

AS&T Student Manual

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1. Introduction to Applied Science & Technology

As defined by the Graduate Division at Berkeley, "graduate group" has specific meaning. It is an academic unit, comprised of a core faculty from two (2) or more existing departments, that offers a doctoral degree in a new method of inquiry or new field of study that has been approved by the Graduate Council of the Berkeley campus and the University of California's full systemwide Academic Senate. Applied Science & Technology is a graduate group at Berkeley.

1.1 Graduate Group in Applied Science & Technology

The Graduate Group in Applied Science and Technology (AS&T) was founded on the Berkeley campus in 1993. It features the application of physical and mathematical techniques to fundamental investigations, and/or emerging areas with potential applications, in the physical and life sciences. Prominent areas of scholarship include applied physics, engineering sciences, mathematical sciences, and life sciences. Due to its standing as a graduate group, AS&T is strictly a doctoral degree program; however, students may also earn a Master of Science (Plan II) degree by completing the necessary requirements during their pursuit of a doctorate. Moreover, AS&T offers students the option of crossing disciplinary boundaries to develop unique and individually personalized programs of graduate study. With the guidance of their faculty research advisors and their faculty graduate advisors, students select courses from a variety of departments to advance the scholarship of their dissertation topics and to complement their research concentration with more diverse topics of minor technical concentration. Students may also work with faculty to develop research subjects that straddle multiple disciplines. The AS&T Graduate Group currently has some eighty (80) faculty members from the departments of Mechanical Engineering, Materials Science & Engineering, Electrical Engineering & Computer Sciences, Bioengineering, Nuclear Engineering, Chemical Engineering, Chemistry, Physics, Mathematics, and Molecular & Cell Biology, representing three (3) different colleges.

1.2 Applied Science & Technology Office

The Graduate Group in Applied Science & Technology is very competently and most generously served by our Student Affairs Officer (SAO),

Patricia Berumen
patbcoe@berkeley.edu
(510) 642-8790

who resides in the AS&T Office. All official correspondence with the Graduate Division must be submitted through this office, including all official forms and petitions. It is strongly recommended that AS&T students *always* bring their campus forms to the AS&T Office for forwarding to the Graduate Division or to the Office of the Registrar in 309 Sproul Hall (the main campus administration building). The AS&T Office retains

current information on campus policies and procedures, time-saving strategies, locations of key campus offices, links to the most important resources on campus, copies of all correspondence for follow-up action, and valuable updates on all matters of importance at Berkeley.

During their academic careers at Berkeley, AS&T students conduct research in several labs across campus, "up the hill" at the nearby Lawrence Berkeley National Laboratory, and at other campuses and national labs. Some AS&T students are co-advised by faculty members from very different departments, while others are mentored by a single member of the faculty with an academic home in a single department on campus. In every instance, AS&T students share both the responsibilities and the rewards that come to other graduate students with traditional Departmental affiliations. It would therefore be wise for AS&T students to declare their presence on one or more traditional departmental mailing lists (those of the students' faculty advisors), to keep abreast of campus updates regarding fellowships, financial assistance, housing, and potential job opportunities.

1.3 *Chair and Executive Committee*

The Graduate Group is administered by the AS&T Executive Committee, including a Chair, and eight (8) additional faculty members. The Executive Committee reviews and implements Graduate Division policies on admissions, preliminary and qualifying examinations, curricula, and advising. The Executive Committee also recommends the granting of all degrees, and other academic matters, as well as approving requests for block grant funding in support of travel or need-based supplements. All members of the Executive Committee are elected by the faculty-at-large to a two (2) year term.

1.4 *AS&T Faculty*

Faculty in AS&T currently come from three different colleges: the College of Engineering, the College of Letters and Science, and the College of Chemistry. Their departmental units include Bioengineering, Chemical Engineering, Chemistry, Electrical Engineering & Computer Sciences, Materials Science & Engineering, Mathematics, Mechanical Engineering, Molecular & Cell Biology, Nuclear Engineering, Physics, and Statistics.

2. Administration

2.1 *Head Graduate Advisor and Faculty Graduate Advisors*

Academic advisors for AS&T students include a Head Graduate Advisor and seven (7) Faculty Graduate Advisors. These faculty members complement a student's Faculty Research Advisor, who has primary responsibility for the conduct of the student's dissertation (see next section). The Head Graduate Advisor approves all petitions for Preliminary Examinations and Qualifying Examinations, all Blue Cards, all applications for Advancement to Candidacy, and the constitution of all Dissertation Committees. Students may also meet with the Head Graduate Advisor for confidential matters that cannot be

resolved by Faculty Research Advisors or by Faculty Graduate Advisors. Faculty Graduate Advisors are assigned to AS&T students primarily to offer counsel in matters of curriculum options, degree requirements, career planning, and other academic matters. Students *must* meet with their assigned Faculty Graduate Advisors at least once per semester to discuss proposed course selections and secure an advisor code that is required during TeleBears registration for classes.

2.2 *Faculty Research Advisors*

Faculty research advisors serve the principal role known on the Berkeley campus as "chair of the dissertation committee." At times students have co-advisors (co-chairs of the dissertation committee) from different departments, and the primary responsibility of faculty research advisor(s) is to offer mentorship to students during the conduct of their dissertation research and writing. Faculty research advisors are the first point of contact for financial support, but they serve many more mentorship roles, including career advisor, confidant, morale booster, problem solver, and friend. It is therefore advisable for students to secure a faculty research advisor soon during their graduate careers, even if they have fellowships or other forms of support during their first semester. AS&T students are expected to have a faculty research advisor before taking the Preliminary Examination during their second semester of their program.

Most students have little problem finding a faculty research advisor. For those who do have difficulty, the least common reason is a lack of qualifications. Any professor is likely to be flattered by an invitation to supervise a student's research, even if he or she feels compelled to decline the invitation. So students are advised to be assertive, flexible, and diligent. Begin by interviewing other graduate students to learn about the mentorship styles of potential faculty research advisors, then follow up with a request to speak to candidate faculty members directly.

It is common for students to change research directions on the way to the doctoral degree, which may be best executed by a change of faculty research advisors. Unfortunately, it can be awkward for students to leave advisors who have invested heavily in them, having given generously of their time, talent, and precious financial support. As a team, students and their faculty research advisors have obligations to meet specific milestones established by the funding agencies, and these must be met by the filing of progress reports and/or publications in the archival literature. The best way to avoid awkwardness and misunderstanding is free and open communication between students and their advisors, and the best time to change faculty research advisors is after the completion of a project report.

2.3 *California Residency*

Every entering student is classified as a Resident or Nonresident of the state of California for tuition purposes. Fees and tuition vary depending upon the student's residency status.

However, some students are eligible to apply for California residency after one year, as described in the following summary.

Resident Classification

To be classified as a California Resident, you should meet all the following general requirements.

Continuous presence You must have sustained residency in California for more than one full year immediately before the residency determination date (the first day of classes of the semester for which you wish to be classified as a resident). Physical presence in California must be demonstrated on a *weekly basis*. You are presumed to be present in the state of California during all academic periods that you are enrolled, but must show evidence that you are also present between academic periods. Keep all dated material that proves your presence in the state such as: airline tickets; paycheck stubs from all places of employment; credit card receipts (these need not be signature copies); bank and credit card statements showing ATM, credit card, and/or debit card activity; and receipts for all rent, phone, and /or utility (PG&E) payments. Please note that such items are primary indicators of physical presence, and will be weighed heavily in determining your status if they are presented together. Individual items such as copies of lease agreements, rent checks or utility checks are much less convincing indicators of physical presence and are not acceptable alone. Your intent will be questioned if you leave California for more than 21 total days during the period in which you are establishing resident status for tuition purposes. Graduate students doing research outside of California for more than 21 total days during nonacademic periods should visit the Residence Affairs Office at 39 Sproul Hall to seek advising before leaving and filing for classification.

Intent to make California your permanent residence This must be established for one full year immediately before the residency determination date. You must show proof of your intent by: registering and voting in California elections; obtaining a California driver's license or Identification Card; registering your car with the California DMV as soon as possible after arriving in California; filing California resident tax forms, even if you have no income to report, using form 540NR for your first year and form 540 thereafter; establishing California bank accounts; remaining in California during nonacademic periods; providing a California address whenever you fill out a University form asking for a "permanent address;" and severing all legal ties with your home state by canceling your driver's license from your home state and closing all bank accounts in your home state. Evidence of intent must be dated one year before the term for which you seek resident classification. If these steps are delayed, the one-year duration period will be extended until you have demonstrated both presence and intent for a full year.

Financial independence You are presumed by law to be financially independent if you are at least 24 years of age by December 31 of the year for which you request resident classification. If your parents are not California residents, you must show evidence that

you have been financially independent during the calendar year January–December immediately preceding the semester for which you wish to claim resident status and for the current calendar year. Any out-of-state student who is claimed as a dependent on someone else's income tax returns will continue to be classified as a nonresident. Graduate Student Instructors and Graduate Student Researchers appointed for a minimum of 48 percent time (or awarded the equivalent in University-administered funds such as grants, stipends, and/or fellowships) for the semester for which they wish to be classified as a resident are exempt from meeting the financial independence criterion. More detailed information on establishing residency and documenting financial independence is available from the Office of the Registrar.

International Students If you are not a U.S. citizen, you cannot be classified as a California resident unless you are a Permanent Resident of the U.S. or are in the process of adjusting your status to Permanent Resident (you must be in a valid immigration status during the entire adjustment process). International students with F-1 or J-1 visas must pay Nonresident tuition during their entire graduate careers. However, doctoral candidates who have been advanced to candidacy for the Ph.D. may be eligible for a 75 percent reduction in nonresident tuition for three (3) years after advancement to candidacy.

Note: This summary is not a complete explanation of the law regarding California residence. Please note that changes may be made in these residence requirements at any time. Please consult the Office of the Registrar < <http://registrar.berkeley.edu/> > for complete and up-to-date residency requirements.

2.4 Registration

New graduate students should meet with their student affairs officer to discuss the registration process and obtain assistance scheduling meetings with their Faculty Research Advisors and their Faculty Graduate Advisors. Before meeting with any advisors, students should construct a tentative schedule of classes and oral examinations.

All Berkeley students enroll in courses using the Telebears system, which can be accessed only by a valid CalNet ID and passphrase.

Students receive email notification each semester from the Office of the Registrar confirming Telebears "appointment times" as well as a Personal Identification Number (PIN), needed for registration. Please note that changes in study list, including addition ("add") or deletion ("drop") of classes, change of grading option, or changes in the number of units of a variable unit course (e.g. independent study courses) may be made by submitting an approved Add/Drop form to the Graduate Office according to the schedule established by the Office of the Registrar. Students may also use the Bearfacts on-line retrieval systems to obtain information regarding current schedules, final grades from previous semesters, financial aid applications and award status, CARS billing information, and the

like. For further details about how to access Telebears, InfoBears, or Bearfacts, please go the Office of the Registrar's website < <http://registrar.berkeley.edu> >.

Important note: Registration involves two (2) steps, enrolling in classes and paying registration fees. Full-time students must carry a minimum of 8 units (200 series classes) each semester (if employed as GSI or GSR, otherwise 12 units) AND must pay at least the first installment of their fees by the published deadline each semester. Failure to pay on time will result in loss of enrollment status and "blocked" future registration. In addition, GSR and GSI appointments, as well as fellowships, may be cancelled for students not registered by the deadline each semester. Registration fees can be paid by check or money order with SID number clearly indicated. Credit cards are not accepted.

2.5 Student Conduct

Copying all or part of another person's work, or using reference material not specifically allowed, are forms of cheating that are not tolerated in the community of scholars comprising the Berkeley campus. Any student who cheats does so at great risk. The instructor may take actions such as: (a) requiring repetition of the subject work; (b) assigning an F grade or a 'zero' grade to the subject work; and/or (c) assigning an F grade for the entire course. For cheating on examinations or term papers the recommended course of action is (c). The instructor must inform both the student and the department chair in writing of the incident, the action(s) taken, if any, and the student's right to appeal through the appropriate channels in the department, or to the Director of the Office of Student Conduct.

In such circumstances, the instructor must retain copies of any written evidence or observation notes. Moreover, the Department Chair must inform the Office of Student Conduct of the incident, the student's name, and the action(s) taken by the instructor. The Office of Student Conduct may choose to conduct a formal hearing on the incident and to assess a penalty for misconduct. Ultimately, students willingly involved in a second incident of cheating are dismissed from the University.

2.6 Withdrawal

The Graduate Division requires that students be registered continuously until a degree is completed. Students requiring a leave of absence should notify the Student Affairs Officer, who can process a request for withdrawal electronically, without the need to file a petition at the Office of the Registrar. A student's withdrawal is effective the day it is entered into the system even though processing may take up to 10 days on campus. International students requesting a leave of absence should also see an advisor at the Berkeley International Office after consulting with the Student Affairs Officer to obtain the necessary paperwork. Students with definite plans for returning to Berkeley may apply for withdrawal and readmission at the same time; those who wish to discontinue their gradu-

ate study must formally withdraw from the University, which simplifies the readmission procedure if requested later.

2.7 Readmission to the AS&T Graduate Group

Students who have withdrawn from the university and later decide to return and finish their degree requirements must file a "Petition for Readmission," available from the Graduate Division Degrees Office, 309 Sproul Hall, or on the web. The petition with all required signatures is filed with the Student Affairs Officer and the Graduate Division.

Petitions for readmission may also require additional documentation, as advised by the SAO, including official transcripts from other institutions and letter(s) of support from former Faculty Research Advisors. Performance on the oral preliminary examination is an important component of the readmission decision, so it is strongly recommended that all students take the preliminary examination early.

Important note: Applications for Readmission and Change of Major or Degree Goals are evaluated simultaneously with all other (new) applications to the graduate group in Applied Science & Technology, and must be received by the same deadline. For AS&T's annual admission cycle (Fall semester admissions only), the deadline is December 15 for admission in the following year.

3. Financial Support

The Admissions Committee for the Graduate Group in Applied Science & Technology makes every effort to link students with research and teaching appointments at the time of admission. The majority of AS&T students therefore enjoy sustained financial support through a research advisor's grants and/or other departmental funding sources. Nevertheless, students are strongly encouraged to be vigilant about the health of their funding packages, and to apply for all available fellowships and grants as a safeguard against unexpected loss of research funding or as an additional buffer to sustain their creative and independent work. It is unreasonable to expect research funding to become available simply for being enrolled in the graduate program, just as it is unreasonable to expect research funding to continue for an indefinite period. Most federal grants are timed to a maximum of 3 years duration. Please remember that unresolved support problems should be brought to the attention of the SAO and the Head Graduate Advisor immediately, while there is still opportunity to resolve them.

3.1 Fellowships

All students are invited to consult the Grad Division website < www.grad.berkeley.edu > regularly and repeatedly for information on external and campus-wide fellowships. First-year students are especially urged to apply for National Science Foundation (NSF) Fellowships. Only U.S. citizens and permanent residents are eligible for these, and 4 rec-

ommendation letters are required, with a deadline for applications around November 1 each year.

In addition, students should consult their Faculty Graduate Advisors regarding their eligibility for departmental fellowships, grants, or prizes.

3.2 *International Student Fellowship Recipients*

The Internal Revenue Service (IRS), the U.S. government tax authority, has issued strict regulations regarding the taxation and reporting of payments made to non-United States citizens. As a result, payments made to international students may be subject to U.S. income tax and reporting to the IRS. The University has set up an online Tax Compliance System called GLACIER which helps managing tax liability in an efficient and effective way.

To comply with the U.S. tax laws, your U.S. Tax Residency Status must be determined. The Substantial Presence Test is used to determine whether an individual is a Nonresident Alien or Resident Alien for purposes of U.S. tax withholding. The GLACIER online Tax Compliance System will calculate your U.S. Residency Status for Tax Purposes based on the information you provide.

If you are a Nonresident Alien for Tax Purposes, you are subject to special tax withholding and reporting regulations; if you are a Resident Alien for Tax Purposes, you are taxed in the same manner as a U.S. Citizen.

For current information on issues of interest to international students, visit the Berkeley International Office website < <http://internationaloffice.berkeley.edu/> > or call 510-642-2818.

For information on disbursements, contact Christine Chang at 510-642-3002 or cschang@berkeley.edu. For fellowship information, contact the Fellowships Office at 510-642-0672 or < http://www.grad.berkeley.edu/policies/memo_international.shtml >.

3.3 *Fees & Tuition*

Fees and tuition, including non-resident tuition, have increased yearly due to state budgetary constraints. The Office of the Registrar is obligated to notify students of any fee or tuition increases as they develop. For information regarding fees and tuition, please refer to the Office of the Registrar's website < <http://registrar.berkeley.edu/> >.

All registered students are liable for fees. The Office of the Registrar will block a student's registration unless the fees are paid, either by the student or through some form of financial assistance. Please note that any graduate student appointments paid through campus, any fellowships paid through the campus, and any financial aid packages distributed through the campus will be cancelled if the first installment of fees is not paid on

time. During the summer session, students requiring the University Health Service for minor visits will have to pay some portion of the costs unless they are enrolled in the summer session (most grad students do not enroll for summer).

Nonresident Tuition

If you are a U.S. citizen, a permanent resident, or hold an eligible non-immigrant visa, it is your responsibility to establish California residency, so that you will not be liable for Nonresident Tuition any longer than necessary. Plan to spend any vacation time and the summer of your first year in California. If you spend extended periods in other states, the Residence Affairs Office may be skeptical about your claims that you're planning to make California your home. It may be possible to obtain an exception if you get a summer job in a state other than a state where you've already lived for an extended period. If your advisor confirms that your job is an integral part of your education, it may be possible for you to escape the drudgery (!) of a California summer. You should plan to submit an exception letter to the Residence Affairs Office before you begin your job so that you'll have time to change your plans should your petition be denied.

To initiate the process of establishing residency, consult the Residence Affairs Office, 39 Sproul Hall, 642-1614.

Reduction in Nonresident Tuition

Effective in Fall 1997 for graduate students who have been advanced to candidacy for the doctorate (see Section 5.9), the annual nonresident tuition fee is reduced by 75 percent, subject to the understanding that: (a) a graduate doctoral candidate may receive the reduced nonresident tuition rate for a maximum calendar period of three (3) years; and (b) any such student who continues to be enrolled or who re-enrolls after the three-year period will be charged the full nonresident tuition rate that is in effect at the time.

Tuition for International Students

International students with F-1 or J-1 visas must pay Nonresident tuition during their entire graduate careers. However, doctoral candidates (see Section 5.0) may be eligible for a 75 percent reduction in nonresident tuition for three (3) years after advancement to candidacy. For the most recent information, always consult with the Graduate Division Office to obtain up-to-date changes in policy.

Unfortunately, the AS&T Graduate Group is unable to assure full tuition support for all international students because of limitations on the resources that can be used for this purpose. Nevertheless, every effort is made to limit the tuition liability of students to an affordable amount. Many faculty members have access to industrial or other "discretionary" funds, which they can use to pay either full or partial tuition for their students. Students who are unable to obtain tuition coverage from their Research Advisors may apply for Graduate Student Instructor (GSI) positions. Different departments disperse funds

differently, so students are advised to investigate the departmental policies of their Research Advisors.

3.4 *Filing Fee*

The "Filing Fee" is a reduced fee for one semester, which may be used by graduate students who have completed all requirements for the degree except for filing the master's thesis or doctoral dissertation. It is not equivalent to registration. If students wish to use any University services that are supported by registration fees, they must pay those registration fees, otherwise they may pay the Filing Fee. The Filing Fee may only be used once during a student's career at Berkeley. For further information regarding requirements and regulations for filing fee status, please see < www.grad.berkeley.edu >.

3.5 *Graduate Student Instructor (GSI) Position*

For the latest updated GSI policy, please consult the Graduate Division website under the topic of "Teaching Appointments Info." At Berkeley, teaching assistants are given the official title of Graduate Student Instructor (GSI). A full-time (20 hours per week) GSI appointment typically entails responsibility for two discussion or three laboratory sections per week, holding office hours, preparation and grading of assignments and examinations, and other duties as assigned by the faculty member in charge of the course. Since June 2000, GSI appointments have been covered by a collective bargaining agreement with the United Automobile Workers (UAW) union, and are subject to change. The full contract is on the Labor Relations website: < <http://hrweb.berkeley.edu/hrlabor.htm> >.

The Graduate Division has set firm eligibility requirements for all GSIs. Graduate students whose first language is not English must meet the university's language proficiency requirements before being hired as a GSI. Please review carefully the requirements on the GSI Teaching and Resource Center, which is located in 301 Sproul Hall and published on the website < <http://gsi.berkeley.edu/> >.

Note: Graduate Council requirements for the preparation of first-time GSIs may be updated at any time. A comprehensive list of all Graduate Council requirements for GSI preparation is found at < <http://gsi.berkeley.edu/faculty/mentoring.html> >.

Every first-time GSI should attend the Orientation Conference sponsored by the GSI Teaching and Resource Center held each semester on the Friday before the beginning of classes. First-time international GSIs should also attend the International GSI Orientation Conference, held every Fall Semester on the Thursday prior to the beginning of classes.

By the end of the third week of classes, every first-time GSI must successfully complete an online short course on professional ethics and standards in teaching. The course has been developed and is administered by the GSI Teaching and Resource Center. Instruction will include information on such topics as academic integrity, sexual harassment, teaching students with disabilities, academic freedom, political speech, confidentiality,

Title VI, and Title IX. GSIs can register and take the course by going to the GSI Teaching and Resource Center's Web site < <http://gsi.berkeley.edu/> > .

First time GSIs must have completed or be enrolled in a 300-series semester-long pedagogy seminar on teaching in the discipline offered by the instructor's home department. In those departments in which a low number of GSI's makes it infeasible to offer such a course, the pedagogy seminar may be taken in another department, with the advice and approval of the GSI's department, or through the GSI Teaching and Resource Center. GSIs who fail to pass the 300-level course must retake and pass the course before they are eligible to teach again.

Faculty using GSIs should be provided with a copy of the revised Graduate Council Policy on Appointments and Mentoring of GSIs, along with specific departmental guidelines, at the beginning of each semester they teach courses with GSI's. A copy of the Graduate Council Policy on Appointments and Mentoring of GSI's or the URL where it can be located, along with specific department guidelines, should be included in each GSI letter of appointment.

When seeking employment as a GSI, it is a good idea to talk to the instructor in charge of the course to which you want to be assigned. He or she can recommend your appointment to the Payroll Assistant who coordinates GSI appointments.

Listed below is general information on GSI appointments, but you will need to check with the GSI Teaching and Resource Center for details, as that office determines eligibility and will have the latest eligibility requirements. It is your responsibility to obtain the most updated information from the GSI Teaching and Resource Center .

Minimum Requirements

To be a GSI, you must be registered and carry a minimum load of eight units, have an overall GPA of at least 3.1, have no more than two Incomplete ("I") grades, and be making satisfactory progress toward your degree goal.

Required Course in Teaching

AS&T does not offer a requisite 300 series teaching course. However, you will need to meet the requirements set by the Graduate Council (see NOTE above), as well as any requirements determined by the instructor's home department. Also, international students are required to pass the speak test, or the OPT exam if they fail the SPEAK test.

Test of Spoken English

All prospective GSI's who do not speak English as a native language must pass a test of their proficiency in spoken English before they can be appointed to GSI positions. Exempted from this policy are those who hold a B.A., B.S., or other bachelor's level degree from an institution in the United States. The policy applies to all prospective GSI's,

whatever their citizenship, country of origin, or residency status, and whatever subject they will be teaching.

You can take the Test of Spoken English (TSE) before you come to the U.S. The TSE is administered by the Educational Testing Service (the same people who bring you the GRE and the TOEFL), and you will have to pay a fee to take this exam. Be sure to have your test score reported to UC Berkeley.

Once you arrive in Berkeley, you can take the free SPEAK test. This examination requires that your answers to written questions be recorded and evaluated. If your score is above 50 out of a possible 300, you can be hired as a GSI. If your score is between 40 and 45, you can take a second test with a panel of examiners listening to and evaluating your level of proficiency. If your score on the SPEAK test is below 40, you won't be able to be hired as a GSI until you take steps to improve your ability to speak English. Please refer to the Graduate Council Policy on Appointments and Mentoring of GSI's for all requirements. For students struggling with English, there are many excellent courses designed to help you improve your written and verbal use of English. Please check the GSI website < <http://gsi.berkeley.edu/lpp/courses.html> > or with your Student Affairs Officer regarding classes available to improve your English language skills.

Fees for GSIs

Students are strongly advised to check the fee payment policies of the department for which they plan to be GSIs. Some departments do not pay Non-Resident Tuition of students are not students of their home department. Some departments may be eligible to receive "Fee Remissions" if students are appointed to a 25% time or greater GSI position. You must consult with your Faculty Research Advisor if you plan to take a GSI position because it may affect the timing of your research progress. Any unpaid balance of the registration fees (which are subject to change without prior warning), must be paid by the student each semester. ALWAYS CONSULT WITH YOUR PAYROLL OFFICE FOR UPDATED INFORMATION REGARDING FEE REMISSIONS.

Salary

Your salary as a GSI is based on the payroll scale paid to students in the department for which you are working. Sometimes it is higher than your GSR stipend, and sometimes lower, and it is advised that you speak to the financial coordinators in your instructor's home department for more information. Many times, compensation can be made so that a salary loss is not suffered. This is, however, at the discretion of your faculty research advisor. Faculty are strongly encouraged to supplement any salary shortfalls of their research students who are serving as GSIs. However, only certain types of unrestricted fund may be used for such augmentation.

Summer Session Appointments

A limited number of teaching appointments are available for the Summer Session. Interested students should contact the Scheduling Assistant to locate the instructors in charge of summer courses and submit an application to the Payroll Assistant.

3.6 Readership Positions

Readers are appointed each semester to grade problem sets in a number of courses. Readers are registered students with a minimum overall grade point average of 3.0, and a grade of B or higher in the course for which they're appointed or in an equivalent course. Since June 2000, Reader appointments have been covered by a collective bargaining agreement with the United Automobile Workers (UAW) and are subject to change. The full text of the contract can be found on the Labor Relations website: < <http://hrweb.berkeley.edu/hrlabor.htm> >.

The number of hours per week allowed for a given course is determined by the number of units and the enrollment. If the enrollment in a course diminishes through students dropping it, the allocation is reduced. Students may read for more than one course or more than one section of a course, to a maximum of 20 hours per week. If a student is employed in another capacity (e.g., as a GSI or GSR) for less than 20 hours per week, this time may be supplemented by employment as a reader so long as the total number of hours per week does not exceed 20. Please refer to the Graduate Division website for all requirements.

Students interested in becoming readers should contact the instructor of the course for which they wish to read.

3.7 Graduate Student Researcher (GSR) Positions

At Berkeley, research assistants are given the title of Graduate Student Researcher (GSR). A large number of AS&T students are employed as GSRs in their faculty research advisor's laboratory. There is no formal application procedure; appointments are almost always made by individual faculty members who hold research grants. It is up to the student to contact faculty members and to discuss funding possibilities. Participation in projects or seminars is usually helpful in securing an appointment. It is also helpful (but not required) to have demonstrated some research skill or creativity.

A Graduate Student Researcher (GSR) is a graduate student in the University who is engaged in or assisting in research projects and whose appointment, alone or in combination with other University appointments, may not exceed 20 hours per week during the academic year. A GSR may, however, be appointed up to full time (40 hours/wk) during the summer. The appointment is usually for one academic year or less, and reappointment is not automatic. There are no specific eligibility requirements regarding level of skills or

previous experience, which permits departments and organized research units to make GSR appointments at levels appropriate to resources and recruitment needs.

Registration and Enrollment Requirements

All students appointed as GSRs are required to be registered by the end of the third week of classes, and must be enrolled for at least eight units in the 100, 200, 300, or 400 series. You may substitute units in the 600 series for 200-level units when appropriate; you may also substitute lower division units taken to prepare for departmental requirements (e.g., for requirements in languages, mathematics, or statistics) for 100-level units.

GSR Salaries

AS&T students are paid at the same rate paid to students in your research advisor's home department, and salaries are subject to range adjustments. Students generally receive the next payroll step after having passed the Qualifying Examination, and after being Advanced to Candidacy. Also, students with a Master's degree are paid at a higher step. Please check with your research advisor's payroll office to determine your pay scale as a GSR.

Note: Always refer to the Graduate Division Appointments website for details regarding appointments as a GSI, GSR, Reader, or Tutor.

3.8 Supplementation of Fellowships

As of August 17, 1999, in the case of any fellowship, whether external or granted by the AS&T Department, a faculty member may, at his/her discretion, offer up to a 25% time GSR supplement unless otherwise stipulated by a particular fellowship program. Contact your research advisor.

Supplementation of fellowships may also be achieved another way. Your research advisor's home department may allow fellowship recipients to secure a 25% GSI appointment per semester while on fellowship. Please check with your research advisor to see if this is possible. You should be aware that appointments above 50% time might cause you to be liable for Social Security taxes. You can check with the Graduate Division's Appointments Office for details about your situation.

GSHIP Payment

The University pays for major medical and dental insurance coverage, known as GSHIP, for students who are employed 25% time or more as a GSI, GSR, or Reader. The remission is activated when employment forms are processed, so it is to your advantage to complete these forms when your employment has been secured.

Withholding Tax

Salaries are paid monthly and are subject to Federal Withholding Tax. Check with the Graduate Division Appointments Office, 318 Sproul, for more information.

3.9 Emergency Loans

The Emergency Loan office in 220 Sproul (642-0470) provides small emergency loans to students. The loan limit is roughly \$425 per semester, with a 60-day repayment period. Students may apply Monday through Thursday, between 9:00 AM and 12:15 PM and must provide photo identification and a registration card. The check is issued later the same day. See < <http://students.berkeley.edu/fao/emergencyloans.html> >.

A special emergency loan agreement has been set up with the Financial Aid Office for those international students who are waiting for their social security numbers and who have a job for the fall. If the student has exhausted all other options and is in need of immediate funds, the student can request funding from the Emergency Loan Office, 220 Sproul, 9-12:00, M-Th, provided the department certifies that the student has a job for the Fall. Students need to bring a completed departmental confirmation memo (please print copies from attached version) from their department certifying their appointment and they need to fill out an emergency loan application. The loan is due and payable at the end of the semester, and a co-signer is required. International students may apply for short-term loans through the SISS office, which must be repaid by the end of the semester.

4. International Students and the Berkeley International Office

4.1 Berkeley International Office

The Berkeley International Office offers a variety of services and special programs for international students and scholars at Berkeley. Located at International House, guidance on immigration problems, help in resolving financial aid concerns, advising on personal difficulties, or information on almost any topic of special interest to international students. See < <http://internationaloffice.berkeley.edu/> >.

4.2 New Student Orientation

Because the role of the Berkeley International Office is to facilitate international students' adjustment into the academic community and to provide support while successfully completing graduate studies, the Office runs a comprehensive Orientation Program, which prepares students for a successful stay at the University of California, Berkeley. In addition, the office offers a series of Scholar Information Meetings (SIMs) at International House, < http://InternationalOffice.berkeley.edu/PRS/J-1/scholar_info_mtg.php >.

4.3 *When to Contact the Office*

Frequent contact with the Berkeley International Office is extremely important. Failure to keep the office up to date may result in penalty fees or revoking the student's visa. Contact the office for the following: cancellation of registration or withdrawal; change of major change of degree goal; early completion of the student's program; requiring more time to complete the student's program; and travel outside of the U.S. while a student at Berkeley.

4.4 *Student and Exchange Visitor Information System (SEVIS)*

As of January 2003, any institution or organization certified by the Department of Homeland Security (DHS) or the Department of State (DOS) to admit non-immigrant students or exchange visitors to their programs must use SEVIS. A computerized process, SEVIS collects, maintains and manages information about international students and exchange visitors during their stay in the United States. To cover the costs for the continued operation of the Student and Exchange Visitor Program (SEVP), including the administration and maintenance of SEVIS, compliance activities, and the establishment of additional DHS support personnel positions, international students must pay a one-time fee of \$100. The SEVIS fee is a U.S. Government fee paid to DHS. It is not a University fee and provides no funds or services to the University. Additional information is available at the SISS website and the Bureau of Immigration and Customs Enforcement (ICE) website .

5. **Academics**

5.1 *Program of Study*

The appropriate curriculum for a graduate student in AS&T depends on the individual student's career goals. Curricula will usually bridge the traditional disciplines, with courses taken in one of **four major fields of study**:

Applied Physics,
Engineering Science,
Mathematical Sciences and
Life Sciences.

Students who have been admitted to the graduate group may also apply for a "Designated Emphasis" in one or more popular topics, such as Nanoscale Science & Engineering (NSE), or Computational Science and Engineering (CSE). Students usually apply for the Designated Emphasis during their first or second year.

A student must choose a program of study falling within one of the above fields. Each student, with guidance from his or her Faculty Graduate Advisor and Faculty Research Advisor (and approved by the Head Graduate Advisor) is expected to complete a se-

quence of courses that cumulatively provide a firm foundation in one of these fields, with a significant knowledge in a broader area of related disciplines.

The definition of a full-time program of study depends upon whether you are an international student and your employment status during the course of your studies. It is strongly recommended that all students enroll in twelve (12) units of upper division and/or graduate work per semester. International students and students on fellowships may have different definitions of "full-time" to contend with, and should consult with appropriate advisors. Graduate Students Instructors (GSI's) and Graduate Student Researchers (GSR's), Berkeley's terms for Teaching Assistants and Research Assistants respectively, are considered full-time if they are taking at least 8 units of upper-division and/or graduate courses.

International students need to check with the Graduate Division for the latest information on the minimum number of required units. Entering students should be aware, however, that most faculty research advisors will expect their students to make progress at a rate that will preclude your continuing to work full-time in industry while pursuing your graduate degree, and particularly at the beginning while you are taking most of your graduate courses, preparing for the preliminary examination, and doing research. You should plan to commit the largest portion of your time to your studies and research at least until you are well established in the program.

5.2 *Blue Cards*

New students will receive the AS&T Blue Card (tentative program of study for the doctoral degree) at the first Orientation meeting held in early fall semester. You will design a tentative program of study for your doctoral degree on your Blue Card (with the assistance of your Research Advisor and your Faculty Advisor), listing the courses needed to fulfill the major and minor courses required for the doctoral degree. The Blue Card must be signed by the AS&T Head Graduate Advisor after you have successfully passed the Preliminary Examination and the Qualifying Examination, and have been Advanced to Candidacy. Later you will also include your Dissertation Committee on the Blue Card.

You are free to make changes to your plan after filing this card, but once it has been signed by your Research Advisor and the Head Graduate Advisor, you are assured that the courses you intend to take will be accepted as satisfying all requirements. This eliminates the possibility of finding out too late, (after you have begun preparations for the Qualifying Examination) that you still have to take another course.

Please submit the Blue Card to the AS&T Student Affairs Officer each time you have completed one of the above "milestones" and have obtained the appropriate signatures.

5.3 Annual Student Reviews

Student Reviews are held annually each spring semester, and are used to measure the student's progress toward completion of the doctoral degree. Students are required to complete the Progress Review form, and to meet with his/her Faculty Research Advisor to discuss the progress made by the student since the previous year's review. The form must be signed by both the student and the Research Advisor, and submitted to the Student Affairs Officer upon completion of the review. Students will thereafter receive a memo from the Head Graduate Advisor, with possible recommendations for future progress.

5.4 Grades

AS&T students are expected to maintain a minimum GPA of 3.5 while at Berkeley, but are mandated by the Graduate Division to maintain a minimum GPA of 3.0.

All courses, except for 299s, must be taken for a letter grade. Courses numbered as 299 are taken with the S/U grade option. Your overall GPA must be at least 3.0 (computed for all 100- and 200-level courses taken up to the time the M.S. is awarded). Grades of "I" (Incomplete), "NR" (No Report), or "F" must be cleared or explained before you are allowed to advance to candidacy or allowed to receive your degree.

5.5 Transfer of Credit

Students may discuss the possible transfer of credits from previous institutions with the Head Graduate Advisor, who will determine if the work completed elsewhere satisfies the University standards for the master's and doctoral degrees. Each student's case is handled individually based on the student's academic course of study, grade received, and institution attended. For all circumstances, the maximum number of transfer units is 8 and these units must be used to offset the student's minor unit requirement. You should contact the Head Graduate Advisor for an appointment to review your transcripts. Please take copies from all institutions attended when you meet with the Head Graduate Advisor.

5.6 AS&T Degree Requirements

The two degrees that are granted under the Graduate Program in Applied Science & Technology are the Master of Science and Doctor of Philosophy. All AS&T students must follow Plan II (without thesis) for the Master of Science degree. Also, Plan B is the designated plan for AS&T students pursuing the Doctor of Philosophy degree.

Master of Science Degree

Students interested in pursuing a Master of Science Degree while continuing to pursue the Ph.D. may plan a Master's project with their Research Advisor (and with the approval of the Head Graduate Advisor). The student and Research Advisor should discuss a timeline for completing the project. The Graduate Division offers two plans for the Master's of Science degree; however, AS&T students need to follow Plan II requirements for the

degree. Students may submit the Application for Advancement to Candidacy Master's - Plan II form to Graduate Division; thereafter, upon approval by the Graduate Division Dean, the student receives a Certificate of Candidacy from the Graduate Degrees office. Normal candidacy for a Master's degree is 3 years; most students complete the degree within one year of filing.

Plan II (Graduate Division) Regulations

A written report of a project must be approved by the Research Advisor and by a second reader, also a member of the Berkeley Division of the Academic Senate. Exceptions for non-Berkeley faculty must be approved by petition. You must submit the (1) original copy of the report, with the original signed title page, to the AS&T Office. A cover page with signatures of all readers must be included in the report. Photographs and drawings in the original copy of your thesis or report must be originals, not photocopies. Your work will be filed in the AS&T office.

AS&T Master of Science Requirements

1. Completion of 24 semester units, of which at least 12 units are in graded graduate level courses in the major field of study, not counting seminars. Up to 3 units of individual research may be included in the remaining 12 units. The remaining units may be advanced undergraduate or graduate courses in other technical fields or in the major.
2. Completion of a master's research project report, in lieu of a comprehensive examination. The master's research project report must be read and approved by at least two (2) faculty members.

AS&T Doctor of Philosophy Requirements (Plan B)

The Ph.D. program for students entering immediately after receiving a baccalaureate degree provides an academic program that includes preparation in the (Applied Physics or Mathematical Sciences) major field of study and one minor field of study. A minimum of 36 semester units of coursework is required, exclusive of seminars and research. Of these 36 units, at least 24 units must be graduate level (200 series) courses, and the remaining 12 units may be upper division or graduate level courses. The student's program is developed in consultation with the faculty research advisor and faculty graduate advisor to suit his/her individual needs. The interdisciplinary nature of the group makes it particularly important that the student discuss all coursework with the faculty research advisor, who is most familiar with the skills and knowledge necessary to complete the dissertation. The student is required to complete at least 18 semester units relating to the student's major research field. In addition, a minor must be established by taking 12 semester units in the chosen minor emphasis area with appropriate technical content to prepare the student for the Qualifying examination and the dissertation. Of the 36 required units, 30 are taken in establishing the major area and minor areas, leaving 6 discretionary units.

5.7 Preliminary Examination

All students who enter the Ph.D. program must take a 1.5-hour oral AS&T Preliminary Examination (or "Prelim") based upon basic courses in a chosen field of expertise. The exam must be taken by the second semester of the first academic year in the program (typically in late spring semester). Students who fail to pass the exam are allowed one more attempt, to be taken by the end of their third semester. A selection of courses to be covered in each of the examination areas is established, and the oral examination is arranged in consultation with the faculty graduate advisor. Recommendations for academic program and course work will be forwarded to the Head Graduate Advisor for inclusion in the student's "Blue Card," which tracks student progress throughout the degree program. The Preliminary Examination Committee includes four members of the AS&T Graduate Group with research interests similar to that of the student. Typically, this includes members from more than one academic department, and a committee chair selected from the List of Approved AS&T Preliminary Examination Committee Chairs.

Preliminary Exam Proposal

Students must submit a Preliminary Exam Proposal, which should be prepared with the guidance and approval of the Research Advisor (and signed by both the Research Advisor and the Head Graduate Advisor).

Scheduling the Preliminary Examination

Scheduling the Prelim involves some long-range planning. Both your faculty research advisor and your faculty graduate advisor can assist you in choosing the members of your examination committee. It is best to first choose the chair of your committee from the List of Approved AS&T Preliminary Examination Committee Chairs, and to make your request of him or her in person, rather than by email. Working with your examination chair, you can narrow the choices for the other 2 members of your committee and an appropriate window of time during which the exam might be scheduled. If you need guidance on how to contact the faculty candidates for your exam, please see your Student Affairs Officer. You will also need to schedule a room for the exam, which could be the faculty office of the examination chair, or another room requiring booking. Don't delay in reserving a room, since many classrooms or conference rooms are booked months in advance. Try to book the same room for practice exams, if possible.

Practicing for the Preliminary Examination

It is prudent to hold one or two "mock" prelim exams staffed by fellow students who have already passed the Prelim, and to do so in the same room that you reserved for your actual exam. Many students feel more at ease on the day of the exam if they have already practiced in the same room.

Examination Protocol

Students are advised *not* to bring food or drink to the exam for the benefit of the examiners. You can be assured that the examiners are well fed already and the lack of food or drink will not affect the outcome of your exam. However, you are welcome to bring food or drink for yourself. If you need to take a drink or a break, do not hesitate to let the examiners know. In particular, if you feel weary let the examiners know so that you can take a break.

5.8 *Qualifying Examination*

In keeping with University requirements, students enrolled in the Ph.D. program must pass an oral Qualifying Examination in subjects appropriate to their approved areas of study. The qualifying examination is mandated by the Graduate Division to test the student's broad knowledge of areas related to his or her chosen areas of emphasis, and not just the singular narrow topic in which the dissertation lies. The examination can be scheduled at any time mutually agreeable to the student and his or her graduate advisor, but in no case later than the third year of study. Students are urged to check the general requirements for Qualifying Examination specified by the Graduate Division.

The Qualifying Examination is an important checkpoint meant to demonstrate that you are on a promising track toward the Ph.D. degree. It is a University examination, administered by the Graduate Council, with the specific purpose of demonstrating that "the student is clearly an expert in those areas of the discipline that have been specified for the examination, and that he or she can, in all likelihood, design and produce an acceptable dissertation." Despite such rigid criteria, faculty examiners recognize that the level expected is that appropriate for a third year graduate student who has only just begun a research project. It is one of the rare times that you will be able to get four professors together to listen attentively to your research ideas and to offer constructive criticism at a time when such criticism can potentially help your research.

Most graduate students take the Qualifying Exam before they even begin their dissertation research, as reflected in the Graduate Division's policy. It is most important to note that having research data is *not* a requirement for passing the Qualifying Examination.

The examination is generally scheduled in a three (3) hour block. It is conducted by a committee of four (4) members of the faculty approved by the Graduate Dean. The student should work with his or her faculty advisor and research advisor to nominate the committee members. The chair of the Qualifying Exam Committee and at least two other members of the committee shall be members of the AS&T Graduate Group. The Faculty Research Advisor may not serve as the chair of the Qualifying Examination Committee. One member of the Qualifying Exam Committee must be an outside member, but all members must belong to the Academic Senate. The committee should include at least

one member from the student's major area of emphasis, and one must be from the student's minor area of emphasis.

Scheduling the Qualifying Examination

The normal time to schedule the examination is in the third year of graduate study. It is better to take the exam early than late; however, you should take the exam only when you and your research advisor are convinced that you are ready. This means that you should have a reasonably clear research plan, be quite familiar with previous and current work in the problem area, and most importantly understand the nuances of the scientific method. The exam is meant to demonstrate ability to do research, not a defense of an all-but-completed dissertation. While it is recognized that some students need to delay the exam (for example, if they switch research areas well into their graduate program), all reasonable effort should be made to take the exam in the third year of study. Significant delays will be brought to the attention of your Faculty Research Advisor and to the Head Graduate Advisor at the time of the Student Review meetings.

As with the Preliminary Examination, you will want to consult early with your research advisor about faculty candidates to serve on your Qualifying Examination Committee. Keep in mind that this exam is schedule in a 3-hour time slot, so it may be difficult to confirm a day and time which all faculty are available. Please be patient and continue to negotiate with your committee members so that you are all satisfied with a day/time. Remember to schedule the room for a minimum of 3 hours to allow sufficient time for the examination process to conclude. You will also want to practice at least once or twice before the exam, so try to reserve the same room for your practices, too. Again, it is always a good idea to invite students from your research group or other AS&T students who have successfully passed the Qualifying Examination to practice at least once with you. More recommendations are available in the Tips and Suggestions for Oral Exams listed below in the Appendix.

Eligibility

To be eligible for the Qualifying Examination, students must be registered during the semester in which the exam is taken. An exam may be taken during the summer or winter breaks only if the student paid fees for the semester immediately preceding the exam or intends to pay fees for the semester immediately following the exam. In addition, students must have completed at least one semester of academic residence at Berkeley, have passed the Preliminary Examination, have a GPA of at least 3.0 (299 units not included) and have not have more than 2 "Incomplete" grades.

Application

Students must apply to take the Qualifying Examination. The application form is available on-line through the Graduate Degrees website, and it specifies 3 suggested topics for examination that you should choose in consultation with your faculty graduate advisor. It

must be signed by the Head Graduate Advisor and submitted to the Graduate Degrees Office at least one month before the proposed date of the exam. Students may take the exam after receiving an approval notice from the Graduate Division. One week before the exam date, the Student Affairs Office will email a reminder to each committee member, so be sure to keep your SAO apprised of any change of time or location.

If a student wishes to change the membership of the exam committee after the application has been approved by Graduate Division, the committee must be "reconstituted" by petition. This form is also available on-line through the Graduate Degrees website. The petition, signed by the Head Graduate Advisor, must be submitted to the AS&T Student Affairs Officer before submitting it to Graduate Division.

Format & Structure

Since research areas differ, the format of the examination may vary somewhat. It is most important that you meet with all members of the exam committee well in advance of the exam to be sure of a common understanding of the format.

5.9 Advancement to Candidacy

Advancement to candidacy requires that doctoral students: pass the AS&T Qualifying Examination; have no more than two (2) courses graded incomplete ("I"); and have a minimum 3.0 grade-point-average.

After satisfying these eligibility requirements, students may submit an Application for Advancement to Candidacy to the Graduate Degrees office in 302 Sproul Hall, accompanied by a check in the appropriate amount, made payable to the UC Regents. The application form is available from the Graduate Degrees Office and the Graduate Division website: < <http://www.grad.berkeley.edu/policies/forms.shtml> >.

The Head Graduate Advisor and the Chair of the Dissertation Committee must sign the form. The application form shall be filed by the end of the semester following the one in which the student passed the Qualifying Examination. Examinations more than five years old are not accepted as representing current knowledge. When doctoral students are advanced to candidacy, the Graduate Division mails a packet that includes information on writing a dissertation, finding financial support for research and writing, and using campus resources during this new phase of doctoral study. You should submit a copy of your Certificate of Candidacy to your payroll office; students who have been Advanced to Candidacy are eligible for pay increases. For further information, including information on Normative Time in Candidacy, please refer to the Graduate Degrees website: < <http://www.grad.berkeley.edu/degrees/index.shtml> >.

5.10 Dissertation

The dissertation, the product of independent investigation under faculty supervision, is the most important requirement for the doctoral program. The research is conducted in close collaboration with members of the AS&T faculty who agree to supervise the student's research. In consultation with the faculty research advisor, and after passing the Qualifying Examination, each student nominates a Dissertation Committee to consist of the faculty research advisor (Chair of the Dissertation Committee) and two other faculty members (who may or may not have been part of the qualifying examination committee and one of whom is from outside the AS&T Graduate Group) for the Head Graduate Advisor's approval. The composition of the committee is subject to the approval of the Graduate Dean. All members of the Dissertation Committee must belong to the Academic Senate.

Note: It is imperative that you carefully follow Graduate Division's requirements and guidelines for filing the dissertation. To avoid future problems, please read this website carefully. Don't neglect to give a copy of your dissertation to each of your dissertation committee members. An additional copy must be submitted to the AS&T office.

6. Coursework

6.1 AS&T Courses

Listed below are the current AS&T courses; however, they are not always offered each semester. Please check with the instructor at least a semester in advance.

- AST C210 (cross-listed as E C213), "Soft X-rays and Extreme Ultraviolet Rays"
- AST C225 (cross-listed as MSE C225), "Thin-Film Science and Technology"
- AST C239 (cross-listed as EE C239), "Partially Ionized Plasmas"
- AST C295R (cross-listed as ChemE C295R), "Applied Spectroscopy"

Other Engineering graduate courses offered through the Engineering IDS office:

- E 298B, Sec. 001, "Soft X-rays, Nanostructures and Applications"
- E98B, Sec. 002, "Research Topics in Internal Combustion Engines"

6.2 Research Units

As a graduate student at Berkeley, you spend a large amount of time in research. Students are able to receive units for the research conducted in each semester. These units are assigned as 299 courses, and each department (including AS&T) offer 299 research units. These units count toward completion of the degree, but are graded as "S/U," and

do not count in calculating your Grade Point Average. In planning your curriculum each semester, be sure to include AST 299 research units.

Early in your academic career, you will probably take fewer research units (typically 4 per semester) but after you have been Advanced to Candidacy, you will take 12 units of research (being Advanced to Candidacy implies that you have completed the coursework needed to write the dissertation).

7. Resources

7.1 University Facilities

Student Facilities

- Housing Office 2610 Channing 642-3642
- University Health Service (Tang Center) 2222 Bancroft 642-5700 (643-7197 after hours, 642-3188)

Urgent Care or crisis)

- Optometry Clinic Minor Hall 642-2020
- Counseling Center (Tang Center) 642-9494
- Career & Grad School Services 2111 Bancroft 642-1716
- Cal Photo ID 110 Cesar Chavez Center 642-8936

Recreational Facilities

(Also on <http://calbears.berkeley.edu/info/ifodirectory.asp#fac>)

- Haas Pavilion 642-6400
- Hearst Gymnasium 642-3893
- Strawberry Canyon Recreational Area 643-6720
- Recreational Sports Facility (RSF) 642-4048
- Pool Hotline 642-6400
- Cal Fit Classes 643-5151
- Cal Adventures 642-4000

Campus Dining Commons

The Campus Dining Commons includes the Golden Bear, located in the Student Union area. Also available to students are the cafeterias at International House, the Terrace Cafe located on the rooftop of the Bechtel Center, Pat Brown's Grille located in the Genetic/Plant Pathology Building, and Ramona's Cafe located in Wurster Hall.

Lost and Found

- Police Department 2427 Dwight Way (Hours: 10-4pm) 642-4936
- AS&T Office 230 Bechtel Engineering Center (Hours: 8-12, 1-5) 642-8790

Student Parking

Information and the necessary permit may be obtained at Parking Services, 2150 Kit-tredge St. 643- 7701. Information is also available on the web: <http://pt.berkeley.edu>

Berkeley International Office

International House 2299 Piedmont Avenue Berkeley 642-2818 (Monday through Friday, 9-12 and 1- 4 p.m.)

Libraries and Reading Rooms

- Doe Library 643-4331
- Moffitt Undergraduate Library 642-5072
- Kresge Engineering Library, Bechtel Engineering Center 642-3339
- Astron-Math-Stat & Comp Sci Library, 100 Evans Hall 642-3381
- Physics Library, 40 Doe 642-3122
- Chemistry Library, 100 Hildebrand Hall 642-3753

By the beginning of the semester, each library should have a printed schedule, which gives the hours of operation for all the libraries, including schedule changes for holidays and semester breaks.

University Offices - Graduate Division

- Degrees 302 Sproul Hall 2-7330
- Fellowships 318 Sproul Hall 642-0672
- Admissions 309 Sproul Hall 642-7405

- Registrar 120 Sproul Hall 642-5990
- Transcripts 123 Sproul Hall 642-7490
- Financial Aid 201 Sproul Hall 642-0485
- Cashier 140 University Hall 643-9803

Emergencies Dial 9-911 or 642-3333

7.2 *SAST and Other Student Groups*

Students of Applied Science and Technology (SAST) is a campus organization established in 2004 to facilitate interactions among students within the graduate group and from the science and engineering disciplines. Through social functions, seminars, and other events, SAST brings students together to share interests and ideas, exchange information, and maximize exposure to the full scope of interdisciplinary research conducted at Berkeley. For more information, please see the SAST website:

<<http://www.coe.berkeley.edu/AST/SAST>>.

The full range of student activities on the Berkeley campus is rich and diverse, and changes frequently.

Other graduate student groups on campus include: the American Society of Mechanical Engineers (ASME); Black Graduates in Engineering & Science Students Association (BGESS); the Center for Underrepresented Students (CUES); the Electrical Engineering Graduate Student Association (EEGSA); Engineers Without Frontiers; Hispanic Engineers & Scientists (HES); the Institute of Electronics and Electrical Engineers (IEEE); the Latino/a Association for Graduate Students in Engineering and Science (LAGSES); the Materials Science and Engineering Association (MSEA); the Mechanical Engineering Graduate Student Council; the Pilipino Association of Scientists, Architects, and Engineers (PASAE); Pi Tau Sigma, Mechanical Engineering Honor Society; Queers in Engineering, Science, and Technology (QUEST); the Society of Women Engineers (SWE); the Transportation Graduate Students Organizing Committee; Women in Computer Science and Engineering (WICSE); Women in Science and Engineering (WiSE).

Information on how to join these groups and other student groups on campus may be found at the College of Engineering website <<http://www.coe.berkeley.edu>>.

8. **Campus-wide Safety and Well-Being**

8.1 *Campus Safety*

The Night Escort Express is a shuttle bus that travels short distances to and from the campus at night. It runs on the north side of campus from 6:30 PM. until 10 PM on Friday. There is a route on the south side of campus that runs Sunday through Thursday

from 7:00 p.m. through 12:00 midnight. Call 642-7233 (day) & 642-9255 (night) for more information. The UC Police Department also provides a walking escort service (Bear Walk) for people walking between the campus and public transportation, cars, and local living groups within the boundaries of Cedar Street to the north, Shattuck Avenue to the west, Warring Street to the south-east, Highland Place to the north-east, and Parker Street to the south. It is available seven nights a week, from dusk to 2:00 AM.

To obtain an escort, call 642-WALK (9255) or stop one of the Community Service Officers (uniformed, radio-equipped student employees of the UC Police Department).

The UC Women's Resource Center, 250 Golden Bear Center, 642-4786, and the Faculty Assistant to the Vice Chancellor for the Status of Women, 200 California Hall, 642-7609, are both resources for women students at Cal Berkeley.

8.2 *Campus Emergency Operations Plan*

In an emergency, the campus will immediately activate its Emergency Operations Plan. Details may be found at the Office of Emergency Preparedness (OEP) website < <http://oep.berkeley.edu/> > .

It is strongly advised that all students, especially those who are not from the west coast, learn all relevant procedures regarding earthquake safety. The campus has four hazard warning sirens strategically located to cover the main campus and adjacent campus facilities. The University of California Police Department activates these sirens. Depending on the incident, sirens and/or public address announcements may be transmitted over this system. What do you do when you hear a warning siren?

SHELTER: Go inside your office or residence, a nearby building, or your car and shelter inside to avoid exposure. If driving a car, safely pull over to the side of the road, turn off the engine and stay tuned.

SHUT: Shut all doors and windows. Building managers should turn off ventilation systems, if feasible.

LISTEN: Access one the following sites to obtain campus emergency information, such as disaster type, evacuation routes, shelter and aid locations, special instructions, etc.

Emergency Information Line: 1-800-705-9998. This out-of-area number allows recorded messages to be accessed by any standard, cell or pay phone, free of toll charges. Information about the emergency is recorded as an outgoing message, and is updated as the situation evolves.

Web Site: <http://emergency.berkeley.edu> . This off-site alternate emergency web presence is reachable anytime, from anywhere. Like the 1–800 service, local area power failures or other crisis conditions will not affect the operation of this web site.

Radio Station: KALX 90.7 FM. The campus radio station, broadcasting at 500 watts, will be utilized to disseminate emergency information during critical incidents and disasters. KALX normally broadcasts live 24 hours a day. KCBS (740 AM), KGO (810 AM), and KNBR (680 AM) also carry Bay Area emergency information.

DO NOT CALL 911 IF YOU HEAR A WARNING SIREN. ONLY CALL 911 IF YOU HAVE A LIFE-THREATENING EMERGENCY.

Since disasters are unpredictable, one must be prepared for an emergency whether at home, at work, at school, or in the car. Think about places where you spend your time and how you can best prepared for an emergency at any given location and time. It is wise to keep a battery operated AM/FM radio and extra sets of batteries at home, at work, and in your car.

Campus "Shelter-in Place" (SIP) Buildings

The campus has already pre-designated some central campus buildings as SIP buildings. These buildings were chosen because their heating and ventilation systems can be quickly and remotely shut down by Facilities Services engineers. If you hear the sirens and are near one of these buildings, go there for shelter. If you are not, then go inside any nearby building to shield yourself from exposure.

Barrows Hall
Bechtel Center
California Hall
Campbell Hall
Cory Hall
Doe Library Addition
Doe/Bancroft Library
Dwinelle Hall
Etcheverry Hall
Evans Hall
Golden Bear Center/Cesar Chavez
Haas Business School/Classroom Building
Haas Business School/Faculty Building
Haas Business School/Student Services Building
Haas Pavilion East
Haas Pavilion West
Haviland Hall
Hertz Hall

Hesse Hall
Kroeber Hall
Law Complex
McLaughlin Hall
Minor Addition
Moffitt Library
Morrison Hall
Moses Hall
Mulford Hall
North Gate Hall
O'Brien Hall
Recreational Sports Facility
Simon Hall/Boalt Hall
Soda Hall
Sproul Hall
Stephens Hall
Tolman Hall
University Hall
Wheeler Hall
Wurster Hall
Zellerbach Hall

8.3 *Sexual Harassment*

Policy

The University of California is committed to creating and maintaining a community in which students, faculty and administrative and academic staff can work together in an atmosphere free of all forms of harassment, exploitation, or intimidation, including sexual harassment. Every member of the University community should be aware that the University is strongly opposed to sexual harassment and that such behavior is prohibited both by law and by University policy. It is the intention of the University to take whatever action may be needed to prevent, correct, and, if necessary, discipline behavior which violates this policy. Managers and supervisors have the responsibility for participation in the creation of a campus environment free from sexual harassment and in the resolution of complaints within their respective jurisdictions.

Definition of Sexual Harassment

Unwelcome sexual advances, requests for sexual favors, and other verbal or physical conduct of a sexual nature constitute sexual harassment when: submission to such conduct is made either explicitly or implicitly a term or condition of instruction, employment or participation in other University activity; submission to or rejection of such conduct by an individual is used as a basis for evaluation in making academic or personal decisions regarding an individual; or such conduct has the purpose or effect of unreasonably

interfering with an individual's performance or creating an intimidating, hostile, or offensive University environment. In determining whether the alleged conduct constitutes sexual harassment, consideration shall be given to the record of the incident as a whole and to the totality of the circumstances, including the context in which the alleged incidents occurred.

Further information

A violation of the University policy on sexual harassment also constitutes a violation of the Faculty Code of Conduct. Staff personnel policies for all levels of staff prohibit sexual harassment and provide for disciplinary action for inappropriate conduct.

What You Can Do About Sexual Harassment

- Let the harasser know that the behavior is offensive and unacceptable. Ignoring the behavior will often be taken as tacit consent.
- Say no. Make it clear (Try saying, "I don't like what you are doing. Please stop.").
- Keep a record of dates, places, times, and witnesses of harassing behavior.
- Seek advice on how to write a letter to the offender identifying the harassing behavior and requesting that it stop. Keep a copy.
- Talk to your co-workers, fellow students, Graduate Office staff or colleagues.
- Consult your AS&T Student Affairs Officer or with other campus resources.
- Seek advice and be informed about the options available to you.

8.4 *Parental Policy*

Graduate students who are also parents may receive additional flexibility in deadlines for passing Preliminary Examinations and Qualifying Examinations. Your AS&T Faculty Research Advisor recognizes that, as with being a graduate student, parenting is a very time-intensive task. While graduate student parents are encouraged to take and pass the Preliminary and Qualifying exams as soon as possible, parents who need extra time are granted extensions for passing these exams. In particular any student who is a parent at the time of the normal preliminary examination deadline can receive an extension of up to one extra year for passing the preliminary examination. Any student who is a parent at the time of the normal qualifying examination deadline (as calculated from the time that the student entered graduate school) can receive an extension of up to two extra years for passing qualifying examinations. The total additional time granted by this policy is not to exceed two years.

You should check with your Research Advisor to find out if any other resources, such as childbearing support, might be available to you.

Appendix

I. AS&T Preliminary Examination Guidelines

The Preliminary Examination has two purposes: to provide guidance to the student, and to determine if the student is qualified to continue in the Ph.D. program. All students who enter the Ph.D. program must take the exam. The exam must be taken by the end of the second semester after entering the Ph.D. program. Students who fail to pass the exam are allowed one more attempt, to be taken no later than the end of the third semester after entering the Ph.D. program. The exam is a one hour oral exam. The suggested format is a series of short (5-10 minutes) question and answer periods covering the areas of examination.

Examination Committee

The Preliminary Exam Committee numbers four (4) members of the AS&T Group with research interest similar to that of the student, and one member may be the student's research advisor. The Committee Chair will be selected from the List of Approved AS&T Preliminary Examination Committee Chairs. The Examination Committee and its Chair will be appointed by the Chair of Graduate Advisors, after consultation with the student. The student's Research Advisor cannot be the Chair.

Examination Protocol

The Preliminary Examination will cover basic undergraduate coursework appropriate to the student's chosen research area, broadly interpreted, and which, if possible, is consistent with the student's undergraduate coursework. Students are urged to consult with the members of their examination committee in advance to determine the scope of the examination. As an example, for Applied Physics, students with undergraduate backgrounds in Physics will normally be examined in three areas: Electromagnetics (Phys 110AB or equivalent), Quantum Mechanics (Phys 137A or equivalent), and one other area of Physics, Mathematics, Engineering, or the life sciences, roughly equivalent to a one or two semester undergraduate course of study. Students with other undergraduate backgrounds will normally be examined in three coherent areas, each equivalent to a one or two semester basic undergraduate sequence, as above. The appropriate areas of examination will be specified by the Chair of Graduate Advisors after consultation with the student, and the student's Research Advisor, if available. The student will provide a list of past and future planned graduate courses to be approved by the Chair of Graduate Advisors before the exam is scheduled. The courses must form a coherent program of studies and a firm foundation on which to base a future career. The location, date and time of the exam will be scheduled by the College of Engineering Interdisciplinary Studies office. The IDS office will deliver a written description of the purpose of the exam, its format, the areas of examination, and the student's list of courses to each member of the Examination Committee. The Chair of the Examination Committee will conduct the exam. The Committee will meet immediately after the exam is over to determine if the student passes or

fails. In addition, the Committee should identify strengths and weaknesses in the student's exam performance and in the student's overall record of performance in the AS&T program. The Committee can make recommendations for future coursework and other actions to be undertaken. The pass/fail decision and the recommendations should be communicated immediately to the student by the Chair of the Examination Committee. The Chair of the Examination Committee will provide a written description of the Committee's actions and recommendations to the Chair of Graduate Advisors. The results and recommendations will be recorded on the student's "Blue Card" which documents progress toward a degree.

II. *Sample AS&T Preliminary Examination Proposal*

Graduate Group In Applied Science And Technology Preliminary Examination Proposal

Name of Student: Oski Bear, SID#: 12345678

Date: May 20, 2005 10am-11am

Location: Room 120C Bechtel Engineering Center

Major Area: Applied Physics, emphasis on sound propagation technology

Minor Area: Semiconductor Devices

Committee: Professor XXX (Research Advisor); Professor YYY (Chair); Professor ZZZ (AS&T Committee); Professor AAA (AS&T Committee)

Area of Examinations: Semiconductor Physics; Fluid Dynamics; Quantum Mechanics

Graduate courses already taken or currently taken: (Transferred) Quantum Mechanics I and II (8); Physics 250 Special Topics in Physics (4); MSE 202 Crystal Structure and Bonding (3); MSE 223 Semiconductor Materials (3); MSE/AS&T 225 Thin-Film Science and Technology (3). Future courses: Physics 250 Course on Surface Science (3); MSE 242 Advanced Characterization Techniques (3); Physics 223 Applications of Group Theory in Modern Physics (4); EECS 143 Processing and Design of Integrated Circuits (4); Physics 211 Equilibrium Statistical Physics (4). Other possible courses: EECS 231 Solid State Devices (4); EECS 243 Advanced IC Processing and Layout (3); Undergraduate Courses: Classical Mechanics, Electromagnetism, Optics, Analogous Electronics, Digital Circuit, Modern Physics and Quantum Mechanics, Electrodynamics, Crystal Growing Theories, Solid State Physics, Thermodynamics and Statistical Physics, Materials Structure and Property, Crystal Physics, Crystal Diffraction.

Professor XXX, Head Graduate Advisor

Professor YYY, Research Advisor

III. *Tips and Suggestions For Oral Examinations*

Preparing for the exam

Confirm the format of the exam. Talk to students who have recently passed their exams, especially students with whom you have committee members in common. Ask about the format of their exams. Did the exam begin with a short summary of the student's academic career by either the chairperson or the candidate? If your department includes a talk as part of the exam, how long was it? Did the faculty members interrupt the talk with questions?

Talk to your committee

Many students neglect this all-important resource, even though much of the intimidating mystery of the exam lies in what the faculty members will ask. Find out what you'll need to know for the exam. Prepare a brief outline of what you know about your three areas and take this with you when you talk to your committee members. Ask them what else you need to know. This outline will help you to organize your studying, and you can plug facts into this framework to illustrate your ideas. If the outline approach isn't appropriate, present a bibliography for a particular area to your committee and ask what other sources you should study. Ask which publications the professor would read to review a certain area quickly and effectively.

Synthesize, don't memorize

As you study, keep in mind that part of your task during the exam is to be convincing, as well as accurate, in your arguments. Professors want to see how you've organized your knowledge and how you can use facts to bolster your arguments. Many questions will have no "right" answer; intelligent, informed conjecture is acceptable in many cases. Begin studying early enough to permit rehearsal time. Be sure to give yourself time to practice. Most students report that practicing for the exam was extremely helpful. Besides giving you a chance to review what you know about the subject matter, a mock exam gives you the experience of answering questions before a group and makes you more confident in that setting. Often major advisors, as well as other students and postdocs are glad to give you a mock exam. If an oral presentation will be part of your exam, practice it several times. Use a blackboard if you plan to use it during the actual exam.

Prepare for the occasional mistake

Imagining a perfect exam in which you know every answer and are consistently brilliant for two or three hours simply is not realistic. Instead, rehearse saying that you don't know and plan what you will say in case you draw a blank. You can gain time, for example, by saying, "Let me take some time to consider that question." Your committee will understand and wait for you to recover.

During the Exam

If you are nervous, say so. Keep in mind that the committee members are instructed by the Graduate Division to "try to humanize an inherently difficult examination" and that the chair should "do all in his or her power to put the student at ease." It's perfectly fine to say, "I'm a little nervous right now; I'll have to get myself organized." And it will give you time to think. Take control of your exam as much as possible. If you've talked to your committee and other students, you should have a good idea of what to expect. In some cases, you may be asked your preference about the order of topics. If you have prepared answers to questions you are fairly certain you will be asked, you will have well-organized responses with no unfortunate tangents that may lead to questions you can't answer.

Take your time in answering questions. Listen to the questions and give yourself time to think about them. Although the silence can be unnerving while you think about an answer, rushing in with a disorganized response is worse. If you can't answer a question, say so and ask for hints. Don't pretend that you know the answer. Going off on a tangent is a transparent attempt to avoid the question. Most committees will simply re-state the question. Say you don't know. If you can't answer a question or feel you have given a poor or incorrect answer, don't dwell on it. Remember that no one expects you to know all the answers. Most likely, the very people who are examining you didn't know all the answers on their exams. (Twenty years later, one Berkeley professor remembers the exact wording of a question he couldn't answer on his exam.) Instead of worrying about a wrong answer, concentrate on the next question, the one you will field with confidence.

Antidotes to Anxiety

If you're worried about failing the exam, fortify yourself with the knowledge that your chances of passing are excellent. Recognize that your committee wants you to pass. These faculty members have a great interest in seeing you do well. They selected you for graduate study and trained you in courses. Most students report that their committee members were very cordial and gave them every opportunity to show what they knew during the exam. Often committee members would re-state questions of other committee members so that students would understand. Finally, believe it or not, 83 percent of Berkeley doctoral candidates consider the qualifying exam to be a beneficial experience, according to the Graduate Division exit questionnaire. It is a rite of passage that can build your confidence and affirm your readiness to take the next step in becoming a scholar.