

Developing undergraduate research projects: from recruiting to final product

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Session Description (11:00 - 11:50am):

Many departments require, or provide the option for, an undergraduate research thesis. For many students, this opportunity is a life-changing event. From the professor's side, undergraduate theses require a lot of energy, effort, and organization. This session will discuss various stages and strategies of the undergraduate thesis including: how to recruit students, how to fund students, how to design projects, how to manage undergraduate lab and field work, and how to manage the often time consuming editing process. (50 mins)

<http://serc.carleton.edu/NAGTWorkshops/careerprep/index.html>

disclaimer: below are Dr. Kirby's opinions based on 13 years experience...obviously, there are many other views on how to write a research statement...please consider them all, as appropriate

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- **Context? (10 mins)**
- **The Undergraduate Thesis? (30 mins)**
- **Plan an Undergraduate Thesis. (20 mins)**



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Context: (10 mins)

1. How many of you wrote an undergraduate thesis?
2. How many of you were required to write an undergraduate thesis?
3. What did you like most about your thesis experience?
4. What did you like least about your experience?
5. What is one thing that you would do better as an undergraduate thesis advisor than for your own experience?

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The undergraduate thesis: (30 mins)

1. Required or Optional?

-required thesis?

- be a good colleague

 - take your share and no more!

 - your time is important and you can say no once you've reached your annual quota

- do not discriminate academically (unless it is an optional thesis)

 - otherwise, take those that make an effort to meet and discuss a project with you OR recruit if you want to secure only the best academic students.

 - all part of being a good department colleague

- tell them what projects you have...always have a mental stack of projects (more on this later).

 - beware the "outside-your-expertise-project."

- also, I require the student to take 2 weeks to make a decision after the interview...I want them to really think about what we've discussed.

-optional thesis?

- student quality very important!

- your time is limited!

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The undergraduate thesis: (30 mins)

2. Recruiting and Expectations?

- advertise?
- interview students.
- establish very clear expectations
 - Kirby e.g., 1. field, 2. lab, 3. write...provide thesis example.
 - lots of CSUF students work, so summer lab work is not possible for many.
 - the thesis should not be a mystery to your student...I provide a detailed template and thus each thesis looks the same and “feels” professional.
 - some departments - such as mine - require an undergraduate thesis proposal, too.
 - again, make it clear and easy...provide template.

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The undergraduate thesis: (30 mins)

3. The Project and You?

- undergraduate theses require A LOT of your time!
 - field work
 - lab training and quality control
 - proposal/thesis editing!!
- how will the project advance your research goals?
- how do you gauge your student's "data trustworthiness"
 - will you trust the data in a future publication.
 - how do you manage the "data untrustworthy" student.
- beware the project outside your expertise!

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The undergraduate thesis: (30 mins)

4. Field Work.

- when?
- where?
- how?
- \$\$



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The undergraduate thesis: (30 mins)

5. Lab work.

- when?
- where?
- how?
 - \$-\$
- data interpretation pre-thesis writing.
 - your students will have very limited working knowledge
 - help your students
 - provide reading list
 - assume minimal self-guided exploration and reading of scientific literature



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The undergraduate thesis: (30 mins)

6. Writing.

- ouch!** This is by far the hardest part of the thesis for the student *AND* for you.
- lots of editing.
 - how do you edit without writing the thesis for the student?
- establish clear deadlines!
- use the university writing center
 - require “receipts” for writing center use *IF* necessary.

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The undergraduate thesis: (30 mins)

7. Other stuff?

- Motivating the student?
- Final product?
 - I provide 3 professionally bound copies for the student, myself, and the department.
 - Sense of pride, accomplishment, part of larger picture.
- Funding?
 - how do you get a student to spend time in the lab or field?
 - grants?
 - internal funding?

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Plan an Undergraduate Thesis: (20 mins)

- Let's take some time to come up with an idea or two for an undergraduate thesis.
- Then we'll discuss a bit.



