

CSE Department Master's Program Handbook

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Foreword

Welcome to the Department of Computer Science and Engineering! We're glad you have chosen Washington University to pursue your master's degree. We hope to offer you an enriching, challenging, and exciting academic experience that will prepare you for future success -- whether your path takes you to industry, entrepreneurship, or a PhD program.

This handbook provides detailed guidance about CSE's masters programs. It supplements, but does not replace, the policies and program descriptions that you can find in the [Engineering Graduate Bulletin](#). Whether you are seeking to join one of our programs or are already enrolled, you will find important information about our department's policies here. The final section will be especially useful for students planning to pursue a master's thesis or project.

While most of our policies apply equally to domestic and international students, the latter group must meet additional enrollment requirements dictated by the terms of their visas. We've tried to call out places where international students should pay special attention.

Feel free to contact us if you have questions about our programs. We look forward to seeing you in class, to conducting research with you, and to helping you gain the knowledge and skills to achieve your professional goals. Good luck!

[Jeremy Buhler](#)

CSE Master's Program Director

[Cleopatra Benos](#)

CSE Graduate Coordinator

1. Enrolling in a CSE Master's Program

Students who seek to enroll in a CSE master's program *must complete the McKelvey School of Engineering's application for graduate admission* unless they are already enrolled in another Wash U. **CSE** graduate program. Consult the [Engineering Graduate Admissions Office](#) for details on application requirements.

Applications from students accepted to a Wash U. non-CSE degree program will not be considered until the student has completed one full semester in their current program. We need to see a student's grades in their current program to make an admission decision. Hence, students who begin their studies at Wash U. in Fall of a given year **may not apply for admission to CSE with a start date earlier than Fall of the following year.**

International students should note that adding or changing programs does *not* automatically reset the time limit on a student's I-20. Please consult OISS if you plan to add or change programs.

1.1 Enrolling in Multiple Graduate Programs at Once

Students enrolled in a **Wash U. non-CSE master's or doctoral program** may apply to enroll concurrently in a CSE master's program. Doctoral students must provide written permission for concurrent enrollment from their doctoral program director.

Non-CSE units from another Wash U. degree program may only be counted toward the CSE degree subject to the usual rules and limits for out-of-department courses in [Section 3.1](#). Moreover, a student enrolled in two or more master's programs within the McKelvey School of Engineering must take *at least 15 units for each master's degree* that do not count toward the other degree(s).

Students enrolled in a **Wash U. CSE doctoral program** who satisfy all requirements for a CSE master's degree *and have not previously earned a master's degree in the same field* may obtain an "incidental" master's on the way to their doctorate. The student must ask the department to verify their eligibility for the master's and file an intent to graduate for it in order to receive it. Doctoral students may **not** count CSE 591 or CSE 699 toward the credits required for an incidental master's degree and may **not** receive credit for the same work as both a master's thesis/project and doctoral research (CSE 699).

1.2 Switching from one CSE Graduate Program to Another

Students already enrolled in a **Wash U. CSE master's program** who wish to change to a different program, e.g., from a Master's in Computer Science to Master's in Cybersecurity

Engineering, may petition the CSE Master's Program Director. A new application is not required. Requests to switch will not be considered before the student has satisfactorily completed *one full semester* of the program under which they were initially admitted. After that, the request will be evaluated based on the student's original application materials and their performance in their current program. Keep in mind that different CSE master's programs may have different admission standards, so program switches are not "automatically" approved.

Students enrolled in a **Wash U. CSE doctoral program** who choose to leave the program may switch to a CSE master's program to earn a terminal master's degree, *provided they have not previously earned a master's degree in the same field*. These students must still satisfy all requirements for a master's degree, but (unlike continuing doctoral students seeking an incidental master's) they may count CSE 591 toward their master's degree credits. Doctoral research credits (CSE 699) may not be counted toward a terminal master's degree, but former doctoral students seeking such a degree will be permitted to propose and defend a master's thesis or project on an expedited basis and may use work completed during their doctoral study as the basis of the thesis or project.

Note that students leaving a non-CSE PhD program (e.g., DCDS, IMSE) are **not** automatically permitted to transition to a terminal CSE master's degree. Requests to do so will be considered on a case-by-case basis with particular attention to the amount of applicable CSE coursework taken as part of the student's PhD program.

Students who have only taken classes in CSE as a **Student Not Candidate for Degree (SNCD)** must complete an application for master's admission as for non-CSE students. If admitted, the student may count up to *nine credits* taken as a SNCD toward their master's degree, provided the credits are otherwise acceptable for their degree program.

1.3 Combined Bachelor's/Master's and Dual-Degree Programs

The McKelvey School of Engineering offers a 5-year combined **bachelor's/master's program**. Application to the program is open to current Wash U. juniors and rising seniors. For details on how to apply and the benefits of the combined program compared to completing the two degrees sequentially -- including reduced tuition and the ability to count certain classes toward both bachelor's and master's degree requirements -- please consult the School's [Bachelor's/Master's website](#).

Students entering Wash U. as part of a **dual-degree program** have [several potential ways](#) to pursue a master's degree at a reduced tuition cost. Master's admission for these students is determined in cooperation with the dual-degree program staff at the point that the student becomes eligible to begin their master's program. Students who are accepted to a dual-degree program that includes a non-CSE master's degree, but who later decide to

switch to a CSE master's degree, must submit a separate application to CSE at that time following the same procedure as for non-CSE Wash U. master's students.

Like combined BS/MS students, dual-degree students may count certain coursework toward both their Wash U. bachelor's and master's degrees. But students should be careful to ensure that they still take enough total credits to meet the school's residency requirement.

1.4 Graduate Certificate Programs

All McKelvey Engineering master's students may enroll in CSE's *graduate certificate programs*. If the student satisfies all course requirements for a certificate, it will be conferred along with the student's master's degree.

To enroll in a graduate certificate program, please send a request to your home department's graduate coordinator. It is not necessary to obtain permission from our certificates' faculty directors in order to enroll.

1.5 Academic Advising

All CSE master's students are assigned an **academic advisor**. The advisor's job is to help the student select courses each semester, to answer questions about the student's degree program, and to provide overall guidance to help the student progress toward graduation. Students must receive their academic advisor's approval to register for courses each semester, which generally entails meeting with the advisor to discuss their course plan. Students should discuss matters such as transfer credit, change of degree program, and similar issues with their advisor first before submitting requests to the department.

Note that the academic advisor is *not a research advisor* and is not expected to supervise a student's master's thesis or project as part of their duties. To find a research advisor, please see the advice in [Section 4.2](#).

New master's students who do not already have a CSE academic advisor are temporarily assigned to a member of the Engineering Graduate Student Services staff, who will help the student plan their first semester of coursework. Roughly four weeks after the start of their first semester, students will be assigned a permanent academic advisor, who will be a member of the CSE Department faculty. Combined bachelor's/master's students whose undergraduate program is in CSE retain their current CSE academic advisor for their master's program and do not receive a temporary advisor.

Students who need to meet with an advisor but have not yet been assigned one should immediately contact the CSE Graduate Coordinator. Students may switch from one

academic advisor to another (with the new advisor's consent) by request to the Graduate Coordinator.

Students pursuing a combined bachelor's/master's degree or multiple degrees face greater-than-normal advising challenges in planning their coursework so as to complete all degree requirements. To help you plan and assist your academic advisor in understanding your needs, we recommend that you fill out a [Program Declaration form](#) that lists the courses you plan to take and which ones will be used for each degree. Completing this form early will help you identify constraints that may affect which courses you can take and when you must take them.

2. Maintaining Enrollment and Standing

Students pursuing a CSE master's degree generally must maintain continuous enrollment in their program until graduation and must make progress toward their degree each semester they are enrolled. *A student who neither takes action to maintain enrollment nor takes an approved leave of absence in a given semester risks having their master's program closed.* Enrollment policies differ for full-time vs. part-time and domestic vs. international students (i.e. those in the U.S. on a student visa).

2.1 Full-Time vs. Part-Time Enrollment

Full-time enrollment for CSE master's students requires taking at least nine credits per semester. Students taking fewer than nine credits in a semester are considered part-time unless the department has given them permission to enroll in the 0-credit course *Continuing Student Status* (CSE 883). Full-time students may take more than nine credits in a semester, but taking more than twelve credits of graduate work at once is not recommended.

International students are required to maintain full-time enrollment every semester until graduation. However, an international student who has (more than zero but) fewer than nine credits of work remaining to fulfill all requirements for their degree may apply to OISS for a reduced courseload in their final semester. Reduced courseload applications must be signed by the student's academic advisor. For students not in their last semester seeking a CPT/Co-Op experience, please consult OISS regarding how that experience interacts with full-time status.

Students who have satisfied all degree requirements at the end of a given semester **must** graduate immediately; they may not extend their program by taking additional courses or by enrolling in independent study or a Co-op experience. Not having completed an open graduate *certificate* is **not** sufficient reason to extend a student's time to degree -- the student will be required to graduate without the certificate.

By law, international students who complete all degree requirements *except for clearing one or more incomplete grades* are not eligible for a reduced courseload. A student in this position who wishes to extend their I-20 for another semester while clearing the incomplete is required to take a **9-credit full-time courseload**, even though the courses are not needed for their degree. The courses taken must be work that would otherwise be eligible for degree credit, i.e., graduate-level science, engineering, or math courses taken for a letter grade. *International master's students pursuing the project or thesis option, as well*

as their advisors, should be particularly aware of this rule, as failure to complete the thesis or project on time can lead to a **highly undesirable situation!**

2.2 Academic Standing, Probation, and Suspension

Students enrolled in a CSE master's program are expected to maintain good academic standing, as judged by their grades and overall GPA. Students who fail to maintain good academic standing are subject to probation or, for more serious cases, suspension from their master's program. The criteria under which master's students become eligible for academic probation or suspension are detailed in the [Engineering Graduate Bulletin](#).

A student who is placed on academic probation must meet with a staff member from Engineering Graduate Student Services to discuss the reasons for their poor performance and to develop a strategy for improvement. Students who repeatedly become eligible for probation may be recommended for suspension.

At the end of each semester, the department reviews the cases of all students who became eligible for suspension in that semester. The department may recommend either suspension (i.e., termination of the student's master's program) or *special academic probation*, which may include restrictions on the number and types of classes that a student may take in the following semester. A student may appeal the department's recommendation to the McKelvey Masters Council, whose decision is final.

2.3 Maintaining Enrollment Without Taking Courses

If a **domestic student** is not taking any new units in a given semester but will be actively fulfilling a degree requirement, e.g., clearing an incomplete course grade or finishing a late master's thesis or project, the student should register for *Continuing Student Status* (EGS 883), which will confer the equivalent of full-time registration for that semester. If, in contrast, the student plans to be inactive -- not taking any units *and* not otherwise doing work toward their degree -- they should register for *Inactive/Nonresident Status* (EGS 885).

Registration for EGS 883 or 885 is subject to departmental approval each semester and may be limited to students in good academic standing. Generally, *at most two consecutive semesters* of inactive or continuing status (one calendar year) will be permitted, after which a student must enroll for new credits, take a leave of absence, or withdraw from the program.

For **international students**, *EGS 883 and 885 are not allowed*. If the student has had a reduced courseload request approved by OISS for their final semester, they should simply take the reduced load without registering for EGS 883.

2.4 Lapse in Enrollment

Students who do not register for any credits or for continuing or inactive/nonresident status in a given semester will suffer a **lapse in enrollment**. *These students risk having their master's program closed*, effectively ending their affiliation with the university. Students who plan to let their enrollment lapse but expect to return in the future should request a [Leave of Absence](#) from the McKelvey Engineering Registrar, so that the department and School know that the program closure is not intended to be permanent. International students should consult with OISS regarding the impact of a leave or other enrollment lapse on their visa status.

At the beginning of each semester, the School *may* at its discretion maintain an open master's program for a student even if they have neither registered nor taken a Leave of Absence for that semester. However, *any such action is at the School's sole discretion* and should not be depended upon to maintain a student's enrollment.

Continuing After a Lapse in Enrollment. Students whose program is closed due to a lapse in enrollment without a Leave of Absence, or who voluntarily withdraw, must petition the CSE Graduate Program Director to be reinstated in order to continue their program. Students who are involuntarily suspended from their program must instead petition the McKelvey Masters Council for reinstatement. Students who have been gone for two years (four semesters) or longer will be asked to reapply to their graduate program.

Students whose enrollment has lapsed and have had their master's program closed, *as well as students on leave*, will not be visible to their CSE academic advisor and so cannot register for courses until they are reinstated.

Students returning to a master's program after a lapse in enrollment may still use credits earned prior to the lapse to satisfy their degree requirements. However, credits earned 7 or more years ago may not be counted toward a returning student's degree requirements except by permission of the CSE Department. Credits earned 10 or more years ago require permission of the McKelvey Masters Council to count. Students whose enrollment lapses in the middle of a master's thesis or project may resume the work only if allowed by both the department and their thesis/project advisor.

3. Course and Credit Requirements

Students must complete credit requirements as described for their degree program in the [Engineering Graduate Bulletin](#) that was in effect in the semester that they entered the master's program. (If requirements are relaxed in a later bulletin, students can typically take advantage of the relaxation; consult your academic advisor to be sure.) *Please see the bulletin for details about the exact credit, breadth, and other requirements of each CSE master's degree and certificate, as well as the different grading options, passing thresholds, and handling of incomplete grades and retakes.*

CSE courses below 400-level or whose course numbers end with the letter N (e.g., 501N, 502N, 504N) may not be counted for credit toward a CSE master's degree. Independent study (CSE 400 or 500) and doctoral research credits (CSE 699) are also ineligible for CSE master's degree credit; independent work toward an MS should instead be recognized as part of a master's thesis (CSE 599) or project (CSE 598), which entails additional requirements including a formal oral examination at the end.

3.1 Out-of-Department Courses

The CSE Department recognizes that our master's students can benefit from coursework outside our own graduate programs. We have therefore established procedures by which students can count a limited number of *out-of-department courses* toward their CSE master's degree. Out-of-department courses are those that would not normally count toward the student's graduate program according to its rules as stated in the Graduate Bulletin.

Whether a given course is out-of-department sometimes varies by program; for example, *Electrical and Systems Engineering courses are considered in-department for Computer Engineering students but out-of-department for all others.* Courses that are cross-listed with or otherwise formally identical to a CSE course are always considered in-department, whatever number was used when the student registered for them. Note that certain non-CSE courses are required or elective for CSE graduate certificates -- for example, MATH 493/494 for the Certificate in Machine Learning and Data Mining or CYBER 567 for the Certificate in Cybersecurity Engineering -- but may still be considered out-of-department and so do not automatically count toward the student's primary master's degree.

Out-of-Department Limits for MSCS, MSCoE, MSCySE Students

Under normal circumstances, students may not count more than **six credits** of out-of-department coursework (two classes) toward a CSE master's degree. However, if a student makes an exceptionally strong argument to count additional out-of-department credits, and the student's academic advisor supports their argument, the department will

consider allowing up to twelve such credits. Simply desiring to take additional courses from another department or to graduate within a certain timeframe is not by itself a sufficient reason to allow more than six credits. Students wishing to justify additional credits for interdisciplinary reasons should instead consider the MEngCSE degree as noted below.

Out-of-Department Limits for MEngCSE Students

The MEngCSE degree is intended to offer greater flexibility for students pursuing interdisciplinary studies. As for the other degrees, students may count up to **six credits** of out-of-department coursework (two classes) toward their degree. However, MEng students have more latitude to count additional out-of-department courses (up to a maximum of **twelve credits**) if the additional courses can be justified as part of a coherent interdisciplinary program of study approved by the student's academic advisor. A student wishing to count more than six out-of-department credits must submit such an approved justification to the Graduate Coordinator for review, in addition the following the usual procedures below to ensure that each class by itself is acceptable for degree credit.

Process for Eligibility Review of Out-of-Department Courses

Not every Washington University course outside CSE is eligible to count as an out-of-department course for our master's students; rather, the department must examine each such course for eligibility. In general, we count only technical courses (science, engineering, and math) at 400 level or above. These courses may come from any division of the university except for UCollege.

Only students with an open CSE master's program may request review of an out-of-department course to determine if it is eligible for credit toward their degree. *We strongly recommend that students hoping to apply a course to their degree determine whether the course is eligible prior to taking it.* Students should also consult with their academic advisor to determine whether a course is likely to be suitable before requesting a formal review.

To formally request review of an out-of-department course for eligibility, the student should submit a request to the CSE Graduate Coordinator stating the title and number of the course and the semester that it was or will be taken. If the course has recently been reviewed for other students, the department may be able to answer immediately; otherwise, the student will be asked to provide a detailed syllabus for the course (preferably including a week-by-week list of topics), which will be sent to a faculty member with relevant expertise for review. Please note that a course is *not* approved until and unless the student receives notice of approval from the Graduate Coordinator or Program Director.

Eligible out-of-department courses may be approved for either 400- or 500-level credit depending on the reviewer's evaluation of their subject matter and level of rigor. This

determination is important because CSE master's programs limit the number of 400-level credits that a student may count toward their degree. Most commonly, the course's number in its home department will determine how we count it; however, some 500-level courses in other departments may only count as 400-level for CSE.

Applying Eligible Courses to a Master's Degree

Even if a course is approved for out-of-department credit, it cannot be applied to a student's degree until the student successfully completes the course with a grade of C- or better. **If the student received approval of a course before completing it, they must contact the Graduate Coordinator again after the course is completed to ask that it be applied to their degree.** The course will then be added as an "exception" that appears on their degree audit. (Students asking for approval of an already-completed course should clearly state in their email that they want the course applied to their degree immediately, so that we do not wait for a second email before taking action following approval.)

Approved out-of-department courses may generally be counted toward a CSE master's degree whether or not they have already been counted toward another Wash U. degree. However, combined bachelor's/master's students, dual-degree students, and students pursuing two or more Engineering master's degrees should pay attention to their programs' limits on courses counting toward multiple degrees.

For all CSE master's degrees, out-of-department courses count toward the degree's elective units. They are not evaluated for "equivalence" with any particular CSE course, *even if such an equivalence exists for the undergraduate program*, and so may not be used to satisfy the MSCS breadth or MSCySE core requirements.

Requests to use an outside course to substitute for a specific course in a graduate *certificate* should be directed to the director of that certificate. Such requests may be made independently of whether a course counts for the student's primary master's degree.

Credit for Courses from Outside Wash U.

Courses from other degree-granting institutions are reviewed for eligibility using the same procedures as out-of-department Wash U. courses. However, the University imposes additional restrictions on whether credits may be transferred from another institution and applied to a student's degree. In particular,

- At most **six** credits (equivalently, two semester- or quarter-long courses at the other institution) may be transferred from other institutions toward a CSE master's degree;
- Only courses considered graduate at their home institution may be transferred;
- No course may be transferred if it was counted toward an *undergraduate* degree obtained at another institution.

Students wishing to transfer a course from another institution must provide the McKelvey Engineering registrar with an official letter from the other institution's registrar or dean stating that the course was not counted toward any previous undergraduate degree.

Courses that do not appear with a grade on an official transcript from a degree-granting institution may not be transferred for degree credit. For example, EdX and Coursera courses are not eligible for transfer.

The department reserves the right to refuse to count an otherwise eligible non-Wash U. course if the student's grade in the course is below a B. Courses not taken for a letter grade cannot be counted toward a CSE master's degree. However, *as a special exception, eligible courses taken pass/fail in Spring 2020 (only) due to an institution's documented policy related to COVID-19 may be counted as if they were graded.*

3.2 Basic Proficiency Requirements ("Prerequisites")

All CSE master's students must satisfy certain basic proficiency requirements in order to graduate. Each student must demonstrate proficiency equivalent to the following courses:

1. CSE 501N "Introduction to Computer Science" (*all students*)
2. CSE 502N "Data Structures and Algorithms" (*students in MSCS, MEngCSE, or MSCySE*)
or CSE 505N "Introduction to Digital Logic and Computer Design" (*students in MSCoE*)

We recognize that our programs attract students from diverse academic backgrounds, including those with little or no undergraduate CS training. These proficiency requirements ensure that, no matter what area of emphasis students with nontraditional backgrounds pursue in their master's program, they will emerge with at least the minimal skill set expected for trained computer scientists or computer engineers. The requirements are equivalent to basic undergraduate courses in computer science or computer engineering; in fact, the three named courses are aliases for CSE 131, CSE 247, and CSE 260M in our undergraduate program.

How to Satisfy the Basic Proficiency Requirements

There are three ways for a student to satisfy a basic proficiency requirement:

- Complete the named course at Wash U. with a grade of at least C-;
- Satisfactorily pass a placement test for the relevant course;
- Show proof of an equivalent course or courses previously completed at another university.

Proficiency by Prior Coursework. When a student first enrolls in a CSE master's program, the Program Director reviews the student's prior transcript(s) for evidence that their prior

work satisfies each proficiency requirement. Generally, a student is considered already proficient if their transcripts include a substantially identical foundation course that was passed with a grade of B or above. Courses not taken for a letter grade (*even if that course was taken at Washington University*) or taken from an organization that does not issue official academic transcripts (e.g., EdX or Coursera) cannot be used to satisfy basic proficiency requirements.

Students will be notified whether they are missing one or more proficiency requirements no later than their first meeting with an academic advisor after they enroll.

If a student took a course that did not appear on their transcript (with its grade) at the time they submitted their application, they may bring the new course to the attention of the Program Director after enrolling in our program. The student should immediately email an updated unofficial transcript to the CSE Graduate Coordinator and must then submit an updated official transcript to the Engineering Registrar as proof that the course was successfully completed.

In all cases, the Program Director has sole discretion as to whether a student's prior coursework is sufficient to satisfy a proficiency requirement.

Proficiency by Placement Test. Students who believe they have the necessary knowledge to satisfy a proficiency requirement, but who were not credited with proficiency based on their prior coursework, may demonstrate proficiency by passing a placement test. Tests are administered by instructors of 501N, 502N, and 505N and may involve a written and/or oral examination. Testing is usually conducted shortly before the beginning of each semester. Students should contact the CSE Graduate Coordinator to schedule a placement test.

Proficiency by Coursework at Wash U. Students may take the appropriate Washington University course(s) for graded credit to demonstrate their proficiency after enrolling in their master's program. The course must be taken for graded credit and passed with a grade of at least C-. Note that these courses do not count for credit toward the student's degree.

Substitutions of other Wash U. courses for the three named courses (CSE 131/501N, CSE 247/502N, and CSE 260M/505N) are not permitted. If a student is required to take one of these courses, it is because the department considers it inadvisable for them to take more advanced courses of the same type without first acquiring proficiency in the basics.

When Must the Proficiency Requirements be Satisfied?

The department **strongly recommends** that students satisfy any unmet proficiency requirement either by passing the placement test before their first semester in the program or by taking the course before or during their first semester. Students who have

two unmet requirements may fulfill one in their first semester and the other in their second semester.

CSE 501N and 502N are frequently offered in the summer. Students who need these courses should consider taking one prior to their first academic-year semester in the program.

Although students may choose to defer satisfying the proficiency requirements, they will not be able to graduate unless these requirements are satisfied, *even if all other degree requirements have been met*. Moreover, not completing the requirements promptly may leave a student unprepared for more advanced courses needed for the student's degree.

Policy for CSE PhD Students Seeking a Master's Degree

The basic proficiency requirements are not part of the CSE PhD program requirements. However, if a PhD student seeks to obtain an "incidental" MS in the course of their PhD study or a terminal MS when withdrawing from the PhD program, they must satisfy the proficiency requirements at that time. Normally, a CSE PhD student who satisfactorily completes all qualifying course requirements is considered to have demonstrated proficiency equivalent to the basic requirements, regardless of the content of their prior transcripts.

4. Master's Theses and Projects

Students in CSE master's programs may, as part of the work leading to their degree, undertake a master's **thesis** or **project**. Theses and projects are supervised by a faculty member -- the *thesis or project advisor* -- and are judged by a committee consisting of the advisor plus at least two other qualified faculty. Students' work during a thesis or project typically consists of either original research or the development of research infrastructure related to the advisor's area of expertise.

4.1 Standards for Thesis vs. Project

A master's **project** should be a substantial effort, comparable to a one-semester (3 credits) or two-semester (6 credits) class, that achieves a clear end result and/or product and has an educational function for the student. The student will be expected to describe the results and products of the work and to articulate what was learned in an oral defense before a small committee of faculty. A project does *not* require an original research contribution or substantial novelty, nor does it require an extensive written report -- a writeup of two pages will suffice.

In contrast, a master's **thesis** should include an original research contribution. The results should constitute a body of work that could form the basis of a substantial peer-reviewed conference or journal paper. The oral defense is a public examination, and the thesis should be a substantial written document (at least 25-30 pages) that describes the work itself, its significance, and related literature in detail. A thesis is always six credits and so should be at least comparable in effort to a two-semester class.

More concisely, when judging a project, the committee will ask "What did you learn?"; when judging a thesis, they will ask "What did you teach us?".

*Note: the thesis option is not open to students in the Master of Engineering in CSE Program; these students **must** complete a 6-credit project.*

4.2 Getting Started: Advisor, Scope, and Proposal

In order to undertake a master's thesis or project, a student must be eligible to do so and must complete three steps: (1) identify an advisor, (2) agree with the advisor on a scope and duration of work, and (3) formally propose the thesis or project.

Student Eligibility

To undertake a CSE master's *thesis*, a student must currently be enrolled in a CSE Department master's degree program that offers a thesis option. To undertake a CSE master's *project*, a student must currently be enrolled either in a CSE Department master's degree program or (with permission of the CSE Department) in another Washington University master's degree program. Students in a non-CSE master's program are responsible for determining whether their home department will count CSE 598 toward their degree program. Projects for such students shall be judged by the same standards and criteria used for CSE master's students.

Identifying an Advisor

Theses and projects are undertaken by mutual agreement between the student and an individual faculty member. It is the *student's responsibility* to identify a faculty member who is willing to advise them.

Students seeking a thesis or project should learn about the research interests of different faculty members to identify potential advisors in their target research area. It may be helpful to take a class from a potential advisor to get a better idea of their interests and personality. Some students, especially those wishing to undertake a thesis, may conduct research with a faculty member for a semester or more prior to actually proposing a thesis or project, both to build up a relationship with the advisor and to better prepare themselves for the work.

In all cases, the student should feel free to talk to faculty and ask about thesis or project opportunities they may have. But be aware that not all faculty members are able to take on students at any given time, and that they may be particular about what kind of work they are willing to supervise.

For theses and six-credit projects, a student should identify an advisor at least **10-12 months** before the student's anticipated date of graduation. For three-credit projects, 5-6 months before graduation may suffice. Students are free to seek thesis or project advisors earlier in their studies, though in most cases it is best to wait until after the student's first semester of study before doing so.

A student's academic advisor *may* serve as their thesis or project advisor but has no obligation to do so. Most students choose a thesis or project advisor different from their academic advisor.

Who Can be a Thesis or Project Advisor? A thesis or project advisor must be a CSE faculty member. This includes *regular CSE faculty* (those with a primary appointment in CSE, whether tenure-track, lecturer, teaching professor, or professor of practice) and faculty

from other departments with a courtesy appointment in CSE. See the [faculty listing](#) on the department's web page for the names of regular and courtesy CSE faculty members. For MS in Computer Engineering students, ESE faculty are additionally considered "regular faculty" and may serve as thesis or project advisor.

Who Supervises the Work? A student's thesis or project advisor sometimes arranges for their work to be partially or completely supervised day to day by a different faculty member. This arrangement is most common when the day-to-day supervisor is an expert in another discipline, such as radiology or quantum physics, that is relevant to the student's work. The student should agree to any such arrangement and disclose it to the department *before* the work begins as part of their proposal. The advisor is still ultimately responsible to the CSE Department for evaluating the student's progress and compliance with program rules.

Scope and Duration of Work

Before beginning work, the student and advisor must agree on the topic, whether the work will be a thesis or project, and how long it will take (one or two semesters). It is best practice to articulate specific goals for the work, e.g., "I will construct software to do X"; "I will formulate and attempt to prove Y"; "I will conduct an empirical performance analysis of Z." We understand that such goals may be subject to change over time, but it's very important that the student and advisor share the same understanding of *how much work* and *what kind of work* is expected to satisfactorily complete the thesis or project.

Timing of Thesis and Project Credits. *We strongly recommend that a thesis or six-credit project be conducted over two consecutive academic semesters (spring+fall, or fall+spring).* One semester is typically not enough time to complete a thesis or six-credit project. Even if the student is willing to devote many hours to the work, the advisor has limited time to supervise it, and unexpected obstacles and opportunities in research mean that the student's initial plan will likely change as the project evolves. Students who try to complete a thesis or six-credit project in one semester have historically been at greater risk of not finishing on time and having to carry an incomplete grade until the work is finished, which can have a variety of bad consequences, or of producing a low-quality final result. Faculty may decline to advise students who seek to complete a thesis or six-credit project in a single semester.

In contrast, a three-credit project should be completed within a single semester.

International students who request a reduced course load in their final semester may not also enroll in a new thesis or project that extends past that semester. Moreover, to avoid issues with I-20 extension, *international students should take care not to satisfy all degree requirements other than an ongoing two-semester thesis or project by the end of its first*

semester. You should instead schedule your classwork to ensure that you have at least one required class left to take in the thesis/project's second semester.

For a thesis or six-credit project extending over two consecutive semesters, *students must take 3 units of CSE 599/598 in each semester.* This rule reflects our expectation that the student will be fully involved in the work of the thesis or project in each of its two semesters. In particular, students may not divide their thesis or project credits unequally over two semesters for financial or visa-related reasons.

Students who plan to complete a thesis or six-credit project over two *non-consecutive* semesters (e.g., fall of two successive academic years) require departmental permission in each academic-year semester that they do not register for thesis or project credits, until all such credits have been taken. Permission for non-consecutive thesis or project registration is normally granted *only to part-time master's students* and only with the advisor's concurrence. The department may recommend that a proposed 6-credit project spread across non-consecutive semesters be restructured as two separate 3-credit projects, each with a separate defense.

No Payment for Thesis or Project Work

A master's student *may not receive payment* for work performed for credit toward a master's thesis or project. If a student is currently or has previously been employed as a research assistant or intern (including support on a McKelvey Master's Fellowship, which must be renewed each semester), the work performed for the thesis or project must be clearly distinguished from any prior or concurrent paid work. This is true whether or not the student's advisor is/was the one paying. The CSE Department will determine whether these criteria have been met in deciding whether to permit or award credit for the thesis/project.

However, doctoral students who undertake a master's thesis on the way to their Ph.D, as well as master's students supported on a long-term McKelvey Master of Science Research Assistantship, **may** be supported financially by their PI in the usual way while conducting work toward a master's thesis or project, even if (as is normally the case) the PI is the thesis or project advisor.

Proposing the Thesis or Project

When the student and advisor are ready to begin a thesis or project, the student must do two things: register for thesis or project credit, and submit a formal proposal.

Students beginning a **thesis** should register for **CSE 599**, while those beginning a **project** should register for **CSE 598**. For theses and six-credit projects spanning two semesters, the student should register for only the credits associated with the *first* semester of work. Be

sure to choose the section number corresponding to your thesis or project advisor. You will be placed on a waitlist until your proposal is approved.

To file a thesis or project proposal, complete a [proposal form](#), which should detail the topic, scope, and timeline of your planned work and whether it will be supervised day to day by someone other than your advisor. The completed form should be returned via email to the CSE Graduate Coordinator. Your advisor must approve the contents of your proposal form before it will be approved by the department.

4.3 Progress and Intermediate Milestones

A thesis or project is a long-term, collaborative effort. The student and advisor should communicate regularly, at least once per week, to assess whether the student is making satisfactory progress and whether changes are needed in the scope or direction of work. If the student encounters difficulties with the work, the advisor should provide direction to help resolve them.

While assessment of thesis or project progress should be a continuous process, there are several natural milestones prior to the final defense. At these points, the student and advisor should take stock of the progress made to date and consider whether the work should continue and whether course corrections might be needed. These milestones include:

Milestone	Typical Time (for theses/six-credit projects conducted in fall+spring)
Student seeks to register for second semester of thesis/project	2.5 months after start (mid-first semester)
Student completes first semester of thesis/project	4 months after start
Student forms committee and schedules defense	7 months after start (mid-second semester)

For three-credit projects, only the last of these milestones applies, and it should happen around 2.5 months after the start of work. For projects spanning a summer, an assessment should be conducted at the end of the first semester and, if work was done in summer, at the beginning of the second semester.

Continuation and Status. Theses and projects continue only by mutual agreement between the student and advisor. Either student or advisor *may at any time* choose to

terminate the work, to convert an ongoing thesis to a project, or to reduce the number of project credits from six to three.

Work beginning as a project may be converted to a thesis at any time prior to the oral defense by mutual agreement between the student and advisor, provided that the student's program allows the thesis option. A project may be upgraded from three to six credits, also by mutual agreement, any time prior to the end of its first semester. If the student has already formed a committee, the committee should be consulted before converting from project to thesis or increasing the number of project credits.

Changes in status for theses and projects should promptly be communicated to the CSE Graduate Coordinator. *The advisor should send a confirmation email to the Graduate Coordinator to approve the change.*

Withdrawal of Advisor. An advisor who must withdraw from a thesis or project partway through for reasons unrelated to the student's performance (e.g., health issues, sabbatical or parental leave, conflict of interest) has a duty to assist the student in finding a new advisor to complete the work. *If, however, the advisor withdraws without providing a replacement because of unsatisfactory progress by the student, the thesis or project will by default be terminated with no credit awarded.* In this case, the student requires departmental permission to continue the work with another advisor, and it is the student's responsibility to find a new advisor.

Change in Student Eligibility. Students who become ineligible to pursue an ongoing master's thesis or project prior to its completion --- whether through graduation, program change, or lapse in enrollment --- will not be allowed to defend, and none of their thesis or project units will be credited. Ineligible students who take action to restore their eligibility require permission of the department and of their thesis/project advisor to resume an unfinished thesis or project.

4.4 Finishing Up: Committee, Defense, and Writeup

In order to finish a thesis or project, the student must form an examining committee, schedule a final oral defense before the committee, pass the defense, and complete the required written component of the work.

The Examining Committee

The student's committee is responsible for assessing the quality of their final thesis or project --- both its oral defense and its written component. The committee as a whole, not just the advisor, determines whether the student has successfully completed the work. Members of the committee can also act as additional sources of expertise should the student encounter difficulties.

Committee Composition. The student's thesis or project advisor is always a member of the examining committee. In addition, there must be at least two other individuals well-qualified to judge the student's work. Of the three required members, **at least two must be regular Washington University CSE faculty** (tenure-track, lecturer, or professor of practice). This rule is particularly important if the advisor is a courtesy appointee from another department. For MS in Computer Engineering students, ESE faculty are additionally considered "regular faculty" and may therefore count toward the "two regular faculty" requirement.

The student and advisor may ask to include individuals outside the Washington University faculty on the committee. Such individuals must be well-qualified to judge the academic quality of the work; typically, they hold a PhD or similar advanced degree or have extensive relevant work experience. The committee must still include two regular Wash U. CSE faculty as described above.

Forming the Committee. The student should first obtain their advisor's approval of their proposed committee and should ensure that each committee member consents to serve. Once the committee is set, the student should file a [committee approval form](#) with the department. We will verify that the committee members meet the necessary requirements and that they consent to serve.

A committee may be formed at any time after a thesis or project begins. Forming the committee earlier gives the student more opportunity to seek their help and input on the direction of the work. The committee can also help to mediate any disputes between student and advisor. *No defense may be held until the student's committee has been formally approved by the department.*

The Oral Defense

Near the end of the thesis or project, the student conducts a final oral defense of the work. Typically, the student prepares an oral presentation with slides of 35-45 minutes that frames the problems addressed by the work, describes what was done, and explains any results achieved. Students should work closely with their advisor to determine the content and format of their oral presentation. The committee will ask the student detailed technical questions about the work both during and after the presentation.

Planning and Scheduling the Defense. Because faculty are typically quite busy, especially near the end of the semester, *students are strongly advised to have their committee agree on a defense date well in advance* -- preferably at least 4-6 weeks ahead. At a minimum, the Graduate Coordinator must be notified of the defense date **at least two weeks ahead**. The committee must have access to a complete draft of the student's written thesis or project writeup **at least a week** before the defense. At this time, the student should also

provide the Graduate Coordinator with a talk title and abstract for any public announcement of the defense.

It is advisable for the student to schedule a two-hour block of time for a defense, though many committees prefer to conclude within 90 minutes. Defenses for master's theses, and optionally for master's projects, are conducted as *public examinations* that are open to all members of the Wash U. community and their guests. Even for public exams, the post-presentation question period is conducted privately between the student and the committee.

Outcomes. Immediately following the oral defense and private question period, the committee confers privately to determine the outcome. The committee may pass or fail the student. In the event of failure, the committee may decide either to continue the work and ask the student to schedule a new defense, or to terminate the work. The committee is empowered to demand that the work be converted from thesis to project and to reduce the number of credits awarded for a project from six to three. The committee may also recommend (with the student's consent) that the work be *upgraded* from a 6-credit project to a thesis.

Even after the committee passes a student through their oral defense, the student must successfully complete the written portion of the work in order to receive credit for the thesis or project.

The Written Component

For **master's theses**, the student must prepare a written thesis following the McKelvey School of Engineering's [formatting and submission guidelines](#). The thesis is a scholarly work, typically at least 25-30 pages in length, that describes in detail

- the significance and background of the problems addressed by the student's research,
- prior related work by other researchers in the field,
- the novel contributions of the thesis and how they were achieved,
- evaluation and validation of the work's results,
- opportunities for future work.

Thesis work often leads to published academic research papers in a peer-reviewed conference or journal. However, even if the student has already published the thesis work, it must be adapted to the School's required format and is typically extended to discuss additional details beyond the space limitations of the published paper.

For **master's projects**, the student must prepare a writeup of at least two pages, which may be formatted in any way desired. The writeup should summarize the work performed

and should describe any products of the work, such as hardware, software, theorems, or experimental results, as well as information on how to access any artifacts (e.g., code repositories, web sites) produced. More comprehensive, more detailed project reports are highly encouraged and may be required of a student at the committee's discretion.

The student's committee must approve the completeness and content of the final thesis or project writeup. Committees frequently delegate final writeup approval to the advisor following a successful oral defense, but such delegation is not required. Committee members may choose to withhold signatures from the approval form for the student's defense until they are satisfied with the written product.

Final Completion and Grading

To complete a thesis or project successfully, the student must

- pass the oral defense;
- for theses, turn in an approved written thesis [per the School's guidelines](#);
- for projects, turn in an approved writeup in electronic form to the CSE Graduate Coordinator.

Theses and project reports are made public after submission through the university's [OpenScholarship](#) website. They should therefore *not* include confidential information. Please notify the Graduate Coordinator if your thesis or report should be embargoed for some period due to an impending publication.

To record completion in a particular semester, all written and oral requirements must be completed by the deadline announced for that semester [by the School \(for theses\)](#) or the CSE Department (for projects).

For a thesis or project spanning multiple semesters, **no grade shall be assigned to any of its units until the student either defends and completes all requirements or terminates the thesis/project.** *The only grade assigned to CSE 598 or 599 units prior to thesis/project completion or termination should be "I" (incomplete).*

At the time of completion, the advisor will assign a letter grade to the student's CSE 598/599 units for the current semester and, for two-semester theses or projects, will resolve the previous semester's incomplete and assign the same grade to those units.

4.5 Resolving a Late/Incomplete Thesis or Project

Students must complete *all* requirements of a thesis or project for any part of its work to count toward their degree. If a student has taken all credits needed for a thesis or project

but has not yet completed its programmatic requirements (passed oral defense and completed acceptable thesis or project writeup), the work is considered **late**.

International students should be aware that a late thesis or project may have **serious adverse consequences** for their enrollment. If an international student has completed all program requirements except for the resolution of an incomplete grade (including an incomplete thesis or project), the student *may not apply for a reduced course load* while they are resolving the incomplete. In order to extend their I-20 and remain in the U.S., the student must take a full-time load (9 credits) of graded courses that would otherwise be eligible for credit toward their master's degree while also resolving the incomplete.

If a thesis or project becomes late, the department will require action to ensure that the student's path to completion is clear. The following actions must be taken by the beginning of the first semester (spring, summer, or fall) in which the work is late:

1. The student and advisor must prepare a written statement that briefly describes the scope of the work, what the student has done to date, and the effort remaining to complete the work. The statement should describe with specificity the remaining tasks that, in the advisor's view, must be done for the student to complete the work satisfactorily. It should specify a latest date by which the student is expected to complete all requirements.

The advisor must provide this statement to the Program Director, and the student must provide a written agreement to its contents.

2. If the student has not yet selected an examining committee, they must **immediately** select a committee in collaboration with their advisor and file a committee approval form with the Graduate Coordinator.
3. International students must consult with OISS to determine whether their visa terms impose a deadline on their ability to complete the thesis or project, and whether they must take any other action to remain enrolled while clearing the incomplete. The results of this consultation must be communicated to the advisor and the Graduate Coordinator.

If the student and/or advisor fail to provide the above information to the department in a timely fashion, or if the advisor declines to continue a late thesis or project out of dissatisfaction with the student's performance, *the work will be terminated, and the student will receive no credit for it.*

A late thesis or project generally must be completed by the end of the first academic-year semester in which it is late. Exceptions require department permission and will be made

only if the student and advisor document compelling circumstances that prevent the student from completing all requirements by this deadline.

Students are expected to remain continuously enrolled in their master's program until they have completed all thesis or project requirements. In particular, *domestic students with a late thesis/project and no other need to enroll during an academic-year semester must enroll in Master's Continuing Student Status (CSE 883)*. Students whose program is closed due to a lapse in enrollment will not be allowed to defend until they reopen the program. Please note that a student should *not* register for additional CSE 598/599 units while completing a late thesis or project; if it is late, all its units have already been taken (and marked incomplete).