Syllabus for Geoscience Research Techniques
Spring 2009

GEOLOGY 390-01, CRN: 157

Credits: 3.0
Lecture meets: MW 11:00-11:50 a.m., and Fri 12:00-1:50 pm, 205 Science 1
Prerequisites: Jr. standing and 15 s.h. of Geoscience courses (LA, CPA)

Instructor

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Textbook *: None*

This course uses **Angel** (https://angel.oneonta.edu/) to transmit information such as the syllabus and lecture schedule, lecture notes, exercises, and links to online information. You will use your SUCO email ID and password to access course information on Angel.

Course Description **(from the Undergraduate Catalog, April 2008)**
The choice and design of research projects are examined in lecture and seminar formats. Techniques employed in geoscience research, including searching and evaluating the primary literature, collecting field data, sampling design and techniques and laboratory analysis of samples are explored in preparation for ESCI 398: Senior Thesis. Scientific writing skills are developed through peer review, preparation of a formal thesis proposal and the introduction and previous work sections of the thesis. *(LA, CPA)*

Course Guidelines
The following list provides a baseline of what is expected from students in this course (quoted section from the list of *Student Responsibilities* approved by SUNY Oneonta).
"In class responsibilities
Students will:
- Attend all classes and arrive punctually.
- If unavoidably late for a class, enter quietly and unobtrusively, and behave in other required ways to minimize distraction.
- Remain alert and attentive during lectures, discussions, and other class/lab activities.
- Avoid unnecessary conversation during lectures, discussions, and other class/lab activities.
- Contribute to class experiences by asking relevant questions, offering relevant examples or views, adequately answering questions posed by others, engaging in critical and independent thought, and challenging both the instructor and the curriculum materials assigned for the course.
- Demonstrate courtesy and respect in dealing with instructors and classmates.
- Recognize and seek to understand diverse points-of-view.

Out-of-class responsibilities
Students will:

- Place academic obligations at the top of the list of college-related priorities.
- Plan to spend 2 to 3 hours out-of-class time in academic study for every one hour of class attendance.
- Thoroughly plan and prepare for classes.
- Notify the instructor in advance, if possible, or in a timely fashion, if unable to attend a class or lab, take a scheduled exam or quiz, submit a scheduled assignment, or remain in the classroom for the entire class meeting because of unavoidable circumstances."
- Any reasonable accommodation will be provided for students with physical, sensory, learning, or psychiatric disabilities. Please contact me for assistance as early as possible.

Grading

Grades will be based on exercises and a research paper that takes the form of a research proposal.

Project. Each student will write a research paper on a topic of their choice. Guidelines for the paper will be handed out at the start of the semester, along with a grading rubric.

Here's the breakdown on grading:

30%	Exercises
70%	Research Project
100%	

Students will receive 1% point added to their grade by participating in an online course evaluation at the end of the semester.

Final grade assignments will be guided by the standard University curve given below.

Percent	*Grade*	*Percent*	*Grade*	*Percent*	*Grade*	*Percent*	*Grade*
93-100	A	87-89.9	B+	77-79.9	C+	67-69.9	D+
90-92.9	A-	83-86.9	B	73-76.9	C	63-66.9	D
< 60	F	80-82.9	B-	70-72.9	C-	60-62.9	D-

Lecture and Lab Schedule (*this schedule is subject to change if more time is required for some topics*).

Date	*Day*	*Topic*
Jan 14	W	Course overview
Jan 16	F	Philosophy of Science; truth, inference, data, hypotheses
Jan 19	M	Philosophy of geoscience research: Read Gilbert, Chamberlin
Jan 21	W	Design of geoscience research: Read *Waterfall Persistence* (Lamb/Dietrich)
Jan 23	F	Read/Discuss current papers on Geoscience thinking
Jan 26	M	Read/Discuss current papers on Geoscience thinking
Jan 28	W	Writing Exercise: Abstracting an article
Jan 30	F	Critiquing abstracts
Feb 2	M	Earth science writing: the structure of journal articles
Feb 4	W	Earth Science writing: the language of journal articles
Feb 6	F	Writing Lab: Re-writing bad paragraphs
Feb 9	M	Searching for information: bibliographies

Feb 11	W	Introduction to library services
Feb 13	F	Lab: Saving your searches, and getting references together
Feb 16	M	Begin your research topic search: find what is known
Feb 18	W	Developing a topical outline from your search
Feb 20	F	Expanding your topical outline into a relational one
Feb 23	M	First Spring Break!!
Feb 25	W	First Spring Break!!
Feb 27	F	First Spring Break!!
Mar 2	M	Defining the goal of your project—Identifying hypotheses
Mar 4	W	Hypothesis testing
Mar 6	F	Lab: Hypothesis construction for your research topic
Mar 9	M	Conceptual models and predictions
Mar 11	W	Mathematical models and predictions
Mar 13	F	Quantitative tests and a stream table; **Research topics due**!!
Mar 16	M	Analyzing results: measurements and predictions
Mar 18	W	Measurement errors
Mar 20	F	Lab: Sliding block
Mar 23	M	Geologic data and hypothesis generation
Mar 25	W	Read Paper on Volcanoes and Climate
Mar 27	F	Lab: Discussion of Volcs/climate paper
Mar 30	M	Interim project: meteorite impacts and extinction
Apr 1	W	Research meteorites
Apr 3	F	Lab: Discussion of meteorites and extinction
Apr 6	M	Second Spring Break!!
Apr 8	W	Second Spring Break!!
Apr 10	F	Second Spring Break!!
Apr 13	M	Second Spring Break!!
Apr 15	W	Work on paper
Apr 17	F	Lab: Critique of drafts
Apr 20	M	Research techniques: Petrography
Apr 22	W	Research techniques: Summarizing petrographic method
Apr 24	F	Research techniques: Mineral ID and Raman spectroscopy
Apr 27	M	Research techniques: grain size analysis
Apr 29	W	Work on paper
May 1	F	Work on paper
May 4	M	Lab: Critique of drafts
May 6	W	Work on paper
May 8-14		Final Project Due

Spring 2009*

January 11-13	Sunday-Tuesday	New student arrival & orientation
January 14	Wednesday	Classes begin
February 20	Friday	College closes after last evening class
March 2	Monday	Classes resume
April 3	Friday	College closes after last evening class
April 14	Tuesday	Classes resume
May 7-13	Thursday-Wednesday	Finals Week
May 16	Saturday	Commencement