

Syllabus

Let's take care of some of the bureaucratic matters first:

- **Course coordinator:** Dr. Patrick Bahls (please feel free to call me Patrick).
- **Contact info:** e-mail: patrick.bahls@gmail.com, phone: 232-5190 (e-mail is typically the best way to get hold of me).
- **Course website:** facstaff.unca.edu/pbahls/math480spring2009/math480.html
- **Class time:** Wednesday, 4:10 p.m. to 5:25 p.m.
- **Class location:** Rhoades Hall, Room 105 (The Calculus Classroom)

Course Objectives.

So why come to this class? Think of the following as your learning objectives for this course:

- **Information literacy.** As this course is designated as Information Literacy intensive, you will be asked to research several topics and to prepare a computer presentation.
- **Oral Competency.** Completion of this course fulfills UNC Asheville's oral competency requirement by requiring you to give a classroom presentation on a mathematical topic.
- **Written exposition.** In writing a brief expository paper (5-10 pages in length) on the topic on which you present, you will have an opportunity to learn the way in which a math paper is put together.

Each of these points is expanded on below.

What do you mean by "Information Literacy"?

This course is designated as Information Literacy Intensive under UNC Asheville's ILS program. As such, you will be asked to research several mathematical topics, evaluate the quality of the sources you used in your research, organize the findings you've discovered, and prepare a multimedia presentation on one of the topics you've researched. Please note that by "research" I mean that you need to be able to use standard tools (databases, archives, *etc.*) to find information on topics of interest to you; I do *not* mean that you need to discover original results, as in an undergraduate research experience.

One of the best ways to start the research process is to simply browse through some issues of quality expository journals. We have several great ones available in the library and through JSTOR online. In particular, there are three journals published by the Mathematical Association of America (MAA) that are highly recommended. In order of increasing sophistication, these are:

- The College Mathematics Journal
- Mathematics Magazine
- The American Mathematical Monthly

Your mentor for this course will help you in this initial stage of your study.

At some point, you will need more information on a specific topic. In fact, you might already know of a topic that you want to know more about. To find this information, you should use a standard research tool such as one of the following.

- JSTOR: <http://www.jstor.org/>
This has a vast collection of online articles *and* provides a search engine for the collection. You will find it useful to again restrict your search to the journals above.
- Google Scholar: <http://scholar.google.com/>
This is Google's search of books and scholarly articles. Much of it is immediately available online or, in the case of books, through our library.
- MathSciNet: <http://www.ams.org/mathscinet/>
This is *the* major index of mathematical research articles. Most of it is quite technical, but you can restrict your search to one journals above.

Note that MathSciNet and JSTOR are not free; UNC Asheville has a subscription so you can freely access them on campus. If you want to access them from off campus, be sure to do so through Ramsey Library's electronic resources page, <http://bullpup.lib.unca.edu/library/eres/>. JSTOR is available under "General Indices" and MathSciNet is available under "Sciences." You will need to authenticate using your student ID number.

Please note that Google is great and you can find plenty of fabulous information on a variety of mathematical topics using Google. However, you need to understand that information obtained from the web needs to be treated skeptically. In fact, I encourage you to use Google so you can develop your ability to discriminate between good and suspect information. Information which appears in published books or journals is by and large superior since it has through a process of review by professional mathematicians. Google Scholar is more focused on scholarly works. Much of this stuff has gone through the review process, but not all.

a final note: it is a requirement of this course that you search for information on at least three distinct topics and provide at least two references on each topic. You will also be asked to evaluate the quality of these sources according to a rubric we devise together in class. You should go through these searching and evaluating processes in consultation with your mentor and me.

What do you mean by "Oral Competency"?

This course also fulfills UNC Asheville's oral competency requirement. You will prepare and deliver a presentation on the topic that you choose, and you will write an abstract for the presentation. Your presentation should be roughly 25 minutes long and should be made accessible to other members of the class, *i.e.*, other math majors. Your presentation should have a computer component. We expect some typeset mathematics to be in the presentation and possibly some imagery. Your presentation might be prepared with *Mathematica*, HTML, L^AT_EX, Word, PowerPoint, or any of a number of computer programs. Your computer files must contain correctly formatted references and you will turn these files in after your presentation in order to receive full credit for your presentation.

What do you mean by "Written exposition"?

This course is *not* a Writing Intensive course, and therefore you will not be asked to produce *massive* amounts of mathematical writing (as you would, say, in MATH 280). However, since it is important that you learn to be able to communicate mathematics effectively both orally *and* in writing, you will asked

to create a short paper, roughly 5 to 10 pages in length, summarizing the research you perform for your presentation.

You will produce this paper in two stages; a *first draft* will be due at a given point in the semester (see the schedule below). Once these drafts have been submitted, you will join your colleagues in the course in a *peer-review* process in which you offer one another constructive feedback on the drafts you've all created. After this you will be asked to spend a couple more weeks polishing up your drafts to create a final version that you will submit towards the semester's end.

Your written work will be graded based roughly upon the following criteria ("The Four Cs"): correctness, completeness, clarity, and composition. You should consult the rubric available on the course website for more information on these criteria.

How will I be graded?

Your mentor for the course will be responsible for assigning your grade for all work you complete for this course (presentation, paper, and abstract). However, all of the course's mentors will meet once all talks have been given in order to ensure consistency of grading standards from mentor to mentor.

Although we do not have a rigid rubric for assessing the quality of oral presentations, the following gives a rough discussion of the varying levels of quality:

- A.** Very clear presentation of a topic of sufficiently substantial mathematical content. The student demonstrates mastery of the multimedia aspects of the talk.
- B.** Similar to an A, but with a presentation which is not quite as clear or a step down in mastery of the multimedia portion of the presentation. There may be one or two minor computational errors.
- C.** A grade of C indicates that some clear flaw is evident in the presentation. For example, a *key* step in a proof or computation is incorrect or clearly misunderstood.
- D.** Like a C, but a *really* bad talk; for instance, more is misunderstood than is understood or errors are frequent and glaring.
- F.** A bad talk and incomplete work (*e.g.*, missing abstract, failure to meet deadlines, no multimedia component to the talk).

To summarize, the following will each contribute to your grade in the course, with the following weights:

- *Initial survey* of (3) topics, with properly-cited references, submitted by deadline: 10%
- *First draft* of paper, submitted by deadline: 10%
- *Written abstract* for presentation, submitted by deadline: 5%
- *Final draft* of paper, submitted by deadline: 25%
- *Presentation*, including submission of multimedia files with properly-cited references: 50%

Since it is important that you come to class in order watch others' talks and take part in in-class activities, your grade will be reduced by a half-letter grade for every absence past your first absence (unless such absence is arranged in advance with your mentor and me).

The schedule below lays out the timeline for the course and indicates the deadlines for the course's various assignments.

Course schedule.

- January 14th.** First day of class; discussion of the syllabus and the expectations for the course.
- January 21st.** Discussion on finding and evaluating sources
- January 28th.** Faculty Talk 1
- February 4th.** Faculty Talk 2
- February 11th.** Faculty Talk 3; *initial survey* of three topics due (you must decide by now which topic you'll be presenting on!)
- February 18th.** Faculty Talk 4
- February 25th.** Faculty Talk 5
- March 4th.** In-class abstract writing exercise; *rough draft of paper* due
- March 11th. Spring Break: no class!**
- March 18th.** In-class peer-review; *abstracts* due
- March 25th.** Student Talks 1 (3 talks)
- April 1st.** Student Talks 2 (2 talks)
- April 8th.** Student Talks 3 (3 talks)
- April 15th.** Student Talks 4 (2 talks)
- April 22nd.** Student Talks 5 (3 talks)
- April 29th.** Student Talks 6 (2 talks); *final draft of paper* due
- Scheduled Final Exam Time.** Student Talks 7 (4 talks)

All files associated to your presentation will be due **one week** following your talk.

If you have any questions at any time, please feel free to ask either me or your mentor for the course. For now, let's get started and have some fun!