BioAP7100
BBS Graduate Course "By Scientific Design"
Spring 2019
Thursdays 3-5PM Location: S2-114

Instructors
Ruth Collins, PhD Course Coordinator ruth.collins@cornell.edu
David M. Lin, PhD Director of Graduate Studies davelin@cornell.edu
Office hours by appointment

Limited to graduate students in the BBS program or by consent of the instructor.

Course Overview

The goal of this course is to accompany the lab/rotation training to help students master the skills critical for success in the A exam. These skills include how to obtain a thorough grounding in the field of choice, understanding the primary literature, hypothesis development, formulating research questions, creative thinking, experimental and theoretical approaches to providing answers including exercises to examine biases and assumptions. The course is designed to be conceptually complementary to the Fall semester grant writing course. Rather than communicating with external agencies, the dialogue is now focused internally around the individual student with immediate peers and mentors to develop the research project and scientific professional success. Science is diverse, both from a subject and an individual perspective; class participants will participate in group exercises and also be provided with opportunities for personalized coaching.
Articles will appear on the course web page under "assignments". Use of Adobe Illustrator and either PowerPoint or Keynote software is required for class assignments. Students can purchase an Adobe suite license from CIT or use the library computers which have Adobe suite installed. All assignments will be turned in via Blackboard/Canvas.

Evaluation and Grading

Grades will be based on an oral defense of the student's research topic, developing a diagram of research model or hypothesis, the final poster presentation, class attendance and participation in the discussions.

Academic Integrity

Every student in this course is expected to abide by the Cornell University Honor Code. Any work submitted by a student for academic credit will be the student's own work. We expect that students will also not plagiarize or self-plagiarize. Each assignment should be appropriately cited, unique and not taken from earlier assignments. Failure to abide by guidelines on plagiarism will result in a failing grade for the assignment and any other repercussions outlined in the Code of Academic Integrity (http://cuinfo.cornell.edu/Academic/AIC.html). You are encouraged to study together and to discuss information and concepts with other students. The materials posted on Blackboard, the course website, or disseminated in class are intellectual property belonging to the author. Students are not permitted to buy or sell any course materials under any circumstances, whether they have been posted on Blackboard or otherwise disseminated. Such unauthorized behavior would constitute academic misconduct.

Diversity and Inclusion

We are committed to the Cornell University legacy of diversity summarized in the founding mission of, "Any Person, Any Study". We aim to create an environment that allows our differences to foster our education and engage our learning. We are committed to honoring the unique contributions of each student and expect all students to respectfully listen and dialogue with those that have a different experience to share.

We are committed to disability and religious accommodations. The student must make the instructors aware of this need so we can assist. Requests for academic accommodations should typically be made during the first three weeks of the semester, except for unusual circumstances, so arrangements can be made. In order to implement disability accommodations, students must register with Student Disability Services to verify their eligibility for accommodations.

Assignments

The major assignments of 7100 are for students develop (1) an information graphic that presents the hypothesis or model to illustrate the PhD thesis project (30%) (2) an oral presentation (30%), and (2) a poster presentation tailored to the rotation work/laboratory or area of interest (30%). Intermediate assignment exercises will prepare students with tasks designed to assist in the major assignments, scientific skills development such as literature competency, data visualization, oral and written hypothesis development, critical experimental evaluation skills, and overall professionalism and will include class participation and engagement (10%). This includes asking questions, attendance, discussions, as well as being present while the instructor is teaching.

The assignments should be uploaded into Blackboard/Canvas by 8:30am on the following dates:

- January 29, 2019 – Project Title (Microsoft Word)
- January 31, 2019 Model or hypothesis information graphic sketch (Adobe Illustrator preferred or pdf)
- February 7 Model or hypothesis information graphic for class (Adobe Illustrator)
- February 21, 2019 Written background abstract (Microsoft Word)
- March 21 Oral defense (PowerPoint or Keynote)
- April 11 Poster outline (Adobe Illustrator)

Class Schedule

Dates:

Week 1	Jan 24th	Formulating research questions and hypotheses, practical guidance in building model figures
Week 2	Jan 31st	Building a research strategy, will the proposed experiments definitively answer the scientific question(s)? Approaches to rigor and reproducibility
Week 3	Feb 7th	Presenting initial models for class feedback and evaluation
Week 4	Feb 14th	Presenting initial models for class feedback and evaluation
Week 5	Feb 21st	Quantitative information and literature research
Week 6	Feb 28th	Identifying core foundational assumptions and how to develop a "chalk talk" approach to the A exam
Week 7	March 7th	Strategies for publication and the changing landscape of research dissemination
Week 8	March 14th	Responding to criticism and review
Week 9	March 21st	Oral defense presentations in class
Week 10	March 28th	Oral defense presentations in class
Spring Break	no class	
Week 11	April 11th	Class discussion including examples of visual content, best practices and building confidence
Week 12	April 18th	Personalized coaching
Week 13	April 25th	Examining different types of scientific conscious and unconscious bias
Week 14	May 2nd	In class poster symposium

Resources

Cornell Writing Center: http://knight.as.cornell.edu/wc
Cornell library: www.library.cornell.edu
Gideon database: https://newcatalog.library.cornell.edu/catalog/10323241
Cornell University Statistical consulting unit https://www.cscu.cornell.edu

Attendance Policy and Classroom Etiquette:

Each student is allowed two unexcused absences. Additional absences may impact your class participation grade unless allowed for unforeseen circumstances and illness. We commit to starting and ending classes on time. Please be prompt and do not leave before the class is over unless it is necessary. Cell phones should be silenced, headphones removed, and use of a computer is expected to support your classroom experience.