Expectations

● Take by Fall of 3rd year
● Recognize research problems of importance
● Develop hypothesis / research plan
● Propose experiments
● Ideal scope: 6-to-12 month project
● Display comprehensive knowledge of your area
Timeline

T-minus 6 months
- Discuss with your research mentor: time, scope & possible committee

T-minus 3 months
- Choose your committee chair and members
- Meet with the committee chair to discuss the exam
- Schedule the exam date with your committee
- Draft your proposal
Timeline

T-minus 2 months

● Start meeting with committee members
● Draft presentation
● Reserve a room for at least 3 hours
● Schedule practice talks with your lab & collaborating labs
● Submit form(s) 6 weeks prior to the exam

T-minus 1 months

● Submit final proposal to committee
● Schedule 1-2 practice quals (BERF)
● Start serious studying
Members must represent:

- Engineering and biology
- UC Berkeley and UCSF
- Exceptions may be considered by petition
- Core members:
  http://bioeograd.berkeley.edu/faculty
Choosing the Committee

● Ask for suggestions

● Members
  ○ You don’t need to know them, but it is helpful
  ○ Don’t have to be directly in the field of your project
  ○ Have different areas of expertise
  ○ Nice people are usually better
  ○ Sometimes emailing will not work (try secretary, office hours, group meeting...)

Graduate Program in Bioengineering
UC Berkeley
Meeting with the Committee

● With your Chair, discuss:
  ○ “Philosophy” of the exam
    ■ Hypothesis driven or aim driven? Need prior data?
  ○ Exam format
  ○ Scope of project
  ○ Need to get your files from SJT/Kristin prior to quals

● Everyone
  ○ Articulate your aims for feedback
    ■ Expect barrage of detailed questions → it’s okay to not know answers, look them up before the exam
  ○ What questions should you expect from their subject area?
  ○ Inform them about exam format
Project Proposal

- A good proposal will help focus your studying and the questions from your committee
  - Spans about 6-12 months of work
  - Typically 4 pages in length
- Format = like a grant
  - Research Background and Significance
  - Hypothesis and **Specific Aims**
  - Preliminary Work (Optional--Talk to your chair)
  - Research design and methods
- Send proposal to committee members early
- Look at old proposals as a resource
**Forms**

- **Application for Qualifying Examination**
  - Berkeley: Turn it into Kristin
  - UCSF: Turn it into SarahJane at least 6 weeks before the exam

- **Qualifying Exam Committee Form (UCSF only)**
  - Turn it into SarahJane at least 6 weeks before the exam
Application for Qualifying Examination

To the Graduate Council:

In the opinion of the Department or group in

Applicant's: ____________________________

Applicant's SSN: ________________________

Applicant's Address: ____________________

is ready to proceed to the Qualifying Examination for the degree of Doctor of Philosophy.

The proposed field of study is ____________________________

Professor ____________________________, is chiefly in charge of research.

The subjects upon which the applicant should be held for examination are:

________________________________________________________________________

________________________________________________________________________

Proposed Committee:

Chair ____________________________

Approved: ____________________________

Signature of Dean of Graduate Studies ____________________________ date

Approved: ____________________________

Signature of Graduate Advisor ____________________________ date
UCSF/UCB Joint Graduate Group in Bioengineering
Qualifying Examination Committee

Name: ___________________________ Date: _______________ Home Campus: ☐ UCB ☐ UCSF

Research Supervisor: ______________________
The examination will be conducted by a committee of no fewer than five members of the faculty approved by the Graduate Dean of the home campus. The student should work with his or her Graduate Advisor (and dissertation supervisor, if known) to nominate faculty to serve on this committee. The Chair and at least two of the other members of the committee shall be members of the Bioengineering Graduate Group; at least one member of the committee shall be outside the Group or have associate status. All members of the committee shall be members of the academic senate or be approved by the Dean of the Graduate Division. The committee shall include at least two members from each campus. At least one faculty member with expertise in each of the student's major and minor areas should be on the committee. The student's dissertation research supervisor, if known at the time, may not be a member of the qualifying examination committee.

<table>
<thead>
<tr>
<th>Name</th>
<th>Campus</th>
<th>Full Academic Title And Department</th>
<th>Member BioE Grad. Group</th>
<th>Campus Address</th>
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Approved: ___________________________ ___________________________

Head Graduate Advisor ___________________________ Date ___________________________

Note: Students must also file the appropriate forms with the Graduate Division of their home campus.
Exam Date: _______________ Location: _______________ Time: _______________
Qualifying Exam

- Remind everyone the day before (...maybe the day of)

- Part 0
  - You get kicked out for 5-10 min while Chair discusses exam format with committee

- Part 1 – Research proposal talk
  - 15 minute presentation (with interruptions, ~1-2hr)
  - Aim for ~12-15 slides

- Part 2
  - Related work – major and minor subjects
  - Ethics / Stats

- Get kicked out of the room again for 5-10 min

- Invited back for decision & recommendations
General Guidelines

- Keep answers concise and MOVE ON!
- Avoid using vague language
- Be willing to say you don’t know, but propose how you could find the answer
- Make your slides **simple**
  - Use active titles
  - Focus on flow and transitions
- Be prepared to be interrupted
- Consider the quals an opportunity to learn more about your field, not just a hurdle
- How much would someone pay to get 4 experts to think about a project for 2 hours?
Now you get to be a PhD Candidate!

- Fill out the application for candidacy as soon as possible.
  - Non-resident students get a fee reduction of 100%
  - There is a fee, but many labs will cover it
Good Slide / Bad Slide

● Bad Slide
  ○ Too much text
  ○ Too much detail
  ○ Too much stuff
  ○ Unclear main point
  ○ Too much time
  ○ Not well connected to overall message

● Good slide
  ○ Active Title
  ○ To the point
  ○ No extraneous/extra information
  ○ Uncluttered
These are the totally cool results from this slide that no one really notices or has time to care about because there’s way too much going here, and that sun looks really cool, where did these pictures come from? Just type random science graphs on Google? Naw.. Well maybe. Anyways I don’t know if I’m going to remember anything from this slide…. Crap.
Good Slides Get the Point Across

- If you connect the dots, you get this cool picture
  
  Run method X on our dots
  
  Solar flares are awesome

- By integrating that over whatever, therefore

Science. It works.
Giving a Good Talk

● Some key pointers
  ○ Information vs. message: so what?
  ○ Maximize # of messages
  ○ Adapt to your audience
  ○ Maximize signal (you) to noise (audience)
  ○ Use effective redundancy
Resources

- Kristin Olson & SarahJane Taylor
- Head Graduate Advisors:
  - Seung-Wuk Lee (UCB)
  - Christoph Schreiner (UCSF)
- Handbook
  - [http://bioeograd.berkeley.edu/handbook/qualifying-examination](http://bioeograd.berkeley.edu/handbook/qualifying-examination)
- Beast Wiki (Quals section)
  - [http://ucbeast.berkeley.edu/academic-resources/academic-resources/quals-and-thesis/](http://ucbeast.berkeley.edu/academic-resources/academic-resources/quals-and-thesis/)
- Students and Faculty
I have a question, where do I find the answer?

Bioengineering Graduate Handbook
http://bioegrad.berkeley.edu/handbook/introduction
- Graduation checklist
- Requirements for committees
- All the forms!
- Course requirements
- Finance information (fees, stipend…)
- Advising - who does what?
- Many other things!

BEAST Wiki
http://ucbeast.berkeley.edu/
- Tax info
- Rent map
- Course tracks
- Presentations like this one!
- Photos of BEASTies doing cool things
- Links to resources for GSling
- “Ugh the BEAST wiki totally doesn’t have what I think it should have”
  - Get involved!
I’ve read everything and I still have a question!

It’s about life outside the program

Taxes? Where to live? Transportation question?
- Your peer advisor! (yes, even after 1st year)
- Other upper year students

Legal issue (ex: rental contract, landlord is unreasonable, etc)
- http://sa.berkeley.edu/legal
- http://success.ucsf.edu/community-legal-resources
- Free legal consultation for students

I’m having difficulty adjusting to grad school, dealing with family or relationships, sexual orientation and identity, coping with personal crises. I’d like to speak with someone confidentially.
- https://uhs.berkeley.edu/counseling
- https://studenthealth.ucsf.edu/healthcare-services/counseling-psychological-services/schedule-mental-health-appointment

My problem isn’t on this page!
There’s so many resources available to you that we can’t list them all - try find someone you trust to help you figure out what’s right for you
I’ve read everything and I still have a question!

It’s about the program/my thesis (and not a technical/research problem)

It’s field specific (courses, resources…)
- Your area advisor
- [Link](http://bioegrad.berkeley.edu/currentgrads/research-area-advisors)

It’s administrative (payment of fellowship, filing forms, dropping classes)
- Berkeley-based: Kristin
- UCSF-based: SarahJane

The person I’m supposed to go to doesn’t make sense (it would be awkward, there’s a conflict of interest, etc)
- Check in with Kristin or SarahJane for a recommendation of who to ask
- Pick your own mentor
  - (Ask KO/SJT to introduce you if you think it would help)

I have a conflict with my PI/I need an outside opinion
- Your graduate advisor
- The head graduate advisor
- Won’t disclose your conversation without your permission
I have no idea what I want to be when I grow up

**Berkeley:**

BEAST Alumni series! (Excellent free food networking opportunity)

SLAM (Science Leadership and Management):
http://qb3.berkeley.edu/qb3/slam.cfm

Beyond Academia:
http://www.beyondacademia.org/

Postdoc industry exploration program:
http://piep.berkeley.edu/

MCB 295: Panel discussion weekly! (Includes food)
http://grad.berkeley.edu/resource/mcb295-careers-for-life-science-phds/

**UCSF**

BEAST Alumni series! (Excellent free food networking opportunity)

GSICE (Graduate Student Internships for Career Exploration):
http://gsice.ucsf.edu/

MIND (Motivating INformed Decisions):
http://mind.ucsf.edu/

ITA Entrepreneurship Center:
http://ita.ucsf.edu/entrepreneurship-center

Consulting Club at UCSF:
https://orgsync.com/62233/chapter

Career center:
http://career.ucsf.edu/phds
Focus on Research!

- Our program’s focus is **research**
- Meet with your PI to set expectations
Classes

- http://bioegrad.berkeley.edu/handbook/program-of-study
  - **Area Requirements:** undergrad classes DO satisfy this
  - **Major/Minor:** YOU can design this!
- Often finish within first 2-3 years
- Talk to lab mates and upper-years in your area for recommendations!

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<thead>
<tr>
<th>Medical Imaging</th>
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<tr>
<td><strong>Track 1</strong></td>
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<tr>
<td>BIOE C261 - Medical Imaging Signals and Systems (UCB 4S)</td>
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<tr>
<td>BIOE 241 - Metabolism and Magnetic Resonance Spectroscopy (UCSF 3Q)</td>
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<tr>
<td>BIOE C265 - Principles of MRI (UCB 3S)</td>
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<tr>
<td>RAD/BI 201 - Principles of Nuclear Magnetic Resonance Imaging (UCSF 3Q)</td>
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<tr>
<td>PHYS137A - Quantum Mechanics (UCB 4S)</td>
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<tr>
<td>BI 260 - Image Processing and Analysis I (UCSF 2Q)</td>
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<tr>
<td>BI 265 - Image Processing and Analysis II (UCSF 3Q)</td>
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</table>

| **Track 2**     |
| (2014-2016)     |
| RAD/BI 209 - Imaging Lab: MR, CT, PET, & SPECT (UCSF 2Q) |
| BIOE 247 - Intro to MRI Systems & Hardware (UCSF 3Q) |
| BI 201 - Principles of MR Imaging (UCSF 4Q) |
| BI 202 - Physical Principles of CT, PET & SPECT Imaging (UCSF 4Q) |
| BI 203 - Imaging probes for Nuclear and Optical Imaging (UCSF 4Q) |
| BI 204 - Principles of Diagnostic and Therapeutic Ultrasound (UCSF 3Q) |
| BI 260 - Image Processing and Analysis I (UCSF 2Q) |
| BI 265 - Image Processing and Analysis II (UCSF 3Q) |

http://ucbeast.berkeley.edu/academic-resources/course-information/course-tracks/
GSI’ing

- Students frequently GSI the semester after quals
- Berkeley
  - Kristin sends out applications around May for the Fall, and Oct/Nov for the Spring
- UCSF
  - Talk to SarahJane or directly with the professor
- USF (near Parnassus)
  - Typically Physics labs
- [http://ucbeast.berkeley.edu/academic-resources/course-information/teaching-information/](http://ucbeast.berkeley.edu/academic-resources/course-information/teaching-information/)
Funding

June 6, 2016
Jasmine Hughes
Monica Lin
Fellowships

- **NSF & NDSEG** - can still apply in 2nd year!
- **HHMI** - talk to other international students
- Kristin & SarahJane send out emails all year
- BEAST Fellowship Roundtables
- *Be direct with your PI about funding* (both for you and your project)