

## Geology Department

### Guidelines for Senior Research Project Proposals

#### Overview

A senior project at Allegheny College must contain original work. You must analyze and evaluate data, prepare your own design, etc. Although you may use data collected by others, it is not sufficient to merely compile that data. This is a major distinction between a research project and a term paper. Probably the most important part of your proposal is coming up with a good question or hypothesis that you will evaluate. Once you have a good question, it will guide your proposal and subsequent research.

Where can you get ideas for research projects? Here are some possibilities:

- o think back about favorite topics in your courses
- o read or skim previous comps (Some of them have "suggestions for further research" near the end of the comp.)
- o do an electronic key word search for an imagined topic of interest using electronic data bases/indexes at the Pelletier website
- o leaf through geology journals in the library to identify topics (articles) that may be of interest
- o find out what some current issues are by means of skimming the published abstract volumes for professional meetings (in Pelletier Library).
- o talk with professors who have interests similar to yours
- o do some brainstorming with some other GEO juniors and seniors.

#### Proposal Format

Ultimately, you will need to prepare a written comp proposal. Keep in mind that your project design and proposal is not a trivial exercise and that strong initiative must be demonstrated. Length (for your paper) is not critical, but 5-7 pages usually covers the material quite well. The typed proposal (double spaced) should be WELL RESEARCHED, WELL THOUGHT OUT, WELL WRITTEN and contain the information listed below with each category separated by headings. BE SURE TO READ AND USE THE MATERIAL ON SCIENTIFIC WRITING IN YOUR SEMINAR HANDOUT. USE THE "SCIENTIFIC STYLE CHECKLIST".

#### I. Project Statement

A clear statement of your hypothesis or question you will attempt to answer.

#### II. Background

Full background information on the problem including:

- o a pertinent review of the subject
- o previous work by other researchers
- o the nature and importance (potential contribution) of your intended work
- o specific aspects of your work related to the background review.

Important diagrams should be included. Proper scientific writing style for figure captions and table headings must be used. This section should make up the bulk of your paper. It should be well researched, complete, and careful presentation.

### **III. Proposed Methods**

An explanation of how you will go about testing your hypothesis or achieving your goal (i.e., procedure).

### **IV. Materials**

Special equipment, material, and supplies needed and the cost of same, indicating what portion you expect the College to pay for.

### **V. Schedule**

Timing. When will you do the work? It would be wise to do most sampling over the summer, etc. Map out a plan of phase I (literature research), phase 2 (data collection), phase 3 (data analysis), etc., if it is appropriate for your comp. At the end of this section, include a list of your proposed committee members.

### **VI. Bibliography**

The extent and/or quality of your references will serve as a demonstration of the quality of your work on the project proposal. Each reference in the proposal text must appear in the bibliography and visa versa. BE SURE TO USE PROPER REFERENCING STYLE (SEE YOUR SEMINAR HANDOUT).

### **Submission of Proposals During the Junior Year**

All proposals are due to your seminar instructor according to the attached schedule. The grades on the proposal will constitute about one half of your seminar grade. PROPOSALS WILL NOT BE ACCEPTED UNLESS PROPER SCIENTIFIC WRITING STYLE IS USED (See CHECKLIST in “Guidelines” for Scientific Writing, Oral Presentation, and Reading Science).

### **Oral Presentation of Research Proposal**

Your research proposal will be presented to the seminar group on an assigned date. The purpose of the presentation is two fold. First, it will provide you with an opportunity for group evaluation of your project, which will further enable you to improve your research experience. Secondly, it will provide you with an opportunity to effectively communicate science. BE SURE TO READ the “Guidelines” section on Oral Presentations. Also, be sure to make and use effective visual aids, e.g., colored overhead projections, handouts of crucial diagrams, etc.

### **Advising and Committee Members**

Your research advisory committee will usually consist of two faculty members. It is your responsibility to arrange for a primary advisor and a reader or, if suitable, a co-advisor. You will set up your committee next year or, if necessary, this year (such as, in the case of summer field work).

### **Course Registration During the Senior Year**

Next fall you will need to register for GEO 600 (to be completed in the fall) or GEO 610 (to be extended) and GEO 620 in the spring. In the first semester, students will be evaluated on their proposal and presentation at the preliminary meeting, and on the progress report submitted by the end of the fall semester. Students will be evaluated on their research effort, oral defense and written senior thesis during the spring semester.

### **Progress Reports During the Senior Year**

When the research topic is accepted the student should arrange for meetings with the thesis advisor. The purpose of the meeting is to keep the advisor informed about the progress of the research and to anticipate any difficulties which the student may encounter. These meetings should continue throughout the research/writing time period. See the schedule for the minimum required meetings.

### **Draft and Final Report**

BE SURE TO READ the section on SCIENTIFIC WRITING in the “GUIDELINES”. This will save you much effort and help avoid problems such as unacceptable style and format. In particular, note the sections on:

- a) Abstract preparation
- b) Approved style for citation of references, bibliography, figure captions, table headings, etc.
- c) Checklist for scientific writing style

Both the draft and final report should contain:

- a) an abstract
- b) acknowledgments
- c) a table of contents
- d) an introduction including the background, purpose and previous work
- e) section describing the method of analysis
- f) presentation of data (that is, a results section)
- g) discussion section (includes interpretations and conclusions)
- h) summary of conclusions (if needed) - may include suggestions for further work