Chemistry

DEPARTMENT OF CHEMISTRY • UNIVERSITY OF CALIFORNIA, BERKELEY

The Graduate Student Handbook

The Student-Edited Guide to the Department and College of Chemistry

This handbook was last updated by graduate students, faculty, and staff in the UC Berkeley Department of Chemistry on 7/23/2019 and was last reviewed by the Graduate Student Affairs Officer, Joel Adlen, on 7/23/2019. Please be aware of any department policies that may have changed since that date.

Chemistry Graduate Life Committee

2019-2020

A Checklist for the First Semester

Electronic Registration with the University

- Memorize your CalNet ID number! Your CalNet ID will be given to you upon accepting enrollment at Berkeley
- Create your berkeley.edu email address: calmail.berkeley.edu.
- Get your Cal ID: https://cal1card.berkeley.edu/getcard
- Activate your buss pass: https://cal1card.berkeley.edu/passes

Class Registration and Making Sure You're Full-Time

- Receive initial enrollment information from the department graduate office.
- Meet with your first-year advisor and plan a course schedule.
    - You should also talk about the First-Year Advising Coursework plan with your first-year advisor (more information later in the handbook).
- Log-on to calcentral.berkeley.edu (with your CalNet ID) and register for classes under your "my academics" tab.
- Use the following guidelines when registering for classes:
    - First enroll in Chem 300 Teaching/Prof Prep for 2 units (Letter grade).
    - Next, enroll in two Chem 298 seminars (the GRC-Physical or GRS-Synthetic, and one of the Topic Seminars based on your research interest), for 1 unit each.
    - Enroll in formal academic courses (~ 3-7 units) after you meet with your First-Year Advisor.
    - If you need more units to bring your total enrollment to 12 units, sign up for Chem 299, sec. 1 as research units, to bring your total to 12.

Teaching Requirements and Settling in as a GSI

- Attend the MANDATORY departmental GSI training during orientation.
- Attend the university-wide GSI training during orientation – this is also mandatory!
- Once you have your teaching assignment, talk with older students about what to expect!
- Find out if your course is on bcourses (and learn how to use bcourses!).
- Make an email list of your class section at lists.berkeley.edu (you can export your students' email addresses as an Excel file from bcourses).
    - This is not mandatory; bCourses enables you to send an email to all of the students in your class section automatically

Getting Financially Square with the Department / Setting-Up Direct-Deposit Payroll

- Complete an on-boarding session with HR
    - If Human Resources reached out to you regarding on-boarding, make sure to schedule an appointment with them and show up with the necessary paperwork requested. Note: you'll need to complete your on-boarding with HR in order to get paid as a GSI.
    - Fill out your direct deposit form at this session or online at "UCB At Your Service"
- Make sure you're setting up direct deposit for an **in-state** bank account (see residency section).
    - Banks Near UC Berkeley: https://internationaloffice.berkeley.edu/living/money
    - GLACIER (for International Students):
      You will not receive your stipend until you have completed your Glacier: https://controller.berkeley.edu/payroll/glacier-tax-compliance-system
- To expedite payment, you may want to set up an Electronic Fund Transfer with your bank. See: https://eftstudent.berkeley.edu/, or, log into Cal Central, select My Finances, then select the Electronic Fund Transfer

Preparing for California Residency (details on page 18)

- Obtain a California Driver's License within 10 days of moving to California. Make an appointment online (www.dmv.ca.gov). Often your appointment will be much later than expected - be sure to schedule ASAP
- If you have a car, get it smog-checked.
- After your smog check, register your car in California (again, www.dmv.ca.gov).

- Close any out-of-state bank accounts and open one in California.
- Make a file to keep at home which will contain 1) your California tax return, 2) your in-state rental agreement, 3) stubs and receipts from air travel showing only brief trips away from California.

Making Sure You Have Healthcare

- If you need to schedule an appointment or visit at the Tang Center, you are now in the time period that your Student Health Care/SHIP can be used. (SHIP info can be found https://uhs.berkeley.edu/ship)
- The first time you need an appointment with the doctor, go to the online scheduling program through eTang (etang.berkeley.edu) and click appointments on the left hand side to schedule a visit. When you go to the Tang center all you will need to present is your Cal1 card to check in for your appointment.
- If the Tang Center requires that you are enrolled at least in 1 unit before making an appointment, you can enroll in classes through your CalCentral account. The suggested class to enroll in is: CHEM 300, Course # 18511 Section 001 for 2 units, "Professional preparation for teaching".
    - NOTE: CHEM 300 has two different sections. Just select one for now so you can get your appointment at the Tang center, then update this to the correct section later in the semester.
- Keep an eye out for mail from Anthem Blue Cross, which will have your card. This is your health insurance outside Tang. Except for emergencies, you'll need to pre-approve services rendered. Vision is through VSP and dental is through MetLife, for more information check uhs.berkeley.edu/ship
- If you plan to have your own health insurance, you may waive your university insurance by filling out the waiver form at uhs.berkeley.edu (but see the note in the Health Insurance section in the main text).
    - We recommend using SHIP for your health insurance, as "SHIP fees are paid for during your entire time as a registered and enrolled student in Chemistry. Payment is covered either by our department or some other funding source. The purpose is to guarantee all Chemistry PhD students have full access to health, dental and vision care provided through SHIP while at UC Berkeley."

Congratulations and Welcome to the Department!

The Graduate Life Committee (GLC) would like to welcome you into an adventure which, with some patience, will be a rewarding and fruitful experience. Balancing time and energy in your personal life with your professional career starts with practice in graduate school.

The Graduate Life Committee is a joint student-faculty committee with the mission of improving the life of chemistry graduate students. Our role in the department is to act as a mediator between the students, faculty, department administration, and university administration.

The material in this handbook is intended to help you adjust to and navigate through life at Berkeley in the Department of Chemistry and the university in general. It outlines academic responsibilities and requirements, information on settling into the department, and it includes resources to guide you through UC Berkeley. Our goal is to ensure that you have every piece of information available in order to best inform your decisions.

But we're not just about rules and regulations! The GLC also encompasses the social branch of graduate student life. We host the annual holiday party and organize the summer softball league and weekly ChemKeg on the Chemistry Plaza. Come join us when we celebrate! We also help organize student visit weekends. If you've got ideas or suggestions for any of these, we recommend you contact your nearest GLC representative, stop by one of our monthly meetings, or even join the committee!

With that in mind, there are many goals the GLC has already set for the upcoming term. To keep abreast of what we're currently working on, contact one of our members!

Graduate school is tough enough on its own. We'll do our part to smooth it out a bit for you.

Best of luck, and don't stay too late tonight,

The Graduate Life Committee

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Preface:

IF YOU ONLY READ ONE PAGE IN THIS HANDBOOK, IT SHOULD BE PAGE TWO. There you will find a checklist to ensure you have health coverage, will qualify for residency, and understand the processes of your first semester here at Cal. If you complete everything in the checklist, you will minimize detrimental surprises and tame some of the bureaucracy of the first year.

This guide is organized into four sections. First, the heart of the handbook features a thorough explanation of academic life, the process of classes and requirements, and non-academic life in the department, including the steps you need to take to establish California residency and to expedite the payroll process. Second, there is a quick guide for all of those frequently asked reference questions you may have, such as group meeting schedules for the department, graduation statistics, online resources, and a formal listing of graduation requirements. Third, when you have time, there is a section of personal perspectives from seasoned faculty and older students on each portion of graduate life. Last, there is a detailed set of procedures for actions you can take when things go wrong. We hope you'll never have to use them! But if you do, know that there are channels you can call on for help.

We hope you will find the entire handbook a valuable resource to which you can refer from today until graduation.

Enjoy,

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About the College and the Department

Chemistry has been offered since the founding of UC Berkeley in 1868. The College of Chemistry itself was founded in 1872, and in 1890, the first building devoted solely to chemistry was built on the current site of Hildebrand Hall. The College of Chemistry is home to the departments of Chemistry and Chemical and Biomolecular Engineering. Currently there are on the order of four hundred graduate students in the Department of Chemistry, and about one hundred fifty post-doctoral fellows.

The *College* of Chemistry, which has its main offices in 420 Latimer, is responsible for resources such as space, building maintenance (located in 119 Gilman), equipment, and room use. The College of Chemistry is led by the Dean of the College. The Dean is responsible for collecting faculty input into the choice of, and for appointing of, the Chair of the Department.

The *Department* of Chemistry, with its main offices in 419 Latimer, is responsible for academic affairs, such as courses, and faculty appointments within the Department. The Department Chair is also responsible for appointing vice-chairs and making decisions about faculty hiring. There are four vice-chair positions: Vice-Chair of the Physical Chemistry Graduate Program, Vice-Chair of the Synthetic Chemistry Graduate Program, Vice-Chair of the Chemical Biology Graduate Program, and Vice-Chair of Instruction.

Divisions within the department

The Department of Chemistry is organized into three different divisions (Physical, Synthetic, and Chemical Biology), each of which has its own specific requirements and sub-divisions. In general, the Physical Chemistry Graduate Program encompasses analytical, nuclear, biophysical, and theoretical chemistry. The Synthetic Chemistry Graduate Program includes organic, bioorganic, and inorganic chemists. The Chemical Biology Graduate Program (CBGP) covers a range of research areas at the interface of Chemistry and Biology.

In recent years, a great deal of research within the department has become interdisciplinary, and you may find your research doesn't neatly fit into any of the above categories. You may, in fact, find that a joint appointment between two research groups best suits the aims of your work. Keep in mind, however, when the dust settles, you will formally reside within one of these three divisions, each of which has slightly different requirements for graduation (more on those later).

Academic Core

Your First-Year Advisor

As an incoming first-year graduate student, you will consult with a faculty member to build a course schedule, learn about the research within the College of Chemistry and find your way around the department. There are many things to ask each of them. For your advisor, each meeting will likely be brief. To make the most of your time, plan ahead! Here's the standard schedule for your first three meetings of the semester with your faculty advisor:

1. **Course Advising** – The deadline for course registration comes up soon after you arrive, so your first meeting should focus on planning your curriculum for the semester. Remember to register for a total of 12 units (Coursework, Seminars, Research, and Teaching).
2. **Preliminary Meeting about Research Groups –** When you feel as though your investigation into research groups (see "how to choose a group" below) has started to fill out, your advisor will have insights into your choices. Your second meeting should help you narrow down those choices.
3. **Joining a Group –** When you are comfortable enough with your decision about a group and you have gathered the requisite signatures, your first-year advisor will have a final approval meeting with you to discuss your decision.

While the above tips represent one standard set of meetings, you should feel comfortable asking your advisor any and all questions that may come up, either by phone, email, or in person. You should also not hesitate to ask for as many additional meetings with your advisor as you feel are necessary.

On the other hand, your peer advisors will be less formal to meet with. Getting to know them will allow you a more intimate look into life in research groups and in the department. Information on your first peer advising session is included in your orientation packet. Again, you should call on your peer advisors as frequently as you feel is necessary.

Courses and Seminars

Most graduate students in Chemistry complete the equivalent of four semester-long courses during their first two years of graduate school. There is a great deal of flexibility in your choice of courses so that you can mold your classes to lay the foundation for your individual research interests.

Along with those courses, which are discussed below, you can attend any number of seminars. First, there are weekly graduate student presentations (the Graduate Research Conference and Seminar), and the Chemistry department also holds weekly seminars in Inorganic Chemistry, Organic Chemistry, Physical Chemistry, and Structural and Quantitative Biology. The weekly seminar schedule is filled with prestigious speakers from universities and research institutes around the world.

Physical Graduate Program

All physical chemistry courses are semester-long. There are no formal course requirements in the Physical Chemistry program. However, most students take two semesters of Quantum Chemistry during their first year, as well as a course in Statistical Mechanics. There are no restrictions as to taking courses in other Divisions of the Chemistry Department, or in other departments. A few other departments that offer interesting and pertinent courses are Physics, Molecular and Cell Biology, and Materials Science.

Synthetic Graduate Program

Courses in the Synthetic Program are divided into three five-week long modules per semester. The purpose of the modular system is to allow students more flexibility in the courses they take. You can sign up for only the first module of a given course if you are interested in studying a particular topic, but do not want to take a whole semester. Synthetic students are expected to take four semester-long courses, or a total of at least eleven modules.

All Organic students take CHEM 200, Chemistry Fundamentals, during their first year. They also typically take Organic Reactions I, II, and III, and Reaction Mechanisms I and II. All Inorganic chemists take CHEM 201, The Fundamentals of Inorganic Chemistry. Inorganic students also usually take Introduction to Bonding Theory and Coordination Chemistry I. Students who are interested in organometallic research may be required to take both CHEM 200 and 201.

Chemical Biology Graduate Program

Chemical Biology students take CHEM 200 during their first Fall semester. CBGP students must also take the three modules of the Chemical Biology course offered in the Spring, as well as a course on scientific ethics. Other than this, Chemical Biology students can plot their own course. Many students take courses in the Department of Molecular and Cell Biology.

Logistical Information

The Schedule of Classes offered each semester is available online (schedule.berkeley.edu). Before you can sign up for classes you must have a student ID number (sent to you by the graduate division this summer), and create a CALNET ID (not your cal email address – go to ist.berkeley.edu/getting-started/). Then you can use the CalCentral (calcentral.berkeley.edu) website to add classes to your schedule. In order to be classified as a full time student, you will need to sign up for a total of twelve units each semester. Your course load will include academic courses (typically 3-4 units for a full-semester course, or 1 unit for each module), one or more seminars (1 unit each), teaching, and research. (See "the checklist" for detailed information about registering for class).

One last thing you should know about is "Berkeley Time". If a class is listed as starting at 9am, its actual starting time will be 9:10am. This is true for all classes throughout the campus, so enjoy the extra ten minutes of sleep!

Teaching

All graduate students in the Chemistry Department are required to act as a Graduate Student Instructor (GSI) for at least three semesters. Most students teach one semester each academic year for their first three years. You may decide to teach two courses during your second year, thereby

fulfilling the teaching requirement; although, this method is not common because of the heavy load it places on your schedule. While there is no formal requirement that you teach any additional classes during later years of graduate school, it is the policy of some professors to require that their students teach an additional course if they remain in graduate school after a certain number of years. This varies among research groups, so be sure to ask when joining a group.

While you are teaching (if you are not on a fellowship) you will be paid by the University, rather than by your research advisor. All students will teach a course during their first year. The first course that you teach will be assigned to you based on your program. Introductory Organic Chemistry (CHEM 3A/B and 112A/B) is taught by most synthetic students in their first year. Physical students usually teach General Chemistry (CHEM 1A or 4A). Teaching assignments are made during the summer by Dr. Rose Beeler. At the end of each year you will be able to select the top three courses that you would like to teach in the upcoming year. Assignments are then made based on your requests, the professors' requests, your seniority and your student evaluations.

There are many resources at your disposal for help with teaching. The first is the course instructor. In large classes such as CHEM 1A, 3A, and 3B, there is also usually an additional person in charge of the GSIs who coordinates their schedules and holds regular meetings to discuss the upcoming material. This person will help you with any problems among the students in your class, such as cheating, disruptiveness, or other problems. In smaller classes, you can consult the professor in case of any problems. The University also provides help and support through the GSI Teaching and Resource Center. This center honors about fifteen Chemistry graduate students annually with the Outstanding GSI Award.

Logistical Information

First time GSIs in the chemistry department are required to enroll in CHEM 300, a course on teaching pedagogy. This course meets the requirements of the Policy on Appointments and Mentoring of Graduate Student Instructors (effective July 1, 2004). CHEM 300 is a two unit course typically composed of reading assignments, classroom observations, peer observations, and a final project. The course is geared towards helping to familiarize you with the literature in chemistry education and how the topics addressed can be applied to your actual day-to-day GSI duties. Usually there will be two sections of the course offered in order to accommodate your busy graduate course and teaching schedules. You should choose one of these sections to attend for every class session. You are required to earn a passing grade in CHEM 300 before you are employed as a GSI. New graduate students can enroll in this course concurrent with their first GSI appointment.

For the future semesters that you teach, you must register for your GSI appointment as though it were a class – also listed as CHEM 300. The sections and class numbers for CHEM 300 are listed in a booklet available in 419 Latimer. Within CHEM 300, there is a different class number for each course, which are listed by course instructor. Once you have identified the correct class number, you can sign up on CalCentral along with your other classes. You will receive a letter grade from the professor teaching the class, based on your job performance and teaching proficiency as a GSI. Please contact Lynn Keithlin in 419 for further information regarding your teaching assignment.

Research

The defining activity of graduate work in Chemistry is novel research. Courses are only a starting

point for your learning. The bulk of what you learn will be drawn from time spent at the bench or computer working on your project and from reading research papers. The group that you choose to join is the most important decision of graduate school. Duly consider all aspects of a lab in which you are interested. Take note: there are three divisions and over 50 research groups in the department – you have a lot of choices, so you should plan to spend a significant amount of time narrowing down your favorites.

A critical consideration that is often overlooked by first-year students is the extent to which they have been exposed to a broad range of research. While every student accepted in the department has taken classes in the breadth of chemistry, it is rare for students to have experienced more than one narrow research project. It is easy to follow your steps from undergraduate work directly into a similar lab here at Berkeley. We challenge you to expose yourself to new areas! Every faculty member here is a field-leader, and each group has a novel idea just around the corner that might just pique your curiosity. Picking a group from day one might be the easiest thing to do, but it's not necessarily the most satisfying in the long run!

How and When to Choose a Research Group

Calendar of Events

Physical and Synthetic Programs

The schedule for choosing a research group is the same for Physical and Synthetic students. You will be guided and advised during the process by your First Year Advisor, who will be assigned to you when you arrive. You *cannot* join a group before the sixth week of the Fall semester. This rule is a conscious regulation on the part of the department; during this time, you should be actively looking into the different groups in which you are interested. *Even if* you feel you have settled on a group when you walk in the door, you are required to investigate at least *five* research groups.

After the five weeks are over, you should speak with the Professor in whose lab you would like to join. If the Professor also wants you to join his/her group, you will need his/her signature on a departmental form that is then turned in to the department office (in 419 Latimer). Generally students have found a group within 6-10 weeks.

Chemical Biology Program

If you have joined the Chemical Biology Graduate Program, you will have the experience of three ten-week rotations before your final commitment is required. At the beginning of each rotation, you will submit your top three faculty choices for the following ten weeks. Your requests will be balanced with the other members of the program and the space availability of each faculty member to assign you to a lab. Keep in mind that if you don't get your first choice in your first rotation, you have two more chances during the course of the year to work for them!

The advice on careful choice of group is similar to that for physical and synthetic division students – do your homework! Before each rotation begins, take the time to investigate your choices for the next rotation.

Some initial advice from those who have gone through the process:

1. Be proactive in visiting groups and talking to people. ***It is your responsibility to seek out groups in which you are interested.*** There is a formal day of lab touring, so keep an eye out for that on the calendar, but mostly you have to go individually from lab-to-lab and meet

people. Finding a fellow first-year to wander with you helps make the process a bit less nerve-wracking.

2. Take note of the environment among the lab members. Is it an atmosphere – physically, mentally, socially – where you would enjoy working?
3. Set up your meetings and get your five signatures (if you're not in the CBGP) early in the semester, as this will give you more time to consider your options and make a decision.
4. *Be flexible*. In the beginning, consider any research group in which you're remotely interested. If you have your sights set on a single group, you might overlook others that could be a better match for you. After that, start narrowing down your choices using the system set out below.
5. When you meet with PIs to get signatures, really consider the decision you are making and try to get a feel for each lab. Don't just try to get the signatures and leave as quickly as possible!

How to Learn About Research Groups

First, and perhaps most importantly, KEEP A RECORD! Writing down your experiences and interesting notes about faculty members is the best way to help you make the decision when you sit down to do it.

There are eight steps students have found work best to learn about and choose a research group:

1. Determine your interests

While this may seem like a funny place to start (maybe you're thinking "of course I know what I like!"), consider that as an undergraduate you were probably only exposed to one kind of research. It is important to think about what your interests have been, but also consider what topics or even entire divisions in chemistry you have not yet experienced. You should join a group that is doing research that interests you, but you should not rule out groups because you don't know anything about the work.

Be open-minded. Don't pigeon-hole yourself too early. Talk to faculty who in any way overlap with your interests – and expand your interests as much as you can. Selecting one group to pursue doesn't give you other options if your first choice doesn't work out due to funding, personality, or space restrictions in a group.

Questions to ask yourself:

1. What are your career goals?
2. Is this research something you are interested in now?
3. Is it relevant to what you want to do after you graduate?
4. Will it help you reach your career goals?
5. Are your career goals set in stone, or are they more flexible?

2. Read group papers and websites

It goes without saying that in order to best understand the projects within a group, you must read their published research. The best way to find representative papers from a research group is through their website. Log-on and download any and all papers that interest you. When you know about the work, you'll be better prepared to ask questions and express interest in ongoing research. Better yet, if you're not into anything that's been published recently, that's a good sign you should consider other options.

3. Use Your First-Year Advisor

Your first-year advisor is an excellent resource about the character and research of groups in which you may be interested. Once you've settled your course schedule (see "What to expect from first-year advising") you should use your first-year advisor as a sounding board for questions regarding your choice of a research advisor. They will often help smooth the process of getting meetings and finding space in labs. Make friends and continue to meet with them!

4. Meet with the Faculty Member

Faculty members are extremely busy. Department committees, teaching requirements, grant writing, current students, traveling to talks, family life, and, especially at the beginning of the semester, meeting with other first-years, can make their schedule challenging. Be respectful of this challenge; but when trying to contact a professor, be persistent with either email or phone calls, or try to catch them just before or after their group meetings. Be sure to get a date and time for official appointments, and adequately prepare yourself beforehand.

Finally, make an impression! The first time you meet with a faculty member may only be for 10 or 20 minutes. Be friendly, alert, inquisitive, and respectful. Remember, they are learning about you as much as you are about them.

Example questions to ask a professor:

1. How are research projects generated in your group? Can a student come up with his/her own thesis topic?
2. Are your students involved in writing proposals or reviewing papers?
3. How independent are your students to plan their experiments, choose their courses?
4. What sort of interaction do you have with your students? Do you have weekly/monthly meetings, or do you see them on a drop-in basis?
5. Towards which research projects are you looking for students to contribute?
6. Are there any brand new projects being initiated in the lab?
7. How many years does a graduate degree usually take in your research field?
8. What jobs do students get after they graduate from this lab?
9. How flexible are the working hours in your lab?

Things to consider:

1. Do you get along with the person you are considering as a PI?
2. Does your potential PI seem interested in you, your research project, and your general welfare?
3. Does the group have a good dynamic? Would you enjoy working with this group every day?

5. Meet with students in labs

Having been in your position, current graduate students are the best resource for learning about life in a research group. Meeting with current graduate students is much less formal than meeting with faculty members. Simply go into a lab, introduce yourself as a new student, and see if they have time and are willing to speak with you. If they're busy, ask if you can come back, and set up a time to do so. Remember, all graduate students were once in your position, and we do our best to return the favor of answering questions!

Example Questions to Ask Students in the Lab:

1. How often do you meet with your PI to discuss your research progress?
2. Does the PI have projects that s/he suggests for students? Do students primarily come up with their own ideas?
3. Do you have regular group meetings or a journal club?
4. Does research in this field generally require forty/sixty/eighty hour work-weeks?
5. How much vacation do people in your lab usually take per year?
6. How many grad students are there in the lab? How many post-docs?
7. Is there enough funding for all the projects?
8. Does your PI help pay for visits to conferences?
9. Do you ever do things together as a lab socially?
10. Would you discuss your career plans with your PI?
11. Does your PI have tenure?
12. Is your PI in town most of the time, or usually away at meetings?
13. How do you spend your day? What experiments, assays, and analyses are you actually doing on an average day?
14. What techniques does your lab use?
15. How "hands-on" is your PI? Is s/he involved in your work on a day-to-day basis, or do you work independently most of the time?

6. Attend Group Meetings

Weekly group meetings include presentations from current graduate students and post-doctoral fellows about their research in the group. The quickest way to get a sense of both a group's research and the dynamic between faculty and students is to attend and watch the style of presentation, the material covered, and the interaction of the group members with the speaker and the PI. You might be pleasantly surprised, or you may find out the group you thought you liked *isn't* what you'd hoped. If you are interested in a group, express your interest to both the faculty member and the group by continuing to attend group meetings.

7. Stay motivated and be persistent

Every year a very small number of students do not find a research group to join in the fall, and that's ok! Getting into the group you want can be a competitive task. The department's experience has found these first-years are either on the shy side and aren't aggressive enough in pursuing their interests, or they are honestly equally interested in two or more groups and delay their decision until the faculty members cannot accommodate them. If you feel this describes you, pay particular attention to the following tips from seasoned graduate students and faculty:

> **Put your foot in the door.** As soon as you become very interested in a group, let the professor and perhaps some grad students in the group know about your intentions right away. This will do wonders in saving your spot.
>
> **Don't waste a day**. You'll have a busy first semester, but this is not something to slack on. Aim to have a group by the end of September and you just might!

8. Lynn Keithlin.

Lynn Keithlin (419 Latimer, keithlin@cchem.berkeley.edu) is the graduate student affairs officer who has coached many other students just like you through this difficult process. She will lend a kind, informed hand to your decision. She is a connected resource in the department and can mediate space and personality conflicts between faculty members. She also has the ear of the Department Chair. Stay in touch with Lynn and you'll be sure to find a place in a group that you're happy with!

Exams and Requirements

The Chemistry Department, in general, has few formal academic requirements, but don't let their simplicity deceive you – they are rigorous requirements. In the synthetic division, you are required to complete a first-year report. In both physical and synthetic divisions, you must teach three total semesters as a Graduate Student Instructor (GSI), complete a GRC (physical) or GRS (synthetic), pass an oral qualifying examination, and file a thesis. There is no thesis defense. Once your thesis is approved by your committee and filed with graduate division, your degree is complete!

First Year Report

Students in the Synthetic Division are required to write a report on their research at the end of the first semester of their first academic year. The report must be no more than ten pages in length (excluding figures, tables, references etc), and is evaluated based on the student's ability to carry out research as well as to put together a paper. First year reports are read by two faculty members, neither of whom can be your research advisor. Your vice-chair will give you detailed information about writing the first year report during the spring semester of your first year. Evaluation of the reports can have the following three outcomes:

1. Accepted without revision.
2. Rewrite requested with a deadline for suggested revisions (usually 2 weeks).
3. Additional experiments and a supplementary report requested (usually due by September 1).

Graduate Research Conference/Seminar

During your second year of graduate school, you will be required to give a presentation on your research to which the department, including faculty and students, are invited. It is termed a Graduate Research Conference (GRC) for Physical students and is on Thursday afternoons, and a Graduate Research Seminar (GRS) for Synthetic students and is held on Thursday mornings. Chemical Biology students may present either a GRC or a GRS, depending on the nature of their work. The presentation is twenty minutes long, with five additional minutes for a question and answer session. During the summer after your first year you will meet in a group with your vice-chair, who will explain the procedure for the GRC/GRS. The GRC/GRS is scheduled during the summer, at the same time as the qualifying exam. Typically students will present their GRC/GRS two to three weeks before their qualifying exam. This gives you an opportunity to organize and present your own results in the greater context of your field, and is a helpful method of preparation for the qualifying exam. You can notify the members of your qualifying exam committee of the date of your GRC/GRS, as many faculty members make an effort to attend the presentations of students on whose committees they are serving.

Qualifying Exam

A few weeks after your GRC/GRS, you will take an oral qualifying exam. During the summer after your first year your vice-chair will explain the procedure for the GRC/GRS and the QE. You will be able to suggest a date and committee members for your exam. The vice-chairs will do their best to accommodate your requests. The QE is evaluated by a committee of four faculty members. Three of the committee members must be from the Department of Chemistry, and one must be from a different department. The QE typically tests your knowledge and understanding of your research and experimental techniques as well as a general knowledge of your subject. You will also have to present a separate proposal (outside your research area) if you are a Synthetic student, or an outside paper for Physical students. The QE typically lasts between two and three hours: the first half focusing on your research, and the second half on your outside topic or proposal. There are three possible outcomes of the QE:

1. Pass
2. Partial Pass. The student may be required to:
    a. Retake the entire exam in about 6 months (or some students opt to leave with a Masters degree in Chemistry). The QE cannot be taken more than twice.
    b. Retake sections of the exam in which the student performed poorly.
    c. Take a class or write a paper in an area that the QE committee thinks would be beneficial to the student. The student will pass on completion of the assigned task.
3. Fail with no option to retake the exam (this occurs very rarely and typically students may leave with a Masters degree in Chemistry)

Information and Support for Non-Traditional Graduate Students

Departmental Support and Suggestions:
We recognize that your route to obtaining a graduate degree can change in a variety of ways as you progress through this program. Should you find yourself in a situation that classifies you as a non-traditional graduate student, you should ALWAYS speak to the general graduate student advisor and confidante; Lynn Keithlin (keithlin@berkeley.edu). Lynn will work with your specific situation and help find a reasonable solution. You may also want to speak with the Department Chair (Matt Francis), who can mediate interdepartmental issues in confidence.

Non-traditional student applies to but is not limited to the following categories:

- Students who do not advance to PhD candidacy and/or plan to obtain a M.S.
- Students who are in the process of transferring research advisors
- Students who do not have a current research advisor due to extenuating circumstances

Students have ONE full academic year of support through Graduate Student Instructor (GSI) appointments by the department (regardless of previous GSI appointments) provided their circumstances can be categorized in at least one of the following scenarios:

1. A student is having irreconcilable differences with their thesis advisor or laboratory setting and would like to transfer research groups
2. A student has been dismissed from a research group by their advisor
3. A student would like to do research with a more suitable advisor and remain in the chemistry

department

Students should seek out a 3rd party faculty member as a resource. Typically, this is your qualifying examination committee chair but can be any other faculty member in the department. Meeting with another faculty member can help give perspective on the overall situation but they are NOT an official mediator between you and your research advisor.

Students could consider doing research for a different chemistry faculty advisor or an advisor in a different graduate department. If you choose to pursue the later trajectory, there are many departments such as physics or molecular cell biology that support related or intersecting research to your current research interests. You should consider talking to faculty outside the department to see if there is an available position and project. You will still be considered a graduate student in chemistry unless you choose to switch for any reason.

Students can completely change their department and major. As a student admitted into the Graduate Division here at UC Berkeley, you may transfer to another graduate department completely. For more details, please look at the "Graduate Petition for Change of Major or Degree Goal" section listed at **http://grad.berkeley.edu/academic-progress/forms/**.

Note: There is no academic support provided if you wish to change to a department that is not closely related to research in chemistry.

Non-Academic Aspects of Life in the Chemistry Department

Tuition

All students within the department of chemistry are granted a tuition waiver. You do not need to do anything to have your tuition payments go through – they will be posted automatically by the department to your Cal Central account. You will, however, still receive statements from the university informing you that your tuition needs to be paid. Typically these are sent to your home before the department waiver has been applied. Rest assured, you do not need to take action until the third week of classes. You can double-check that your waiver has been applied by logging onto **calcentral.berkeley.edu/finances** once the semester has progressed. If outstanding fees still appear on your billing statement after the third week, you should contact Lynn Keithlin immediately (see the contacts list in the "quick reference" section).

The Stipend/Payroll

The stipend for the 2019-2020 academic year will be $34,000. You are paid less during the Fall, while acting as a GSI, and the extra amount is made up during the following summer. You should sign up for direct deposit by filling out a form (this has your paycheck automatically transferred to your bank account). See the "quick reference" section for a month-to-month pre-tax breakdown of payroll checks.

Fellowships

There are many fellowships out there that graduate students can apply for. In addition to the ones listed here, the chemistry department regularly updates the online graduate student bulletin board with new fellowship/scholarship information. The graduate division also sends a monthly email newsletter to each graduate student that features new and/or niche fellowships.

- Fullbright Fellowship for International Study
- Hertz Graduate Fellowship
- NSF Graduate Research Fellowship
- Ford Foundation Fellowships
- NDSEG Felllowship
- SMART Fellowship
- DOE Office of Science Graduate Fellowship

Applying for a fellowship is highly recommended! Here are some reasons:

1. Receiving a fellowship is an award for your achievement. It is an honor, and a vote of confidence in your abilities.
2. With a fellowship, your advisor will not have to pay your stipend, leaving more money for other things in the lab.
3. Some fellowships come with extra money designated for your use to buy a computer or books, or for travel to conferences.
4. Most fellowships pay more than the departmental stipend

Here are some things to keep in mind:

1. Many fellowships are highly competitive, so apply for several. Applications are usually due in the Fall.
2. If the fellowship amount is for less than the chemistry department annual stipend, then the Department will make up the difference between the two, so you will still receive at least the normal stipend amount.
3. If you are on an outside fellowship and acting as a GSI, you will receive a GSI position and salary commensurate with the requirements of your fellowship. (In some cases this will result in net earnings above the basic stipend level, in other cases the department will make up the difference to make your earnings match the basic stipend requirement.) This may be different for each fellowship and for more information concerning relevant details contact the Graduate Unit Manager. If your fellowship has extra money designated for "computer or books, etc." then this is given to you for that purpose and does not count as part of the stipend (although it is taxable).
4. If you receive a fellowship, taxes will not be automatically deducted from your paycheck. Since taxes are normally taken regularly throughout the year, if you wait until the end of the year to pay taxes, you could be charged late fees. To avoid this, you should make quarterly estimated tax payments, which is not as hard as it sounds. You will need to estimate your income and taxes once at the beginning of the year and then make your payments in four installments. This will also mean you don't end up paying thousands of dollars at once when you file your taxes. To make estimated tax payments, use the 1040-ES form for federal taxes, and California form 540-ES for state taxes.

Resources for addressing the "Broader Impacts" criteria for the NSF graduate fellowship

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Prof. Ming C. Hammond

There are two review criteria for the NSF graduate fellowship, the intellectual merit and broader impacts of the proposal. Typically, the latter has been more difficult for students to address in their fellowship applications. The good news is that now that you are here at Berkeley, there are many resources that you can draw on to strengthen this part of your proposal.

A quick primer: there are 5 categories of activities that qualify as broader impacts, which are the same as for NSF research grants. (1) How well does the activity advance discovery and understanding while promoting teaching, training, and learning? (2) How well does the proposed activity broaden the participation of underrepresented groups (e.g. gender, ethnicity, disability, geographic, etc.) (3) To what extent will it enhance the infrastructure for research and education, such as facilities, instrumentation, networks, and partnerships? (4) Will the results be disseminated broadly to enhance scientific and technological understanding? (5) What may be the benefits of the proposed activity to society?

For graduate fellowships, category #3 does not really apply. But you should try to address the remaining four categories by describing activities you have done in the past and will do in the future. NSF provides a helpful list of representative activities for each category that you should take a look at (http://www.nsf.gov/pubs/2002/nsf022/bicexamples.pdf). This article emphasizes resources at Berkeley that will help you fulfill categories #1 and #2, but a quick note about category #5: this

really boils down to you drawing a connection between your basic research project and specific outcomes or applications that people like your aunt or your dentist (e.g. taxpayers) would care about.

The following is a list of diverse Berkeley programs that would dearly love to have chemistry graduate students serve as research mentors, tutors, or teachers. Some of these programs have hefty time commitments, but where "team effort allowed" is stated, you can combine efforts with some of your classmates or labmates to volunteer in teams. For all activities, especially for research mentorships, you are strongly encouraged to discuss plans with your research advisor.

1. Berkeley Engineering Research Experiences for Teachers (BERET): Help a K-12 teacher and a CalTeach undergraduate bring science research into the K-12 curriculum. Time commitment (team effort allowed, must be in same lab): 8 weeks over the summer for research project, plus 5-8 hours during the academic year for a classroom activity.
   Website: https://www.synberc.org/beret
2. Cal Corps Public Service Center: Tutor and inspire a student in an East Bay K-12 school. Time commitment (team effort allowed): 1-3 hours/week during 1 semester or full academic year.
   Website: http://publicservice.berkeley.edu
3. Bay Area Scientists in Schools (BASIS): Show cute elementary school kids that science is cool. Time commitment (team effort allowed): 1 hour classroom visit / month or 1 full day visit during the school year, can be flexible.
   Website: www.crscience.org
4. Summer Math & Science Honors (SMASH) Academy: Get paid a small stipend to teach current topics in science research to high school students from underserved communities. Time commitment (team effort allowed): 2.5-5 weeks over the summer, 15-30 hours total.
   Website: http://cdms.berkeley.edu/UCBlabs/Main/SMASH
5. Center for Energy Efficient Electronics (E3S) Summer Research Program and Transfer-to-Excellence (TTE) Program: Mentor an undergraduate on your chemistry or ChemE research project over the summer. Time commitment: Over the summer.
   Website: www.e3s-center.org/education

Loans and Financial Management Resources

As a student you are typically eligible for significant government loans. You may take up to $4,250 of subsidized, and an additional $6,000 of unsubsidized loans each semester. To apply, complete the Free Application for Federal Student Aid (FAFSA, fafsa.ed.gov). Your financial information will be forwarded from the Department of Education directly to the graduate division, at which point you will be issued an offer letter online and in paper. Accepting your loans and getting a check is as easy as filling out the "offer letter" electronically at **calcentral.berkeley.edu/finances**. Men must be registered with the selective service (the draft) to be eligible for federal loans.

Remember, however, that loans are not free money – they may make your life more comfortable, but it is your responsibility to pay them back. To make this a little easier, you do not have to pay your loans while you are enrolled in school, and you are given a 6-month grace period after you graduate.

Be sure to check out Berkeley's online resources for managing your finances - **https://uhs.berkeley.edu/facstaff/worklife/financial-resources** and **cashcourse.org** - these websites will help teach you great tools for keeping track of your spending. Graduate school is

stressful enough – no need to tack on money worries on top of getting that first paper published!

California Residency Requirements

During the summer after your first year you will have to file a petition with the residency office to become a California resident for tuition purposes. In order to be accepted, you will need to show proof of the following:

1. Opening a bank account in CA (keep all your bank statements to prove you have been in-state using the account)
2. Closing out-of-state bank accounts
3. Living in CA for almost the entire year (keep boarding pass stubs from airplane trips)
4. Proof of paying CA taxes (keep copies of your CA tax return)
5. Proof of getting a CA driver's license (within ten days of moving to the state) and registering to vote in CA
6. Proof of registering your car in CA (within twenty days of moving to the state. Note: You will need to get a smog check first)
7. Proof of living in CA (keep copies of your rental agreements to show you are renting in state)

If you have questions about residency requirements, or if you need to leave the state for an extended period of time (more than two weeks), you may want to find out if there will be a problem, or get written approval from the Residency Office before you leave. All residency issues must be dealt with through the Campus Residency Office, the Department of Chemistry may not act on your behalf when concerning matters of Residency.

Health Care and Insurance

Unless you opt out because of your own private plan, the department pays your coverage with the Berkeley Student Health Insurance Plan (SHIP). Student health insurance is excellent – it covers regular appointments and urgent-care cost-free, has specialty appointments (physical therapy, x-rays) at reduced rate, includes a dental and vision plan, minor co-pays for prescriptions, and covers 80% of most services outside the campus health network. Berkeley SHIP is divided into three insurance carriers: Anthem Blue Cross Student Health for medical and mental health, MetLife for dental coverage, and VSP for vision coverage.

University Health Services (uhs.berkeley.edu) is housed in the Tang Center (2222 Bancroft, across from the soccer stadium). Tang is a nearly full-featured hospital, including urgent care, medical offices, physical therapy, lab, pharmacy, and self-service information center. Benefits include:

- $15 co-pay for a Primary Care office visit and $35 for an Urgent Care clinic visit ($50 for off-campus Urgent Care centers in Anthem network)
- Prescriptions filled at the UHS (Tang Center) Pharmacy for a minimal cost ($0 co-pay for generic medications, $25 for brand name); birth control is covered at 100%
- One free adult preventative services visit (including routine mammograms, PAP smears, and prostate cancer screenings) per year

- $15 co-pay for counseling outside UHS (Tang center referral appointments are free)
- 10% of UHS fees for most other services
- No lifetime maximum cap on coverage!

For a list of all SHIP benefits, see **https://uhs.berkeley.edu/insurance/ship-benefits**.

Counseling and Psychological Services are also offered at the Tang Center. If you would like to talk with a counselor, or psychiatrist, there are staff members available on the 3rd floor of the Tang Health Center. They provide brief emergency counseling as well as regular sessions and evaluations for depression and other mental health concerns on a short-term basis (generally five appointments or less). With SHIP, the first five sessions are free, and follow-up appointments are only $15 for SHIP members. UHS also offers referrals to local private psychiatrists and psychologists for more long-term counseling, which are covered with a $15 co-pay. Go to **https://uhs.berkeley.edu/counseling** for more information about mental health services, including support groups and general mental health information.

Additionally, UHS has opened a satellite office in the College of Chemistry in Hilldebrand B40/40A with a designated counselor, Yu Bi (yubiyb@berkeley.edu). She both offers standard 1 hour counseling sessions, as well as drop in hours on Tuesday from 2-4pm and Friday 10am-noon.

The Berkeley School of Optometry offers one eye exam per year at reduced rates ($10 copay) and has a center where you can fill prescriptions for eyewear. For a $25 copay, you are also able to get new glasses or contacts (up to a $120 value) every 12 months.

Dental coverage is also included under SHIP through the insurance provider MetLife. SHIP covers two standard dental appointments for cleaning annually at no cost. Most other dental services are covered 80%. Though dental services are not available at the Tang Center, a list of local dentists can be found on the MetLife website. Graduate student recommended dentists are listed below.

- Bill Cavalli, D.D.S.
- Barbara Curtis, D.D.S.
- Hosein Bafava, D.D.S.
- Thomas Smithers, D.D.S.

For emergency room services or after-hours urgent care, the closest ER is at Alta Bates Hospital (at the corner of Ashby Avenue and Telegraph Avenue), or dial 911. Your emergency treatment can be covered by SHIP retroactively, so don't stop yourself from getting treatment if it's not during business hours.

Note: Health insurance is a part of the registration fee. If a student opts out of SHIP, they can not expect to receive the difference personally to themselves. Since the funding source is the Department (Research Director) the reimbursement will come back to the Department. So in many cases, it is better to not opt out of SHIP and just have two insurance policies.

Making Sure You're Covered:

1. When visiting the Tang Center, make sure to bring your Cal1Card photo ID. This card will provide you access to services within the Tang Center.
2. Anthem Blue Cross insurance cards generally arrive a few weeks after the semester has

begun. Make sure to keep your address updated on CalCentral so your Blue Cross card is sent to the correct address. Carry your card with you for off-campus care, as SHIP contracts with Blue Cross to provide medical and mental health services outside of the Tang Center. Further details about Blue Cross are forthcoming, so make sure to check in with the Tang Center's FAQ section!

3. Make a dentist appointment! Come on, you know you want to. It's easy – just go to this website: **http://www.uhs.berkeley.edu/students/insurance/dentalannouncement.shtml** and click the link for "how to choose a dentist."

Department Graduation Statistics

The graduation statistics for the most recent years available (Fall 2016 and Spring 2016) are below.

The average time to receive a PhD in Chemistry is 6 years.

Fall 2016 Graduates	Spring 2016 Graduates
● 2 Master's ○ 1 chembio, female ○ 1 physical, female ● 27 Ph.D.'s ○ 4 chem bio, female ○ 0 chem bio, male ○ 2 synthetic, female ○ 5 synthetic, male ○ 5 physical, female ○ 11 physical, male	● 4 Master's ○ 2 synthetic, male ○ 2 physical, female ● 34 Ph.D.'s ○ 2 chem bio, female ○ 3 chem bio, male ○ 6 synthetic, female ○ 10 synthetic, male ○ 6 physical, female ○ 7 physical, male

These statistics are summarized in the quick guide later in the handbook.

For 2016:

86% of the women who graduate do so with a Ph.D.,
…and 14% with a Masters

95% of the men who graduate do so with a Ph.D.,
…and 5% with a Masters

More broadly however, for 2010-2016, the following were true:

84% of the women who graduate do so with a Ph.D.,
…and 16% do so with a Masters

87% of the men who graduate do so with a Ph.D.,
…and 13% do so with a Masters

Finding a Job

There is a vast range of jobs in which you can make use of your Chemistry degree. You may not end up actually 'doing' Chemistry, but using the analytical skills that you have learned during your extended education. Historically students graduating with a Ph.D. in Chemistry leave to work in the following places (approximate % of students given, data from 2010):

Academia:	51%
Industry:	35%
Government:	8%
Professions:	2%
Other:	4%

Many students in graduate school seem to think there are only two tracks possible: Industry and Academia, and are not enamored of either of them. This is untrue. There are a number of government, medical, and consulting jobs that seek applicants with science Ph.D.'s. There are many ways to find out more about jobs. Here are some ideas:

1. Talk to older students who are actively looking for jobs about where they are looking and what their experiences have been.
2. Go to the career fairs for science Masters and Ph.D. students. These are typically held in September and are organized by the career center, which has many useful resources for finding jobs.
3. Talk to your advisor. Ask him/her what jobs are available in your particular field, if you wish to continue in it.
4. Fully utilize departmental career events, such as the Fall ACS Career Workshop and scheduled industry information and interview sessions.

Student Groups – Get Involved!

1. ***Graduate Life Committee*** **(**www.cchem.berkeley.edu/glc**)**
   The Graduate Life Committee (GLC) is comprised of students, faculty, and staff in the Chemistry Department. The goal of the GLC is to improve the quality of chemistry graduate student life. Specifically, we seek to identify and resolve issues of concern to graduate students. We also organize the summer softball league, the holiday party, ChemKeg, and career development events. The GLC meets on the first Wednesday of each month from 12-1 p.m. Since input from and participation of student members is essential to the success of the GLC, we accept new members at any time. You can get in touch with us at ucbglc@gmail.com

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2. ***Iota Sigma Pi, Hydrogen Chapter*** (Hydrogen Chapter: www.cchem.berkeley.edu/~iota/; National: http://www.iotasigmapi.info/)
   Iota Sigma Pi, Hydrogen Chapter ISP is a national honor society for women in chemistry, which began in 1902 with the organization of the Hydrogen chapter here at the University of California, Berkeley. Since then, over 10,000 members have been initiated into forty

chapters nationwide. We promote the professional development and personal growth of women in chemistry and related fields through recognition, public outreach and the formation of supportive networks. Here at UC Berkeley, ISP hosts events including discussion lunches and teas with visiting professors and faculty members, hikes at locations around the Bay Area, tours of local breweries and vineyards, co-sponsors the ACS Career Workshop, a Choosing Your Research Group panel discussion and Mixer early each fall, and many others. ISP's events are open to everyone. Check us out on facebook!

3. ***Alliance for Diversity in Science and Engineering (ADSE) Chapter at Berkeley***
   ADSE is a national nonprofit that was founded at UCLA by Chemistry PhD students a while ago, and there are now more than 10 chapters across the country. The ADSE chapter at Berkeley is dedicated to building an inclusive and diverse community of graduate students within all branches of science and engineering, with no regard to disability, race, gender, or sexual orientation/identity. Our goal is to build a network of graduate students, post-docs, faculty and other scientists of all ages and backgrounds from all over the Berkeley campus community that can form mentor-mentee relationships, act as role-models for each other, share diverse experiences and grow into a supportive community for each other. We host yearly diversity and inclusion seminars on campus, social events on and off campus and fundraisers! Please contact adseberkeley@gmail.com for more information or to join our listserve!

4. ***Women in Chemistry Initiative (WICI)***
   The Women in Chemistry Initiative (WICI) serves as an inclusive social and professional network of graduate students and postdoctoral scholars of all genders and experiences. Their mission is to increase the visibility of women in STEM, make connections within our local community, support the health and wellness of our members and community, and encourage women to pursue careers in STEM. WICI focuses on creating a diverse, inclusive, and engaged STEM community though monthly events including trivia and craft nights, meetups at local restaurants, and social and networking hours. In addition, they host an annual Fall Harvest Social featuring keynote talks from prominent female faculty. These events serve as a medium through which members of our community can engage and connect with each other.
   https://callink.berkeley.edu/organization/WICI

5. ***Queer Grads***
   QG is a campus-wide graduate student group for LGBT students. The group runs monthly social hours, as well as a few annual events, including a reception for LGBT students in the sciences (typically in November) and a panel discussion of LGBT faculty. To stay informed about QG events and other issues relevant to the UC Berkeley LGBT community, send an email to queergrads-owner@lists.berkeley.edu and ask to be added to the mailing list or go to https://calmail.berkeley.edu/, log in, and subscribe to the "Queergrads" list. If you'd like to volunteer to help organize events, we would love to have you!

6. ***Graduate Assembly***
   The GA is the official representative body of graduate and professional students at UC Berkeley. The GA awards funding to graduate student groups (including the Chemistry GLC) for their activities, organizes community service events, and advocates for students at the campus, local, state, and federal level. To learn more about the GA, visit http://ga.berkeley.edu. To learn more about joining the GA as a representative of the

Chemistry Department, contact Carl Onak (conak@berkeley.edu).

7. ***Alpha Chi Sigma, Sigma Chapter (***violet.berkeley.edu/~sigma/index.html***)***
AXΣ is a coed professional chemistry fraternity, dedicated to creating friendships, promoting chemistry, and helping its members as chemists. The Sigma chapter fulfills these three objectives not only by organizing and participating in professional and community events but also by having many fun social events. The chapter has a house on the North side of UC Berkeley, open to both members and non-members. Undergraduate and graduate students at UC Berkeley may become members of AXΣ by pledging the Sigma chapter.

8. **Community Resources for Science, College of Chemistry Volunteers (**www.crscience.org/**)**
Community Resources for Science (CRS) helps elementary teachers use science resources to give all kids access to great hands-on learning experiences. At the same time, we work to build the science education opportunities in our community. For more information contact Prof. Bob Bergman or visit their website.

9. **American Institute of Chemical Engineers (AIChE - www.cchem.berkeley.edu/~aiche/)**
The purpose of the student chapter of the American Institute of Chemical Engineers is threefold: (1) To provide students with insight into various chemical engineering careers; (2) To provide a social medium for student interaction; (3) To promote informal student-faculty contact.

Chemistry Department Activities

There are a number of events that go on within the Chemistry Department:

1. ***The Holiday Party*** – This annual bash features skits put on by current students *and faculty* parodying graduate and faculty life in the department. There's a party on the Chemistry Plaza with food and drinks, followed by a show in Pimentel Hall. Look out for flyers advertising the show just before winter break each year, and contact the GLC if you would like to participate in the skits!

2. ***Summer softball*** – Each summer nearly the entire department breaks out into softball fever. The physical and synthetic divisions square off as leagues in a department-wide battle royale for the department championship. Last summer, 16 teams (8 from each division) fielded over 200 players each week on the Clark-Kerr softball field. There are plenty of home-runs and high-fives, so be sure to ask about your group's team.

3. ***Grad student lounge***: On the third floor of Gilman Hall (room 321) is an enclave of relaxation for all chemistry graduate students. It's a great place to meet up with classmates to study, grade lab reports, or procrastinate. There are couches and a ping pong table. Use your "3" key to unlock the door.

Living in Berkeley

Housing

It is generally recommended that you spend no more than $1300/month on housing. When looking for an apartment, be sure to consider whether water and garbage are included, otherwise it could increase your monthly payments. Remember that you will be paying electricity and phone bills every month, which will also increase your monthly spending. If you live outside Berkeley, rents are often cheaper. However, remember to add in the cost of daily transport. There are a number of good listings for apartments, such as craigslist.org, which is free, and Cal Rentals.

There is a limited amount of University-owned housing available for graduate students in the Manville Apartments, the International House, and the Ida Louise Jackson House. Some University housing is also available for married students and students with children. There is a wait-list of at least six months for most units. Keep in mind that University housing is not necessarily less expensive than other housing options.

Parking and Transportation

Most of your time during the day will be spent on campus. Many students live close enough to walk or bike to campus, which eliminates the cost of travel and parking. If you decide to live further away, you can purchase a student parking permit for about $385 per semester. To purchase a permit you must show proof of living at least two miles away from campus. More permits are sold than there are spaces, so even if you buy a permit, you are not guaranteed a spot. This means you may have to get in early (e.g. before 8:45am) before the lots fill up to get a space.

Many students use public transit to get to campus. Unlimited bus travel on AC-transit lines is *free* for Berkeley students, although this may change. You simply need to pick up your Clipper Card from the Cal 1 Office (same location as getting student ID). The Bay Area Rapid Transit (BART) subway system is a convenient way to commute if you live near a BART station. There are frequent trains from the East Bay to San Francisco. The fare is proportional to the distance traveled. Trains stop at midnight. UC-Berkeley has a transit subsidy program to encourage carpooling and use of public transit. See the "Living in Berkeley" section of Electronic Resources for helpful links.

Best of Berkeley, Student-Made Lists

Outdoor Fun:

1. Tilden Regional Park has many walking and hiking trails.
2. Many groups at the Berkeley Marina offer classes in water sports such as windsurfing and sailing.
3. Point Reyes is an excellent place for camping, hiking, and other activities.
4. Muir Woods on the northwest side of the bay is a great place to hike and see redwood trees.
5. Golden Gate Park in San Francisco is a huge park with everything from Japanese tea gardens, to a Bison paddock, to a natural history museum.
6. Walking around San Francisco's varied neighborhoods is a fun way to spend any weekend.
7. The Berkeley hills behind campus are accessible via fire trails and are good for one hour hikes up to full day hikes, although you can not camp on them.

8. The Berkeley botanical gardens are free to students, and discounted for other students. Just remember to bring your ID!

Grocery Stores:

1. The Berkeley Bowl grocery store on Shattuck and Ward or the second location on Heinz and 9th Street, is a great place to get quality inexpensive produce.
2. Trader Joe's is a popular whole foods store. There is one at University Ave. and Martin Luther King Way in Berkeley. Also, one is in the El Cerrito Plaza, one next to the Rockridge Bart station and one in Emeryville.
3. There are a number of Safeway grocery stores around Berkeley and the surrounding areas.

Furniture Stores:

1. Check along San Pablo for many cheap or second hand furniture stores.
2. Target in Emeryville.
3. Futon stores at University and California.
4. Craigslist.org is a great place to find cheap furniture. Some people even give furniture away when they are moving. Try checking every day for a week, or more often during high seasonal turnover.
5. Goodwill store on Shattuck and University.
6. There is an IKEA furniture store located close-by in Emeryville.
7. National Furniture Warehouse down I-80. Look for the giant "$499 Sofa & Love" sign.
8. Macy's Furniture Outlet in Union City, California

Restaurants and Bars:

1. La Mission and Himalayan Flavor on University.
2. Poulette on Shattuck
3. Jupiter, Triple Rock, Cornerstone, Tupper and Reed, Eureka, and Pacific Standard Tap room on Shattuck.
4. Freehouse on Bancroft and College, Taphaus on Durant, Raleigh's on Telegraph
5. Albatross, Missouri Lounge, Club Mallard, and the Ivy Room on San Pablo.
6. Plenty of places in Oakland (on Telegraph - 12th/19th BART stops)

General Recommendations

Enjoy Berkeley! There are many restaurants and things to do in Berkeley and San Francisco. Take advantage of them! All work and no play makes you burn out early. Become involved in extracurricular activities/clubs/sports/graduate committees. Make an effort to meet your classmates in the classes you take or at seminars, because once you join a lab, you will have much less contact with other students.

Quick Reference

Department of Chemistry: Graduation Requirements and Milestones

1. **First-Year Report** (synthetic division only): a journal-quality research paper of no more than 10 pages (without figures) detailing research and experiments from the student's first year of work. Typically due June 1st.
2. **Poster Presentations:** (chemical biology division only): three conference-style poster presentations, to be displayed during a presentation session at the end of each of three 10-week rotations during the student's first year.
3. **Seminar Presentation (GRS/GRC):** (all divisions): A 25-minute presentation given to the department on the student's research during the second year of study. GRS presentations are held Thursday mornings and GRC presentations Thursday afternoons throughout the year. All are invited to attend.
4. **Qualifying Examination** (all divisions)**:** An oral examination of varying length (2-3 hours) given approximately three weeks after the seminar presentation (GRS/GRC). The student is tested on both their research as well as an outside topic for which they have prepared a research proposal for review.
5. **Advancement to Candidacy (Plan B)** (all divisions)**:** Occurs after the student has completed all previous requirements and is approved by the department. The application fee is $90.
6. **Submission of Thesis** (all divisions)**:** There is no thesis defense at UC Berkeley. The student's thesis committee reviews the completed work after the thesis committee chair (the student's advisor) has approved it for review. The degree is then complete.

Department of Chemistry: Coursework Requirements

While there is no formal coursework requirement for the PhD, either for the department or the university, it is expected that you will complete sufficient and appropriate coursework upon which to build a foundation for interesting research. You will work with your first-year advisor to craft a course schedule appropriate for your research interests, and the qualifying examination committee determines whether your coursework was sufficiently completed. It is important to note, however, that *there is a formal coursework requirement* should you decide to depart with a Master's degree (See university requirements below).

Department of Chemistry: Seminar Requirements

Seminars are an important part of the curriculum. Because of the size and diversity of the Berkeley faculty, there are many seminars on a variety of topics which you may choose to attend. There are regular weekly seminars in several major areas, including biophysical, physical, nuclear, organic, theoretical, solid state, and inorganic chemistry. These seminars are presented by members of the Berkeley faculty, as well as distinguished visitors to the campus. These seminars allow you to become aware of the most important current research going on in the field.

University Requirements for the Doctoral Degree

Section F2, Doctoral Degrees, from the "Guide to Graduate Policy"
http://grad.berkeley.edu/policies/guides/category/ggp/degrees/

"The doctorate is awarded in recognition of a student's knowledge of a broad field of learning and for distinguished accomplishment in that field through an original contribution of significant knowledge and ideas. To be eligible to receive the doctorate, the student must complete at least two years (four semesters) of academic residence, pass a Qualifying Examination administered by a committee approved by the Graduate Division on behalf of the Graduate Council, and submit an approved dissertation completed under the guidance of Berkeley Academic Senate faculty members. The dissertation must reveal high critical ability and powers of imagination and synthesis."

"Unlike a master's degree, there are no specific unit requirements for the doctorate. A course of study is tailored to fit the needs of individual students. Departments, schools, and graduate groups may informally recognize that students have completed relevant courses at other institutions, if they wish, but no units will be officially transferred for the doctoral degree."

University Requirements for a Master's Degree

Section **F1, Master's Degree Plans,** from the "Guide to Graduate Policy"
http://grad.berkeley.edu/policies/guides/category/ggp/degrees/

"Plan I requires a minimum of 20 semester units of upper division and graduate courses, and completion of a thesis. For the 20 unit minimum, the Academic Senate has established that a minimum of 8 units be in 200 series courses in the student's major subject. However, majors may require more than 20 units; students should check with their academic programs for a listing of all requirements. If the degree requires more than the 20-unit minimum, 40% of the unit total must be 200-level course work."

Graduation Statistics (2016), Department of Chemistry

	All Students	P	CB	S	F	M	P/F	P/M	S/F	S/M	CB/F	CB/M
MS	6	3	1	2	4	2	3	0	0	2	1	0
PhD	61	29	9	23	25	36	11	18	8	15	5	4

(P = physical; S = synthetic; CB=ChemBio; F = female; M = male)

'19-'20 Estimated Non-Fellowship Pre-Tax Payroll

For the majority of incoming graduate students, in your first semester, you will serve as a Graduate Student Instructor (GSI) with an appointment from August 1 through December 31, 2019.*

As a way to offset your relocation expenses, you will receive a one-time $750 of your annual stipend/salary in one payment in September.**From January 1 through July 31, 2020, your financial support will be provided by your research adviser through a Graduate Student Researcher (GSR) appointment. The balance of your annual stipend/salary will be disbursed monthly over these seven months.***

$ 4,254.60* 8/1/19 - 9/30/19 ($ 2,127.30 per month x 2 months before taxes). If you have completed onboarding with HR by or before August 8th, your first reimbursement will be issued on 8/30/19. A schedule for 2019-20 pay distribution dates can be found **here**.

$ 6,573.36* 10/1/19 - 12/31/19 ($ 2,191.12 per month x 3 months before taxes).

$ 750.00** mid-to late September - one-time relocation advancement

$ 16,442.50 *** 1/1/20- 5/31/20 ($ 3,288.50 per month x 5 months before taxes)

$ 5,979.54 *** 6/1/20 - 7/31/20 ($ 2,989.77 per month x 2 months before taxes). An additional 7.5% pre-tax retirement contribution in lieu of Social Security and a 1.45% Medicare deduction are also withheld while you are not registered and enrolled during the two summer months.

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$34,000.00 - total annual stipend/salary before taxes (estimate State and Federal tax withholding for Monthly Employees here)

Graduate Student Services Office Staff

Lynn Keithlin, Student Affairs Officer (419 Latimer, keithlin@berkeley.edu)

Will guide you on your academic progress, including choice of research group. Responsible for fellowship and financial matters.

Joel Adlen, Student Affairs Officer (419 Latimer, joeladlen@berkeley.edu)

Knows everything about admission. He is a resource for all questions about the department and focuses on incoming graduate students as well as admissions.

Ellen Levitan, Student Affairs Officer (419 Latimer, ellenl@berkeley.edu)

Handles everything pertaining to your qualifying exam and your academic milestones.

Electronic Resources

Academic Life

1. The College of Chemistry - http://chemistry.berkeley.edu/
2. The Department of Chemistry - http://chem.berkeley.edu/index.shtml
3. Chemical Biology Graduate Program - http://chembio.berkeley.edu/
4. Chemistry Graduate Student Electronic Bulletin Board - http://www.cchem.berkeley.edu/currentstudent/
5. Guide to Graduate Policy - http://grad.berkeley.edu/policies/index.shtml
6. Seminar Schedule - http://events.berkeley.edu/index.php/calendar/sn/chem.html
7. Schedule of Classes - http://schedule.berkeley.edu/
8. To create a CALNET ID – https://calnet.berkeley.edu/
9. Student Information - https://calcentral.berkeley.edu/ – Personal University Profile (ie. official address information) academic transcripts, degree audit report, current class

schedule, statement of California residence,
10. Register for Classes - https://calcentral.berkeley.edu/academics
11. GSI Teaching and Resource Center - http://gsi.berkeley.edu/
12. Graduate Appeals: http://grad.berkeley.edu/policies/pdf/appealform.pdf
13. Conference Travel Grant (one-time, up to $600, $900 or $1500, depending on location) - http://grad.berkeley.edu/resource/conference-travel-grants/

Financial Information and Resources

1. Payroll Information Management and Human Resources - https://ucpath.berkeley.edu/ Change or update payroll/stipend information, print W2 forms, print earnings statements, update personal profile information (address, email, etc), reimbursement tracking.
2. Student Information - https://calcentral.berkeley.edu/finances - View financial aid information (department tuition waivers, loans offered and taken) and CARS account information (your bills with the university).
3. Free Application for Federal Student Aid - http://www.fafsa.ed.gov/
4. Federal Tax forms - http://www.irs.gov/
5. Financial stress management tools - https://uhs.berkeley.edu/facstaff/worklife/financial-resources
6. Free online workshop for learning ways to manage money https://www.cashcourse.org/

Non-Academic Life

1. Family Resources - https://ofew.berkeley.edu/welfare/families - Information about family life, including paid maternity leave, domestic partner policies, child care, and the Berkeley parents network. Child care reimbursement has changed recently, make sure you learn about all of your options.
2. Setting up a CALNET ID and Berkeley Email: http://ist.berkeley.edu/getting-started
3. Residency Office - http://registrar.berkeley.edu/Residency/legalinfo.html
4. Career Center - https://career.berkeley.edu/
5. University Ombuds service - http://staffombuds.berkeley.edu/
6. A few other links that your author (CSO) found useful during his first year: http://www.cchem.berkeley.edu/cjcgrp/links.html

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Healthcare

1. University Health Services - http://www.uhs.berkeley.edu/
2. Dental Coverage Information - http://www.uhs.berkeley.edu/students/insurance/dentalannouncement.shtml
3. Berkeley eye care - http://www.caleyecare.org/
4. Counseling and Psychological Services - http://uhs.berkeley.edu/students/counseling/aboutcounseling.shtml and http://uhs.berkeley.edu/students/counseling/index.shtml#15
5. Alta Bates Hospital - http://www.altabatessummit.org/; 3001 Colby Ave, at the intersection of Ashby Ave and Colby Ave

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Transportation

1. Local bus system - AC-Transit - http://www.actransit.org/
2. Cal Class Pass, Berkeley Parking and Transportation - http://pt.berkeley.edu/
3. Bay Area Rapid Transit (Bart) - http://www.bart.gov/
4. Transportation Alternatives (including bear pass) - https://pt.berkeley.edu/transportation-benefits
5. Bicycle Information - https://pt.berkeley.edu/transportation-options/bike - campus bike information, https://www.ebbc.org/ - East Bay bike info and advocacy

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Living in Berkeley

1. Craig's List - http://sfbay.craigslist.org/
2. Cal Rentals - https://och.berkeley.edu/
3. Manville Apartments - http://www.housing.berkeley.edu/livingatcal/manville.html
4. International House - http://ihouse.berkeley.edu/
5. Family student housing - http://www.housing.berkeley.edu/livingatcal/studentsfamilies.html; http://universityvillage.berkeley.edu/ - University Village (Albany)

Perspectives on Graduate Life

On Being a Teaching Assistant

Lauren Wagner – Graduate Student in Synthetic Chemistry (Bertozzi Group)
(wagner.lauren@berkeley.edu)

As a first semester graduate student, you will be challenged to juggle coursework, research, and teaching. Among these, teaching tends to inspire mixed feelings, from anxiety and apathy to enthusiasm. Although entering PhD students have experience and interest in graduate coursework and research, many of us have not explored teaching as thoroughly. A range of previous experience with teaching often leads to a range of expectations for your first semester as a GSI.

Most synthetic students will teach either of the CHEM 3A/B introductory organic sequence, while most physical students will teach general chemistry (CHEM 1A). Later in your graduate career, you may teach other advanced undergraduate chemistry courses or graduate courses. You will spend between 15 and 20 hours per week on duties including teaching lab, holding office hours, grading, attending course lectures, meetings, and preparation. These duties may vary from week to week, and they can consume as much time as you allow.

During my two semesters teaching, I have found it best to over-prepare initially, and then to reduce my workload as I learn the format of the course. In particular, this means attending course lectures to review the material and to see how subject matter is presented to the students. With lecture material under your belt, the burden of preparation for office hours is significantly reduced. Additionally, planning the workflow of each lab experiment in advance can actually reduce your burden during the lab period itself. This includes anticipating the amount of time each step should demand, and succinctly introducing the experiment to the students so that they grasp the purpose and the main techniques first. Finally, grading student work promptly and thoroughly is particularly important at the beginning of the term. With quick feedback from you, students learn sooner how to improve their reports, and your job grading becomes easier.

I taught CHEM 3B my first semester, which was challenging because my training was largely in molecular biology. With limited synthetic experience, I found myself learning alongside my students when experimental results deviated from those described in the lab manual. In those times, it was critical to maintain authority by keeping my cool and fully assessing the situation before responding. I left that semester significantly more comfortable with synthetic organic techniques, and I have since been more confident troubleshooting my own research.

Teaching is a mixed bag: the tedium of grading is at one end of the spectrum, while at the other end is the spontaneous, seat-of-your-pants response demanded during lab time. Leading a lab section demands patience and ingenuity, not to mention diplomacy. Because students have very limited access to professors, you may be their main contact for the course. Your attitude and knowledge will impact their laboratory experience, as well as how much they gain from office hours. Ultimately, you must invest enough in teaching to walk away confident that both you and your students had the best possible experience, considering your other obligations as a graduate student too.

On Being a Teaching Assistant

MaryAnn Robak - Chemistry Lecturer, (mrobak@berkeley.edu)

Teaching as a graduate student instructor (GSI) can be a valuable, enjoyable and rewarding experience. As an integral part of the chemistry graduate program, your teaching assignments will provide invaluable experience in communicating scientific ideas effectively to people from diverse backgrounds. Developing the ability to explain complex (and not-so-complex) subject material in a straightforward manner and tailor your answers to questions to meet your audience's needs will be useful to you even if you do not plan to pursue teaching as a career.

The job responsibilities for any GSI assignment will include some combination of lecture attendance, office hours, grading, and teaching sessions (such as reviews, discussion sections, or laboratory sections). The overall GSI experience can vary greatly depending on what type of class you are assigned to teach. As an incoming first year student, you will most likely be assigned to teach a lab section for one of the large, lower-division classes (Chem 1A, Chem 3A, or Chem 3B.) Later on, you can choose to seek out teaching assignments in upper-division classes or even graduate classes, based on your interests.

There are many effective methods of helping students learn material, and the particular methods that you employ will of course change based on the course setting. For example, lecturing can be an effective way of conveying a large amount of well-organized material to many students at once. You might find that you use a lecture approach for conveying safety information at the beginning of a lab period, or for reviewing course content in a discussion section or exam review setting. However, lecturing has its limitations. By default, it tends to be a fairly passive learning experience for the students. While a lecture may be appropriate as a first step in the learning experience, it is usually not sufficient by itself to provide the student with a working knowledge of the course content. As a GSI, you will usually be working with students who have already attended a lecture given by the course instructor. As a result, you may find that very little of your time is spent lecturing. Instead, you may spend your teaching time facilitating class discussions and question and answer sessions, supervising small group problem-solving sessions (including laboratory work), and interacting with students one-on-one. The common element in this list of teaching techniques is that each encourages the students to take a more active role in the learning process, allowing them to develop a deeper understanding of the subject material than they would from a lecture alone. The use of a variety of teaching techniques insures that you can reach students who have a variety of preferred learning styles.

In a laboratory setting, it may sometimes be tempting to feel that your only responsibility is to make sure that the students are working in a safe manner and efficiently completing the assigned tasks. While safety and efficiency are certainly important, the laboratory class also provides the opportunity for you to engage small groups or individual students in active discussions of the concepts they are learning. Making an effort to do so will make the teaching experience more enjoyable for you and also much more useful to your students. Careful, consistent, constructive feedback in written format, such as on graded lab reports and exams, can also be a very valuable teaching tool.

To be effective at teaching, no matter which techniques are employed, it is important that you spend enough time on preparation that you are confident in your knowledge of the subject material, and

organized enough to keep discussions and other activities on-track. It is equally important that you are flexible enough to allow students to really participate fully in an interactive experience, and sometimes you may find that you need to deviate from your plans because your students' level of understanding is different than you anticipated. As you listen to the questions that your students ask, you have the opportunity to tailor your explanations to meet their needs.

Occasionally, you will be faced with a question that you do not know how to answer. This happens to everyone, and should not embarrass or surprise you. In these situations, keep in mind that the last thing a student wants is to feel as though the instructor is lying to them, and if you try to bluff your way through, you stand a good chance of severely damaging the student's ability to see you as a helpful resource. Your credibility as an instructor will benefit if you respond honestly, acknowledge that you need a chance to find more information, and make arrangements to follow up with the student after you have arrived at an acceptable answer (if this occurs during office hours when you are not sure you will see the student again soon, asking for the student's email address is a good option). Then, make sure that you remember to follow up with the student in a timely manner.

The effort and enthusiasm that you put into your teaching (including both preparation for classes, and your in-class work) is repaid with the satisfaction of seeing progress in your students' understanding of the material. You will find at least a few students in your class who begin the semester apprehensive or indifferent about the course content. As you make an effort to reach out to these students, it can be particularly rewarding to watch these students gain confidence in their ability to learn the material and become more engaged and excited by what they are learning.

On the Student / Advisor Relationship

Marcin Majda - Professor of Physical Chemistry, College of Chemistry (majda@berkeley.edu)

Chemistry graduate study in Berkeley is intrinsically very challenging. The coursework and research, in particular, require intense intellectual effort, and the standards of performance are very high. Scientific research and learning proceed hand in hand and the process is necessarily extremely demanding of the student's time and abilities. Good progress cannot be expected to result from a mere accumulation of time spent at a desk or in a laboratory.

This notwithstanding, the rewards of scientific progress are great and easily outweigh the effort that they require. The learning process is intrinsically satisfying. A taste of scientific discovery, mastering a new, broad area of science, development of a professional relationship with a faculty advisor and her/his recognition of the student's progress and accomplishments all bring enormous satisfaction. Of course, the ultimate formal reward must not be forgotten: a Ph.D. degree almost instantaneously opens many doors of professional opportunities.

The cornerstone of the chemistry graduate study is a mentoring relationship between a faculty advisor and her/his student. The relationship begins by mutual consent when a student becomes a member a professor's research group. This specifically implies a commitment of both the student and the professor to work together on a specific research project. Naturally, the nature and the scope of the research project may change numerous times in the course of student's graduate study. However, the mutual commitment of the student and the professor to pursue together their scientific goals remains the foundation of their relationship.

While the pursuit of scientific excellence in research and learning is the common goal of a student and her/his faculty mentor, their roles and burdens in this relationship are necessarily different. The student commits to mastering a new area of chemistry, to acquire technical expertise necessary to carry out research in this area of science, and to using her/his creativity to learn how to ask scientific questions and how to conduct research to find the answers. The role of a faculty mentor is multifaceted: setting the initial course of student's research, directing research, teaching and mentoring her/his students represent some key elements. In addition, faculty advisors are obligated to evaluate the student's progress in order, ultimately, to judge the student's chances of timely graduation. Thus mentoring and passing judgment are two seemingly conflicting, yet necessary elements of a professor's responsibilities in the interactions with her/his graduate students. These various demands may sometimes strain student – faculty relations. At such times, some basic rules are important to keep in mind. Firstly, the student may, at any time, leave the research group of his advisor and join, upon mutual consent, a research group of a different professor. Likewise, a faculty advisor may terminate his mentoring relationship with a student and ask the student to find a different advisor. It is extremely rare that such decision on the part of a faculty advisor is dictated by reasons other than his assessment of student's inadequate progress towards the Ph.D. degree in his/her group. Moreover, the faculty advisor's mentoring role requires that any serious deficiencies in student's performance be discussed with a student early on, and that a plan be developed to correct such deficiencies, including outlining a timeline during which student has a reasonable chance to improve his performance. However, since the faculty advisor is ultimately responsible for evaluating and judging his/her student's progress, his judgment and decisions in such matters prevail.

The decision of a faculty advisor to ask his/her student to leave his research group is not synonymous

with putting a student on academic probation or initiating formal dismissal from the graduate program. A student may be put on probationary status, and ultimately dismissed, only by the Dean of the Graduate Division.

In addition to their individual faculty research advisors, the chemistry graduate students may and should also seek advice of the Vice-Chair in charge of their program (physical, synthetic, and chemical biology). The Vice-Chairs act as Graduate Advisors and are thus responsible for the academic advising of graduate students in all academic matters, including student – faculty advisor relations. It is important to stress that while the Vice-Chairs cannot directly interfere in the student – faculty advisor relationship, they are nevertheless able to offer insightful commentary, often putting difficult situations in a proper perspective. Their advice and suggestions take into consideration the best interest of a student and of his academic progress. Needless to say, advising with Vice-Chair is completely confidential. In addition to seeking advice of Vice-Chair, graduate students may seek counsel of the Ombudsperson for Students (to make an appointment call 642-5754).

On the First Year Report
Jonathan Ellman - Professor of Synthetic Chemistry

The first formal requirement in the synthetic graduate program is a research report to be submitted at the end of your second semester of graduate work. The first year report is written in the style and format that one would use in writing a full paper. Writing the first year report therefore can be an extremely valuable educational experience. Do not be concerned if you have not made sufficient research progress to actually submit your work for publication. Due to the varied nature of research and multiple responsibilities in the first year, at the end of the second semester most students have not yet reached a stage where publication of their work is warranted.

Report organization

The first year report should begin with an introduction (one-two pages) outlining the rationale upon which your project is based, followed by a brief presentation of the experiments you have done, and concluding with an experimental section. The total number of double-spaced pages is limited to ten, exclusive of title page, references, figures and experimental section. It is important not to exceed this number of pages, otherwise your report will likely be returned to you for revision.

At the time that the first year report is written several handouts are provided. The samples of experimental write-ups, which illustrate proper style, are quite valuable because common mistakes are highlighted. The ACS Style Guide edited by Janet S. Dodd is an extremely useful additional resource.

The exact nature of these reports varies to some extent depending upon each student's research area. Although your research director will not formally be part of your evaluation committee, he or she should have significant input on how the report is to be written. For that reason, consult with your research director several months prior to the deadline for submitting the report. Many research advisers will in fact review a draft of the report to provide guidance.

It is also extremely helpful to look at a copy of one or more successful reports that have previously been submitted by students from your group or from groups with related research focus. It is also advantageous to have a senior student proof-read your report prior to submission.

Report evaluation

Your evaluation committee will consist of two faculty members other than your research director, one of who will serve as chair. Both members will read your report, and the chair will provide you with written comments. You will have some level of input on who serves on your evaluation committee. Specifically, at the time that the report is submitted, each student submits a cover page listing his/her preferred committee members and chair. You should request input from your faculty advisor in making this selection. The Vice Chair for Graduate Synthetic Chemistry, who will assign the evaluation committees, tries as much as possible to accommodate each student's requests. However, because of faculty sabbaticals, other departmental service obligations, or popularity of specific faculty members, students will typically be assigned some but not all of their faculty selections.

Your committee will base their evaluation on your understanding of your research project, your level of research progress, the clarity with which your report is written, and your ability to correctly report experimental procedures and data (the committee will carefully read the experimental section). Three types of overall evaluation are provided. (1) The report is accepted without revision. (2) A statement that the report needs certain revisions with a deadline for rewriting. Most students receive this type of evaluation and are required to submit a revised report within approximately two weeks of receiving the evaluation. This should not be taken negatively, but rather should be looked at as opportunity to learn from mistakes that have been made. (3) A need for additional experiments and a supplementary report, usually due one to three months from the time that the student receives the evaluation. A relatively small percentage of reports receive this evaluation, which indicates that the committee either feels that insufficient research progress has been made or that the student has a poor understanding of his/her research project.

Upon satisfying this first formal requirement of the synthetic graduate program each student should feel confident in his/her ability to report on original research in peer reviewed journals, which is arguably the most important mechanism for communicating significant new scientific results.

On the First Year Report

Rebecca Murphy - Graduate Student in Synthetic Chemistry (Sarpong Group), (rmurphy@calmail.berkeley.edu)

The first year report (FYR) is pretty much exactly what you would expect – a paper on the research you have done over the course of your first year. There will be a meeting, held by vice chair Prof. Thomas Maimone, in March that outlines the details of the report. This will prepare you to submit it (to Prof. Thomas Maimone) on June 1st.

The FYR is written in the same format that a paper published in an American Chemical Society journal, such as JACS or JOC, would be written. The report should be 10 pages of text, double-spaced, before figures are added. Additional sections not included in the 10 pages will be a title page at the beginning, and references, an experimental section and any ^{1}H NMR spectra at the end. Of the 10-page body, there should be three sections: Introduction and Background (2-3 pages), Results and Discussion (6-7 pages), Conclusion and Future Directions (1 page). The Introduction and Background section should outline what your project is and why it is important. In the Results and Discussion section you will show all of your forward work toward your goal. The Conclusion and Future directions section should tie everything together concisely and show what your next steps will be. The experimental section is akin to the supporting information that would be attached to a published paper. This is where any compounds that you have made during the year will be tabulated. This should include full characterization: ^{1}H NMR, ^{13}C NMR, IR and HRMS.

The most important (and tedious) part of getting ready to submit a first year report is making sure that all of the compounds you will be discussing are fully characterized. In that sense, you don't need to wait for the meeting about FYRs to start getting ready. Starting in the spring semester, it is best to make a checklist of all of the compounds that you have been using, and fully characterize them. This allows you to get ready slowly, and on your own time instead of rushing at the end.

Once you are ready to start writing the actual report, it may be helpful to first write an outline that you can go over with your advisor or an older student. This will ensure that you are on the right track before you put in a lot of work writing. Other great resources include old FYRs written by senior group members. Nothing is a better guide than a report written in the same field of work. After you have written your first draft of your report, you will want to have a few (2+) older graduate students edit it for both content and grammar. After these drafts, if possible, you will want to have your advisor read through it as well.

When you submit your report you will be able to choose two professors who will serve as readers. You will want to choose these members carefully because they will also be on your Qualifying Exam and Thesis Advisory committees, as well as eventually writing you letters of recommendation after graduate school. Ideally, they will have similar research interests to yours.

Your first year report will be returned before the end of the summer. There are three possible outcomes: 1) Accept as is, with out revision (this is rare), 2) Accept with 2 week revisions (this is the most common outcome), 3) Resubmit after 3+ month revision (this is very rare). The more drafts you do before you submit your report, the more likely it will be complete and polished, so the more likely it will be accepted outright.

The first year report is actually very useful. It is a great way to see how much you have been able to get done in your first year, and it should give you an idea about when you will be ready to give your GRS/GRC and take your qualifying exam. It also serves as a great outline for making your talk, which you will appreciate in your second year!

On the GRC/GRS

Matthew Francis - Professor of Synthetic Chemistry (mfrancis@berkeley.edu)

Regardless of the setting, professional scientists must be able to describe their research findings, develop interactive collaborations, and educate those around them. To foster the development of these and related communication skills, students in the Chemistry Graduate Program are required to present their research progress in the format of a formal seminar during their second year. The presentations are given in the Pitzer lecture hall and are attended by the majority of the synthetic students and the faculty. The talks are limited to 25 minutes in length, including a 5 minute "question and answer" session at the end. Although PowerPoint-based slide presentations are most commonly used, facilities are also available for overhead projector use.

Due to the diverse nature of the research in our department, the exact format of the seminars varies somewhat. However, all presentations should include a clear introduction that states the goals of the research project and its relevance to the overall scientific community. Commonly, the introductory section will also describe related work by other researchers in the field. From the faculty standpoint, this segment of the talk provides an excellent way to gauge a student's knowledge of the background literature, as well as their appreciation for the "big picture" aspects of the project.

Following this, experimental descriptions and obtained data should be presented clearly and succinctly. Invariably students will not describe all of the work that has been carried out; instead, the most relevant and informative results should be selected and emphasized. The data should be interpreted carefully and presented such that they can be understood by a diverse audience. The most successful talks create a sense of flow by linking the outcome of one experiment to the rationale for the next. In addition to being more satisfying scientifically, this "story" format provides an excellent way to maintain the attention of the listeners. Near the end of the seminar, the data should be summarized and a logical set of conclusions should be presented. Most talks also include a brief description of the future research directions that will be undertaken. Finally, the presentations should conclude by acknowledging coworkers who also contributed to the work. After the presentation, the students and faculty in the audience will have the opportunity to ask questions and to make suggestions for future work.

It should be noted that in most cases, the end goals of the research have not been reached by the time of the GRS. This is understandable, as the projects are usually expected to continue until the completion of the student's Ph.D. studies. However, each student is expected to demonstrate significant progress toward their research goals during the presentation. It is also critically important for the students to show that they have contributed to the intellectual development of their project, rather than simply carrying out the instructions of their advisor. Meeting these criteria ensures continued success as the student progresses through the Ph.D. program.

Many students and faculty have commented that they enjoy the GRS talks more than the regular departmental seminars. In addition to the consistently high quality of the talks, the seminars provide an invaluable opportunity to learn about a broad range of topics. Every effort is made by the faculty and the students to provide a supportive and welcoming atmosphere. To maintain this scientific environment and to provide support for their colleagues, students are strongly encouraged to attend as many of the GRS presentations as possible.

On the GRC/GRS

Chelsea Gordon, Graduate Student in Synthetic Chemistry (Bertozzi Group), (cggordon@berkeley.edu)

The GRS/GRC is an invaluable opportunity to develop your skills as a communicator. I'm sure you've heard this before, but the ability to give a clear, interesting, and well organized talk is extremely important, especially for scientists. So, instead of thinking of your upcoming GRS/GRC as a terrifying hurdle standing between you and your PhD, think of it as a golden opportunity to get tons of people to listen to all the awesome things you've been working on and give you advice about how to become a better communicator. Just remember that no one is out to get you, and everyone in the audience wants you to succeed.

Everyone is nervous about his/her GRS/GRC, but luckily, there are plenty of things you can do to make sure you are well prepared for the big day. First, you will need to make a presentation. Ideally, you will have completed a first draft of your slides 1-2 weeks before your scheduled talk. Your slides should give a general introduction and background information so that people in the audience can understand your amazing project and just why it is so amazing. Don't forget to make it abundantly clear *why* you are doing what you are doing. What is your motivation? Next, give a summary of your results to date. There is no need to cram in a full description of every single experiment you have done, but at the same time, you don't want to be so general that people are left with tons of questions and a poor understanding of your work. You want your slides to tell a detailed story, but not come across like a laundry list of experiments. I would recommend attending as many GRS/GRC presentations as possible during your first year so that you can get a good feel for the amount of data that is appropriate to include in a presentation.

Once you've finished your first draft, it's time to practice! Don't make the mistake of spending days polishing your slides before your first practice talk, because believe me they will change. A lot. So, a rough (though complete, so as not to annoy the people who are listening) first draft is all you'll need for your first few practices. Schedule these talks with people in your group as well as with graduate students in other labs. Your group members can help you pinpoint technical areas that need correction, whereas those outside your group and less familiar with your work can help you judge the clarity of your presentation. It's also a good idea to have people ask you questions about your research. This way you'll get in some practice for the Q&A section of your talk. The nice thing about the GRS/GRC is that everyone has to do it. As a result, older graduate students feel your pain and are generally more than happy to help you practice. It's a really nice way to meet people in other groups and get some productive feedback about your research. You're likely to receive extra-productive feedback if you bring snacks for your listeners. But this, of course, is not required.

After you've gone through a few practices, it's time to start making corrections and really perfecting your slides. If possible, I would highly recommend giving a final practice talk in 120 Latimer. This way you will know ahead of time if the projector is going to accurately project your slides. Pay careful attention to how colors translate to the big screen!

After you're finished with all of your practices and your slides are polished, you're ready to go! Generally, students discuss the order of presentations and make arrangements for laptops etc. with the other graduate student(s) presenting on the same day. Definitely make sure you have a backup copy of the presentation saved somewhere just in case! When it comes time to give your

presentation, try to relax and enjoy it! It's not often you get the attention of so many professors and students at once. Be proud of what you have accomplished so far!

How the examination is structured:

The qualifying examination is divided into two parts. The first part usually concentrates on the candidate's research, and the second part is devoted to a defense of the research proposal (synthetic chemistry students) or outside topic (physical chemistry students). At the beginning of each phase of the examination you will typically be asked to start with a short introduction to your research (or proposal/outside topic), followed by more detailed discussion during which the committee members will ask questions.

One thing that surprises many students is that at the beginning and one or two other times during the examination, you will probably be asked to leave the room for a few minutes. This is not meant to represent anything ominous--the committee uses those short periods to make some decisions about how to structure the examination, and to make sure the outside member is familiar with how QE's in chemistry are run.

Preparing for your examination

The questions on a qualifying exam are often designed to determine how you can think your way through a problem, rather than just asking you to regurgitate facts. However, even though this is the general goal of the examination, the following adage is true: "it is difficult to learn how to think if you don't have anything in your head to think about." Therefore, in preparing for the exam, try to identify the most important (not necessarily comprehensive or picky) things that you should know, and refresh your memory about them. For example, considering the goals of your research, it is important to know what papers in the literature might have discussed trying to reach that goal, and how the approach in the earlier work differed from yours. With respect to quantities that are important in your area of research, often ball-park values, as long as they are close enough to the correct ones, are ok. For example, you might do reasonably well by guessing that the bond dissociation energy in methane is 100 kcal/mol, even though that is not exactly the right answer. However, you will be in trouble if you guess that it is 20 or 1000 kcal/mol. It is also a good idea to have relative quantities in your memory. For example, even if you don't know the exact numbers, it is important to know that ammonia is more acidic than propene, rather than the other way around.

Another important aspect of the "what should I know" question is that the committee will expect that you know the most important things that you (should have) learned in your undergraduate and first-year chemistry courses. It is quite surprising how many students, in preparing for their exam, do not think to go back and review their course notes, exams, etc. from their first year courses. The committee will also expect you to have a good familiarity with the literature in your chosen field of research. It is very difficult to pick this up during the few weeks before the exam, so get in the habit of reading the literature regularly, and talking with your research advisor and other coworkers about papers that interest you, as soon as you join a group and begin working on your project.

Don't listen to anyone who tells you that the faculty members are out to "get" students by failing them. The members of the faculty are serious about setting a good intellectual standard for passing the exams, but it is important to the department to keep the failure and attrition rate low, so no one is happy when someone doesn't get through his or her exam the first time. Faculty members have

nothing to gain by making anyone come back for a repeat exam. Furthermore, all of us can say from personal experience that having to tell a student that s/he has failed an exam is one of the least pleasant jobs that a faculty member can have, and the chair will typically try as hard as possible to avoid having to carry out this task. So please believe that nobody wants to fail a student, and you will therefore be doing everyone a favor if you prepare for the exam effectively and perform well enough to pass the first time you take it.

Because there are so many different committees, and oral exam evaluation is inevitably subjective, it is impossible to run all the exams in exactly the same way. If for some reason you do not make it through your exam the first time, we realize it is discouraging--but please try not to give up hope. Talk extensively with your chair and your advisor, and try to correct the problems that the committee identified, rather than giving in to the feeling that you have been treated unfairly. Nearly everyone who listens carefully to the chair's advice and takes the exam a second time passes and goes on to a Ph. D. It is somewhat ironic, but true, that if you can avoid the feeling that failing your first exam is the end of the world, this attitude will actually help to prevent you from getting into a situation in which stress limits your ability to think and answer questions clearly and logically, and actually improve your ability to pass.

Because the type of questioning that is characteristic of qualifying examinations (see below) is different from what most people have experienced, an absolutely crucial aspect of preparation is to schedule (preferably several) practice examinations. This should start a substantial length of time before the date of your examination, so that you can develop an intuitive understanding of how the questioning works. In some groups, the research advisor participates in some or all of these practices--this is often important, because he or she obviously has had more experience posing the types of questions that occur during qualifying examinations. However, if your advisor does not do this, at least set up these practice exams with your coworkers. You could also look into the possibility of sitting in on practice exams that other research advisors hold for their second-year students.

You are required to meet with your committee chair to obtain approval of your outside topic or proposal. However, you should make an effort to talk more extensively with your chair about the exam in general, especially to discuss any concerns you may have about the experience. It is also good to get to know the other members of your committee. It is not a good idea to go into your examination with the committee members hardly knowing who you are. Establishing a relationship with them (including your outside member) will inevitably increase their understanding of your work and their support for your goals, which will help make your mutual interaction more comfortable during the exam.

The way exams work

One important goal of the qualifying exam is to establish whether a student is approaching his or her problem as an independent researcher, rather than operating more like an assistant to the research advisor, or to a senior student or postdoc who may be working on the same or a related problem. Therefore, a good thing to ask yourself is the following: what would I have to know, what concepts would I have to be in control of, and what literature would I have to know in detail, if I were managing this project myself, with no one else around to fall back on? The committee will try to establish through its questioning whether the student has taken the initiative to "own" his or her research project at this level of responsibility. Because of this goal, a classic question that often comes up in QE's is "why are you working on this problem"? You should be able to justify the rationale for your project clearly and convincingly, and in your own words. This also holds true about

the day-to-day design of your work. If you are asked why you did a particular experiment, it is not a good idea to say, "because my research advisor (or anyone else) told me to do it". Certainly consulting with your research advisor and laboratory coworkers is important, but the committee will expect that you have played a significant role in directing the course of your own research.

If you have not had a lot of experience with oral examinations, you may find that the nature of questioning that occurs during a qualifying examination seems unusual or confusing. For example, the following scenario often occurs. A committee member (CM) asks a question, and the student (S) offers an incorrect or incomplete answer. So CM asks another question. S may have trouble with that question, too, which will prompt CM to ask yet another question. This can often go on for a while. The result: S perceives that s/he is being asked a series of unrelated questions, and is being given no feedback about whether the answers are right or wrong--or maybe that the answers are wrong, but s/he is not being told how to correct them. CM perceives that S is being unresponsive to attempts to help S understand the questions. The result of this is that CM gets increasingly frustrated, and S gets increasingly stressed out.

What is really going on here? In actuality, the reason CM keeps asking more questions is that each subsequent question is related to the earlier one, but is meant to be somewhat easier than the earlier one, and is thus meant to provide a hint to help the student answer the earlier questions. However, if S does not understand that the questions are related to one another, it is often difficult to see any pattern in the questioning, and it becomes harder to figure out the answer. So it is important to understand that this method of questioning/hinting goes on all the time in qualifying examinations.

The key to doing well in this process is to keep track of the earlier questions while thinking about subsequent ones, so that the relationship between the questions can be figured out. Once that relationship is perceived, often the answer to all the questions becomes apparent at once. If S not only answers one of the questions, but volunteers that s/he sees how the series of questions is interconnected, this invariably brings smiles and head-nodding from members of the committee (because, as noted above, they are becoming confident that they will not have to come back for another exam!). Often it is the recognition of these "relationships" that the committee member is actually looking for in the student's responses.

Finally, try to avoid going for long periods of time without saying anything because you are trying to silently work out the answer to a question. It is important to stay in clear and constant communication with the members of the committee during the exam. You should think carefully about questions you are asked before you start responding, but it is a good strategy to "think out loud", and get your initial thoughts on the blackboard, so that the committee member can use the sequential-question method described above to help you reach the understanding s/he is trying to lead you toward. It is also important to ask for clarification about questions you do not understand.

Because of the above style of questioning, another unexpected aspect of QE's is that the questions may or may not stick closely to the student's presentation. A typically astonished comment from many students after their exam is, "They spent hardly any time asking me about my research (or proposal, or outside topic)." The reason for this is that another goal of the QE is to make sure that the student is in control of the most fundamental concepts in his or her field. Therefore, committee members will often use a particular aspect of a student's presentation to branch off into a more fundamental, or textbook-type, question that is related to the subject that the student had been discussing. The multiple-question format described above can then take the discussion quite far

from the original topic.

At the other end of the performance spectrum, QE committees are also trying to establish not just whether students have adequate understanding of their research and general field, but what the "outer limits" of their understanding are. Therefore, students are often perplexed to find that if they are performing well on a topic, the committee may abruptly drop it and go on to something else (usually something more complicated). This is often a good sign--it means the committee is satisfied with the student's performance in one area, and wants to "push the envelope" and find an area that the student is less familiar with, to see how s/he analyzes a new or unexpected question. Sometimes the exams move into areas that are quite unknown, and cover topics that committee members might be interested in, but have not reached a clear-cut answer to themselves. If this happens, you should try not to worry if all the answers do not pop into your head immediately. It means that the committee has a lot of confidence in your ability to handle basic questions, and wants to see how you deal with something more complicated (and usually more interesting). For the few students who do not get through their QE the first time, it is not because they do not understand something complicated--it is much more often because they have had difficulty answering questions that the committee felt were much simpler or more fundamental. Most people who do not do well are unable to communicate even broad swaths from junior/senior-level undergraduate courses and, in the most disappointing cases, even from freshman chemistry. It may seem strange to recommend that you refresh your understanding of such basic material in preparation for your QE, but you really do not want to be caught struggling to answer questions that your committee will undoubtedly feel "every chemist should know."

Believe it or not, many examinations (after the first few minutes of nervousness, which essentially everyone experiences) go very well, and are an intellectually satisfying experience for both the committee and the student. If you can maintain your confidence that it is possible for this to happen in your case, you will maximize the chances of doing actually making it a profitable educational experience, and of getting to that bottle of champagne that is waiting for you in your laboratory after the exam.

On the Qualifying Exam

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(Adam took the Physical version of QE)

"DON'T PANIC" – Douglas Adams

The qualifying examination is one of the defining moments of the first half of graduate school. The courses, talks, and research you've experience will have prepared you. In considering the following advice on the qual, it's important to have a healthy mindset:

The qualifying exam is intimidating only if you let yourself be intimidated. It is ultimately a test of your ability to speak cogently on science (both your own experiments, and those of others.) After graduate school, you'll no longer be sitting down to take exams that determine your knowledge of a topic; your tests will be to describe your work to others. Your goal in your pre-qual preparations should be to become comfortable with your experiment and your field, to the extent that you can answer questions, and make reasonable guesses about questions you hadn't expected.

Getting Started:
In May of your first year, you'll receive the first paperwork for your exam, allowing you to choose a date, a committee, and the material on which you'll be tested. Your responses are a guide by which whomever is assigning members to your committee can get a handle on roughly what sort of work you do.

This is a good time to have a meeting with your advisor; some advisors have strong preferences as to whom you request for your exam and when you request to take it. Their advice can be invaluable in the first steps of preparation. It is also critical to visit your advisor because of their role in the qualifying exam: they will be writing a letter on your behalf to the examination committee. It's a good idea to be certain that your advisor feels you are on the right track in your graduate career.

While choosing a time for your qual is a matter of personal preference, it will have an effect on when you choose to GSI in the upcoming year, and how you'll plan your studies. It's best to avoid taking your qualifying exam during the same semester in which you GSI; studying is much easier if you aren't under pressure from other work. If you feel a high degree of comfort with your research and you've accomplished a lot in your first year, taking your exam in the fall will get it out of the way. If more time to prepare and do research sounds appealing, spring is a better choice. Consider the date of your qual as approximate; it's often the case that scheduling conflicts amongst the various professors on your committee can lead to the date of the qualifying exam being moved by up to a month.

Choosing a Committee:
Though you do not have complete control over the professors assigned to your committee, you'll typically get at least two of your three choices. Rather than choosing three professors who all do work that is very similar to yours, it's best to choose professors who represent a broad variety of fields that are relevant to your experiment. It's often a good idea to consult with your group members and advisor for suggestions.

Later in the summer, you'll also choose an outside member. This member of your committee should be another Berkeley professor with no connection to the Chemistry Department (though Chemical Engineering is fine.) They act as a unique viewpoint on your committee. It is your responsibility to find this professor yourself. Many graduate students consult with their research groups on this choice. It's also worthwhile to check faculty listings in other departments to find professors who might do applicable work. You should contact this faculty member yourself.

Studying and Preparation:
In the months leading up to your qualifying exam, it's a good idea to focus on two key areas: (1) learning the details of your experiment, including any necessary theoretical justifications for why it should work and (2) the background material of your field, including any seminal papers on similar experiments with which a professor might be familiar. Your general goal should be to acquire the knowledge you need to make informed decisions about your own work—to become an expert in your own experiment.

About eight to nine weeks before your qualifying exam, it's a good idea to start thinking about tasks to be completed before you take the exam. Depending on whether you're taking a physical or synthetic qual, you'll want to begin planning for the outside topic portion of your qualifying exam. For physical students, this means searching the literature for a high-impact paper to present. For synthetic students, this means beginning to brainstorm an experiment for your proposal. Once you think you have a few good choices of paper or project selected, it's wise to meet with your advisor and get her input. This is also a good time to meet with the chair of your committee—both to get to know her, and to check with her on the outside topic you've chosen.

Eight to nine weeks pre-qual is also time to start studying for your exam in earnest. There are a few particularly effective techniques:

1. Read through your lab notebook and familiarize yourself with the details of your experiment. This might mean knowing the conditions for a reaction, or being able to sketch a part of your experimental apparatus. You want to get comfortable with the details of your experiment that are not always necessary to make things work on a daily basis, but are important for describing why the experiment works.
2. Read an upper-level undergraduate text book. Physical students, for instance, will often reread their physical chemistry book. Because the qualifying exam puts a premium on confidence with basic material and having a strong background, this is a great way to refresh yourself on the fundamentals. Your goal should not be to know everything about everything, but rather to know enough about the right things.
3. As you begin to synthesize your chemical knowledge, you'll also be working on preparing your GRC/GRS presentation. This is a great chance to think about the important points regarding your experiment, and the story that you want to tell. Having a strong experimental narrative makes the qualifying exam less complicated; as you finish answering one question, you can return to your narrative.

Practicing:
Once you've studied and practiced the narrative of your qual, most students choose to have at least one practice exam, during which fellow grad students and post-docs will behave as an *ad hoc* exam committee. If it's feasible, choose graduate students from several relevant research groups, to get a variety of perspectives on the exam.

Though not everyone does practice exams, they can be a good way to raise your confidence, if conducted well. Some qual skills are only refined during a qual-like experience. A practice qual is a chance to practice using the black/whiteboard efficiently; it's important to be able to draw meaningful and clear figures to describe your work. Practice exams can sometimes be stressful, however; avoid practice exams in the two weeks before your qual date.

Taking the Exam:
The night before your exam, try to relax and do something non-science-related. Cramming one more equation can add a lot of stress with little benefit. Get a good night's sleep, and try to have a good breakfast. Make sure to bring water with you to the exam; if you need a moment to think about a question, pausing to drink is a great cover.

Your exam will take place in a professor's office—most frequently your chair's. Typically, upon arrival, you'll wait in the room for all of the professors to arrive. After greeting them, your chair will send you to wait outside while the professors discuss how they'll approach your exam. This can be the most nerve-wracking part of the qual, but remain calm.

You'll be called into the room, and the chair will typically start you off by saying, "Why don't you tell us a bit about your experiment."

Your committee will likely give you about five minutes to talk about your work without interrupting, to help you get comfortable. After a while, they will ask some casual questions. Typically, if you can answer the question correctly, they'll move on. If you give an answer that wasn't quite what they expected, the professors will ask more leading questions to try to help you find the correct answer.

There will always be some questions that you cannot answer; this isn't a problem. Professors are much more interested in evaluating how you respond to a new topic with which you might not be familiar. After speaking on your inside topic for an hour or so, you'll be sent outside again while the professors discuss the exam again. You'll then return to cover your outside topic in much the same manner as your inside topic. After the outside topic, you'll go outside while the professors discuss whether you have passed. The decision must be unanimous. They'll have you return to hear the results, then have a one-on-one meeting with your chair, during which she'll deconstruct your performance.

After the Exam:
If you passed your qualifying exam, it's traditional to take a few days off. This is a good time to decompress, but also to evaluate the state of your research. With fewer formal requirements in your graduate education post-qual, it's worth thinking about where you'd like to take your research and plan the next few years. Feelings of malaise are common after the intensity of the exam itself.

If you did not pass one or both parts of the qualifying exam, it's time to consider the future direction of your graduate work. For many students who fail their exam the first time, there is a realization that graduate school is not what they want to be doing. At this time, these students may choose to leave with a master's degree. For others, failing to pass on the first try is a wake-up call that they need to rededicate themselves to their study. Students who choose to take the qualifying exam a second time typically pass.

Final Thoughts:
The qualifying exam is hyped as the "make-or-break moment" in your graduate life. Though it should

not be taken lightly, the qual is really an excellent opportunity to polish your scientific and speaking skills. Approach it with a level head, and you shouldn't have trouble.

On Finding a Job

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Decide what kind of job you want, whether it is a post-doctoral scholarship, an industry job, a teaching position, a consulting position, or whatever you can think of. Talk to people who had gotten a job of that nature. If you do not know anyone in that particular field, ask your friends, use your Facebook, Twitter, Google Plus, or LinkedIn network to find someone willing to help you. Speaking of social networking, make sure your profiles reflect the image you want to put out of yourself-monitor your pictures, your posts, and your friends' posts on your wall to show your qualification for jobs.

Get a Linked In account. Chemists have been recruited directly off the resume they have posted to Linked In. Follow the jobs that are posted, and gather as many connections as you can. Get your account fully set up with recommendations, resume, etc.

Ask your friends, mentors, and connections to pass on job opportunities to you, go over your resume, and listen to all of the advice you can get. Make sure your resume and curriculum vitae (CV) have been read over by someone in your field.

Network. Go to parties and meet other chemists, go to cocktail hours and meet people in other fields. You can never know enough people and these people will ultimately help you find the right job. Make sure you have business cards to pass out at conferences and social gatherings. Ask the administrative assistant in your lab for help. Visit the Career Center at UC Berkeley. They can help find positions, go over resumes, etc.

Use American Chemical Society resources. ACS (www.acs.org) has many resources on finding a job, how to interview correctly, and interviews at their national meetings. Going to an ACS national meeting (Spring or Fall) and doing the job fair is one of the best ways to get an industry job and meet potential employers. On the ACS website, both resumes and jobs are posted to connect employers with chemists.

Talk to your recommenders. Many positions require at least three letters of recommendation, which can be difficult at a place as large as Berkeley. Make sure you get to know your recommenders well (usually your research advisor and members of your qualifying exam committee) and that they know the research you pursue after your qualifying exam.

It is never too early to start thinking about the job you want and building your network.

On Life in the Bay Area

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It's hard to believe that you'll have any free time while in graduate school at Berkeley, as we are in one of the top chemistry programs in the country. While mainly true, you'll still find yourself itching to explore the many treasures that the Bay Area has to offer. Besides, everyone needs a break from grueling life as a graduate student. Luckily, you will come across many welcomed distractions during your time here.

Nestled against the Pacific, the Bay Area has historically been a place of great diversity with cultures and ethnicities differing from neighborhood to neighborhood. Whether it is food, music, theatre or sporting events, there is something for everyone from all parts of the world. Sometimes, the adventure of discovering new spots to eat, or parks to hike is just as much fun as the places themselves. For example, simply walk down Telegraph Ave and you will find a plethora of restaurants and interesting sights and sounds. Or if you prefer to be more adventurous, head across the bridge to San Francisco where there is always something fun and new to experience regardless of what day it is.

Venturing outside of Berkeley to nearby cities is convenient with available public transportation options from AC Transit and BART. Like Berkeley, both cities offer an exotic array of food and drink options. In addition, since both cities border bodies of water, the delicious fresh seafood is abundant.

For those of us from land-locked regions of the world, we now have the opportunity to enjoy our beautiful ocean and the potential activities that come with it. All water sports are aplenty in the bay and along the coast, including sailing and surfing; Cal offers classes to learn both of these at the Marina. With occasional warm weather throughout the summer, it's nice to relax at one of San Francisco's many beaches, including Ocean Beach and Baker Beach. For a setting outside of the city, head to Muir Woods and Point Reyes where you will be immersed in nature and beautiful scenery.

During the winter months, it is suggested to head to Lake Tahoe, a perfect resort three hours northeast of the Bay, for some world-renowned skiing, hiking, and camping. However, if you prefer to stay indoors, the Museum of Modern Art and the deYoung Museum in San Francisco are also beautiful options.

Ultimately, regardless of your interests, you will find exactly what you’re looking for in the Bay Area since the possibilities are endless. The world is literally at your doorstep.

On the Purpose of a Graduate Education

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Your graduate school education will be profoundly different from the education that you've had to date. It's true that your first couple of years will be similar to your college education. You'll attend classes, you'll do problem sets, and you'll study late into the night. You'll read papers feverishly, and you'll become an expert in your field. In graduate school, though, you don't study and learn just for its own sake. The reason you do these things is to put yourself in the position where you can generate more knowledge. Until now, you've been a consumer of knowledge, but in graduate school, you will produce it.

It's easy to explain why engineers and doctors, for example, go to school. They learn how to build bridges and how to cure patients. Learning how to produce knowledge, though, is often frustrating because the end result is intangible, and you usually can't sell it. Granted, your research may eventually lead to a better bridge or a miracle drug, but those applications are usually so far away that they're impossible to see. And it's true that by the time you graduate, your engineer and doctor friends from college will be earning much more than you are. So why go into research at all?

Academic research is worth it precisely because there is no pre-specified goal. You are neither a slave to the market nor to the bottom line. The fact that there's no tangible product is the very thing that gives you so much freedom in your graduate career. When you find something interesting, you can follow it up. Indeed, many impactful discoveries start with a serendipitous observation – an occasional weirdness or a minor inconsistency – that someone looked into entirely out of curiosity.

In fact, your curiosity is your best protection against drudgery and burn-out. You're here because you like to experiment and see what happens. When you can think up an experiment, and you're genuinely itching to see what will happen, it makes all the tedious steps in between go by faster. And Berkeley is the best place you could dream of to do your experiments. You're guaranteed to be at the cutting edge of whatever area of chemistry you choose to study. The faculty and your fellow students are among the brightest people in the world. In your five or six years here, you'll become the world expert on your project and a specialist in your field, and you can do it all while getting paid.

So take advantage of everything available to you at Berkeley. Focus on your project, but keep Hyour mind open to other areas of chemistry. You can't anticipate or force serendipity, but you can prepare for it. If you learn as much as you can and stay curious, then you're bound to stumble upon something that turns out to be terrific.

If you encounter problems during your graduate career, there are a number of people you can turn to for help, depending on the nature of the problem. To start, you can contact members of the Graduate Life Committee, Lynn Keithlin, or your peer advisors. If you have questions or concerns about whom to contact, see Lynn Keithlin. If needed, the non-partisan University Ombudsman can help mediate conflicts and facilitate communication between you, your advisor and the department. Counseling Services are also available at the Tang Center. For specific situations that may occur, we have provided a listing of the formal department and university procedures for mediation:

Excessive Teaching Loads

Teaching loads at Berkeley are agreed upon by union contract and are designed to be fair across different types of instruction. In case you are asked by the professor teaching your class to work more than the allotted time agreed to in your teaching contract, or if you find you have a personal conflict with the faculty member teaching the course, follow these guidelines for working out the problem:

1. Start by talking with your course instructor to discuss your load. See if you can work out an alternative teaching schedule or duties.
2. If the load continues to be a problem, contact the Student Affairs Manager in 419 Latimer. S/he will work with the director of instruction and your faculty instructor.
3. If you still have problems with your teaching workload, contact the GSI union at berkeley@uaw2865.org or by phone at 510-549-3863. You can also read the details of the current GSI union contract with the university online at: http://www.uaw2865.org/resources/current-uaw-contract/.

Excessive Pressure to Perform Lab Work

While work loads at Berkeley are heavy, they should not be burdensome, cause depression, or otherwise affect your personal life. In cases where you are being asked to perform an excessive amount of lab work, the department has worked out the following procedure for resolving the pressure between you and your Principal Investigator.

1. Start by talking to your advisor. The only way for them to know that you feel like you've been given too heavy of a load is to tell them. See if you can work out a more reasonable amount of work for your project.
2. In case the excess work continues, or if you are uncomfortable speaking with your advisor, setup a meeting with Lynn Keithlin, Graduate Student Affairs Officer (keithlin@cchem.berkeley.edu). She will work with you and your advisor to resolve these issues.
3. At any point, or if any previous resolution is inconclusive, the university ombudsman can provide further assistance for mediating problems between you and your advisor. The ombudsman is a strictly confidential, secure, third party designed and empowered by the university to act as an impartial judge for conflict resolution (642-5754).

Appealing College and Department Administrative Decisions

In accordance with the provisions of the Guide to Graduate Policy (Appendix A), it is necessary for the Chemistry Department to have a procedure for appeals of "*those administrative or academic decisions that terminate or otherwise impede the progress of a Berkeley graduate student toward his or her academic or professional degree goal*." The following procedure has been established:

1. A graduate student who has been dismissed from graduate standing, who has been placed in a probationary status, or whose academic progress has otherwise been impeded by administrative or academic decision, has the right to appeal that decision. The individual making such a decision is obligated to inform the graduate student of his or her right to appeal under these procedures.
2. The appeal should be lodged, in writing, within 14 calendar days after the student is made aware of the decision. The written appeal should be delivered to the Chair of the Chemistry Department. If the appeal pertains to a decision made by a Vice Chair of the Department or by the student's research director, a copy of the appeal must be delivered to that individual as well as to the Department Chair.
3. Upon receiving the written appeal, the Department Chair will appoint an ad hoc committee to consider it. The ad hoc committee will normally consist of the three Vice Chairs of the Department, plus one professor to be named by the student. If the decision being appealed was made by one of the Vice Chairs, that person will not serve on the ad hoc committee. In such a case, the Department Chair will appoint a fourth member of the committee from the Chemistry Department faculty. The ad hoc appeals committee will be constituted within fourteen (14) calendar days of receipt of the written appeal.
4. Within twenty-one (21) calendar days after receipt of the written appeal in the Chemistry Department office, the ad hoc appeals committee will meet to consider the appeal. The committee will make a written recommendation to the Department Chair, who will make the final decision on the appeal. The Department Chair will notify the student of the outcome of the complaint within sixty days from written receipt of the appeal.
5. If the decision on the appeal is negative, the student has the right to further appeal to the Dean of the College of Chemistry or to the Dean of the Graduate Division, as provided in Appendix A of the Graduate Advisor's Handbook.
6. The full Graduate Appeals Procedure (approved April 27, 1998) is available at the Graduate Division website at http://www.grad.berkeley.edu/degrees/pdf/gradappeal.pdf

Berkeley Campus Procedures for Responding to Reports of Sexual Harassment

The campuses, DOE Laboratories, Medical Centers, the Office of the President, including Agriculture and Natural Resources, and all auxiliary University locations (the locations) shall implement the following procedures for responding to reports of sexual harassment.

The primary purpose of these procedures is (1) to offer sexual harassment training and education to all members of the University community and to provide, consistent with California Government Code 12950.1, sexual harassment training and education to each supervisory employee; (2) to provide all members of the University community with a process for reporting sexual harassment in accordance with the policy; and (3) to provide for prompt and effective response to reports of sexual harassment in accordance with the policy.

These procedures also cover reports of retaliation related to reports of sexual harassment. Any exceptions to these procedures must be approved by the Senior Vice President for Business and

Finance. Up to date information can be found on the web at https://ophd.berkeley.edu/ or http://survivorsupport.berkeley.edu/report/how-to-report.

A. Procedures for Reporting and Responding to Reports of Sexual Harassment

1. Making Reports of Sexual Harassment

All members of the University community are encouraged to contact the Title IX Compliance Coordinator (Sexual Harassment Officer) if they observe or encounter conduct that may be subject to the University's Policy on Sexual Harassment. Reports of sexual harassment may be brought to the Title IX Compliance Coordinator (Sexual Harassment Officer), to a human resources coordinator, or to any manager, supervisor, or other designated employee responsible for responding to reports of sexual harassment. If the person to whom harassment normally would be reported is the individual accused of harassment, reports may be made to another manager, supervisor, human resources coordinator, or designated employee. Managers, supervisors, and designated employees shall be required to notify the Title IX Compliance Coordinator (Sexual Harassment Officer) when a report is received.

Reports of sexual harassment shall be brought as soon as possible after the alleged conduct occurs, optimally within one year. Prompt reporting will enable the University to investigate the facts, determine the issues, and provide an appropriate remedy or disciplinary action. The Berkeley campus shall respond to reports of sexual harassment brought after one year to the greatest extent possible, taking into account the amount of time that has passed since the alleged conduct occurred.

2. Options for Resolution

Individuals making reports of sexual harassment shall be informed about options for resolving potential violations of the Policy on Sexual Harassment. These options shall include procedures for Early Resolution, procedures for Formal Investigation, and filing complaints or grievances under applicable University complaint resolution or grievance procedures. Individuals making reports also shall be informed about policies applying to confidentiality of reports under this policy (see E. below). The campus shall respond, to the greatest extent possible, to reports of sexual harassment brought anonymously or brought by third parties not directly involved in the harassment. However, the response to such reports may be limited if information contained in the report cannot be verified by independent facts.

Individuals bringing reports of sexual harassment shall be informed about the range of possible outcomes of the report, including interim protections, remedies for the individual harmed by the harassment, and disciplinary actions that might be taken against the accused as a result of the report, including information about the procedures leading to such outcomes.

An individual who is subjected to retaliation (e.g., threats, intimidation, reprisals, or adverse employment or educational actions) for having made a report of sexual harassment in good faith, who assisted someone with a report of sexual harassment, or who participated in any manner in an investigation or resolution of a report of sexual harassment, may make a report of retaliation under these procedures. The report of retaliation shall be treated as a report of sexual harassment and will be subject to the same procedures.

3. Procedures for Early Resolution

The goal of Early Resolution is to resolve concerns at the earliest stage possible, with the

cooperation of all parties involved. The Berkeley campus encourages Early Resolution options when the parties desire to resolve the situation cooperatively and/or when a Formal Investigation is not likely to lead to a satisfactory outcome. Early Resolution may include an inquiry into the facts, but typically does not include a formal investigation. Means for Early Resolution shall be flexible and encompass a full range of possible appropriate outcomes. Early Resolution includes options such as mediating an agreement between the parties, separating the parties, referring the parties to counseling programs, negotiating an agreement for disciplinary action, conducting targeted educational and training programs, or remedies for the individual harmed by the harassment. Early Resolution also includes options such as discussions with the parties, making recommendations for resolution, and conducting follow-up after a period of time to assure that the resolution has been implemented effectively. Early Resolution may be appropriate for responding to anonymous reports and/or third party reports. Steps taken to encourage Early Resolution and agreements reached through early resolution efforts should be documented.

While the University encourages early resolution of a complaint, the University does not require that parties participate in Early Resolution prior to the University's decision to initiate a formal investigation. Some reports of sexual harassment may not be appropriate for early resolution, but may require a formal investigation at the discretion of the Title IX Compliance Coordinator (Sexual Harassment Officer).

4. Procedures for Formal Investigation

In response to reports of sexual harassment in cases where Early Resolution is inappropriate (such as when the facts are in dispute in reports of serious misconduct, or reports involve individuals with a pattern of inappropriate behavior or allege criminal acts such as stalking, sexual assault or physical assault) or in cases where Early Resolution is unsuccessful, the campus may conduct a Formal Investigation. In such cases, the individual making the report shall be encouraged to file a written request for Formal Investigation. The wishes of the individual making the request shall be considered, but are not determinative, in the decision to initiate a Formal Investigation of a report of sexual harassment. In cases where there is no written request, the Title IX Compliance Coordinator, in consultation with the administration, may initiate a Formal Investigation after making a preliminary inquiry into the facts.

Formal Investigation of reports of sexual harassment shall incorporate the following standards:

1. The individual(s) accused of conduct violating the Policy on Sexual Harassment shall be provided a copy of the written request for Formal Investigation or otherwise given a full and complete written statement of the allegations, and a copy of the Policy on Sexual Harassment and Procedures for Responding to Reports of Sexual Harassment.
2. The individual(s) conducting the investigation shall be familiar with the Policy on Sexual Harassment and have training or experience in conducting investigations.
3. The investigation generally shall include interviews with the parties if available, interviews with other witnesses as needed and a review of relevant documents as appropriate. Disclosure of facts to parties and witnesses shall be limited to what is reasonably necessary to conduct a fair and thorough investigation. Participants in an investigation shall be advised that maintaining confidentiality is essential to protect the integrity of the investigation.
4. Upon request, the complainant and the accused may each have a representative present when he or she is interviewed. Other witnesses may have a representative present at the discretion of the investigator or as required by applicable University policy or collective bargaining agreement.

5. At any time during the investigation, the investigator may recommend that interim protections or remedies for the complainant or witnesses be provided by appropriate University officials. These protections or remedies may include separating the parties, placing limitations on contact between the parties, or making alternative working or student housing arrangements. Failure to comply with the terms of interim protections may be considered a separate violation of the Policy on Sexual Harassment.
6. The investigation shall be completed as promptly as possible and in most cases within 60 working days of the date the request for formal investigation was filed. This deadline may be extended on approval by the relevant Vice Chancellor.
7. Generally, an investigation should result in a written report that at a minimum includes a statement of the allegations and issues, the positions of the parties, a summary of the evidence, findings of fact, and a determination by the investigator as to whether University policy has been violated. The report also may contain a recommendation for actions to resolve the complaint, including educational programs, remedies for the complainant, and a referral to
   disciplinary procedures as appropriate. The report shall be submitted to the appropriate UCB official with authority to implement the actions necessary to resolve the complaint. The report may be used as evidence in other related procedures, such as subsequent complaints, grievances and/or disciplinary actions.
8. The complainant and the accused shall be informed promptly in writing when the investigation is completed. The complainant shall be informed if there were findings made that the policy was or was not violated and of actions taken to resolve the complaint, if any, that are directly related to the complainant, such as an order that the accused not contact the complainant. In accordance with University policies protecting individuals' privacy, the complainant may be notified generally that the matter has been referred for disciplinary action, but shall not be informed of the details of the recommended disciplinary action without the consent of the accused.
9. The complainant and the accused may request a copy of the investigative report pursuant to University policy governing privacy and access to personal information.[1] However, the report shall be redacted to protect the privacy of personal and confidential information regarding all individuals other than the individual requesting the report in accordance with University policy.

B. Complaints or Grievances Involving Allegations of Sexual Harassment

An individual who believes he or she has been subjected to sexual harassment may file a complaint or grievance pursuant to the applicable complaint resolution or grievance procedure listed in Appendix II: University Complaint Resolution and Grievance Procedures (found at: https://ophd.berkeley.edu/) . Such complaint or grievance may be filed either instead of or in addition to making a report of sexual harassment to the Title IX Compliance Coordinator (Sexual Harassment Officer) under this policy. A complaint or grievance alleging sexual harassment must meet all the requirements under the applicable complaint resolution or grievance procedure, including time limits for filing.

If a complaint or grievance alleging sexual harassment is filed in addition to a report made to the Title IX Compliance Coordinator (Sexual Harassment Officer) under this policy, the complaint or grievance shall be held in abeyance subject to the requirements of any applicable complaint resolution or grievance procedure, pending the outcome of the Early Resolution or Formal Investigation procedures. If the individual wishes to proceed with the complaint or grievance, the Early Resolution or Formal Investigation shall constitute the first step or steps of the applicable

complaint resolution or grievance procedure.

An individual who has made a report of sexual harassment also may file a complaint or grievance alleging that the actions taken in response to the report of sexual harassment did not follow University policy. Such a complaint or grievance may not be filed to address a disciplinary sanction imposed upon the accused. Any complaint or grievance regarding the resolution of a report of sexual harassment under this procedure must be filed in a timely manner. The time period for filing begins on the date the individual was notified of the outcome of the sexual harassment investigation or other resolution process pursuant to this policy, and/or of the actions taken by the administration in response to the report of sexual harassment, whichever is later.

C. Remedies and Referral to Disciplinary Procedures

Findings of violations of the Policy on Sexual Harassment may be considered in determining remedies for individuals harmed by the sexual harassment and shall be referred to applicable campus disciplinary procedures (https://ophd.berkeley.edu/). Procedures under this policy shall be coordinated with applicable campus complaint resolution, grievance, and disciplinary procedures to avoid duplication in the factfinding process whenever possible. Violations of the policy may include engaging in sexual harassment, retaliating against a complainant reporting sexual harassment, violating interim protections, and filing intentionally false charges of sexual harassment. Investigative reports made pursuant to this policy may be used as evidence in subsequent complaint resolution, grievance, and disciplinary proceedings as permitted by the applicable procedures.

D. Privacy

The University shall protect the privacy of individuals involved in a report of sexual harassment to the extent required by law and University policy. A report of sexual harassment may result in the gathering of extremely sensitive information about individuals in the University community. While such information is considered confidential, University policy regarding access to public records and disclosure of personal information may require disclosure of certain information concerning a report of sexual harassment. In such cases, every effort shall be made to redact the records in order to protect the privacy of individuals. An individual who has made a report of sexual harassment may be advised of sanctions imposed against the accused when the individual needs to be aware of the sanction in order for it to be fully effective (such as restrictions on communication or contact with the individual who made the report). However, information regarding disciplinary action taken against the accused shall not be disclosed without the accused's consent, unless it is necessary to ensure compliance with the action or the safety of individuals.

E. Confidentiality of Reports of Sexual Harassment

Confidential resources, identified in Appendix I of these procedures, provide members of the University community who may be interested in talking to someone about a sexual harassment situation, with a safe place to discuss their concerns and learn about the procedures and potential outcomes involved. Confidential resources include campus ombudspersons and/or licensed counselors in employee assistance programs or student health services. Because content of discussions with confidential resources is not reported to an office of record, such discussions do not serve as notice to the University to address the alleged sexual harassment. However, individuals should be informed of the appropriate campus offices to which sexual harassment incidents may be reported in a manner that the University is put on notice that it may need to address the alleged sexual harassment.

The Title IX Compliance Coordinator (Sexual Harassment Officer), all other resources listed at the end of this appendix of these procedures, managers, supervisors, and other designated employees have an obligation to respond to reports of sexual harassment, even if the individual making the report requests that no action be taken. An individual's requests regarding the confidentiality of reports of sexual harassment will be considered in determining an appropriate response; however, such requests will be considered in the dual contexts of the University's legal obligation to ensure a working and learning environment free from sexual harassment and the due process rights of the accused to be informed of the allegations and their source. Some level of disclosure may be necessary to ensure a complete and fair investigation, although the University will comply with requests for confidentiality to the extent possible.

F. Retention of Records Regarding Reports of Sexual Harassment

The office of the Title IX Compliance Coordinator (Sexual Harassment Officer) is responsible for maintaining records relating to sexual harassment reports, investigations, and resolutions. Records shall be maintained in accordance with University records policies, generally five years after the date the complaint is resolved. Records may be maintained longer at the discretion of the Title IX Compliance Coordinator (Sexual Harassment Officer) in cases where the parties have a continuing affiliation with the University. All records pertaining to pending litigation or a request for records shall be maintained in accordance with instructions from legal counsel.

[1] UC Business and Finance Bulletin RMP-8, Legal Requirements on Privacy of and Access to Information.

Berkeley Campus Sexual Harassment Resources

The Sexual Harassment Policy, Complaint Resolution Procedures, contact information for the Title IX Compliance Officer and other campus resources are on the website at https://ophd.berkeley.edu/about/staff

1. Title IX Compliance Coordinator (Sexual Harassment Officer)

The Berkeley Campus has designated Title IX Compliance Coordinator (Sexual Harassment Officer), whose responsibilities include, but may not be limited to, the duties listed below.

a. Training and supervision of an Education Coordinator to plan and manage campus sexual harassment education and training programs. The programs should include wide dissemination of this policy to the University community; providing educational materials to promote compliance with the policy and familiarity with local reporting procedures; and training University employees responsible for reporting or responding to reports of sexual harassment.
b. Develop and implement local procedures to provide for prompt and effective response to reports of sexual harassment in accordance with this policy, and submit the local procedures to the UC Office of Human Resources and Benefits for review and approval.
c. Maintain records of reports of sexual harassment at the Berkeley campus and actions taken in response to reports, including records of investigations, voluntary resolutions, and disciplinary action, as appropriate.
d. Prepare and submit an annual report to the Office of the President, for submission to The Regents, on sexual harassment complaint activity during the preceding calendar year in a format specified by the UC Office of Human Resources and Benefits.

2. Trained Sexual Harassment Complaint Resolution Officers

The Title IX Compliance Coordinator (Sexual Harassment Officer) is the primary Complaint Resolution Officer for the campus. The Associate Vice Provost for Faculty Equity, the Title IX Education Coordinator, and others appointed by the Chancellor, Executive Vice Chancellor & Provost, or the Vice Provost of Academic Affairs and Faculty Welfare on an "as needed" basis, may serve as additional complaint resolution officers for members of the University community who have concerns regarding behavior that may be sexual harassment.

3. Campus Resources on Sexual Harassment

Faculty, staff and students with a question or complaint about sexual harassment, or the campus policy for responding to incidents may inquire and/or receive information at any of the following offices:

Title IX & Title VI Compliance Office: This office addresses issues of sexual & racial harassment campus-wide; the office seeks to resolve situations that may constitute discrimination on a prohibited basis, such as sexual or racial harassment. In addition to serving as an investigation officer when a formal complaint of sexual harassment is filed, this office provides consultation to faculty administrators, directors, managers and supervisors and graduate and undergraduates students for resolution strategies at the earliest possible levels.

200 California Hall; 642-2785

Title IX & Title VI Education Coordinator: manages and provides educational workshops and

interactive training programs to academic departments, administrative units and the student community on issues of discrimination and harassment. The Education Coordinator offers intake, problem resolution strategies, and may serve as a Complaint Resolution Officer under the campus
Sexual Harassment Policy and Complaint Resolution Procedures.

200 California Hall, 643-9707

Associate Vice Provost for Faculty Equity: provides information about the campus Academic Affirmative Action Plan, and may serve as a Complaint Resolution Officer under the campus Sexual Harassment Policy and Complaint Resolution Procedures.

200 California Hall; 642-1935

ASUC Student Advocate's Office: provides advocacy for students in a dispute with the University. The SAO offers representation, help and advice to any student for a broad variety of problems, including sexual harassment and discrimination concerns.

204 Eshleman; 642-6912

Campus Police Department: The UCPD's Threat Management Unit provides assistance to any member of the campus community with filing criminal charges and/or restraining orders, and handles issues of potential violence in the workplace, classroom, or student residence halls.

1 Sproul Hall; 642-6760

Dean of Student Life: an entry point for students that offers policy and referral information on all issues related to student co-curricular life on campus.

102 Sproul Hall; 642-6741

Gender Equity Resource Center: Sexual Harassment/Assault Resource Specialist (SHARES) provides advocacy and crisis intervention to students and staff in dealing with an experience of possible sexual harassment or assault. Support ranging from listening to "case coordination" (interacting with all the campus units that have responsibilities when an incident of sexual harassment/assault occurs) is offered.

202 Cesar Chavez Center; 643-5727

Intercollegiate Athletics (ICA), Executive Associate Director: provides policy information, resources, referrals, and works in collaboration with the Title IX Compliance Office to resolve situations of possible sexual harassment and/or gender discrimination among student athletics, coaches, ICA staff and administrators.

115 Haas Pavilion; 642-9224

Office of Human Resources/Employee Relations: Assistance with filing a grievance against a supervisor or another staff member, alleging discrimination on a prohibited basis including sexual harassment.

207 University Hall; 642-7163

Ombuds Offices: These offices provide informal, impartial assistance with academic or work-related concerns. The Ombuds offices are confidential resources, and provide assurance that what is said will not be disclosed to anyone without the individual's permission. These offices are not offices of record, and are not offices for filing complaints.

Ombudsman for Faculty*
Academic Senate Office
320 Stephens; 642-7213

Ombudsman for Staff*
642-7823

Ombudsman for Students and Post-doctoral Appointees*
642-5754

Office of Student Conduct: handles complaints filed against students who may have violated policy, including possible discriminating or sexually harassing behaviors.

326 Sproul Hall; 643-9069

University Health Services*: The two departments below provide assessment, consultation and counseling in a confidential setting, and/or referrals regarding work and personal stress, emotional concerns that are interfering with an individual's ability to work in his or her professional or academic setting.

Tang Center, 2222 Bancroft Way
CARE Services for Faculty and Staff; 6423-7754
Social Services for Graduate and Undergraduate Students; 642-6074

* indicates confidential resources with whom members of the University community can consult for advice and information regarding making a report of sexual harassment. All other resources such as the Title IX Compliance Coordinator, managers, supervisors and other designated employees have an obligation to respond to reports of sexual harassment, even if the individual making the report requests that no action be taken. Policy standards regarding confidentiality are further detailed in section E of this document.