW Sign-Up Form” area of the relevant term.
- Select “I will be in an independent work seminar this spring (best choice if little previous IW experience)” within the “Options” box.
- Rank the IW seminars in order of preference (1st choice, 2nd choice, 3rd choice, etc.)
- Answer the following prompt: “Please describe your interests and goals related to independent work this fall. Include any relevant coursework and/or work experience.”
- Include any scheduling conflicts that the IW Administrator should know about.
 - Note: As indicated above, students are not guaranteed a spot in any particular seminar, but schedule and preferences are accommodated as best as possible.
- Click the blue submit button at the bottom of the page.

After Students Are Assigned to Seminars

Students are typically notified of their seminar assignments:

- **Early summer** for fall seminars
- **Early January** for spring seminars

After assignments are released:

- Students may switch to another seminar if space is available.
- Students may change from a seminar to a one-on-one project before the end of the add/drop period, provided they have secured an adviser.

Contact the IW Administrator for assistance with either change.

What Happens Next

Once your enrollment and IW Sign-Up Form have been completed:

- Seminar students will receive their seminar assignment before the beginning of the term.
- Students may make approved changes during the add/drop period as permitted by department policy.

If You Are Enrolling in a Single-Term One-on-One IW

Before Completing the Form

Please do **not** complete the IW Sign-Up Form until you have confirmed a [faculty adviser](#).

If you intend to complete a one-on-one project but are still looking for an adviser, email the IW Administrator to indicate your plans.

Completing the IW Sign-Up Form

After enrolling in COS 398, S99 (fall, juniors), COS 399, S99 (spring, juniors), or COS 497 (fall or spring, seniors) in Stellic and allowing 24-hours for the IW portal to sync with Stellic:

1. Sign in to the [IW Portal](#) with your netID and password.
2. Click the “Click to complete form” button under the “IW Sign-Up Form” area of the relevant term.
3. Select “I will be doing one-on-one research with a professor” within the “Options” box.
4. Select adviser name from the drop-down list, or

- a. If your adviser is not listed, check the box that says, “My adviser is not listed above.” Enter your adviser’s name, then email the IW Administrator, Mikki Hornstein, mhornstein (@princeton.edu), to let Mikki know that your adviser needs to be added to the drop-down list.
 - b. Add the name(s) of any additional advisers.
5. Enter the proposed project title.
 - a. Note: If you don’t have a title yet, you can enter “TBD” temporarily and edit it later. It’s most important that we know you are paired with an adviser.
6. Enter a brief project description.
 - a. Note: As with the project title, if you don’t have a description yet, you can enter “TBD” temporarily and edit it later. It’s most important that we know you are paired with an adviser.
7. Click the checkbox indicating that you confirm that your adviser has agreed to advise you on this project.
8. Click the blue submit button at the bottom of the page.

What Happens Next

Once your enrollment and IW Sign-Up Form have been completed:

- Students will have their adviser and project information reviewed by the department.
- Students may make approved changes during the add/drop period as permitted by department policy.

Enrolling in a B.S.E. Senior Thesis

All COS B.S.E. students enrolling in a two-term senior thesis must complete the following enrollment steps:

1. Complete the [B.S.E. senior thesis application form](#) (released in the spring of junior year)
2. Enroll in the appropriate COS senior thesis course code in Stellic.
3. Complete the COS IW Sign-Up Form in the COS IW Portal.

All three steps are required to complete your enrollment.

Step One: Complete the B.S.E. Senior Thesis Application Form

This is a Google form maintained by the IW Administrator. It will ask you to identify your thesis adviser and confirm your understanding of a few rules regarding the B.S.E. senior thesis. Generally, students should have an adviser confirmed or close to confirmed before applying to enroll in the B.S.E. senior thesis.

- Completion of the application form notifies the COS IW Administrator to give you permission to enroll in COS 498B in TigerHub/Stellic.

Step Two: Enroll in Stellic

During course selection or the add/drop period:

1. Enroll in the appropriate COS Independent Work course in **Stellic**.
2. Wait approximately **24 hours** for the COS IW Portal to sync with Stellic.

Two-Term Senior Thesis				
Course #	Description	Term	Grade	Course Credit
COS 498B	B.S.E. Senior Thesis I	Fall	P/D/F	1
COS 499B	B.S.E. Senior Thesis II	Spring	A-F	1

Note: [As previously stated in this handbook](#), students may only enroll in one IW course code per term.

Step Three: Complete the COS IW Sign-Up Form (First-Term, Only)

After waiting 24 hours from your Stellic course enrollment:

1. Log into the [COS IW Portal](#) using your Princeton NetID and password.
2. Open the **IW Sign-Up Form** for the appropriate term.
3. Complete the portion of the form that corresponds to your Independent Work type:
 - **Senior thesis**

Note: Students only complete the IW Sign-Up form for the first term of their senior thesis (usually Fall). In the second term (usually Spring), students only have to enroll in COS 499A in Stellic and do not need to complete anything extra in the IW Portal.

Before Completing the Form

Please do **not** complete the IW Sign-Up Form until you have confirmed a [faculty adviser](#).

Note: We recommend that students begin reaching out to potential senior thesis advisers starting in March of their junior year. If you need help identifying an adviser or thinking through a potential thesis topic, please contact the IW Administrator.

Completing the IW Sign-Up Form

After enrolling in the appropriate course code in Stellic and allowing 24-hours for the IW portal to sync with Stellic:

- Sign in to the [IW Portal](#) with your netID and password.
- Click the “Click to complete form” button under the “IW Sign-Up Form” area of the fall term.
- Select “I will be doing a senior thesis this year (COS498A & COS 499A, or COS 498B & COS 499B)” within the “Options” box.
- Select your adviser from the drop-down list, or
 - If your adviser is not listed, check the box that says, “My adviser is not listed above.” Enter your adviser’s name, then email the IW Administrator, Mikki Hornstein, mhornstein (@princeton.edu), to let Mikki know that your adviser needs to be added to the drop-down list.
 - Add the name(s) of any additional advisers
- Enter the proposed title of your project
 - Note: If you don’t have a title yet, that’s fine. You can enter “TBD” temporarily and edit it later. It’s most important that we know you are paired with an adviser.

- Enter a brief description of your planned project
 - Note: As with the project title, if you don't have a description yet, that's fine. You can enter "TBD" temporarily and edit it later. It's most important that we know you are paired with an adviser.
- Click the checkbox indicating that you confirm that your adviser has agreed to advise you on this project.
- Click the blue submit button at the bottom of the page.

What Happens Next

Once your enrollment and IW Sign-Up Form have been completed:

- Students will have their adviser and project information reviewed by the department.
- Students may make approved changes during the add/drop period as permitted by department policy.

2026-27 Independent Work and Thesis Deadlines

These deadlines will also be available on the [Calendar and Requirements web page](#). More information about the assignments listed below can be found in the [Assignment Descriptions](#) section of this handbook.

There are separate deadline charts for Fall 2026, Spring 2027, and for full-year thesis projects.

Fall 2026 Single-Term IW Projects

Note: There are some significant changes from past fall IW calendars due to the university's change to the fall IW final paper deadline. Please pay close attention to this calendar and the required deliverables.

Date	Event/Deadline	Location	Notes
May 5, 2026 11:59pm	Initial deadline to select an IW seminar or adviser and complete the IW sign-up form	IW Portal	Note: Students are placed into IW seminars by IW admin.
September 2, 2026 11:59pm	Secondary deadline to select an IW seminar or adviser and complete the IW sign-up form	IW Portal	Note: Seminar placement subject to availability at this point.
September 2, 2026 Time TBD, either 12:15pm or 4:30pm	IW Getting Started Meeting	Room TBD	Attendance required. Time and room will be announced closer to the meeting date.
September 2, 2026	SEAS Funding Application opens	bseprogram (@princeton.edu)	The application is usually due at the end of September.
September 17, 2026 11:59pm	Written Project Proposal due	IW Portal	
Mid-to-late September TBD	SEAS Spring Funding Application due	bseprogram (@princeton.edu)	Deadline TBD. The application is usually due at the end of September.
October 15, 2026 11:59pm	Checkpoint Form due	IW Portal	

November 3, 2026 Time TBD, either 12:15pm or 4:30pm	How to Give an IW Talk. information session	Room TBD	Attendance required for first-time IW students, and encouraged for others who need a refresher. Time and room will be announced at the start of the term.
November 10, 2026 Time TBD, either 12:15pm or 4:30pm	How to Write an IW Paper. information session	Room TBD	Attendance required for first-time IW students, and encouraged for others who need a refresher. Time and room will be announced at the start of the term.
November 30, 2026 11:59pm	Oral presentation slides and video due	IW Portal	
December 10, 2026 11:59pm	Written Final Paper due	IW Portal	1/3 grade penalty assigned for papers submitted after this deadline.

*Note: Date and time of the How To meetings is subject to change based on availability of the COS IW Coordinators and room availability.

All final papers submitted after the deadline will incur a 1/3 grade penalty.

Spring 2027 Single-Term IW Projects

Date	Event/Deadline	Location	Notes
December 11, 2026 11:59pm	Deadline to select an IW seminar or adviser	IW Portal	Note: Students are placed into IW seminars by IW admin.
January 25, 2027 Time TBD, either 12:15pm or 4:30pm	IW Getting Started Meeting	Room TBD	Attendance required. Time and room will be announced closer to the meeting

			date.
February 2027 TBD	SEAS Spring Funding Application due	bseprogram (@princeton.edu)	Deadline TBD. The application is usually due in mid-February.
February 15, 2027 11:59pm	Written Project Proposal due	IW Portal	
March 4, 2027 11:59pm	Checkpoint Form due	IW Portal	
March 16, 2027 Time TBD, either 12:15pm or 4:30pm	How to Give an IW Talk, information session	Room TBD	Attendance required for first-time IW students, and encouraged for others who need a refresher. Time and room will be announced at the start of the term.
March 24, 2027 Time TBD, either 12:15pm or 4:30pm	How to Write an IW Paper, information session	Room TBD	Attendance required for first-time IW students, and encouraged for others who need a refresher. Time and room will be announced at the start of the term.
April 11, 2027 11:59pm	Oral presentation slides and video due	IW Portal	
April 26, 2027 11:59pm	Written Final Paper due	IW Portal	1/3 grade penalty assigned for papers submitted after this deadline.

*Note: Date and time of the How To meetings is subject to change based on availability of the COS IW Coordinators and room availability.

All final papers submitted after the deadline will incur a 1/3 grade penalty.

Senior Thesis Projects, 2026-27

Date	Event/Deadline	Location	Notes
May 5, 2026 11:59pm	Initial deadline to find an adviser and complete the IW sign-up form	IW Portal	
September 2, 2026 11:59pm	Deadline to find an adviser and Submit IW Sign-Up Form	IW Portal	
September 2, 2026 Time TBD, either 12:15pm or 4:30pm	IW Getting Started Meeting	Room TBD	Attendance required. Time and room will be announced closer to the meeting date.
September 2, 2026	SEAS Spring Funding Application opens	bseprogram (@princeton.edu)	Deadline TBD. The application is usually due in mid-September.
Mid-September 2026	SEAS Spring Funding Application closes	bseprogram (@princeton.edu)	Deadline TBD. Waiting to hear from SEAS. The application is usually due in mid-September.
September 17, 2026 11:59pm	Written Project Proposal due	IW Portal	
October 15, 2026 11:59pm	Checkpoint Form due	IW Portal	
November 3, 2026 Time TBD, either 12:15pm or 4:30pm	How to Give an IW Talk, information session	Room TBD	Attendance required for first-time IW students, and encouraged for others who need a refresher. Time and room will be announced at the start of the term.

November 10, 2026 Time TBD, either 12:15pm or 4:30pm	How to Write an IW Paper, information session	Room TBD	Attendance required for first-time IW students, and encouraged for others who need a refresher. Time and room will be announced at the start of the term.
November 17, 2026 11:59pm	Second Reader for Senior Thesis due	IW Portal	This is due earlier than it has been in the past! Don't delay!
December 10, 2026 11:59pm	Midpoint Thesis Report due	IW Portal	This is a more robust report than in past years. Please review the full requirements!
February 2026 TBD. Usually mid-February	SEAS Spring Funding Application due	bseprogram (@princeton.edu)	Deadline TBD. The application is usually due in mid-February. Students who exhausted or will exhaust their fall award may apply again. Students who did not need fall funding, but who do need spring funding may also apply.
February 18, 2027 11:59pm	Thesis Draft Paper due	IW Portal	This is a more robust report than in past years. Please review the full requirements!
March 16, 2027 Time TBD, either 12:15pm or 4:30pm	How to Give an IW Talk, information session	Room TBD	Attendance is encouraged if you need a refresher. Time and room will be announced at the start of the

			term.
March 24, 2027 Time TBD, either 12:15pm or 4:30pm	How to Write an IW Paper, information session	Room TBD	Attendance is encouraged if you need a refresher. Time and room will be announced at the start of the term.
April 15, 2027 11:59pm	Written Final Thesis Paper due	IW Portal	1/3 grade penalty assigned for papers submitted after this deadline.
April 18, 2027 11:59pm	Oral Presentation Slides due	IW Portal	
April 19-23, 2026	Thesis Oral Presentations Week	Live, Schedule with adviser	

*Note: Date and time of the How To meetings is subject to change based on availability of the COS IW Coordinators and room availability.

All final papers submitted after the deadline will incur a 1/3 grade penalty.

Assignment Descriptions

Below are specific details about the various IW and thesis assignments. Please note that **not all assignments listed below are applicable to every student every term.**

Please check the applicable [deadlines](#) section above to determine which specific assignments apply to you.

Written Project Proposal

[Three or four weeks into the term](#), students must submit a 1-2 page written proposal describing their intended project plan. The written proposal should have the following sections:

- **Title.** Include name, class, project title, and adviser.
- **Motivation and Goal.** Give a high-level introduction to the topic area and state precisely what problem you will address. Students should clearly state the goal of the project with a sentence beginning “The goal of my project is ...”. Explain why that goal is essential and/or interesting, perhaps with a description of applications or people enabled by achieving it.
- **Problem Background and Related Work.** Place the project in the context of prior work. Give some background of what has been done before to achieve the stated goal. Include citations to closely related academic papers and/or list commercial products targeted at the same goal. Finish this section with a brief explanation of the problem unsolved by previous work that their project will address.
- **Approach.** Provide a concise description of the key idea underlying the approach to achieving the stated goal. Provide an argument of why this approach is a good idea – i.e., why it can reach the stated goal where others have not.
- **Plan.** Students should describe the steps they plan to take and/or the issues they plan to address during the execution of the project. What data sets must be acquired? What algorithms must be developed? What theorems must be proven? etc. For the non-trivial steps, briefly describe the issue, options, and planned approach. Please indicate any particularly risky aspects of the project and discuss contingencies if they do not go as planned.
- **Evaluation.** Describe the methodology that will be used to evaluate how well the project achieved the stated goal. Be specific. What data will be used? What test will be run? What quantitative metrics will be used to measure success? etc. This is an essential and often overlooked aspect of a project plan – please think about it before finalizing the project selection.

How to submit the Written Project Proposal

1. Sign in to the [IW Portal](#) with your netID and password.
2. Create a PDF file named "**written_project_proposal.pdf**"
3. Click the "Submit File" button next to "Written Proposal" in the "Manage your independent work" section of the IW portal.
4. Click the "Browse" button to upload the file from your computer
5. Click the blue "Submit" button at the bottom of the page
6. Email the PDF file to your adviser

Note: Students have the ability to submit a new file before the deadline, if necessary.

Mid-Term Checkpoint Form

[Around midterms week](#), students will submit the Mid-Term Checkpoint Form. The Checkpoint Form serves as a tool to provide feedback to students and to the department about whether a student is making consistent progress, whether a student should meet with their adviser more often, and/or whether there are any potential roadblocks to a student completing their proposed project.

The Checkpoint Form is not supposed to be difficult or take much time. Students will write a brief description of what has been accomplished so far and what remains to be done. The checkpoint form is divided into three parts:

1. Progress to date: Mention any ideas you have had, software that has been built, related research evaluated, and papers or textbooks read.
2. Current difficulties: If you are having difficulty making progress on the project due to some obstacle, explain the obstacle and a plan for overcoming the problem.
3. Next steps: Detail how you anticipate proceeding for the rest of the term.

As a guideline, students should be meeting approximately weekly with advisers and updating advisers on progress and challenges. This will happen naturally in an IW seminar. One-on-one students should set up a schedule to meet their adviser. Meeting every week at the same time is highly recommended. Students are encouraged to allocate 10-15 hours of time per week for progress on their independent work projects.

How to Submit the Mid-Term Checkpoint Form

1. Sign in to the [IW Portal](#) with your netID and password.
2. Click the “Click to complete form” link in the “Checkpoint Form” section under “Manage your independent work”
3. Enter the project title
4. Enter the approximate number of meetings with your adviser
5. Enter your progress to date, current difficulties, and next steps.
6. Click the blue “Submit” button at the bottom of the page

After a student submits the Checkpoint Form, their adviser will receive an email notifying them of the submission and with a link to provide the student with a response.

Midpoint Thesis Report (Thesis Students Only)

[At the end of the fall term](#), thesis students will submit the Midpoint Thesis Report. The Midpoint Thesis Report should be around **5-10 pages** long. The report should include a full outline of your paper. It should also include an introduction section with motivation and goals fully explained. Include a brief background of the problem and any related work that you have discovered so far. The report must also include a short description of your progress to date, current challenges, and planned next steps.

Students should discuss the exact requirements for the paper with their adviser. While the department has a minimum requirement of 5-10 pages, an adviser may wish to see more. In general, the draft paper should contain (one or more of) the following components:

1. Introduction. A tentative overview of the project including your motivation and goals. Why should the reader care? What is the problem and why hasn't it been solved already? What do you hope to do that is new?
2. Background information and problem description. What is the general area of research and the specific problem that you are solving?

The Midpoint Thesis Report serves as the basis for the P/D/F grade students are awarded for COS 498B, Senior Thesis I.

How to Submit the Midpoint Thesis Report – Update Coming Fall 2025

How to Submit the Midpoint Thesis Report

1. Create a PDF file named "**midpoint_thesis_report.pdf**"
2. Sign in to the [IW Portal](#) with your netID and password.
3. Click the "Click to complete form" link in the "Midpoint Thesis Report" section under "Manage your independent work"
4. Enter the project title
5. Enter the approximate number of meetings with your adviser
6. Enter your progress to date, current difficulties, and next steps.
7. Click the "Submit File" button next to "Written Proposal" in the "Manage your independent work" section of the IW portal.
8. Click the "Browse" button to upload the file from your computer
9. Click the blue "Submit" button at the bottom of the page
10. Email the PDF file to your adviser

Note: Students have the ability to submit a new file before the deadline, if necessary.

Oral Presentation

All students are required to complete an oral presentation near the end of their project.

- **Single-term IW students** submit a PDF of their oral presentation slides, and a link to a **9-minute video-recorded** oral presentation to the [COS IW Portal](#).
- **Senior thesis students** deliver a **12-minute live oral presentation** to their thesis adviser, and submit a PDF of their oral presentation slides to the [COS IW portal](#).

To prepare, all students should plan to [attend](#) the “[How to Give an IW Talk](#)” information session.

Presentations are evaluated on both the **quality of the work** and the **clarity and effectiveness of the presentation**.

Specific oral presentation requirements are below. [For additional advice and resources, click here.](#)

Preparing Your Presentation

Students can make their presentation slides in any presentation tool (e.g., Keynote or PowerPoint), as long as it can be exported to PDF. Although there are many ways to organize the presentation and slides, we strongly recommend that you adhere to the following outline:

Recommended Presentation Structure

- **Title slide:** Include name, class, project title, and adviser.
- **Motivation and Goal:** Introduce the topic area and state specifically what problem you will be addressing. You should clearly state the goal of your project (i.e., “The goal of my project is ...”). Explain why that goal is important and/or interesting. What people and/or applications would benefit? Give some examples of the problem being addressed to help make it easier to understand.
- **Problem Background and Related Work:** You probably are not the first person to work towards this goal, nor will you be the last. Give some background of what has been done before. Have academics already written papers on this topic? Are there already products on the market? Why do they not solve the problem? What aspects of the problem are still uninvestigated? It is always the case that someone has done something that can be related to what you are going to do. Find out the most closely related pieces of work and explain the relationship to your proposed project.
- **Approach:** Clearly explain the key idea behind the approach you are taking and explain why it is a good idea. What is your key insight to solve the problem? What makes this approach unique in comparison to previous work? It might be that you are asking a different question than others have before, attacking the problem in a different way, or

using different tools, or leveraging different data sets. In any case, describe the most interesting “key idea” behind the project and justify why you chose it.

- **Implementation:** Describe the steps that have been completed and/or the subproblems that have been solved to make progress on your project. For each of them, you may want to describe: What was the main issue? What options were available? What solution did you create/choose and why? How did you perform the implementation? What tools were used? How well does the solution work? What remains to be done? If your implementation is not complete, outline any logistical or technical problems you anticipate and explain any contingency plan you have for avoiding or coping with them.
- **Results.** Every project should have some means of measuring success. Explain the methods you will use to evaluate how well your implementation achieves the goal articulated at the beginning of the talk. Perhaps you will need to describe the test data sets, measurement techniques, evaluation metrics, etc. If possible, provide some quantitative comparisons of the results to alternative methods (e.g., the previous state-of-the-art, random results, etc.). Part of (not the entire presentation) may involve giving a demo of your results.
- **Conclusion.** Sum up the most important aspects of the talk concisely.

Note that some of the points may not be relevant for some types of projects, and others will probably require more than one slide. Please do not feel constrained by the number of slides, and do not feel that you have to address every point raised above. **Tell a coherent story** about what you are trying to do, how you are doing it, and how well your solution works ... while staying within the time limits.

Submit Your Presentation Slides

All students must submit a PDF of their presentation slides through the [COS IW Portal](#).

1. Sign in to the [IW Portal](#) with your netID and password.
2. Create a zip file named "**oral_presentation.zip**" containing all the files needed for your talk.
3. Click the “Submit File” button next to “Oral Presentation” in the “Manage your independent work” section of the IW portal.
4. Click the “Browse” button to upload the file from your computer
5. Click the blue “Submit” button at the bottom of the page
6. Email a ZIP file with your slides to your adviser.

Additional Requirements for Single-Term Students

Single-term Independent Work students submit a **video-recorded presentation** rather than presenting live.

Requirements:

- Maximum length: **9 minutes**
- Upload a shareable link to the recording to the [COS IW Portal](#)
- Submit a PDF of your slides to the [COS IW portal](#)

The recording method is your choice (Zoom, Google Drive, YouTube, etc.), provided that:

- Faculty can view the recording without downloading special software.
- The video can be accessed without requesting permission.

First-time IW students are required to attend the ["How to Give an IW Talk" information session](#).

Submitting the Video Link

1. Upload the recorded presentation somewhere that provides a shareable URL. (Past students have used Google Drive, Zoom, YouTube, etc.)
 - a. Make sure that the share settings are set such that the IW Coordinators, IW Administrator, and your adviser do not need any special permissions to view the video recording.
2. Submit the hyperlink to your recorded oral presentation to the [IW Portal](#).
 - a. Sign in to the [IW Portal](#) with your netID and password.
 - b. Under the "Manager your independent work" section in the IW portal, click the "Click to complete form" link in the "Oral Presentation Video Link" section.
 - c. Paste the url to your recorded oral presentation into the text box
 - d. Click the blue "submit" button at the bottom of the page.

Additional Requirements for Senior Thesis Students

For A.B. seniors, the thesis oral presentation counts as the departmental exam required for graduation. For this reason, **all thesis oral presentations must be presented live.**

Requirements:

- Maximum length: **12 minutes**
- Up to three minutes of questions
- Submit a PDF of your slides to the [COS IW Portal](#)

Before Your Presentation

1. Schedule a presentation time directly with your thesis adviser.
2. Reserve a presentation room if needed using the room reservation calendar provided by the IW Coordinator. (Information about this will be released in early April.)
3. Invite your second reader to the presentation.
4. Submit a pdf of the slides to the [IW Portal](#).
5. Email the pdf of the slides to your adviser and second reader.

Senior Thesis Second Reader (Thesis Students Only)

[Toward the beginning of the spring term](#), thesis students are required to submit the name of a second reader to the IW Portal. Every thesis must have both an adviser and a second reader. The second reader reviews the thesis and provides input on the final grade. Students may want to choose and involve a second reader early on in the project. **If a student's primary adviser is not a COS faculty member, then the Second Reader MUST be a COS faculty member.**

Second readers can be postdocs, but they cannot be your adviser's postdoc. Your thesis adviser should be able to recommend potential second readers.

How to Submit to the [IW Portal](#):

1. Login to the [IW Portal](#) with your netID and password.
2. Add the name of the second reader in the "Second Reader Form" under the "Manage your independent work" section in the [IW Portal](#).
3. Click the blue submit button at the bottom of the page.

Senior Thesis Draft Paper (Thesis Students Only)

[Towards the middle of the spring term](#), thesis students submit a draft paper. This is not expected to be a full thesis, but it should include a complete outline with the introduction, motivation and goals, related work, and approach sections filled out. Students should also include preliminary results. The draft paper should be at least 10-15 pages long (single-spaced).

Students should discuss the exact requirements for the paper with their adviser. While the department has a minimum requirement of 10-20 pages, an adviser may wish to see more. In general, the draft paper should contain (one or more of) the following components:

1. Introduction. An overview of the project including your motivation and goals. Why should the reader care? What is the problem and why hasn't it been solved already? What have you done (or, what do you hope to do) that is new?
2. Background information and problem description. What is the general area of research and the specific problem that you are solving?
3. Related research. What is already known about the problem? What is different about your project? Have there been previous academic papers on this or related topics? Are there companies that have developed related software products? What is the historical context? Summarize the related work that is closest and most important to your work. Be sure to cite related research properly. Include a bibliography at the end of your paper.
4. Approach and Implementation. What is the big idea of your solution? Explain your design. Are you taking an experimental approach? A theoretical approach? Is this a new domain? What is your progress so far? Explain major accomplishments so far. Be as precise as possible. Give examples, charts, diagrams, and proofs to back up your ideas wherever possible and appropriate. What new algorithms have you defined? -- describe them in detail if they are sufficiently interesting and novel. Have you defined your overall software architecture? -- Describe it in detail and justify your design. Do you intend to prove something about your research? -- Give a proof outline. Have you proven any intermediate theorems or lemmas? State what they are and explain the proof. Can someone reproduce your work from your description of it? Give details that are important in describing how you are achieving your goals and proving your claims. OK to include approaches that did not work when implemented and why they did not work.
5. Plan for the remainder of the year. Outline the steps you will take to complete the thesis. Explain how you will evaluate your results. What is the criteria for success? Include a table with a concrete set of deadlines for finishing major components of the project. Include at least 3 weeks for writing.

How to Submit in the [IW Portal](#):

1. Login to the [IW Portal](#) with your netID and password.
2. Create a PDF file named "**draft_paper.pdf**"
3. Submit the PDF file via the [IW Portal](#). Use the submit link for "Draft Paper" under the "Manage your independent work" section in the [IW Portal](#).
4. Email the PDF file to your adviser.

Written Final Paper

Note: All final papers submitted after the deadline will incur a 1/3 grade penalty.

All IW and thesis students are required to submit a written final paper. The paper should expand upon the material presented in the oral presentation by providing a more detailed discussion of the project's:

- Goals
- Background and related work
- Approach
- Implementation
- Results
- Conclusion

Unlike the oral presentation, which must be extremely concise due to time constraints, the written paper allows students to provide a thorough technical discussion, cite related work, include detailed figures and tables, and present complete experimental results.

To prepare, all students should plan to [attend](#) the “[How to Write an IW Paper](#)” information session.

Final papers are graded on the basis of technical content, organization, creativity of ideas, and quality of writing. All final papers should contain a proper bibliography, and all non-original text should be properly attributed. Failing to cite appropriate sources for ideas, tables, text, or diagrams is a serious violation of [Princeton's honor system](#). Students who are unsure about how to cite ideas or research papers properly and create a bibliography should speak with their adviser. [AI tools](#) such as ChatGPT are completely prohibited for use when drafting/writing the final paper.

Formatting and Templates

All final papers must include a title page with your name, your adviser's name, and the title of your project. All final papers must also include an [honor code](#) statement.

Templates:

Though the written final paper should look like a professional document -- 12pt Times-Roman font, 1-inch margins, double-spaced -- there are no official formatting rules for a COS final IW or thesis paper. That said, below are some templates that students are welcome to use.

Princeton University provides free [Overleaf Professional](#) accounts for all students, faculty and staff who would like to use a collaborative, online LaTeX editor for their projects. Overleaf

Professional accounts provide real-time track changes, unlimited collaborators, and full document history.

Formatting guidelines for the templates are [here](#). Files for use in Overleaf are below.

- Single-term students: [IW final paper files](#).
- Senior thesis: [Thesis final paper files](#).

[For additional advice and resources, click here.](#)

Recommended Final Paper Length

Final paper lengths will vary greatly depending on the specific COS research areas. For example, theory papers tend to be equation-heavy and shorter overall, whereas technology policy papers tend to be lengthier. Below are approximate target page lengths, but students should speak with their adviser about their specific paper length expectations.

- Single-term IW projects: 20-25 pages long
- Senior thesis projects: 40-50 pages long

Submitting Your Final Paper

- Login to the [IW Portal](#) with your netID and password.
- Create a PDF file named ***"written_final_report.pdf"***
- Click the "Submit File" button next to "Written Final Report" in the "Manage your independent work" section of the IW Portal.
- Click the "Browse" button to upload the file from your computer.
- Click the blue "Submit" button at the bottom of the page.
- Email the PDF file to your adviser.

Note: COS thesis papers are not required to be printed/bound and as such, the department does not provide funding for thesis binding.

Mudd Library Thesis Archive (Thesis Students Only)

All students must [archive](#) a copy of their final thesis papers with the university library.

Step-by-step instructions and more details about submission requirements are [here](#).

Information Sessions

The department hosts several information sessions throughout each term to help students understand expectations and to provide valuable guidance for the larger IW and thesis assignments.

[Example slides from past meetings can be found here.](#)

Getting Started Meeting

During the first few days of the term, we host a "Getting Started" meeting for IW and thesis students to explain the key requirements, review the schedule for the term, and provide information about the seminars. Attendance is mandatory for all students starting IW that term.

“How to” Meetings

During the second half of each term, we have meetings to provide students with information and guidelines about how to give an IW talk and how to write an IW paper. These sessions will provide critical information about what content to include and what formatting to use for your work. They are mandatory for all students doing IW for the first time.

Equipment and Funding

COS IW & Thesis Equipment Collection

All IW and thesis equipment purchased using SEAS funding is returned to the department and entered into an equipment collection. Before requesting funding for equipment, please check the list of what the department already has on-hand.

[Click here to view the COS IW & Thesis Equipment Collection](#)

Students who use SEAS funding to purchase equipment must return the equipment to the department at the end of their project.

SEAS IW & Thesis Funding

Students may apply for support for senior thesis and independent work research from funds administered by the SEAS Dean's Office. All awards are contingent on the availability of funds.

These funds are normally restricted to consumable supplies, software, small equipment, and parts and travel for field experiments. They specifically **do not cover** books and journals, food and refreshments, copying, thesis preparation, and poster printing costs, or capital equipment. This funding is not for use on extracurricular projects or conference travel.

There are two funding rounds annually. Applications for fall are typically due mid-to-late September. Applications for spring are typically due mid-February. Students will receive an email from both SEAS and the COS IW administrator about the release of the funding application, deadlines, and requirements. Application deadlines are firm. Late applications are not accepted.

Application Guidance

- Fill out the online application form (link will be sent by SEAS and by the IW Administrator when it becomes available.).
- Include all necessary supporting documents with your application.
 - Provide a full and realistic itemized budget. Do your best with the cost estimates.
 - Note: Most awards will not exceed \$500
 - The above said, if your needs exceed these general caps, please provide your full realistic budget, and SEAS will do their best to accommodate it.
 - Though SEAS is regularly quite generous with the funding they award, it is extremely important that you justify the funding request with a well-thought-out budget detailing how you intend to spend the award.

- The online application will automatically send an email to your adviser requesting their support and approval of your funding request. Please also give your adviser a heads-up to look for this email.
- Thesis students may request a top-up on funding using the spring application if they exhausted their fall funds.
- A note on cloud computing:
 - SEAS will ask that you include use of complementary student cloud computing credits (usually around \$100) as part of your budget. Please visit <https://researchcomputing.princeton.edu/systems/cloud-computing> for further details about Google Cloud Platform, Amazon Web Services, Microsoft Azure, and Oracle. Please access these free resources before applying for SEAS funding.
- Note: Any student requesting to purchase large datasets must adhere to all the DUA guidelines, <https://researchdata.princeton.edu/research-lifecycle-guide/data-acquisition/data-use-agreements>.
- This is not a competitive application. The university wants to fund what you need for the research, so be thoughtful in your approach to the funds required.

How to Access SEAS Funding

Access to funding is contingent upon IRB approval, if applicable. SEAS will let students know if they are required to go through the IRB approval process.

There are two main ways to use SEAS funding:

1. Order what you need, and send the receipt to the IW Administrator via the [SEAS Funding Reimbursement Request Form](#). The IW Administrator will send you a reimbursement through SAFE.
2. Request that the IW Administrator place an order for you. (Recommended for international students whose countries are subject to tariffs.)
 - a. If you are unable to order equipment for yourself (for example, you do not have access to a credit card) and would like someone to place an order for you, send an email to the IW Administrator, Mikki Hornstein, [mhornstein \(@princeton.edu\)](mailto:mhornstein@princeton.edu) with a link to what you need to be purchased; include the quantity needed. The IW Administrator will use the departmental credit card to place the order and have it delivered to the COS building. You will receive an email with information about how and when to pick up the items when they are available.
 - b. This method is generally not available for subscription services. If you are unable to set up a subscription service and pay out of pocket, please contact the IW Administrator.

Please note that all equipment purchased with SEAS funding must be returned to the department at the end of your IW project for use by future students. Please keep the original packaging for easy return and storage.

General Advice

Selecting Good Projects

The goal of undergraduate research and independent work in Computer Science is to serve as a synthesizing experience in which undergraduates work on significant research or design projects. Given the broad diversity of intellectual problems in Computer Science and equally broad possibilities regarding future career trajectories, the style of your project can vary from theoretical to systems or applications-oriented, with output ranging from scholarly publications to working software or hardware.

Selecting a good project is usually the most important and trickiest part of the IW process.

There are many types of projects. Independent work in COS may require a significant programming effort, a theoretical study involving the design and analysis of algorithms, or an application problem in some other field. No one set of guidelines applies perfectly to projects of all types. However, that said, here are some guidelines to consider when choosing a project:

- Choose something you are passionate about.
- Choose a project with some aspect of novelty (a new app, a new algorithm, etc.).
- Choose a project with easy, medium, and hard milestones.
- Choose a project that can realistically be completed by the [due date](#) of the final paper.
- Think about how to evaluate the results before starting the project.
- Advisers may recommend changes to the scope of the project. Listen to them.
- Do not choose a project with unresolved dependencies (e.g., data sets, software licenses, etc.).
- Again, choose something you are passionate about.

Students can find examples of past senior thesis projects through the Mudd Library DataSpace. Students may search by topic, adviser, class year, etc. [Click here to see example senior theses from the Class of 2024.](#)

Finding an Adviser

Students can reference the list of [COS faculty and their preferred independent research projects](#) when looking for an IW or thesis adviser. The faculty will be regularly updating this web page with new research ideas.

Any Princeton faculty can advise a COS independent work project as long as there is a significant computer science component (check with the IW Coordinators if you are not sure). Many students have done interdisciplinary projects in the past, often advised by faculty in another department or co-advised with a COS faculty. Note that the list linked above includes

non-CS faculty who have done research with COS students in the past or are looking to do interdisciplinary projects with COS students in the future. **Students with an adviser who is not a SEAS faculty member, MUST have a secondary COS adviser.**

Giving a Good IW Talk/ Oral Presentation

[Each term](#), the department will offer an information session on “[How to Give a Good IW Talk](#)” before the oral presentations are due. Attendance is required for any students completing IW for the first time in that term. During the information session, one of the IW Coordinators will discuss slide design, how to organize the oral presentation and general public speaking tips. After the presentation, the slides will be posted to Canvas for future reference.

[Example of past How to Give an IW Talk slides.](#)

Below are some general guidelines for giving a good oral presentation:

- **Practice:** To improve an oral presentation, practice it; both alone and in front of others, before presenting live or before recording your presentation.
- **Refine:** Take seriously any feedback on your posture, eye contact, style, and energy, as well as the structure, organization, and content of your presentation.
- **Know the Audience:** Imagine that the audience is a group of senior Princeton undergraduates in computer science who are smart and have quite a bit of knowledge about computer science in general, but will not know the specifics of the particular research problem or area.
- **Define:** Clearly introduce the problem and the reason you are doing your research. Do not depend upon the audience to know specific jargon, nonstandard mathematics, the nuances of particular programming languages, or the specifics of certain software packages
- **Be Convincing:** Be a bit of a salesperson -- convince the audience that the ideas are useful or intriguing or ingenious, or astonishing. Try to leave the audience impressed by what has been accomplished and hoping to hear more about it at a later time.
- **Cite Others:** Cite other people or papers or software products during the presentation.
- **Use Images:** Use images or graphics to support your points wherever possible, minimizing the use of text on slides. In particular, do not put all the text you will say on your slides – so boring. The text on slides should be short sentences or phrases that convey key points after a quick glance, not sentences and paragraphs that provide the entire script for the talk. Many excellent research talks are composed almost exclusively of pictures and graphs.
- **Be Organized:** Slides should be well-organized, uncluttered, easy to read, and visually appealing.

Writing a Good IW/Thesis Paper

[Each term](#), the department will offer an information session on “[How to Write an IW Paper](#)” before the written final papers are due. Attendance is required for any students completing IW for the first time in that term. During the information session, one of the IW Coordinators will discuss how to organize the paper, what to include in each section, and general writing advice. After the presentation, the slides will be posted to Canvas for your reference.

[Example of past How to Write an IW Paper slides.](#)

Recommended Outline:

- Abstract
- Introduction
- Problem Background or Related Work
- Approach
- Implementation
- Evaluation
- Conclusions and Future Work
- Bibliography
- Appendices (optional)

Time Management:

Talk to your adviser about how to write the final paper. It is usually best to start writing the paper early in the term and refine it continuously throughout the term. Talk to your adviser about exactly what they are looking for in the paper. The best papers are prepared with enough time for the adviser to read over a draft and give comments for revision.

Sample Papers:

[Click here to see example senior theses from the Class of 2026.](#)

Formatting Guidance

The written final paper should look like a professional document (example: 12pt Times-Roman font, 1-inch margins, double-spaced). That said, **there is no official required format** for a COS IW/ thesis paper. This includes the bibliography – there is no official formatting type required.

- [Example template](#)
- Single-Term Projects: [LaTex and BibTex files for template](#) for IW paper
- Thesis Projects: [LaTex and BibTex files for template](#) for senior thesis paper

Below are general length guidelines based on whether a project is completed during one term, or two. That said, lengths of final papers vary wildly based on the specific COS subfield of research. Below is a chart of average pages for a small sample of A-papers, taken from a past [“How to Write an IW Paper”](#) information session:

Section	One-Term Projects	Thesis Projects
Intro	Avg 1.5 pages	2-8 pages, avg. 3.5 pages
Related Work	Avg 4.5 pages	Avg. 7.5 pages
Approach	1-8 pages, avg. 3 pages	1-8 pages, avg. 3.5 pages
Implementation	Avg. 10 pages	Avg. 13.5 pages
Evaluation	Avg. 5.5 pages	Avg. 11.5 pages
Conclusion	Avg. 1.25 pages	1-7 pages, avg. 3.5 pages

Total Length:

- Single-Term Projects: final written papers for one-term projects should be 20-25 pages long.
- Thesis Projects: final written papers for thesis projects should be 40-50 pages long.

Images:

Relevant charts, tables, diagrams, etc., should be included, with accompanying captions. Be sure to refer to each such chart in the main body of the text, clearly explaining its nature and purpose. The technique of "padding" papers using multiple, overly-large figures is well-known and should be avoided. Include auxiliary data such as lengthy code or auxiliary examples or detailed algorithms or long proofs, or supplementary data of other kinds, in a clearly labeled Appendix. The Appendix may be as long as is necessary -- it may extend beyond the page limit.

Other Information

Collaboration Policy

It is possible for groups of 2-3 students to work on different parts of the same large-scale project.

As an example, a few students might work together on a system for collaborative grading of assignments in MOOCs (massive open online courses), with one student developing the user interface, another designing the algorithms for assigning problems to graders, and a third implementing a system for integrating grader responses in the back-end server.

- **Each student must carve out a distinct part with a clear goal, novel idea, evaluation methodology, etc.**
- **Each student must submit their own work.**
- **Each student will be graded separately.**

Every student is responsible for completing their own distinct work. This includes the project proposal, checkpoint form, oral presentation, and final paper, etc. Similarities in Motivation/Goal Background/ Related Work are expected, but each student must produce their own assignments and should cite partner work as necessary/appropriate.

Compliance and IRB

From the Office of Undergraduate Research (OUR):

The conduct of research involving humans, animals, unmanned aircraft systems, biosafety and managing conflicts of interest is highly regulated and raises a number of ethical questions. Princeton University is committed to upholding rigorous compliance and ethical standards while considering the care and welfare of all living subjects in the planning, review, approval, and implementation of proposed research. The [Office of Research Integrity and Assurance](#) (RIA) oversees the Institutional Review Board (IRB), Institutional Animal Care and Use Committee (IACUC), Institutional Biosafety Committee (IBC) and the Conflict of Interest (COI) in Research Panel. Independently, each committee is responsible for ensuring the ethical conduct of research through its review process.

IRB Info: <https://undergraduateresearch.princeton.edu/compliance/human-research>

Honor System

All work related to independent work and senior thesis must be conducted under the University's Honor System.

<https://ua.princeton.edu/policies-resources/undergraduate-honor-system>

AI Tools

AI tools such as ChatGPT are completely prohibited for use when drafting/writing a paper and/or oral presentation. Each advisor or IW seminar leader will determine whether it is okay to use AI tools for other tasks such as data set generation, coding support, etc. In any case, **all uses of AI tools must be documented in your reports, presentations, and any code you turn in.**

[Click here to see Princeton's student guide to disclosing use of generative AI.](#)

Studying Abroad

All students who study abroad are expected to adhere to the same deadlines as any other IW student. You are responsible for either (a) finding a primary adviser abroad and a secondary Princeton faculty adviser, or (b) working remotely with a Princeton faculty adviser. You are expected to keep in regular contact with your adviser.

Please email Prof. Brian Kernighan, bwk (@princeton.edu), for more information about studying abroad.

Campus Resources

McGraw Center for Teaching and Learning

The McGraw Center for Teaching and Learning offers several different programs to support student learning.

- [Academic Life and Learning Strategies Consultations](#)
 - **JP/Thesis:** Talk through any aspect of the project, from planning the work to working effectively with your advisor to clarifying the research question.
- [Academic Strategies Workshops](#)
 - Thriving at Princeton: Mapping Your term for Balance & Success
 - Time Management Strategies: Creating a Structured AND Flexible Routine
 - "Why do I keep putting things off?": Overcoming Procrastination
- [Study Partners](#)
- [Resource Library](#)
 - [Breaking Down Large Projects Into Manageable Pieces](#)
 - [Mastering Independent Work](#)
 - [Senior Thesis on a Page](#)

<https://mcgraw.princeton.edu/>

Princeton Engineering Library

Research consultations with Willow Dressel, Engineering Librarian wdressel (@princeton.edu) are available to students in-person, or by email, phone or Zoom.

<https://libguides.princeton.edu/cs>

Princeton Writing Center

The Writing Center can help with any part of the writing process: brainstorming ideas, developing a thesis, structuring an argument, or revising a draft. The goal is to develop strategies that will encourage students to become astute readers and critics of their own work.

<https://writing.princeton.edu/writing-center>

Princeton Office of Undergraduate Research (OUR)

The Office of Undergraduate Research (OUR) provides a wealth of resources for students. OUR provides individual and small-group advising for students who need help reaching out to potential faculty mentors; creating a plan to balance research, coursework, and personal responsibilities; reflecting on and processing research setbacks; and more.

OUR also has a [student-authored research blog](#), where students share advice on various relevant research topics.

Finally, [PURC](#), Princeton's Undergraduate Research Calendar, intends to help students navigate the many programming opportunities and resources available to support research endeavors at Princeton, including junior and senior independent work.

<https://undergraduateresearch.princeton.edu/>

Princeton Survey Research Center (SRC)

The Survey Research Center's (SRC) main purpose is to assist students, faculty and administrators with the design and implementation of their own survey research projects. The SRC provides consultation and guidance on study design, sampling, instrument development, data collection and data processing. The center has digital voice recorders, iPads, virtual telephone interviewing capability, web survey utility, a library collection on survey research methods and a network of external resources.

SRC Staff members are available to meet with students who are planning to conduct survey research projects. At the design stage, this requires consideration of alternative study plans, definition of a study population, selection of appropriate sampling methods and data collection techniques, and design of survey questionnaires and data analysis plans.

<https://psrc.princeton.edu/>

Data and Statistical Services (DSS)

Data and Statistical Services (DSS) provides data and statistical consulting. Experts are available to advise Princeton University students, faculty, and staff on choosing appropriate data, application of quantitative research methods, the interpretation of statistical analyses, data conversion, and data visualization. [Subject specialists](#) help choose appropriate data. The statistical packages supported by [consultants](#) are R/R Studio and Stata. DSS provides limited

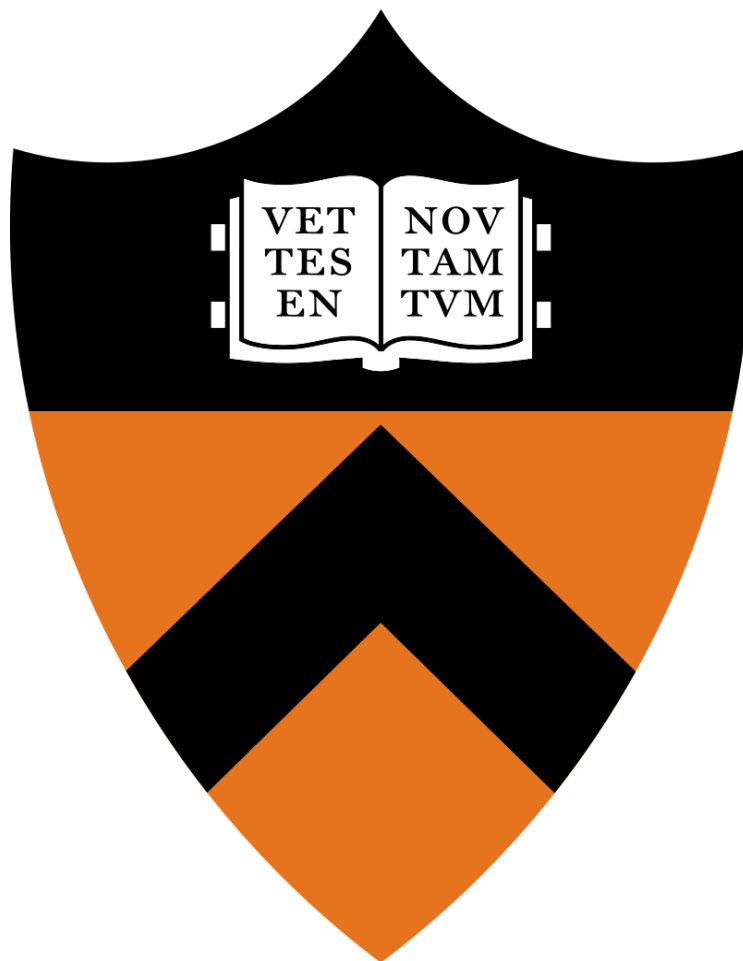
help with Matlab, Python (for text mining and social science applications), SAS and SPSS. DSS provides statistical and software assistance in quantitative analysis of electronic data as part of independent research projects, such as junior papers, senior theses, term papers, dissertations, and scholarly articles.

<https://library.princeton.edu/dss>

Princeton Research Day (PRD)

Students are encouraged to submit their independent work or thesis projects for consideration to present during Princeton Research Day. Awards and monetary prizes are available.

<https://researchday.princeton.edu/>



ChatGPT was used for assistance with organizing, revising and proofreading text in this document.