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Harvard John A. Paulson School of Engineering and Applied Sciences

Policies of the Committee on Higher Degrees (*Ph.D., M.E., S.M.*)

The Committee on Higher Degrees (CHD) is responsible for overseeing the degree programs of Graduate School of Arts and Sciences (GSAS) students in the Harvard John A. Paulson School of Engineering and Applied Sciences (SEAS). It is a body comprised of faculty from across the school.

Students may work toward the Doctor of Philosophy (Ph.D.) and/or Master of Science (S.M.) degrees in one of four subjects: Applied Mathematics, Applied Physics, Computer Science, and Engineering Sciences. SEAS also offers a Master of Engineering (M.E.) degree in Engineering Sciences, an S.M. in Data Science, and an M.E. and an S.M. in Computational Science and Engineering.

The basic degree requirements and other matters pertaining to graduate study are summarized in *GSAS Policies* (<https://gsas.harvard.edu/policies>). Included in the current document are SEAS-specific policies, procedures, and degree requirements. Issues relating to acceptable graduate-level courses, cross-registration, part-time study and dissertation research in absentia are also discussed. The actions of the CHD are based on the requirements and regulations detailed in this document. This document is subject to change. The current CHD policies are posted on the SEAS website and available in the SEAS Office of Academic Programs; it is the student's responsibility to familiarize themselves with current policies, which are revised annually, usually in August.

Meetings of the CHD

The CHD monitors progress towards attainment of the degree. The CHD meets approximately once a month during the academic year to review the set of courses each student intends to use for meeting SEAS degree requirements (their "program plan") and to act on other pending business. Exceptions to the rules must be submitted via petition and can be granted only by the CHD. Petitions to the CHD must be in writing (including via PDF submitted electronically), and must have the approval of the student's faculty advisor(s). Ordinarily, the CHD will not act on any matter submitted for its consideration through the Office of Academic Programs (Pierce Hall 110) **fewer than ten working days prior** to a given meeting. The Office of Academic Programs will communicate deadlines to the graduate students in advance of each meeting.

Academic Standing

For purposes of this document, "satisfactory academic progress" is defined as a student taking an appropriate number of courses, earning acceptable grades in those courses, and, if applicable, making adequate progress toward their qualifying exam, research, and thesis or dissertation. The research advisor will be consulted about any question of satisfactory progress in the research component of the program.

Applying for a Degree

The Application for Degree must be filed on my.harvard.edu by the deadlines available on the Faculty of Arts and Sciences Graduation & Diplomas (<http://registrar.fas.harvard.edu/registration-enrollment-degrees/graduation-diplomas>) page – typically early August for a November degree, late November for a March degree, and late March for a May degree. Students will be informed of the exact deadlines by the Office of Academic Programs, however, students are responsible for knowing the deadlines. The Registrar's Office does not typically accept late degree applications.

Students who apply for a degree and do not receive it will need to re-apply for the degree at the time they plan to complete the program. The courses taken by the student **must match** the courses listed on the student's most recent CHD-approved Program Plan.

Definition of SEAS faculty

The phrase "SEAS faculty" is used throughout this document. The definition of SEAS faculty is a SEAS faculty member who is a member of the ladder faculty (Assistant, Associate, or Full Professor), including emeritus faculty.

Advisors

Each SEAS graduate student is assigned a field advisor who is a member of the SEAS faculty upon starting the program based on the topics of study interests outlined in the application. The field advisor is primarily responsible for helping the student to plan a strong, coherent program in that field. In each semester of the first year, a student is required to have the advising hold in *my.harvard* lifted by his/her field advisor – which is also referred to as having their study card “signed”. For M.E. and Ph.D. students, the research advisor will sign the study card in subsequent year(s).

Grading Scale

For SEAS purposes, a student's performance in letter-graded courses is evaluated based on the 4-point GPA system described in [GSAS Policies](#). Individual grades of C- or better are satisfactory grades. SEAS does not include SAT/UNS grades in its GPA calculation; students should note that the informal GPA displayed in their *my.harvard* record does factor in SAT/UNS grades.

An excused ABS grade is equivalent to a B and a temporary INC grade is equivalent to a C- when determining cumulative average grades at the end of a given semester. Students must make up an excused ABS during the succeeding term, and are expected to resolve temporary INC grades promptly, both according to the policies and deadlines stated in [GSAS Policies](#). An excused ABS or temporary INC grade that is unresolved by the stated deadlines becomes a permanent ABS or INC on the student's record, equivalent to a grade of E; the course in question may be retaken for credit at a later time only if the student is allowed to continue in the program. The EXC grade is not permitted for courses taken in a SEAS graduate program.

Independent Study Courses: 299r

The CHD reviews the content of any 299r course when it is included on a program plan. 299r courses are arranged in advance of the semester by the student and a faculty member. The Office of Academic Programs must be informed about a student registering for a 299r at the beginning of each semester, via a “299r form” submitted by the student outlining the scope of the course and indicating the faculty member responsible for submitting the grade at the end of the semester. The form, available at <http://seas.harvard.edu/office-academic-programs/graduate-student-forms>, must be signed by the 299r instructor and returned to the Office of Academic Programs not later than the date on which study cards are due (i.e., course registration day). Students must also enroll in the 299r course along with their other course selections in *my.harvard*.

Cross Registration

Many SEAS students have occasion to cross-register for one or more MIT graduate courses; fewer avail themselves of other opportunities for cross-registration. The following restrictions on cross-registration, constituting SEAS’ interpretations of the stipulations in [GSAS Policies](#) must be satisfied by graduate students in SEAS degree programs. They apply to all courses taken by cross-registration, cumulatively where appropriate.

The reasons for taking graduate-level courses by cross-registration must be explained in the student's supplementary statement accompanying the degree Program Plan. Ordinarily, only graduate-level courses comparable in level of technical content to SEAS 200-level courses may be taken by cross-registration. MIT courses comparable to Harvard reading and research courses may **not** be taken by cross-registration. Courses taken by cross-registration should cover subjects not otherwise available in FAS: that is, they should not be taken in place of or in addition to any comparable FAS course without good and sufficient reasons. Ordinarily, a SEAS graduate student may not cross-register for any course that is not directly related to his/her degree program. GSAS limits the number of courses that may be taken by cross-registration to no more than half of the student's total program of study. The SEAS interpretation of this is that no more than half of all letter-graded courses, exclusive of SEAS letter-graded reading and research courses, may be taken by cross-registration. The operative limit may be smaller than this in order to satisfy other SEAS requirements on degree programs described elsewhere in this document. For specific policies on including courses from MIT or elsewhere on a Program Plan, see the Ph.D. or the S.M./M.E. course requirements sections.

DEGREE REQUIREMENTS

Doctor of Philosophy (Ph.D.)

To earn a Ph.D. degree a student must acquire breadth and depth of knowledge in a field of study offered by SEAS, demonstrate understanding and proficiency in the field, and write an original and significant research dissertation. It is the duty of the faculty to help each student define these goals more precisely with respect to his/her primary field of interest, to guide him/her toward their achievement, and to judge whether they have been satisfactorily met.

Course Requirements

General requirements

GSAS requires that all Ph.D. students complete at least 16, four-unit courses or their equivalent prior to graduation. SEAS requires that 10 of the 16 be letter-graded courses, at 100-level or higher, which together comprise the student's Ph.D. Program Plan. The remaining 6 courses beyond the SEAS 10-course requirement may include 300-level research courses and/or other undergraduate- or graduate-level coursework. Students who are appointed as Research Assistants in a given semester must enroll in at least 4 units of the 300-level research course offered by their advisor.

All Ph.D. Program Plans of 10 letter-graded, four-unit courses must be approved by the CHD and satisfy the following:

1. No course with a grade lower than B- may be included in the Ph.D. Program Plan. Also note the minimum average grade of B or better as described in the "GPA Expectations" section.
2. At least 5 of the 10 letter-graded courses must be 200-level SEAS technical courses (or 200-level FAS technical courses taught by SEAS ladder faculty—SEAS assistant, associate, or full professor), and excluding 294r/297r/298r/299r courses. Any remaining courses are normally taken from SEAS, FAS, other Harvard schools, or MIT.
3. At least 8 of the 10 letter-graded courses must be "disciplinary" courses.
 - a. Up to 1 disciplinary course may be a 100-level SEAS/FAS course.
4. At most 2 of the 10 letter-graded courses may be "breadth" courses.
 - a. Up to 1 breadth course may be a 100-level SEAS/FAS course.
 - b. Technical courses on topics adjacent and complementary to the student's research topic may be breadth courses.
 - c. Nontechnical courses, including innovation or communication courses, and courses from other Harvard schools outside SEAS/FAS normally may only be included in the breadth category.
5. A maximum of two 294r/297r/298r/299r courses in total may be included in a Ph.D. Program Plan. 294r/297r/298r/299r courses are subject to the following additional limitations by degree area:
 - a. *Applied Math*: 294r/297r/298r/299r courses may only appear in the breadth category.
 - b. *Applied Physics*: 294r/297r/298r/299r courses may only appear in the breadth category. If two 299r's are taken, they must be taken with two different faculty.
 - c. *Computer Science*: 294r/297r/298r courses may only appear in the breadth category. One 299r course is allowed in the disciplinary category. If two 299r's are taken, they can be with the same faculty but the topics must be sufficiently different.
 - d. *Engineering Sciences (Environmental Science and Engineering Track only)*: 294r/297r/298r courses may only appear in the breadth category. One 299r course is allowed in the disciplinary category.
 - e. *Engineering Sciences (all tracks except Environmental Science and Engineering Track)*: 294r/297r/298r/299r courses may only appear in the breadth category. If two 299r's are taken, they must be taken with two different faculty.
 - f. *All degree areas*: for students who entered the SEAS Ph.D. program prior to 2015, one disciplinary 299r course is allowed.
6. Certain courses and enrollments have specific restrictions and are not valid to include on a Ph.D. Program Plan:
 - a. Neither SEAS/FAS 300-level courses nor courses taken under the auspices of the Harvard Extension School may be included on a Ph.D. Program Plan.
 - b. The ungraded class ES 399-TIME does not count toward GSAS or SEAS requirements and may not appear on a Program Plan. Enrollment in ES 399-TIME is limited to two sets of SEAS students:
 - i. those who are Teaching Fellows, for at most 4 units per .25 FTE of TF appointment;
 - ii. international students taking the Derek Bok Center's *English, Culture, and Communicating Science* seminar to meet the GSAS English Language Proficiency requirement, for 4 units.

Further requirements for including prior graduate-level coursework from Harvard or elsewhere, or courses taken through cross-registration, on the Ph.D. Program Plan are given below.

Cross-registration at MIT

7. While in a Ph.D. program at SEAS, a student can petition the CHD for a course from another university, such as MIT, to be included in the student's Program Plan in lieu of a Harvard course.
 - a. The student must provide justification why the other institution's course is necessary (e.g., SEAS does not offer the topic or it has not been offered in recent years, etc.).
 - b. Only G-level (graduate) MIT courses are acceptable.
 - c. The student should attach the course syllabus and catalog description when submitting the Program Plan.
 - d. Courses taken at MIT do not count as 200-level SEAS technical courses.

Credit for prior coursework at Harvard

8. If a student has completed graduate-level coursework while in a Harvard degree program prior to enrolling as a SEAS Ph.D. student, and the course credit was not applied towards an undergraduate degree, ordinarily all 200-level SEAS courses and 200-level FAS courses taught by SEAS ladder faculty can be included in the Ph.D. Program Plan subject to the above general requirements. Other Harvard graduate-level letter-graded courses will be considered by the CHD.
 - a. Up to two 200-level SEAS courses, including 200-level FAS courses taught by SEAS ladder faculty, taken as a GSAS Special Student prior to enrolling as a SEAS Ph.D. student can be included in the Ph.D. Program Plan subject to the above general requirements.
 - b. SEAS/FAS 100-level courses taken prior to enrolling as a SEAS Ph.D. student cannot be included in the Ph.D. Program Plan.

Credit for prior coursework at other institutions

9. If a student has completed graduate-level coursework at another university prior to enrolling as a SEAS Ph.D. student, the student may petition the CHD to allow inclusion of the courses in the student's Program Plan. All transfer credit must also be approved by both the CHD and the FAS Registrar's Office.
 - a. Normally a maximum of 3 Harvard-equivalent courses will be considered by the CHD.
 - b. If the coursework was performed while a candidate for an undergraduate degree, the student must unequivocally demonstrate that the course credit was applied solely to a concurrent graduate degree.
 - c. Petitions to the CHD need to demonstrate that the courses in question are comparable to SEAS graduate courses, typically by submission of the course syllabus, requirements, and documentation of grade obtained. The student should indicate whether each course fits within the 8-course disciplinary category or the 2-course breadth category.
 - d. Typically only 1 of the transferred courses can count as part of the five 200-level SEAS technical courses.
 - e. Transfer credit must be petitioned for before or upon first submission of the final Ph.D. Program Plan in G2 year. Students are encouraged to petition for transfer credit on their prospective Program Plan in G1 year. Coursework cannot be older than four years at the time the student submits the petition to the CHD.
 - f. Grades in courses taken previously elsewhere will not be factored into the Harvard GPA, nor will the courses appear on the transcript.

Additional Area Requirements and Model Programs

In addition to the above requirements, which apply to all SEAS Ph.D. students, each area (Applied Mathematics, Applied Physics, Computer Science, and Engineering Sciences) may have area-specific requirements or guidelines, and some areas have provided model programs with suggestions of appropriate courses. A Ph.D. student's Program Plan **must always comply** with the requirements outlined in the "General Requirements" section above, in addition to complying with any area-specific requirements. Such area-specific requirements, guidelines and model programs are updated regularly and can be found at <http://seas.harvard.edu/academics/graduate/phd-model-programs> on the SEAS website.

GPA Expectations

Students must achieve at least a 3.00 GPA (a “B” average) in the ten courses comprising the Ph.D. Program Plan. At the end of any semester, a student who has failed to maintain a 3.00 GPA or has received any unsatisfactory grade may be required to withdraw, thus terminating degree candidacy. Students who have satisfied the requirements for the S.M. degree *en route* may still receive that degree.

A Ph.D. candidate whose GPA at the end of the first semester is between 2.50 and 3.00 may be warned that continuation as a Ph.D. candidate beyond the second semester is contingent upon achieving a cumulative 3.00 or better average grade at the end of the second semester. Failure to meet this standard normally will result in the student being expected to withdraw from the program following the third semester, receiving the S.M. degree if its requirements have been met. The student may petition for reinstatement to candidacy for the Ph.D. at the end of the third semester; this petition will be granted only if there is a reasonable expectation that the qualifying examination can be completed on schedule during the fourth semester.

A Ph.D. candidate whose GPA at the end of the first semester is less than 2.50 but who could achieve a cumulative 3.00 GPA or better at the end of the second semester normally will be expected to withdraw after the second or third semester, receiving the S.M. degree if its requirements have been met. Continuation for a third and final semester is contingent upon a marked improvement in performance sufficient to provide reasonable assurance that the requirements for the S.M. degree will be completed at the end of the third semester.

A Ph.D. candidate who could not achieve a cumulative 3.00 GPA or better at the end of the second semester normally will be required to withdraw at the end of the first semester, thus terminating degree candidacy.

Scheduling of Courses and Research

A Ph.D. candidate's first year of graduate study ordinarily is spent principally on course work, although some students may begin research. The second year, in most cases, will involve half-time course work with the other half devoted to teaching and research. Subsequently, additional courses can be taken to fulfill any remaining requirements, and a transition would be made to full-time research. This is not, however, a hard and fast schedule that all students will necessarily follow. In a few special cases, it may be necessary to delay the start of research beyond the third semester. In all cases early planning of the student's career at Harvard is highly desirable.

Prospective Ph.D. Program Plan: Spring of G1 year

By mid-semester of the Spring of the G1 year, students should submit a Prospective Ph.D. program plan. The Ph.D. program plan specifies the ten SEAS graduate-level half-courses, or acceptable alternatives, to be taken to satisfy the course requirements for the degree. The plan should contain a Proposed Dissertation Topic / Area of Research. The plan should be supplemented by a statement to explain the area of interest and the educational rationale for the courses included in the program. A major test of a program's intellectual validity is the possibility of providing a rational and persuasive argument in its favor. Supporting statements by the student's advisor(s) may also be necessary. The explanatory statement should be as brief as is consistent with clarity and completeness.

After consultation with his/her first-year field advisor, the student will submit the Ph.D. program plan form by the announced deadline, usually in March of the G1 year. If necessary, the Application for Academic Credit for Graduate Work Done Elsewhere form also should be completed and attached to the prospective plan.

After reviewing the prospective program plan, the CHD may suggest or require modifications. It is in the best interest of the student that the prospective program plan be submitted as early as possible, during the first semester if possible; in no case may submission be delayed beyond April of the G1 year. An approved prospective program plan is normally a condition for registration for a third semester.

At any time after approval of the prospective program plan, changes to it are subject to approval by the CHD.

Selecting a Research Advisor: Spring of G1 Year

During the second semester of study, the student will focus on identifying a specific research area and a potential Ph.D. research advisor. The potential research advisor may be the same person as his/her field advisor, but not necessarily so. Students are required to finalize their research advisor by early spring of the G1 year to be making satisfactory progress

to degree. The Office of Academic Programs will communicate about the specific deadlines and forms required as part of the selection process.

Occasionally, the potential research advisor may not be a SEAS faculty member, but ordinarily must be a Harvard faculty member. The appropriate Director of Graduate Studies (DGS) must approve in advance if the student wishes to have a primary advisor who is not a member of the SEAS faculty. Every Ph.D. student with a non-SEAS primary advisor must have an active SEAS co-advisor; some degree areas, e.g., Computer Science, stipulate that the SEAS co-advisor must be in that area. The SEAS co-advisor will communicate with the student's primary research advisor, the CHD, and the Office of Academic Programs about academic or financial issues as needed. The SEAS co-advisor will chair the qualifying exam committee and the research committee, meet with the student at least once each semester to be updated about degree progress, sign off on the annual student progress report, advise the student about coursework and program requirements as needed, sign the student's study card when primary research advisor is not a member of the FAS faculty, allow the student to register for their 300-level research course and submit the necessary grades at the end of the semester when primary research advisor is not a member of the FAS faculty, and communicate with the student's primary research advisor about the student's progress on a regular basis (at least once each semester).

Note that Ph.D. students who have a non-SEAS primary advisor have their G2 tuition paid for by the non-SEAS advisor rather than by SEAS.

Ph.D. Program Plan (including qualifying committee): Fall of the G2 year

In consultation with the research advisor, the student will submit the Ph.D. Program Plan form by mid-November, preferably earlier. The final program plan serves two purposes: (1) it updates the prospective program plan by noting any revisions to the ten courses to be taken, and (2) it serves to form the qualifying exam committee. The committee includes the research advisor and nominations by both the student and the research advisor of one member each. The CHD reviews the final program plan and, on behalf of the Dean, nominates a fourth member for the qualifying committee, who is a SEAS faculty member

An approved final program plan is normally a condition for registration for a fourth semester.

The SEAS Teaching Requirement: G2 year

All students entering the Ph.D. Program as of fall 2013 or later are required to TF at quarter time (0.25 FTE) for at least one semester for a SEAS course or for an FAS course (excluding Summer or Extension courses) taught by a SEAS faculty member. This requirement must be met during the student's G2 year. In exceptional cases, a research advisor may request a deferral of the TF requirement until the G3 year, but there are financial implications for the advisor that must be agreed upon before a deferral is approved.

The SEAS Qualifying Exam: By end of G2 year

The qualifying examination should be taken no later than the end of May of the fourth semester (or the end of the Reading Period if the fourth semester is in the fall). An extension of this deadline will be granted only if the chair of the qualifying committee makes a specific request to the CHD via the "Request to Delay the Qu. If a student is transferring between advisors and does not have a chair of his/her qualifying committee, the student can make the extension request to the DGS. A recommendation that the examination be held within a few weeks after that deadline as a matter of mutual convenience, or for good and sufficient reasons during the period June through September following the second year of graduate study, will normally be routinely approved, provided the student has a cumulative average grade better than 3.00 ("B"). Marginal students, or postponement beyond the end of September in the fifth semester, will receive careful scrutiny as to the reasons behind the recommendation.

If a student has not received approval for an extension and does not complete the qualifying examination by the deadline of end of May of the fourth semester (or the end of the Reading Period if the fourth semester is in the fall), SEAS may put the student in unsatisfactory (UNSAT) progress status with GSAS. At that time the CHD will determine whether the student should lose his/her monthly research funding support, and whether tuition for the following semester is not to be paid unless the UNSAT has been resolved. If so, registration is blocked for the following semester because of the tuition balance.

The qualifying committee is comprised of four committee members: the research advisor, the research advisor's nominee, the student's nominee, and the Dean's Nominee (assigned by the CHD). The members of the qualifying

committee should be Harvard faculty members, but on occasion MIT faculty members or other technical professionals of comparable stature may serve in this capacity with the approval of the CHD. The qualifying committee so constituted should include at least two SEAS faculty members, at least one of whom should be a senior faculty member (i.e., a full professor). Usually, the research advisor serves as chair of the qualifying committee; but if the research advisor is not a Harvard faculty member, he/she will serve as co-chair with a SEAS faculty member. Area-specific exam guidelines may specify that the Dean's Nominee is to chair the exam.

Approval of the final program plan and the identification of the Dean's nominee by the CHD will permit the student to schedule the qualifying examination. Once the student has agreed upon a time for the examination with all members of the qualifying committee, the student is responsible for contacting the Office of Academic Programs (classes@seas.harvard.edu) at least two weeks in advance in order to prepare the exam paperwork, and, if needed, to schedule a room. Any variation in the process described here requires approval in advance from the Area Chair; students and committee chairs should consult with the Office of Academic Programs in such situations.

The qualifying examination has the dual purpose of verifying the adequacy of the student's preparation for undertaking research in his/her chosen field, and of assessing his/her ability to synthesize the technical knowledge already acquired. The purpose of the examination is not to reassess the student's performance in formal courses; however, evaluation of the student's general knowledge in the major field is appropriate. The basic judgment to be made is whether the student has demonstrated sufficient mastery of the intellectual skills necessary to conduct research so that a confident prediction can be made that an acceptable doctoral dissertation will be forthcoming in timely fashion. These skills include the ability to pull together scientific ideas, to formulate technical questions, to recognize answers thereto and to make reasonable judgments on how to seek answers to such questions.

The format of the qualifying examination ordinarily is a two-hour oral examination devoted to the presentation and discussion of one or more potential dissertation topics and to more general questions. The intent is to test the student's comprehension of his/her chosen research field and to probe the limits of the student's technical knowledge in related areas. Various groups within SEAS have different customs with regard to the detailed nature of the qualifying examination. For area-specific exam guidelines, see the Graduate Degrees Requirements page on the SEAS website (<http://seas.harvard.edu/academics/graduate/graduate-degree-requirements>). One role of the Dean's nominee is to assure that comparable standards are applied throughout SEAS. The qualifying committee should agree among themselves as to what is expected of the student, who should reach out to the committee members in advance of the examination regarding the committee's expectations.

The qualifying committee may pass or fail the student, or may judge the performance to be inconclusive. Within its discretion, the committee may stipulate further requirements, such as additional course work, a written examination or presentation of a research proposal, as conditions that must be satisfied. The research committee (see below) will determine whether these conditions have been met, and so report to the CHD. Failure means that the student may not re-register, thus terminating degree candidacy. In the case of an inconclusive performance, after consultation with his/her potential research advisor, the student may schedule a second examination, which must be conclusive. The qualifying committee should explain to the student and report to the CHD its reasons for judging the performance to be inadequate and for granting a second examination.

Students who chose to switch degree areas within SEAS after completing their qualifying exam are ordinarily required to take a qualifying exam in the new area (for example, within Engineering Sciences from Bioengineering to Electrical Engineering or between degrees such as from Engineering Sciences to Applied Physics). The qualifying exam committee for this exam should appropriately reflect the new degree path. Students must first seek approval of the Director of Graduate Studies and the CHD in the area they wish to transfer and must submit a final program plan for the new degree area to be reviewed and approved by the CHD.

Research Advisor and Research Committee

Once the qualifying examination has been passed, the final stages of the path to the Ph.D. are initiated by the nomination by the research advisor of a research committee to oversee the student's dissertation research. The committee monitors the student's research progress and approves the final dissertation. The Designation of Research Committee form, signed by the research advisor and indicating the other members of the proposed research committee, must be submitted to the Office of Academic Programs, ordinarily within one week after the qualifying examination. Typically the research committee is comprised of a subset of the members of the qualifying committee. Subsequent

changes in the composition of the research committee must be approved by the CHD or by its representative. A duly constituted research committee must be in place throughout the rest of the student's graduate career.

The research committee normally consists of three or four Harvard faculty members, with the research advisor as chairperson. MIT faculty members or other technical professionals of comparable stature from the local area may be included with the approval of the CHD. At least two SEAS faculty members, at least one of whom is a senior faculty member (i.e. full professor), must be included. If the research advisor is not a Harvard faculty member, the SEAS co-advisor will chair the research committee.

Students who are in-between advisors

Students who are in-between advisors have the length of one full semester to identify a new advisor. Students are expected to find external funding or to serve as TF at a half-time (0.5 FTE) appointment for their funding in the Fall or Spring terms. The TF covers the monthly salary and all tuition/fees. The monthly salary is equal to the RA salary.

There are not TF opportunities over the summer and SEAS does not provide summer funding. Note a student must be in good standing in order to qualify to serve as a TF and receive funding. Students who cannot identify a new advisor at the end of one full semester will be asked to withdraw from the program based on a lack of progress to degree.

Employment Policies

SEAS policy is that no full-time student may accept employment other than Teaching Fellowships and Research Assistantships during the academic year, either inside or outside the University, which involves a time commitment of more than ten hours per week without the permission of the Director of Graduate Studies (DGS). No restrictions apply to employment during the Summer Period, except that employment as a full-time Research Assistant precludes other employment. Ph.D. candidates who have passed their qualifying examinations may not be granted part-time status for the purpose of accepting employment without the permission of the DGS.

Progress Reports

The student is responsible thereafter for submitting progress reports to the Office of Academic Programs once a year in the G3 year and beyond. These reports must be signed by all members of the research committee, and must contain a statement by the chairperson. Progress reports are due by the end of Reading Period in the Spring semester but can be submitted at any point in the academic year. In addition to the standard review of the progress of each student each semester, students in their eighth and subsequent terms should meet with their research committees, assembled as a group, at least once a year. The CHD urges that committee meetings be held in September or early October, and that each student and his or her committee members take full advantage of the excellent opportunities that meetings offer for appraising a student's progress toward the degree and for clarifying and resolving problems. It is especially urged that these meetings be held when the members of the committee come from different disciplines and schools. The CHD may require an additional progress report at the end of the Summer Period if there is any question as to whether the student should be permitted to continue. The progress report due at the end of the final semester, if the final Ph.D. oral examination (see below) is imminent, may be omitted at the discretion of the research advisor (or the SEAS co-advisor, if applicable), provided the Office of Academic Programs is duly notified.

Submission of a satisfactory progress report ordinarily is a condition for registration in the following semester.

Dissertation and Final Ph.D. Oral Examination

SEAS expects most students to complete their dissertation in four to six years. The dissertation must represent an original and significant contribution to knowledge. The dissertation should be a coherent document conforming with the customary standards of scholarly discourse and addressed to a broad audience in the corresponding subject rather than to a narrow audience of specialists in the field. SEAS does not follow the practice in which a collection of manuscripts intended for publication (or actually published) as technical papers constitutes an acceptable dissertation. It should be understood, however, that the student has an obligation to prepare the work for publication in the archival literature in timely fashion. The dissertation must meet the GSAS requirements as to format available at <http://registrar.fas.harvard.edu/registration-enrollment-degrees/graduation-diplomas/phd-dissertation-submission>; detailed information is available from the Office of Academic Programs and the FAS Registrar's Office.

The last two requirements are the final Ph.D. oral examination and an electronic copy of the dissertation submitted as a PDF (Portable Document Format) file. The student must deliver a complete penultimate draft of the dissertation (except for the acknowledgments) to all members of the research committee at least two weeks prior to the final

examination. Once the student has agreed upon a time for the examination with all members of the research committee, the student is responsible for contacting the Office of Academic Programs (classes@seas.harvard.edu) at least two weeks in advance in order to prepare the exam paperwork, and, if needed, to schedule a room.

All members of the research committee must be present for the final oral examination. A request for remote participation by a member will be decided by the DGS on a case-by-case basis. In any such case, a committee meeting the stated SEAS requirements for composition must be physically present, in addition to any member participating remotely; the advisor must be physically present for the final examination and not the member participating remotely; all committee members must agree to the remote participation of any one; and the student is to send the presentation materials to the member participating remotely before the date of the examination, in addition to sending a penultimate copy of the dissertation.

The final examination is essentially a presentation and defense of the dissertation, though more general questions relating to the field of the dissertation are in order. At the end of the examination, the research committee may accept the dissertation, possibly subject to agreed-upon revisions, or specify further requirements. If other than minor revisions are involved, the nature of the conditions that need to be met should be reported to the DGS. The research advisor must certify in writing that these conditions have been met before award of the degree can formally be recommended by the Dean.

SEAS facilities are the usual location for the final defense. A student planning a defense to be held outside of SEAS must have the approval of all his/her committee members before finalizing the location of the defense. Arrangements as to location will be made by the student through the Office of Academic Programs. Public notice will be given. The Office of Academic Programs strongly encourages students to schedule their defense not later than two weeks before the GSAS Ph.D. Dissertation submission deadline.

Ph.D. Funding

Please see the document entitled *Financial Aid and Funding Policies* available online as an addendum to this document at <http://seas.harvard.edu/academics/graduate/committee-on-higher-degrees>.

Master of Science (S.M.) and Master of Engineering (M.E.) Degrees

Note: specific requirements for the *Computational Science and Engineering* and *Data Science* programs are online at:

- CSE: <http://seas.harvard.edu/programs/graduate/computational-science-and-engineering/master-of-science-in-cse>
- Data Science: <http://seas.harvard.edu/programs/graduate/applied-computation/master-of-science-in-data-science>

Students in the MS/MBA joint degree program with Harvard Business School should consult with the *Associate Director, Masters Programs* in the Office of Academic Programs for details of that program's curriculum.

Course Requirements

The following course requirements apply to all SEAS S.M. and M.E. degrees. Specific areas may have additional requirements published at <http://seas.harvard.edu/academics/graduate/master-of-science-degree-requirements>.

1. Eight letter-graded half courses are required for the S.M. degree (or twelve for the S.M. in *Data Science*). As many of these as possible should be SEAS 200-level courses. (Note: a half course is a typical semester-long course at Harvard, i.e., a 4-unit course in FAS. Unless otherwise noted, the semester "course" in the points below refers to a half course.) M.E. students must take eight additional non-letter-graded research-oriented courses at the 300-level that result in the completion of the required M.E. thesis.
2. At least four of the eight letter-graded courses must be offered through SEAS or taught by a SEAS faculty member in another FAS department. Because Applied Mathematics is inherently interdisciplinary and draws on offerings in Mathematics and Statistics, this standard is not applied stringently to S.M. programs in Applied Mathematics. Candidates for the S.M. in Applied Mathematics should consult their graduate advisor or the DGS in Applied Mathematics about their programs.
3. At least five of the eight letter-graded courses must be 200-level SEAS/FAS technical courses, not including reading and research courses (299r), seminar/project courses (298r, 297r, 294r), or innovation or communication courses. The remaining three courses should be from SEAS, FAS departments, other Harvard schools, or MIT. (Note: for MIT courses, students should attach the course syllabus and the catalog description when submitting their program plan, indicating MIT G-level status).
4. Up to three of the eight letter-graded courses may be 100-level SEAS/FAS courses. As a guideline, having one 100-level course will generally not lead to any concern; having two 100-level courses requires at least some justification (i.e., that the courses are necessary prerequisites for 200-level courses); having three will generally lead to close examination by the CHD.
5. Only one reading and research (299r), seminar/project (298r, 297r, 294r), innovation, or communication course can count among the eight letter-graded courses. An exception is that two such courses are allowed when an S.M. student chooses to write a Master's thesis (see below).
6. Harvard Extension School courses may not be included in the program plan.
7. Transfer credit for work done previously elsewhere is not accepted toward the S.M. or M.E. degree.
8. No 300-level courses may be included in the S.M. program plan. ES 399-TIME and AC 399-TIME may not be included in an S.M. or M.E. Program Plan.
9. Exceptions to these requirements are considered by petition to the CHD.

A limited number of acceptable graduate-level courses taken as a Special Student in GSAS or when registered in the Harvard Summer School may be included in SEAS graduate program plans if completed with an honor grade ("B-" or higher); however, acceptable offerings are rarely available through the Summer School. Students needing remedial work, in computer programming for example, may nonetheless find Summer School or Extension courses of interest. Not more than a total of four graduate-level courses taken as a Special Student or in the Summer School may be included in a Master's program plan. Harvard University employees who take courses for academic credit under the Tuition Assistance Plan are treated as though they had registered as Special Students, for purposes of SEAS graduate degree programs, should they subsequently be admitted to GSAS.

S.M. Program Plan

The S.M. Program Plan should be comparable to that customary for the first year of a Ph.D. program, with special attention to attaining some breadth and depth of preparation. An approved program plan ordinarily is a condition for registration for a second semester. The Program Plan must be submitted before study card day in the Fall semester of their first year for terminal S.M. students, and by April of junior year for A.B.-S.M. students. For non-A.B.-S.M. students,

the program ordinarily should allow completion of all degree requirements in one academic year, but may propose continuation for a third, final semester. Subsequent changes must be approved in advance by the advisor and the CHD.

M.E. Program Plan

The M.E. program admits students who wish to pursue more advanced formal training without undertaking the quantity of research required for completion of a doctoral dissertation. The M.E. degree requires the successful completion of one year of course work and one year of research, including a final oral presentation of the thesis.

The sixteen four-unit courses, including research courses, taken for this degree must form a coherent program plan approved by the CHD. The M.E. Program Plan should be submitted before the end of the first semester of graduate study. Subsequent changes must be approved in advance both by the student's advisor and by the CHD. Students are expected to complete the requirements for the M.E. degree within four consecutive terms. Continuation beyond the fourth semester will be granted only if there is reasonable assurance that the requirements can be completed by the end of the fifth semester.

GPA Expectations

Students must achieve a 3.00 ("B") or better average grade in the courses offered for the S.M. or M.E. degree; no course completed with a grade less than C (for the S.M.), or less than B- (for the M.E.), may be included. Failure to maintain a cumulative 3.00 or better average grade or receipt of any unsatisfactory grade may require that the student withdraw from the program, thus terminating degree candidacy.

A regular S.M. candidate whose average grade at the end of the first semester is between 2.50 and 3.00 normally will be warned that he/she will not complete the requirements for the degree at the end of the second semester unless a cumulative 3.00 or better average grade is achieved. Should the student fail to satisfy the requirements for the S.M. degree at the end of the second semester, continuation for a third and final semester will be granted provided there is reasonable assurance that the degree requirements can be completed at the end of that semester. A regular S.M. candidate whose SEAS average grade at the end of the first semester is less than 2.50 but who could achieve a cumulative 3.00 or better average grade at the end of the second semester, working as a full-time student, normally will be warned that continuation for a third and final semester is contingent upon a marked improvement in performance sufficient to provide reasonable assurance that the requirements for the S.M. degree will be completed at the end of the third semester. A regular S.M. candidate who could not achieve a cumulative 3.00 or better average grade at the end of the second semester normally will be required to withdraw at the end of the first semester, thus terminating degree candidacy.

Master's Thesis

A candidate for a terminal Master's degree, with the prior approval of a faculty supervisor and of the CHD, may undertake an extended reading and research project resulting in what amounts to a Master's thesis. The thesis is optional for the S.M. degree and required for the M.E. degree. In connection with this project, an S.M. candidate may take no more than two SEAS letter-graded reading and research courses (299r), no more than one in any given semester; M.E. candidates may take up to one 299r course as part of the eight letter-graded courses and are required to take eight 300-level reading and research courses.

When a thesis project is pursued in connection with a terminal Master's degree, the thesis supervisor, in consultation with the student, shall nominate an outside reader who is a member of the SEAS faculty for approval by the CHD by study card day of their second semester in the case of SM students, or by study card day of their third semester for M.E. students. Ordinarily, both the supervisor and reader must be members of the SEAS faculty; exceptions must be approved by the CHD.

An initial draft of the thesis must be transmitted to the supervisor before Spring Recess of the student's final semester (or Thanksgiving Recess if the student's final semester is the fall). The final draft of the thesis, incorporating any revisions given on prior drafts by the thesis supervisor and outside reader, must be transmitted to the thesis supervisor and outside reader by the first day of Reading Period, and the student should simultaneously submit a one- or two-page abstract to the Office of Academic Programs. The thesis supervisor and outside reader should each submit to the Office of Academic Programs by the last day of Reading Period a letter giving their evaluation of the thesis. It is expected that such a thesis will represent a more substantial contribution than is customary for an undergraduate senior thesis, but less so than a doctoral dissertation. The thesis will follow a similar format to a Ph.D. dissertation, and satisfy similar

criteria. The main difference is in the volume of original work expected of a master's thesis, which might have the content of roughly 25% of original research as in the Ph.D. dissertation. No part of a master's thesis may be included in a subsequent Ph.D. dissertation. The student should note that the following four points should be covered in a master's thesis: introduction, stating the question being asked, or hypothesis being tested, or design challenge being addressed; literature review, summarizing pertinent prior work; original research or design; and conclusions, stating what was learned. The thesis abstract and evaluations will be made part of the student's permanent record. When an S.M. or M.E. program plan approved by the CHD provides for or requires the preparation of a thesis, award of the degree will not be recommended by the CHD until the abstract and satisfactory evaluations have been received by the Office of Academic Programs. Unsatisfactory evaluations of the thesis will be reflected as unsatisfactory grades given by the supervisor in the student's 300-level and/or 299r courses and will preclude the awarding of the M.E. degree; M.E. students who otherwise have met the course requirements for the S.M. may apply for that degree to be conferred on the next degree date.

M.E students who are in-between supervisors

M.E. students who do not remain with their initial supervisor are expected to secure a new supervisor by the end of the second semester. Students who cannot identify a new supervisor by that time will be expected to withdraw from the program based on a lack of progress to degree, receiving the S.M. if they have met the requirements for that degree. Such students may petition to remain for a third semester in order to satisfy the S.M. requirements.

The new supervisor will normally be a member of the SEAS faculty. Permission for a student to have a non-SEAS supervisor may be given by the DGS; such students must also have a SEAS co-advisor.

Ph.D. Candidates earning the S.M. degree *en route*

Ph.D. candidates may apply for the S.M. degree upon completion of the degree requirements. A Ph.D. candidate in SEAS or in another GSAS program may earn the S.M. degree *en route* in any SEAS area, provided their S.M. program plan satisfies both the SEAS-wide and area-specific requirements for the S.M. degree in that area. In particular, a SEAS Ph.D. student whose Ph.D. Program Plan has been approved by the CHD can receive an S.M. in that same area with no further approval required, provided that the courses selected to apply towards the S.M. degree satisfy both the SEAS-wide and area-specific S.M. course requirements. In all other cases, an S.M. Program Plan form must be completed, signed by the research advisor and submitted together with the required supplementary statement through the Office of Academic Programs for approval by the CHD. *Note that transfer credit is not accepted toward the S.M. degree, even if it has been approved toward the Ph.D. Harvard Ph.D. students in non-SEAS programs must consult with the Office of Academic Programs to pursue the SM en route. GSAS, the FAS Registrar's Office and my.harvard refer to the S.M. en route (along with a similar A.M. degree in other programs) as the "master's in passing".*

A.B.-S.M. Program

In fall of their third year, undergraduates in Harvard College who have been granted Advanced Standing may apply in the usual manner to GSAS for admission to candidacy for the S.M. degree during their fourth year. They will be considered for admission only if it is possible to complete the requirements for both the A.B. and the S.M. degrees by the end of their fourth year. Early planning of the student's program is essential since flexibility may be limited. A student admitted to the A.B.-S.M. program will be assigned a field advisor shortly after his/her acceptance; the student is encouraged to consult with the advisor before the beginning of the fall semester. Students must meet all requirements set forth above for S.M. candidates in SEAS. Particular attention should be paid to the expectation that at least half of the graduate-level courses used to satisfy the requirements for the S.M. degree will be offered by SEAS.

Prospective A.B.-S.M. candidates should be aware that it is possible to designate graduate-level courses taken prior to the fourth year for inclusion in the S.M. program (subject to CHD approval) rather than in the student's A.B. program. No course may be counted for both the S.M. and the A.B. program. A tentative program plan may be submitted to the CHD for an advisory opinion.

APPENDIX A: NON-RESIDENT AND PART-TIME STUDENTS

Leaves of Absence

SEAS recognizes that there will be times when a student has to take a temporary leave from their graduate studies to deal with a personal or medical issue or to pursue activities unrelated to their degree program. A student should request a Leave of Absence in these cases. The field advisor or research advisor must be consulted and approve of the leave. Leaves of Absences are generally approved for one year. Extensions of a Leave of Absence requires the approval of the Associate Dean for Education, and will be granted only in exceptional circumstances.

Students who plan to return to SEAS after being on a Leave of Absence must have an active research advisor (for Ph.D. students) or an academic advisor (for master's students). Students who do not have an active advisor on record will not be permitted to return from a leave.

Part Time Study

GSAS normally does not offer part-time graduate degree programs. Under unusual circumstances detailed in GSAS Policies page <https://gsas.harvard.edu/policies>, a full-time degree candidate may petition for permission to work **temporarily** as a part-time student. Such part-time students usually register for two half-courses per semester. Petitions for part-time status on grounds of outside employment normally will not be granted until at least one year of full-time graduate study as a SEAS degree candidate has been completed. Terminal Master's degree candidates who need fewer than four half-courses to complete the requirements for the degree will be charged tuition on a per course basis if they wish to work at less than a full-time rate during their final semester.

Part-time students are subject to the same requirements and regulations as full-time students. When granted temporary part-time status, a Master's degree candidate or a Ph.D. candidate who has not completed the course requirements for the degree and (for Ph.D. students) has not passed the qualifying examination will be permitted by the CHD to extend the normal deadlines for completing the corresponding requirements by one semester; in extraordinary circumstances, the student may petition the CHD for an extension of up to one year.

Dissertation Research in Absentia

Dissertation research in absentia is defined as research that is not done primarily at Harvard and is not done under the immediate direction of a member of the Harvard faculty. Before discussing the regulations governing dissertation in absentia by SEAS Ph.D. candidates, several distinctions should be made: when a Ph.D. candidate is away from Harvard temporarily conducting fieldwork as part of his/her dissertation research, under the general direction of the research advisor, this is not deemed to constitute dissertation research in absentia. Similarly, if the student's research advisor is at MIT and the research is done primarily at MIT, it is not deemed to be dissertation research in absentia.

There may arise situations in which the research advisor is temporarily absent on leave or ceases to be a Harvard faculty member while a Ph.D. candidate is engaged in dissertation research. When the research advisor is temporarily absent for a substantial period, another member of the research committee -- ordinarily a SEAS senior faculty member -- should be designated by the research committee as chairman, and the Office of Academic Programs should be notified accordingly. If another member of the research committee ceases to be a Harvard faculty member, the committee should be reconstituted.

Faculty members normally should not agree to serve as research advisors unless they expect to see the research through to its conclusion. Should the research advisor cease to be a Harvard faculty member before the Ph.D. candidate completes the requirements for the degree, the research committee must be reconstituted. The student may wish to find a new research advisor. If the original research advisor and the student wish to continue their research collaboration, two situations arise. If the original research advisor remains in the local area and the research can be carried out primarily at Harvard, the previously stated rules shall apply. If the original research advisor does not remain in the local area or the research cannot be carried out primarily at Harvard, the rules stated below regarding dissertation research in absentia shall apply; these require that a SEAS faculty member assume the formal role of research advisor.

The following rules govern dissertation research in absentia, as defined above. The student must have the consent of his/her research advisor, who must be a SEAS faculty member, and of his/her research committee. The student must establish to the satisfaction of the CHD that there are compelling educational reasons for the research to be done in absentia. Any financial advantage of working in absentia is not an acceptable reason. The student must have completed all course requirements for the degree. The research committee must have approved the dissertation topic

and a proposed plan of research. The student must register as a Traveling Scholar. If employed at more than a ten hour per week rate, the student must submit a letter from the employer certifying that three quarters of his/her working time can be devoted to dissertation work. The research advisor may add additional requirements before agreeing to direct dissertation research in absentia. The completed dissertation, in a form ready for study by the research committee, must be submitted at least three months before the final oral examination. All applicable regulations governing Ph.D. candidates in residence continue to apply. In particular, the requirement for periodic progress reports must be met; however, the research committee need not meet together as a group with the student if it deems that to be unnecessary and impractical. Research completed while in residence at Harvard may be written up in absentia if all of the above regulations are complied with except those relating to CHD permission and employer certification.

APPENDIX B: FORMS AND DEADLINES

This appendix lists some important SEAS and GSAS forms which graduate students may encounter, available on the SEAS, GSAS, and FAS Registrar's Office websites, including <http://seas.harvard.edu/office-academic-programs/graduate-student-forms>. All SEAS forms and petitions are submitted to the Office of Academic Programs.

Academic Advising Agreement (SEAS). Ph.D. students and their advisors confirm their academic relationship with this form, typically each spring but also when the relationship changes. Funding arrangements for the ensuing year are contingent on this agreement. It is also needed for masters students who are doing research which is externally funded.

Application for Academic Credit for Graduate Work Done Elsewhere (FAS/GSAS). This form specifies graduate-level courses taken elsewhere for which academic credit in the Ph.D. program is sought. It should be attached to the Ph.D. Program Plan form if required, and the explanatory statement should justify inclusion of such courses. See GSAS Policies page <https://gsas.harvard.edu/registration/credit-completed-graduate-work> and the GSAS tab on <http://registrar.fas.harvard.edu/forms-petitions>. Please check with the Office of Academic Programs if you intend to apply for credit for work elsewhere.

Designation of Research Committee (SEAS). This form specifies the membership of the research committee, which monitors the Ph.D. candidate's research progress and approves the final dissertation. The research advisor, in consultation with the student, nominates the original membership of the research committee at the time the qualifying examination is passed. If needed, the study may reconstitute the research committee thereafter by filing a new form.

S.M. Program Plan (SEAS). This form specifies the eight letter-graded graduate-level (4-unit) courses offered to satisfy the degree requirements. It must be filed by all S.M. candidates by Study Card Day in the first semester of graduate study (or the April of junior year for A.B.-S.M. students) and must be accompanied by an explanatory statement.

M.E. Program Plan (SEAS). This form specifies the sixteen graduate-level (4-unit) courses offered to satisfy the degree requirements. It should be filed before the Spring Recess in the second semester of graduate study, and must be accompanied by an explanatory statement.

Ph.D. Program Plan form (SEAS). For prospective Ph.D. program plans, this form specifies the ten letter-graded graduate-level (4-unit) courses offered to satisfy the course requirements for the Ph.D.; it must be filed before the Spring Recess in the second semester of graduate study. For final Ph.D. program plans, this form finalizes the Ph.D. program plan (but allowing for later updates), and specifies the potential research advisor and two additional members of the qualifying committee. It must be filed before the Thanksgiving Recess in the third semester of graduate study. In both cases the form must be accompanied by an explanatory statement.

Request to Delay Qualifying Exam (SEAS). This form is for Ph.D. students and their advisors to request a delay in the student's deadline to take the exam. Please consult with the Office of Academic Programs for any delay requests beyond early fall of G3 year.

Petition for Part-Time Study (GSAS). This form must be completed annually by any student requesting to be a part-time student. Part-time study for Ph.D. and M.E. students is not normally allowed. SEAS and GSAS must approve. See <https://gsas.harvard.edu/registration/part-time-study>.

Progress Report (SEAS). Ph.D. candidates engaged in dissertation research must file a progress report signed by all members of their research committee by the end of Reading Period in the sixth and eighth terms of graduate study, and in each subsequent semester. In the eighth semester and beyond, the committee should meet together as a group with the student.

Petition to Change Subject (FAS). Students are admitted for the S.M., M.E. or Ph.D. in one of six subjects: Applied Mathematics, Applied Physics, Computational Science and Engineering, Computer Science, Data Science, and Engineering Sciences. This form is used when the student wishes to change the degree designation from one of these subjects to another, if permitted under SEAS policy. See <http://registrar.fas.harvard.edu/forms-petitions>, under the "GSAS" tab.