
Guide to Your Qualifying Exam

June 6, 2016
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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

Committee

Chair

Home Campus
Core Member

Member 2

Other Campus
Core Member

Member 3

Any Campus
Core Member

Member 4

Home Campus
Outside Group

Members must represent:

- Engineering and biology
- UC Berkeley and UCSF
- Exceptions may be considered by petition
- Core members:

<http://bioegrad.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...)

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 the Qualifying Examination

Doctoral students who are preparing to take the Qualifying Examination (QE) must submit this application at least three weeks prior to the proposed date for the examination. Students must be registered for the semester in which the examination is held. If the student has been formally admitted to one of the approved Designated Emphasis (DE) programs on campus, the Head Graduate Advisor of the DE must also approve this application. Submit the completed application to your departmental administrator. Direct questions to your Degrees Office advisor: grad.berkeley.edu/academic-progress/advising.

S.I.D. # _____ Degree Granting Program: _____ Proposed exam date: _____

Designated Emphasis (if applicable): 1. _____ 2. _____

Name: _____ Email address: _____
(APPEARING ON STUDENT RECORDS) (LAST, FIRST, MIDDLE)

Subject areas. At least three subject areas must be listed, including the general field and the nondepartmental fields of knowledge in which the candidate will be examined. Incomplete applications will be returned to the department.

1. _____
 2. _____
 3. _____

Proposed committee members to conduct the qualifying examination(s) are (You must provide an email address for committee members that are not from UC Berkeley):

QUALIFYING EXAM CHAIR, DEPARTMENT _____	EMAIL _____	ADDITIONAL MEMBER, DEPARTMENT _____	EMAIL _____
ADDITIONAL MEMBER, DEPARTMENT _____	EMAIL _____	ADDITIONAL MEMBER, DEPARTMENT _____	EMAIL _____
ACADEMIC SENATE REPRESENTATIVE, DEPARTMENT _____	EMAIL _____		

Proposed faculty member primarily in charge of the dissertation research: _____

CHAIR, DEPARTMENT _____

Proposed Co-chair (if applicable): _____

CO-CHAIR, DEPARTMENT _____

Designated Emphasis representative(s): _____

DEPARTMENT _____

Foreign language requirement. The foreign language requirement, if appropriate, must be satisfied prior to admission to the qualifying examination(s). I hereby certify that the foreign language requirement has been fulfilled.

Language: _____ Date completed: _____

Language: _____ Date completed: _____

Signature of Head Graduate Advisor, Degree Granting Program _____ Date _____

Signature of Head Graduate Advisor, Designated Emphasis (if applicable) _____ Date _____

This section for Graduate Division use only

Registration status: _____ Approval date: _____

Approved by: _____ Expiration date: _____

4/19/14

Application for Qualifying Examination

To the Graduate Council:

In the opinion of the Department or group in _____

Applicant's: _____

Applicant's SSN: _____ Last name First name MI

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 Graduate Advisor date

Approved: _____
 Signature of Dean of Graduate Studies 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.

Name	Campus	Full Academic Title And Department	Member BioE Grad. Group	Campus Address
(chair)				

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

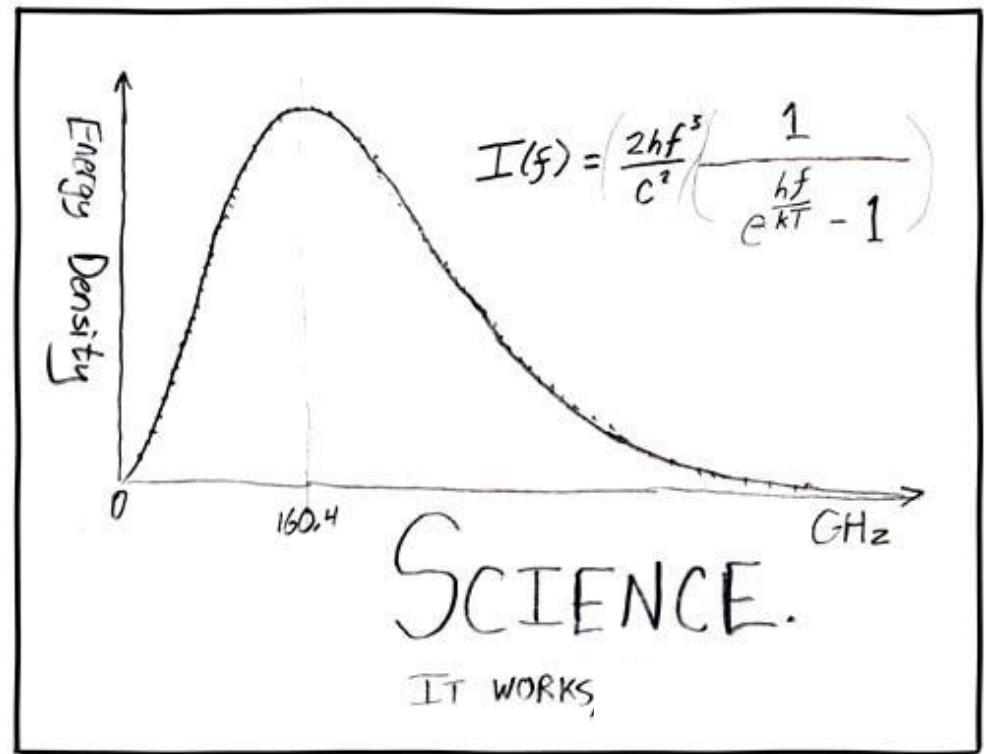
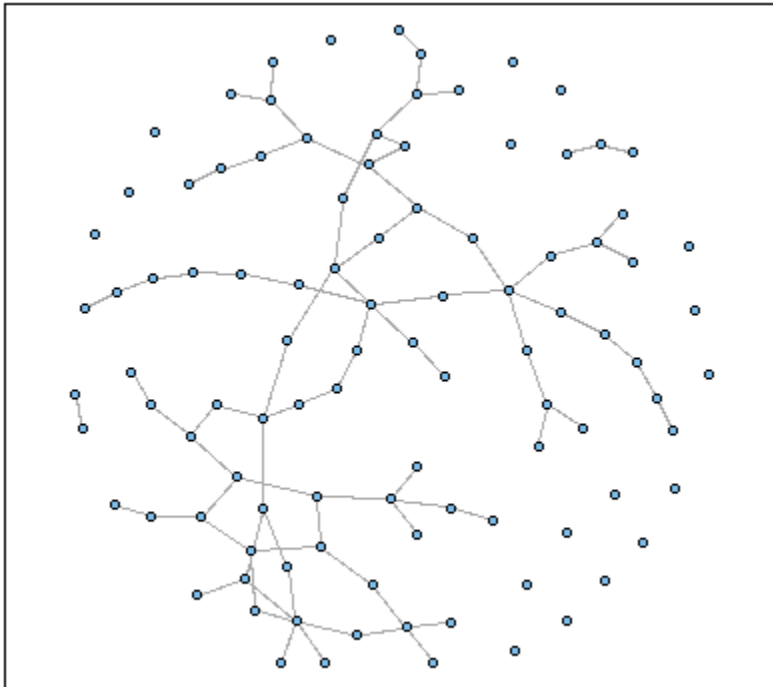
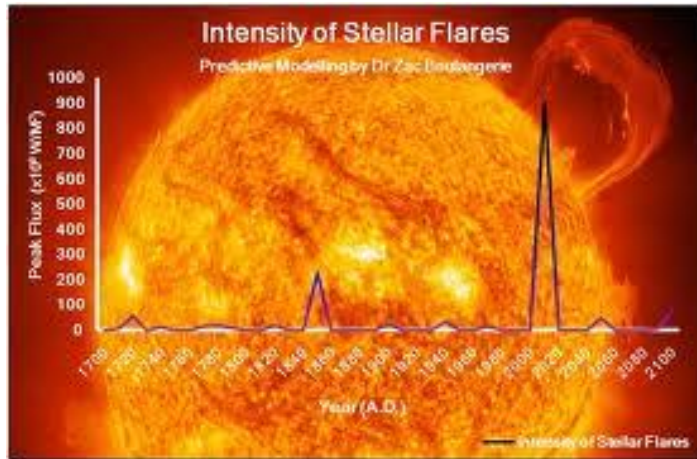
- **Bad Slide**

- 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

Slide # 7 : Results (continued again)



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

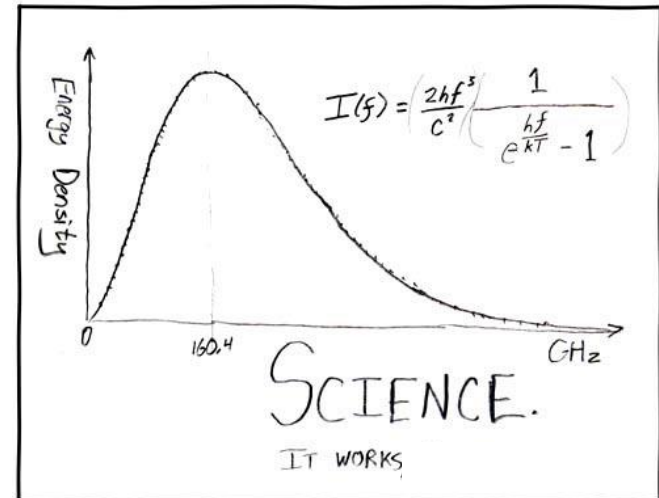
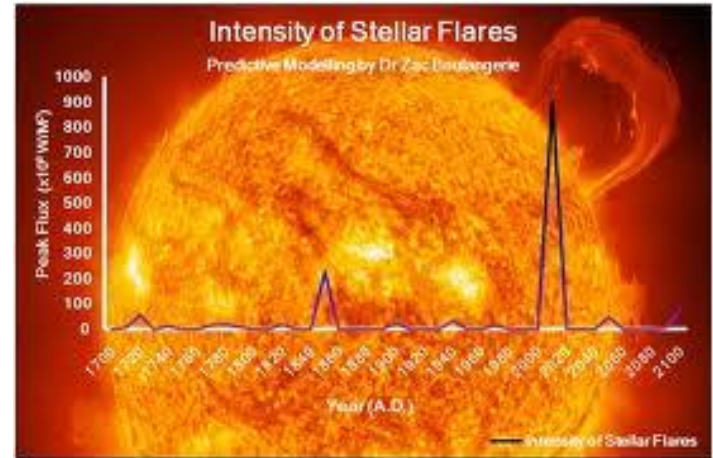
Run method X
on our dots



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://bioegrad.berkeley.edu/handbook/qualifying-examination>
- Beast Wiki (Quals section)
 - <http://ucbeast.berkeley.edu/academic-resources/academic-resources/quals-and-thesis/>
- Students and Faculty

Resources

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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
- <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>



Expectations After 1st Year

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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!

Medical Imaging

Track 1

(2014-2016)

BIOE C261 – Medical Imaging Signals and Systems (UCB 4S)

BIOE 241 – Metabolism and Magnetic Resonance Spectroscopy (UCSF 3Q)

BIOE C265 – Principles of MRI (UCB 3S)

RAD/BI 201 – Principles of Nuclear Magnetic Resonance Imaging (UCSF 3Q)

PHYS137A – Quantum Mechanics (UCB 4S)

BI 260 – Image Processing and Analysis I (UCSF 2Q)

BI 265 – Image Processing and Analysis II (UCSF 3Q)

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/>

Funding

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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)