**QSB 296 – Professional Skills Development**

**Fall, 2018 • Tu & Th 1:30-2:45pm • GLCR 130**

***Course Description and Outcomes***

**Instructor:** Fred Wolf, fwolf@ucmerced.edu 415-370-1132 SE1 330

**Course Credit:** 3, 2 lecture/discussion + 1 instructor face-to-face meeting.

**Course Catalog Description:** This course will introduce graduate students to the art of grantsmanship and effective scientific communication. Emphasis is on the practical goal of submitting a competitive proposal to the NSF Graduate Research Fellowship Program (GRFP) or an NIH F31 predoctoral fellowship for the fall deadline. Other students will prepare for relevant graduate or postdoctoral funding opportunities. Course topics address finding funding opportunities, planning for grant submission, formulating and composing a fundable research proposal and personal statement, developing a curriculum vitae and biosketch, peer mentoring schemes, budgeting, administration, on and off campus support, and extensive in-class peer review. Students will also gain extensive experience in effective public speaking and in writing for a general science audience.

**Learning Outcomes:** By the conclusion of this course, students will be able to (**1**) conceptualize a fundable research proposal, (**2**) develop an advanced planning strategy for proposal submission, (**3**) understand the components of a successful research proposal, (**4**) comprehend and meet funding agency requirements, (**5**) write and orally defend an achievable and compelling research proposal, (**6**) critique research proposals of their peers, (**7**) critically evaluate the primary literature to produce a general science audience review article, and (**8**) present a general interest research talk to an undergraduate audience. *Course learning outcomes are an extension of associated program learning outcomes from participating Natural Sciences graduate groups.*

This course addresses **the ability to propose and defend a feasible research plan** and **success in obtaining research funding**, part of the fifth Program Learning Outcome for the Quantitative and Systems Biology (QSB) M.S. and Ph.D. programs. It also addresses QSB skills (Outcome 1), Communication (Outcome 3), and Scholarship (Outcome 4).

***Policies***

**Pre-requisites:** Graduate standing; enrollment priority given to **first and second year** School of Natural Sciences graduate group students in QSB. This course may be taken by senior undergraduate students and audited by post-doctoral students with consent of the instructor.

**Credit Hours and Time Commitment:** Students are expected to dedicate at least six hours of preparation time for each week’s class meeting, *including significant discussions with their faculty advisor*. This time allocation will be used for grant proposal preparation, critical reading and presentation of proposals, and manuscript preparation.

**Attendance and Participation:** This class is workshop-focused, so in-class activities will be an essential aspect of your learning. You are expected to attend all class sessions. Absences exceeding three per semester (amounting to 20% of course time) will result in either an incomplete, withdraw or fail. To see timelines for grading procedures, please visit the following [link at the Registrar’s Office](http://registrar.ucmerced.edu/policies/adddropwithdraw).

***Evaluation and Course Projects***

Students will be evaluated using four criteria.

 • Participation in discussions and critiques (25%)

 • On-time completion of class and funding agency tasks (15%)

 • Quality of written and oral constructive criticisms (25%)

 • Instructor evaluation of grant proposal and manuscript (35%)

Final letter grades will follow a straight scale.

 A = 90-100% (A- = 90-92, A = 93-100)

 B = 80-90% (B- = 80-82, B = 83-86, B+ = 87-89)

 C = 70-80% (C- = 70-72, C = 73-76, C+ = 77-79)

 D = 60-70% (D- = 60-62, D = 63-66, D+ = 67-69)

 F = below 60%

**Course Projects:** The central project will be the crafting, submission, and evaluation of a predoctoral grant proposal to the NSF or the NIH. Application for the NSF GFRP is limited to first year graduate students. Students will also be required to synthesize current literature to produce a review for a general science audience. Finally, students will give a general interest research seminar to an undergraduate audience.

***Resources***

**Required Readings:** Primary literature relevant to individual proposals, to be found online and at the library. Proposals from previously successful applicants. NSF grant submission guidelines. Grant submission guidelines from the Research and Development Services office at UC Merced and from other agencies.

• Schimel, Joshua. 2011. Writing Science. Oxford University Press.

• NSF Grant Proposal Guide, 2016, (http://www.nsf.gov/pubs/policydocs/pappguide/nsf16001/gpg\_print.pdf)

• Highly recommended, but not required: Friedland, Andrew J. and Carol L. Folt. 2009. Writing Successful Science Proposals. Yale University Press, New Haven. 201pp.

**Academic integrity:** Academic integrity is the foundation of an academic community. Academic integrity applies to all members of the university community. Our policy prohibits academic misconduct including, but not limited to, cheating on examinations, fabrication of data or references, plagiarism and other forms of academic dishonesty specified in the policy or other campus regulations. For more information, please see UC Merced’s [academic honesty policy](http://studentlife.campuscms.ucmerced.edu/files/page/documents/academic_honesty_policy.pdf).

You are encouraged to study and to discuss course materials among classmates and other students. However, any course works submitted by a student will be the student’s own work, not by other students. You are not allowed to copy other students’ work. Any academic misconduct found in assignments will result in zero credit and possible further action.

**Accommodating disabilities:** The University of California Merced is committed to ensuring equal academic opportunities and inclusion for students with disabilities based on the principles of independent living, accessible universal design and diversity. I am willing to share this commitment and discuss appropriate academic accommodations that will be required for student with disabilities. Students can find more information about appropriate accommodations through UC Merced Disability Services (UCM DS).

UCM Disability Services is located on the first floor of the Kolligian Library, Room 109. The e-mail address is disabilityservices@ucmerced.edu.

Additionally, the instructor will make every effort to accommodate all students who have conflicts with scheduled exams or assignments because of religious obligations. Please speak with the instructor during the first week of class regarding any potential academic adjustments or accommodations that may arise due to religious beliefs during this term.

*The following schedule may change significantly as we update this course*

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| --- | --- | --- | --- |
| **Date** | **#** | **Class Activities & Outcomes** | **Assignments & Projects** |
| 8/25/16 | 1 | Introduction to the course. Proposal overview. Titles. | Choose topic with thesis advisor. Obtain example grants from thesis advisor. |
| 8/30 | 2 | **Susan Carter:** Grants admin @ UC Merced. How to write a Personal Statement. | Assign mentor’s grants to groups of students. Outline grant structure paragraph by paragraph – identify purpose of each paragraph. |
| 9/1 | 3 | Workgroups of three – Mentor’s grants. Apply outline to own proposal. Intellectual Merit and Broader Impacts. | Read and critique proposal from advisor other than your own. |
| 9/6 | 4 | Present outline of grant in 10 min or less | Full outline or draft research proposal due to Fred on 9/5 |
| 9/8 |  | Personal statement – Knowing where you are and want to go |  |
| 9/13 | 5 | Personal statement defenses |  |
| 9/15 | 6 | Critical analysis of a model review article. Parameters for effectively reviewing current science.  | Full draft of Personal Statement due night of the 18th. |
| 9/20 | 7 | Peer analysis of your full proposal | Read critically a classmates proposal. Be prepared to present and critique the proposal. Submit your analysis.  |
| 9/22 | 8 | Peer analysis of your full proposal II. | Amend research statement based on peer input. Submit a rough draft of the proposal. |
| 9/27 | 9 | Personal Statement, Relevant Background and Future Goals | In class personal statement workshop. Please post your statement to CROPS by 6pm 9/30. |
| 9/29 | 10 | Peer review of personal statements | List of 3-5 primary research articles. Write a short synopsis of the main findings. Write 1-2 sentences that describe the broader impact of the research article. |
| 10/4 | 11 | Proposal Critique by peers | Your research proposal and personal statement, complete drafts |
| 10/6 | 12 | Review article – structure, effectiveness, content |  |
| 10/11 | 13 | **Susan Carter:** Mock review session |  |
| 10/13 | 14 | Proposal Critique by peers |  |
| 10/18 | 15 | Individual meetings with Dr. Wolf |  |
| 10/20 | 16 | Individual meetings with Dr. Wolf |  |
| **10/24** | **17** | **Submission to NSF**  | **In-office submission of your proposal** |
| 10/27 | 18 | Introduction to the second half of the semester |  |
| 11/1 | 19 | Concept and Context – representing other peoples science. Literature review and public presentation. |  |
| 11/3 | 20 | Review article (RA) – defining an effective narrative flow Peer review of proposed review structure | Critique peers review in writing and verballySign up for research talk series aimed at undergraduates. |
| 11/8 | 21 | Review article (RA) – defining an effective narrative flow Peer review of proposed review structure | Critique peers review in writing and verballySign up for research talk series aimed at undergraduates. |
| 11/10 | 21 | Peer critique of abstracts in mock review style | Prepare rough draft of review |
| 11/15 | 22 | Peer input for review rough draft | Refine draft based on peer input |
| 11/17 | 23 | In class writing exercise | Prepare second draft of review |
| 11/22 | - | In class writing exercise | Prepare second draft of review |
| 11/29 | 24 | In class peer review of RAs | Write critique of partners RA. Work on your RA. |
| 12/1 | 25 | In class peer review of RAs, same partners. |  |
| 12/6 | 26 | Critique the professor. Individual meetings with Dr. Wolf. |  |
| 12/8 | 26 | Individual meetings with Dr. Wolf. |  |
| 12/16 | 27 | Submit review article. |  |