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Fall 9-1-2021

### GEO 508.01: Fundamentals of Academic Research

Joel T. Harper

*University of Montana, Missoula*, [joel.harper@umontana.edu](mailto:joel.harper@umontana.edu)

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Harper, Joel T., "GEO 508.01: Fundamentals of Academic Research" (2021). *University of Montana Course Syllabi*. 12351.

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## **Fundamentals of Graduate Research – Autumn 2021**

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](mailto: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:**

#### ***overarching:***

- Initiate a successful graduate program with: a) knowledge of the logistics associated with UM, our department, and graduate degrees; b) development of skills and knowledge needed to be a successful graduate student and scientist; and, c) personal and professional development.

#### ***specific***

- 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, trends and practices within the scientific community.
- gain an overview of career pathways for graduate degrees in geosciences and initiate planning.

### **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

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. The Moodle site will be updated frequently the schedule of topics, assignments and due dates

### **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](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/>

**UM regulations are that:**

1. Face masks are required to be worn in the classroom at all times until further notice. *This is necessary to limit the spread of the Covid-19 virus.*

2. Students must always sit in assigned seating locations.  
*This is necessary for contact tracing of infectious disease cases.*