

AS&T Faculty Graduate Advisor Handbook

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1 Introduction

Every graduate student admitted to the Graduate Group in Applied Science & Technology (AS&T) at Berkeley has **two** faculty advisors:

- (1) a *faculty research advisor*, officially known on the Berkeley campus as the Chair of the Dissertation Committee, who mentors the student through his/her independent research project; and
- (2) a *faculty academic advisor*, who offers counsel on coursework, oral examinations, and all other facets of the student's graduate program.

Students are expected to meet regularly with **both** of their faculty advisors.

Meetings with faculty research advisors are likely to occur frequently and are not formally monitored; however, meetings with faculty academic advisors **must** occur least once per semester when students obtain advisor codes for their course enrollments and signatures on their study lists. Other meetings with faculty academic advisors give students guidance on the selection of their major and minor programs of study, coaching on their Preliminary and Qualifying Exams, and counseling on their career trajectory.

The faculty academic advisor therefore provides a complementary balance to the faculty research advisor across the full spectrum of the student's entire program of scholarship at the graduate level.

For all of these reasons it is important for faculty academic advisors to cultivate a functional and productive relationship with their advisees, to encourage frequent meetings and sustained communication beyond the mandatory once-per-semester sign-off of study lists. They should encourage and inspire students through all phases of their graduate education, and to be sensitive to early signs of difficulty or distress, so that our students can achieve all to which they aspire in AS&T.

2 Responsibilities of Faculty Academic Advisors

- Offer counsel in matters of curriculum options and degree requirements
- Review course selections, parsed as major, minor, and discretionary units
- Sign study lists and confer advisor codes
- Coach advisees in preparation for the Preliminary Exam and the Qualifying Exam
- Give guidance in the solicitation of financial assistance
- Assist students in selection of dissertation committee members
- Offer career counseling
- Act as an intermediary between advisees and faculty members, including faculty research advisors, especially in cases requiring conflict resolution

3 Course Work and Curriculum

Minimum Course Load

The minimum course load to sustain full time student status is normally 12 units per semester. Other rules may apply to international students, students on special fellowships, and students holding special employment status. For resolution of these special cases, please consult the [Graduate Division](#) website.

Total Course Unit Requirements

For the Master of Science degree, 24 units are required, 12 of which must be in letter-graded graduate level (200 series) courses, and 3 of the remaining 12 units may be research (299) units.

For the Doctoral degree, 36 units are required, 24 of which must be letter-graded graduate level (200 series) courses, and the remaining 12 units may be upper division or graduate level courses. At least 18 units must be in the student's major field of Applied Physics or Mathematical Science, and 12 units must be in the technical minor emphasis area, leaving 6 discretionary units.

Conscientious course selection in the major and minor fields is the **best** preparation for Prelims and Qualifying Exams.

Transfer Units

Petitions to transfer units earned at other institutions are considered individually, based upon the student's academic program of study, grades received, and institution attended. The maximum number of units that can be transferred is 8, and those units can only be used to offset the student's minor field requirements as described in more detail in the AS&T Graduate Student Handbook.

Students may contact the Head Graduate Advisor for an appointment to review transcripts. They should bring copies of all transcripts from all institutions previously attended when meeting with the Head Graduate Advisor.

4 Preliminary Examination

Timing

The Preliminary Exam must be taken by the end of the **second semester** of the first academic year within the program (typically late spring semester).

Prelim Exam Committee

The Preliminary Examination Committee must include **three** faculty members of the AS&T Graduate Group with research interests similar to those of the student. The Chair must be selected from the List of Approved AS&T Preliminary Examination Committee Chairs.

Mechanics of the Prelim Exam

The Prelim is a one-hour oral examination. Committee members come prepared with a few questions relevant to the Prelim Exam Proposal, taking turns asking question(s). Students are expected to "answer at the board" as they develop their responses.

Examiners are interested in the student's ability to **think logically** rather than to memorize facts.

Preparing for the Prelim Exam

Students should consult faculty research advisors for assistance drafting their Preliminary Exam Proposals. Proposals must contain a **list of undergraduate level topics** on which the examination is to be based, signed by both the faculty research advisor and the Head Graduate Advisor.

Coverage of undergraduate course materials during the Prelim is modeled after a comprehensive final examination in each course. Students should be encouraged to consult relevant outlines, syllabi and textbooks from comparable courses offered at Berkeley and class notes from courses taken at other institutions.

"Mock" Preliminary Examinations conducted by AS&T students who have already passed the exam should also be encouraged. Many students might also feel more at ease on the day of the exam if they have previously practiced in the same room used for the actual exam.

Outcomes of the Prelim Exam

Students who fail the Prelim are allowed one more attempt, to be taken by the end of the third semester. Students should consult with their examiners individually to confirm any deficiencies and how best to recover from them.

5 Qualifying Examination

Timing

The Qualifying Examination must be taken by the end of the **third year** of study. Students should be encouraged to take the exam early, while the subject matter from both their major and minor fields are still fresh in mind. Another advantage of passing this exam early is that students qualify for higher GSRA salary. Students generally receive the next payroll step after passing the Qualifying Examination, when they are Advanced to Candidacy for the doctoral degree.

Students **must** be registered during the semester in which the exam is taken. Qualifying exams may be taken during the summer or winter breaks if the student paid fees for the semester immediately preceding the exam or intends to pay fees for the semester immediately following the exam and if faculty examiners are available.

Students must have completed at least one semester of academic residence at Berkeley before taking the Qualifying Exam, must have passed the Preliminary Examination, must

have a GPA of at least 3.00 (299 units not included) and not have more than 2 "Incomplete" grades.

Students must submit an Application for Qualifying Examination to the Graduate Degrees office at least 3 weeks before the exam, and must receive a Notice of Admission to the Qualifying Examination from the Graduate Division before the exam takes place.

It should be emphasized that the purpose of this exam is to decide whether a student is **qualified to begin doctoral dissertation work**. Research results are **not** expected, nor are they a determining factor in the outcome of the exam.

Qualifying Exam Committee

The examination must be conducted by a committee of at least **four** faculty members approved by the Dean of the Graduate Division. The Chair of the Qualifying Exam Committee and at least two other members of the examination committee must be members of the AS&T Graduate Group. The student's faculty research advisor may not serve as the Chair of the Qualifying Examination Committee. By the rules of the Graduate Division, one member of the Qualifying Exam Committee must be an "outside" member. All members must belong to the Academic Senate, or be approved for service on the exam by the Graduate Division. The committee must include at least one member from the student's major, and one from the minor.

Mechanics of the Qualifying Exam

Typically the Qualifying Examination begins with a presentation of a research "proposal." Students are expected to spend up to 30 minutes making the presentation, but should be prepared to respond to questions at any time. The duration of this first part of the exam consequently ranges from 30 to 90 minutes when questions are included.

The second part of the exam concentrates on the three subject areas specified by the student for examination. The examiners take turns asking questions that probe both the depth and breadth of knowledge in those areas, usually finishing the entire exam (both parts) in three hours or less.

During the exam students have the right to ask for a short break. Students feeling sick should ask for a break to recover, and in serious cases the Chair can suspend the exam, continuing it at another time. During the exam, students should also feel free to ask the examiners to repeat questions or clarify them if unclear.

Preparing for the Qualifying Exam

Students should prepare proposal presentations to last no longer than 20 to 30 minutes, uninterrupted. With questions, such a presentation could easily extend by a factor of 3. Everything shown on slides is open to question, especially equations, graphs, and figures, but also terminology. Practice exams in the presence of colleagues who have already taken a Qualifying Exam are strongly encouraged.

Students must also identify three subject areas from their major and minor fields as topics to be featured during the examination. Students should be counseled that this is privilege

that should be used wisely. Examiners seek both depth and breadth of knowledge in these three areas, and topical coverage is drawn from graduate level courses taken by the student in the identified subjects.

Outcomes of the Qualifying Exam

There are three possible outcomes to the Qualifying Examination: pass, partial fail, or fail. Students who fail the exam may take it a second time, if permitted by the Graduate Division on the recommendation of the Exam Committee. The re-examination should be scheduled no earlier than 6 months after the first failed exam to give students adequate time to prepare by consulting all the members of the Exam Committee.

6 Dissertation

Timing

Dissertation filing deadlines vary from year to year, based upon the academic calendar. Students should check with the Graduate Degrees Office at least one semester before filing to confirm all filing requirements. An extension petition is required to file after the deadline, supported by the Chair of the Dissertation Committee, if for example a member of the dissertation committee is unavailable to sign by the deadline due to travel or illness.

It is always advisable to file the dissertation before leaving the campus for a new position; new demands in a new job can jeopardize writing of the dissertation and elevate the risk of forfeiting the doctoral degree.

Dissertation Committee

Students should consult both faculty research advisors and faculty graduate advisors for advice on potential members of the dissertation committee. The Graduate Division requires that they be members of the Academic Senate, and one of them must represent a discipline outside of A&ST.

Filing Fee Status

Students can apply for "filing fee" status for one semester, qualifying for a reduced fee when they have completed the research phase of their dissertation and therefore have no more use of university facilities because they are only writing.

7 Financial Aid

Graduate Student Instructor (GSI) Positions

Applied Science & Technology does not receive funding for GSI positions, which are only granted to the Departmental homes of the faculty members who serve as Instructors of Record in those courses requiring GSIs. However, some GSI positions may be available in departments offering large numbers of service courses, such as the Mathematics and Physics departments. Students should consult broadly with AS&T faculty if interested in serving as a GSI.

Reader Positions

The University sets a cap on the total amount of money that can be paid to graduate students, and there may be opportunities to augment a GSR position with additional funding, depending upon the rate and percentage of pay associated with the GSR appointment. One such option is a "Readership," which is paid by the hour, exclusively for grading of assignments. Students should consult broadly with AS&T faculty to find open Readership positions if they are interested, and with the AS&T Office to determine their eligibility for augmentation.

Travel Support

Applied Science & Technology has limited "block grants" from the Graduate Division to fund student travel in support of their attendance at professional society meetings. When funding is available, a call for applications is sent to all faculty members in AS&T. Students should consult with their faculty research advisors to request such funding when needed. Requests are reviewed and approved by the Executive Committee of AS&T.

Summer Stipends

The same limited "block grants" from the Graduate Division may be used to fund summer stipends in special circumstances. When funding is available, a call for applications is sent to all faculty members in AS&T. Students should consult with their faculty research advisors to request such funding when needed. The amount of a typical summer stipend is variable, and can range from partial to full monthly support, depending upon available resources, student needs, and the number of requests. Requests are reviewed and approved by the Executive Committee of AS&T.

8 Transfer Policy

Currently enrolled graduate students from Departments in the College of Engineering and from Departments in the College of Letters and Sciences that are considered to be "science", "mathematics", or "technology" Departments will be recommended to the Graduate Division for transfer into the Graduate Program in Applied Science and Technology if they have written approvals from the AS&T Head Advisor and from the Chair of the AS&T Admissions Committee and if they meet the following requirements:

- 1) They are in good standing with their current Department and the Graduate Division
- 2) They have a UC Berkeley GPA > 3.6
- 3) They have either passed their Department's Preliminary Examination or have never failed their Department's Preliminary Examination
- 4) They have never failed their Department's Qualifying Examination
- 5) They have written evidence that they have full financial support for at least two years
- 6) They have a written letter by a faculty member currently in AS&T stating that they agree to be the student's PhD Research Advisor

All other graduate students will be considered for recommendation to the Graduate Division for transfer into the Graduate Program in Applied Science and Technology only after their case has been reviewed by the full AS&T Executive Committee and has received a majority vote of the Executive Committee for recommending transfer.

9 Health Issues and Insurance

University Requirements for Health Insurance Coverage

It is a university regulation that all students must have health insurance as a precaution against emergencies and accidents, even though it is known that students are usually quite healthy. The university does allow students to waive the student health insurance plan fee if they are covered elsewhere by comparable health insurance.

Emergency Health Costs

Students should consult their faculty advisors and the AS&T Office for available funding in a medical emergency. In the worst case, the university may extend students an emergency medical loan.

Medical Leaves

If advised by a physician to take time off for recovery, students should consult with the AS&T Office to determine feasible and best options. International students must consult with the International Office to confirm that they have submitted all appropriate documents related to a break from studies.

10 Career Planning

Applying for Employment

Students are encouraged to search the “positions open” listings in industrial and scholarly journals when approaching graduation. Job interviews at professional society meetings afford a convenient way to sample the interview process as well as the range of potential positions available. Students may also contact industrial recruiters at job fairs held on campus in the Spring Semester, and contact a graduate advisor at the UC Career Center for counseling.

However, the most important component of any application is a collection of strong supporting letters of recommendation, and students should spend time during their graduate careers earning the respect many faculty members, not just their faculty research advisors, in preparation for soliciting those letters.

Career Positions

On any university campus, graduate students can find numerous mentors with knowledge of positions in academia. However, many members of the faculty have also held previous industrial and/or government lab positions and can offer guidance on those career options, too. Some students have also held summer internships in industry, with valuable and contemporary information on potential employers and job duties/responsibilities. Students may also consult with the Career Center for information about industry jobs.

It is possible, although not necessarily easy, to transition from positions in government labs or industrial labs to an academic position. In most industrial and government labs, employees have projects with specific goals that might not include or even allow publishing of scientific results in scholarly journals. That could be an impediment to establishing the scientific reputation needed for an academic appointment. For positions that do allow or encourage publications in the scientific literature, the transition to an academic appointment can be greatly enhanced.

For any career position, transitional postdoctoral experience is helpful but not absolutely necessary. In the same vein, students should be encouraged to try teaching by serving as a GSI for at least one semester. There is no better way to sample to the academic profession during graduate studies than accepting a GSI position at Berkeley.

10 Additional Resources

Berkeley Campus URL

< <http://www.berkeley.edu/> >

Graduate Division URL

< <http://www.grad.berkeley.edu/> >

AS&T URL

< <http://ast.berkeley.edu/> >

Financial Aid Office URL

< <http://students.berkeley.edu/finaid/graduates/index.htm> >