

Blackboard course site: Please see the Blackboard site *Geology Senior Research & Honors Research 2016-17* for an electronic copy of this syllabus and other important information.

FALL semester deadlines

Friday, September 30th

Students submit a *progress report*. This report should include:

- 1) title of thesis research
- 2) description of research questions/goals
- 3) a statement on progress thus far
- 4) a statement on what remains to be accomplished

This report should be submitted both to Blackboard and to your research advisor as a single pdf file. Students will be graded on this report (based on both the progress of the thesis research and quality of the report). The progress report will be evaluated by the faculty.

Friday, November 11th

Students submit their *Introductory sections* (including Introduction, Background, Previous Work, Geologic Setting, and **ANY** other sections before Methods), Methods section, and the *appropriate figures* for those sections. Please note that the Introduction and Methods sections should be complete, including all *figures* as well as the *references cited* in those sections. *Note:* you may have already started on the Results & Discussion section- you can submit those as well.

This material should be submitted both to Blackboard and to your research advisor as a single pdf file. Students will receive a grade for this report based on the quality of the writing, figures, and proper citations. The introductory sections will be evaluated by the faculty.

Friday, December 9th

Students submit their revised *Introductory sections, Methods, and Results to date* section. Please note that this section should be complete, and include figures and references. *Note:* you may have already started on the Discussion section- you can submit that as well.

This material should be submitted both to Blackboard and to your research advisor as a single pdf file.

Students will receive a grade in the Fall semester based upon 1) meeting the aforementioned deadlines and 2) the quality of the work that is submitted.

Spring semester deadlines

Friday, February 17th

Students submit their *Discussion* section. Please note that this section should be complete, and include figures and references.

This material should be submitted both to Blackboard and to your research advisor as a single pdf file.

Late February

Undergraduate Research Symposium @ William & Mary (*voluntary*)

Friday, March 24th

Students must submit their **COMPLETED THESIS** (*with figures, plates, etc.*). This material should be *submitted as a single pdf file* via Blackboard. This version of the thesis is not a rough draft, and should have already undergone several revisions with advisor input.

Failure to meet this deadline will result in a significant grade reduction.

March 30th to 31st

SE section meeting of the Geological Society of America- Richmond, VA (OPTIONAL)

Saturday, April 22nd

SENIOR RESEARCH SATURDAY

Students present their thesis research as a 10 to 12 minute talk, with 5-6 minutes for questions. This will be a full-day symposium. A reception and celebration for the Geology seniors will follow. Friends, friemenies, and families are welcome.

By Monday, May 1st

Students submit an electronic copy of their **final corrected theses** to the class Blackboard site (as a single .pdf file entitled with your last name and year- for example Keithline16.pdf). Advisors may require other items to be submitted (other files, graphics, and perhaps even a paper copy of the thesis).

General Information

The Geology Department considers research to be a valuable part of an undergraduate education in geology, thus all majors are required to complete a research project during their senior year. Senior research is a year-long program of independent research that culminates in a formal written thesis and oral presentation. The research is carried out in close cooperation with a faculty advisor, ***although the responsibility for successfully completing the project lies with the student.*** Senior research is your opportunity to explore a particular subdiscipline of geology in detail and to apply the research skills that you have mastered in your geology coursework to a specific research question that you find fascinating.

Student responsibilities

1. Communicating regularly and effectively with your advisor
2. Surveying and evaluating the primary literature pertaining to your research
3. Refining your research questions/goals
4. Learning and applying data collection and analysis techniques
5. Collecting data throughout the year
6. Analyzing and interpreting those data
7. Writing a formal thesis (*see format provided below*)
8. Presenting your research to your peers and faculty in the geology department

Grades

The Geology 491/492 is a 4-credit course sequence, and your final grade will be based on the following components:

- 30%** meeting required course deadlines and demonstrating progress on research activities throughout the Fall and Spring Semester
- 45%** the final thesis
- 25%** thesis presentation at Senior Research Saturday

The assignment of grades for senior research is a collective effort involving all faculty members. At the end of the spring semester, we meet and review the work of each student, and attempt to arrive at some consensus regarding an appropriate grade. Our judgments are based on the tangible results of your work, your progress throughout the year, and a variety of additional indications of your engagement with your project. Much of the input in our discussions obviously comes from your advisor. The list below includes many of the components that we consider and discuss in assigning your grade.

1. Quality of the final written thesis: including writing, figures, overall scientific quality, and how much effort was required by your advisor to edit your work
2. Quality of the final oral presentation: including professionalism, quality of oral component (organization, clarity, timing, etc.), quality of visual component, overall scientific quality, response to questions
3. Did you have regular meetings with your advisor throughout the year? How many times did you cancel or just not show up?
4. How successful were those regular meetings? Did you come prepared with questions, new results, new insights, or any indication of progress? Or, did you come having done little, just expecting your advisor to give you another task?
5. Did you complete various tasks in a timely fashion? How much did you do at the last minute?
6. How well did you master the literature on your topic? How diligent were you in seeking out material on your own? Did you read things without being continually bugged about it by your advisor?
7. How successful were you at making the project "your own"? In other words, did you show initiative, or simply go from one assigned task to the next without much independent thought? Your advisor has probably gone to a considerable amount of effort to come up with a project idea for you, and will also spend many hours helping you. We need to see that our efforts are matched by yours.
8. Did you do a brown bag?
9. Did you submit a minor research grant proposal (or any other proposal)?

10. Did you participate in the undergraduate research symposium?
11. If you received financial support for your project during the summer, did you maintain a strong commitment to your work during the academic year (i.e., when you weren't getting paid!)?
12. Did you present the results of your work at a professional meeting? We realize that not everyone is in a position to do this, and it certainly is not a requirement. However, this accomplishment is an indication of early progress, diligence, and . . . *results!*

In the list above, numbers 1 and 2 are obviously the most important. If you are making good progress throughout the year, as reflected in the other items, the final results of your work will almost certainly be of high quality. Unfortunately, the opposite is also true.

Honor Code Policy: The geology faculty are strong supporters of the William & Mary Honor Code. If you have any questions about the code, please see:
<https://www.wm.edu/offices/deanofstudents/services/studentconduct/honorcodeandstudentconduct/honorcode/index.php>

If you have any questions about what constitutes plagiarism, please let your advisor know and they will discuss it with you.

Formatting Your Senior Thesis

Your thesis is the written legacy of your research at William & Mary. Therefore, it needs to be loaded with data, well organized, and well documented. Here are some handy hints to help you format and organize your thesis.

Formatting instructions

Margins: 1.5" on the left and 1" on the top, bottom, and right sides.

Line spacing: double-spaced

Font: Times or Times New Roman

Font size: 12pt for normal text, 14-18pt for title page

Page numbering: centered at the bottom of the page (on all pages following the title page)

Outline

Please use this outline to help you organize your thesis-- but be sure to review your potential outline with your advisor before you start writing! Not all theses will include every section and some may include different sections. All theses should include: a title page, table of contents, list of figures, list of tables, abstract, conclusions, acknowledgements, references cited, and appendices. The sections should follow this general order:

- Title page: must contain the title of your project, your full name, Williamsburg VA, and the date (see sample Title Page for Geo 492 format, see Charles Center website for Geo 496 format)
- Table of Contents: see sample Table of Contents for format
- List of Figures
- List of Tables
- Abstract: no more than one page
- Introduction
- Background (and/or Geologic Setting)
- Methods (or alternative heading)
- Results
- Discussion
- Conclusions
- Acknowledgements
- References Cited
- Appendices

Figures

Figures should be high quality and as large as is practical. They should be numbered consecutively and *inserted into the text* (usually on their own pages) following (not before) the first reference to the figure in the text. More than one figure can be included on a page. All figures need detailed captions, which should be included at the bottom of the figure. Color figures may be used. Photomicrographs are best as color figures. Scanned color images must be printed at the highest possible resolution (these typically look washed out or pixelated). Color photocopies are also acceptable. Use the appropriate program to make figures and avoid pixelated images.

References Cited (reprinted from the Information to Authors: *GSA Bulletin*)

All references must be cited parenthetically in the text and listed in the References Cited section. List references alphabetically by author's surname. For references with two authors, list alphabetically by first author's surname and then alphabetically by second author's surname. For references with more than two authors, list alphabetically by first author's surname and then chronologically, earliest year first. Distinguish by addition of letters those references that would otherwise have identical citations (e.g., Smith, 1979a, 1979b). Do not abbreviate journal titles or book publishers in references. For references that do not match any of the examples given here, include all information that would help a reader locate the reference.

Abstract

Sammis, C.G., 1993, Relating fault stability to fault zone structure: Geological Society of America Abstracts with Programs, v. 25, no. 6, p. A115-A116.

Book

Vail, P.R., Audemard, F., Bowman, S.A., Eisner, P.N., and Perez-Cruz, C., 1991, The stratigraphic signatures of tectonics, eustasy and sedimentology-An overview, *in* Einsele, G., et al., eds., Cycles and events in stratigraphy: Berlin, Springer-Verlag, p. 617-659.

Journal

Doglioni, C., 1994, Foredeeps versus subduction zones: *Geology*, v. 22, p. 271-274.

Comment, Discussion, Reply

Retallack, G.J., 1993, Classification of paleosols: Discussion: Geological Society of America Bulletin, v. 105, p. 1635-1636.

Guidebook

Blackstone, D.L., Jr., 1990, Rocky Mountain foreland exemplified by the Owl Creek Mountains, Bridger Range and Casper Arch, central Wyoming, *in* Specht, R., ed., Wyoming sedimentation and tectonics: Casper, Wyoming Geological Association, 41st Annual Field Conference, Guidebook, p. 151-166.

In Press

Hoffman, H.J., and Masson, M., 2002, Archean stromatolites from Abitibi greenstone belt, Quebec, Canada: Geological Society of America Bulletin, v. 114 (in press).

Map

Abrams, G.A., 1993, Complete Bouguer gravity anomaly map of the State of Colorado: U.S. Geological Survey Miscellaneous Field Studies Map MF-2236, scale 1:500,000, 1 sheet.

Open-File Report

Alpha, T.R., 1993, Landslide effects: U.S. Geological Survey Open-File Report 93-0278-A, 43 p.

Proceedings from a Symposium or Conference

Baar, C., 1972, Creep measured in deep potash mines vs. theoretical predictions, *in* Proceedings, Canadian Rock Mechanics Symposium, 7th, Edmonton: Ottawa, Canada Department of Energy, Mines and Resources, p. 23-77.

Thesis

Wopat, M.A., 1990, Quaternary volcanism and tectonics in the Mexican volcanic belt near Tequila, Jalisco, southwestern Mexico [Ph.D. thesis]: Berkeley

Websites

USGS website. <http://www.usgs.gov/>. Accessed 1/1/05.

Appendices

All of the data you collect during the course of your senior research should be included in your thesis as appendices. These should be laid out in table form and serve as a data repository.

Digital Archive

All of your work (*including your data and analyses*) should be saved in electronic format. See your advisor for information on which folders and files to include and what format should be used.

(sample title page)

Your title here

A thesis submitted in partial fulfillment of the requirements for the degree of
Bachelor of Science in Geology
from the College of William & Mary

by

Your name here

Williamsburg, Virginia
May, 201?

(sample)

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