

Fundamentals of Graduate Research – Autumn 2020

Fridays 10-12:30

Note: *This Course has a Moodle Site. Information and assignments will be posted there with frequent updates and homework assignments, so check the site often.*

Instructor information

Joel Harper

Office: ISB 406C

Cell: 406-214-9311

e-mail: Joel@mso.umt.edu

E-mail is the best way to reach me – I check it often including weekends and evenings.

Course objective

This course will develop skills needed to perform successfully as a graduate student researcher and to continue as a career scientist. Specific goals are to enhance the student's ability to: 1) design research projects having sound scientific methods, 2) write successful grant proposals, and 3) make effective written and oral presentations of research results to scientific peers. The course will also discuss trends and developments in science, such as bias, replicability, and publishing. The course is intended for first semester graduate students in the field of geosciences. Three credits.

Learning outcomes

- understand how to design research with sound scientific methods.
- be able to successfully write research grant proposals.
- make effective written and oral presentations.
- understand the scientific culture of geosciences within the context of different scientific sub-disciplines.

Course Assignments and Grading

Required Elements

1. Write three research proposals.
2. Prepare and deliver a 15 minute presentation to the class.
2. Prepare and deliver a 15 minute oral presentation to the geosciences department.
3. Create a poster using graphics software.
4. Create a website.
5. Complete written and reading assignments, such as peer reviews and writing exercises.
6. Actively participate in class discussions, exercises, and peer review sessions.
7. Attend and evaluate all departmental guest lectures and thesis defenses.

Evaluation

Improving one's ability to design research projects and write successful proposals are skills most scientists strive to improve throughout their careers. Assessment will focus on the student's level of commitment to the course objectives partitioned as follows:

Proposals – 40%
 Oral presentations – 30%
 Peer reviews and other written assignments – 15%
 Course participation – 15%

Course Text (this book, or something similar, is recommended)

Scientific Writing, How to write papers that get cited and proposals that get funded
 Joshua Schimel
 Oxford University Press, 2012, 240 Pages, ISBN: 9780199760244

Simplified schedule, subject to revision

Meeting	Class Topic
21 Aug	introduction, degree requirements, equip. & facilities
28 Aug	scientific method/peer review
4 Sep	proposal mechanics, publication process, literature
11 Sep	proposal mechanics, problems and hypotheses
18 Sep	GSA proposal panel review
25 Sep	budgets, figures, broad impacts
2 Oct	literature review presentations
9 Oct	individual meetings on project proposal (no class meeting)
16 Oct	TBD
23 Oct	results v interpretation
30 Oct	conferences, posters
6 Nov	poster session
13 Nov	talk rehearsals
16 Nov(M)	department presentations (Dept. lecture Monday 12)
20 Nov	<i>Quick Debrief from talks</i>

A homework assignment will be due each week. In addition, there will be numerous in-class activities which students are expected to complete. The content of weekly assignments and in-class exercises will be somewhat fluid, however, the following due-dates are pre-determined and will remain fixed.

Due on:

- September 18 – GSA Reviews and panel participation
- September 25 – literature review, written
- October 2 – literature review, presentation
- October 9 – 1-page project summary
- October 16 – proposal #1
- October 23 – proposal reviews
- October 30 – proposal #2
- November 6 – poster and presentation
- November 13 – draft talk
- November 16 – formal department talk
- November 20 – proposal #3

UM's E-mail policy

The UM email policy requires that faculty “must use *only* UM assigned student email accounts for all email exchanges with students, since such communication typically involves private student information.” You are therefore required to send correspondence to us through your GrizMail account.

UM's Academic honesty policy

All students must practice academic honesty. Academic misconduct is subject to an academic penalty by the course instructor and/or a disciplinary sanction by the University. All students need to be familiar with the Student Conduct Code. The Code is available for review online at: http://life.umt.edu/vpsa/student_conduct.php

Students with Disabilities

Whenever possible, and in accordance with civil rights laws, the University of Montana will attempt to provide reasonable modifications to students with disabilities who request and require them. Please feel free to setup a time with me to discuss any modifications that may be necessary for this course. For more information, visit the Disability Services for Students website at: <http://www.umt.edu/dss/>