Contact Information: Arnold Arms 206, (83)8-8869

Office Hours: M W F 3:00-4:30, T 1:00-2:50, other times by appointment

Goals:

- To provide a capstone experience for your mathematics major.
- To give you a chance to demonstrate your ability
  - to read and learn mathematics in dependently,
  - to make rigorous mathematical arguments, and
  - to precisely articulate (both in writing and orally) complicated and technical arguments.
- To have the experience be challenging, but one that you remember with pride and satisfaction for many years.
- To have projects worthy of presentation at the Academic Excellence Showcase in the spring.

General Course Structure:
The main activities are as follows.

- Selecting a topic: Select, in consultation with the instructor, a suitable topic for a substantial senior paper/thesis/project. Follow the guidelines from the document “Finding a Senior Project Topic.”
- Make a short oral presentation of a topic proposal.
- Research: Thoroughly read and understand the paper(s) selected for the project. This amounts to making a thorough set of informal notes containing the definitions and proofs, with all the details filled-in.
- Consult with the American Mathematical Society’s information on the style of your paper. Here is their website: http://www.maa.org/pubs/journal_guidelines.pdf.
- Writing the paper: Work on the paper/thesis/project all term giving the instructor and peers multiple opportunities to respond to drafts. Write drafts by hand or using a word processor, but writing formulas by hand as necessary. At the draft stage, avoid wasting time on appearance, save that for the final version. Keep all copies of your paper as we make corrections and/or additions. The graduate school bound students or others who wish to learn an efficient mathematical typesetting program should consider learning LaTeX. Ask for details.
- Reporting: At each weekly meeting, submit a written work log, summarizing times worked and what was accomplished during each work period. Enhanced reports also include questions, comments, ah-ha moments and so forth. A minimum of 8 hours per week is expected, but that will not be sufficient in most weeks.
On-going Feedback: Each week, beginning with week 5, you should submit a draft of a significant portion of the project. Keep all drafts, revisions, copies of my feedback, etc. in the large envelope provided. Submit the envelope and its entire contents each week. If you do not submit a significant amount of work each week, your grade on the project will be cut.

Submitting your final paper: After that lengthy process of writing and review, you will submit the paper at the end of this term. Then, in the jargon of scholarly publication, it will be “refereed.” The version you submit should be one which you think needs no more work.

The referee (in our case, the instructor) will review the paper. The referee’s report will be either

- accept the paper as is (rare),
- accept the paper subject to revision (during spring term), or
- reject the paper (and not pass the course).

In order to avoid rejection, proof-read and edit the final product carefully and also incorporate the feedback received on the drafts.

Revising the paper: Most often, the referee’s report is that the paper has merit, but needs improvement. The revision will occur during spring term.

During and after the writing of the paper, you will speak about it to the class and to the campus. Most speaking will be done during spring term.

Schedule:
- Week 1 – Meet with instructor to discuss precise project content; begin research.
- Weeks 2-4 – Meet with instructor; continue research; make draft outlines of the paper
- Week 4 – Short oral project proposal presentations (during scheduled class times)
- Weeks 5-9 – Meet with instructor; continue research and writing; submit drafts
- Weeks 8 & 9 – Class presentations by those who are completing the projects early (during scheduled class times as announced)
- Week 10 – Individual meetings as needed
- Finals week – Paper due Monday; submit all drafts and feedback along with the paper.

Grading:

Oral Proposal Presentation 6% of the grade
Attendance and Participation in the Presentations 4%
Work logs -1% per missed submission
Drafts -2% per missed or inadequate submission
Senior Paper/Thesis 90%

Accommodations: A student who feels she or he may need an accommodation for any type of disability should make an appointment to see the instructor or contact the Office of Disability Services (838-8250v/tty) in the Academic Programs and Support building.
As is the case in the working world of mathematicians, including teachers, these guidelines are enforced.

Content and Audience
The senior paper/thesis/project is be an original treatment of material from multiple sources, properly cited. “Original” means it will be presented in the author’s own words, which are not overly bound to the style of the sources. In some cases, it may contain original mathematics. It should always contain original examples.

The paper should be sufficiently self-contained and clear as to be accessible to an average senior mathematics major at WOU.

Style
In the mathematics profession, a journal will usually direct authors to recent issues of the journal with the instructions to use the same style as is used in those issues. Here we will use the style of The American Mathematical Monthly (AMM). Your senior paper should look exactly like an article in AMM, except that it should be 1.5-spaced instead of single-spaced.

The senior paper will be divided into labeled sections as in AMM.
When you wish to list a book, article, website, personal communication, or whatever in the bibliography, look through recent issues of AMM until you find the same kind of source being used, then copy the style of the bibliography entry. Use issues less than 6 years old, since styles have changed.

There are two acceptable options for citations in the senior paper. One is to number the items in the bibliography and cite them by number, as in AMM. The other acceptable method is to label the bibliography entries with initial(s) of last name(s) of the author(s) and cite them by those initials. For example, the bibliography might contain an entry like


A citation would look like “W. Bolyai passed his interest in the parallel postulate on to his son [LP, p. 14].” If there are two sources by same author(s), then include the year along with the initial(s), such as [LP1999]. If there are authors of separate items whose names begin with the same letter, use more than the first letter. For instance, if we had Ward and Williams as authors of two separate items, we would label them [Wa] and [Wi].

Whichever style is used, list the page(s) of the source from which the information is obtained (see above example). If citing a theorem, then it is common to cite it by number rather than page, as in [13, Thm. 3.1] or [W, Thm. 3.1].

Notice that APA style is not used. APA style is not common in math journals (though it is in math education research journals).

Writing
The senior paper is expected to be well-written with good sentence structure; easily understood and mature writing style; correct spelling, grammar and punctuation; and smooth transitions. Refer to a standard manual for matters of grammar and punctuation.

Authors should read the following for math-specific matters of style.

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1These guidelines are taken from Dr. Ward’s course in Winter 2007


**Typing**

Papers, of course, should be typed using 1.5-spacing. Lee’s Guide, listed above, has some guidance on typing mathematics. Assistance in using Word’s Equation Editor or learning LaTeX is available upon request.

**Summary and Checklist**

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