MATH 2784-001/2794W-001 Undergraduate Seminar I &II
Fall 2014

Math 2784/2794W, Fall 2014
Instructor: Keith Conrad
Office: MSB 318
Course Web Page: http://www.math.uconn.edu/_kconrad/math2784f14
The instructor's email address and office hours are posted on the course web page.

Brief overview:
This course will partially satisfy the W criteria for math majors. You are required to prepare a paper of at least 7 to 8 pages of revised and edited work on a mathematical topic this semester, written in accordance with common conventions in mathematics. (Taking the course twice will satisfy the 15-page requirement for a W credit. Under no circumstances will a student be allowed to write two papers in one semester to reach the 15-page minimum for a W credit.) Course handouts are available to provide some sample math papers for you to examine and some advice on mathematical writing. Read the sample papers and model your format on those samples if you are unsure how to structure your paper.

What is a W course?
According to the UConn regulations, W courses should:
(1) Require that students write a minimum of fifteen pages that have been revised for conceptual clarity and development of ideas, edited for expression, and proofread for grammatical and mechanical correctness;
(2) Address writing in process, require revision, and provide substantial supervision of student writing. (The structure of revision and supervision may vary, including in- class writing workshops, individual consultation, substantial formative commentary on drafts, and so on.);
(3) Have an enrollment cap of nineteen students per section;
(4) Make explicit the relation between writing and learning in the course;
(5) Articulate the structure of supervision of student writing;
(6) Explain the place and function of revision in the course;
(7) Detail how the page requirement will be met;
(8) Require that students must pass the writing component in order to pass the course.

Course meetings:
Class meetings, on Mondays and Wednesdays, will alternate between discussions of writing and listening to talks. The talks are usually on Wednesdays. You are required to attend at least 7 of these talks, and the paper you write will be based on one of the talks you hear. Even if you select a topic early in the semester, you are still required to fulfill the attendance obligations, which are checked by your filling out and submitting the two-question comment sheet by the end of the week of the talk. At each talk, references to the literature will be made available for further reading about the themes discussed. Keep these reference sheets together to help you select your paper topic. There will be sign-up sheets posted on the instructor's office door (MSB 318) to set up an individual meeting with each student in the early part of the semester.

Picking a topic:
How are you going to pick the topic for your paper? The titles and abstracts of the talks can be found at http://www.math.uconn.edu/math-club, although not all may be available right away. The abstracts (and perhaps to some extent the title) will give an indication of what the topic is about. After the talk you can search for more information on the topic if you found it interesting, through both the reference sheet for the talk and by a web search. There are a lot of good articles in back issues of the American Mathematical Monthly, for instance, which can be found on the website http://www.maa.org/pubs/monthly.html. Inform the course instructor (by email or in person) once you have selected your paper topic. You are encouraged to meet with the instructor to discuss possible topics if you are not sure what to choose. Start getting some substantial background reading done soon after selecting the topic and think roughly about how your paper might be structured. If you find the mathematical techniques needed in the topic you picked to be

far above your abilities, then you need to focus on a special aspect of the topic or you have simply chosen the wrong topic and need to find a different topic.

Deadlines for different stages of your paper are as follows:
(1) Oct. 17 (Friday): Tell instructor your topic by email at 5 PM.
(2) Nov. 3 (Monday): Outline of your paper due by email at 5 PM.
(3) Nov. 17 (Monday before Thanksgiving break): First draft due by email at 5 PM.
(4) Dec. 10 (Wednesday of final exam week): Final draft due by email at 5 PM.
Your first draft will be discussed in an individual meeting before spring break.

Content of the paper:
The most basic thing to remember is that your paper is about mathematics. It must have mathematical content at the college level. A paper with no serious mathematical content is not acceptable. For instance, an essay on the history of the Newton-Leibniz priority dispute over calculus would not be primarily a paper on mathematics and is not going to be accepted. Some historical remarks in your paper can be useful, but they're not the main point. It should be evident in the outline you submit what kind of mathematics will be used or developed in the paper, so the instructor can judge that you're going in the right direction in terms of mathematical content.

A good paper will have the following features:

- An introduction that gives good motivation to the topic.
- Clearly written definitions of relevant terms (which may also be described in less formal language).
- Careful mathematical reasoning that takes the reader from the definitions to some nontrivial mathematical results. This usually is placed in the format of theorems and proofs.
- Examples that illustrate the basic mathematical ideas, including counterexamples that show how things break down if some hypotheses are not satisfied.
- Show a clear mastery of the material.
- In short: introduce ideas with motivation, state results, prove them, and illustrate what they mean by well-chosen examples.

Your paper should not contain the following:

- A laundry list of examples, definitions, and theorems with no clear train of thought connecting them or moving in the direction of some goal.
- Two or three equations and otherwise no actual mathematical content. (For instance, a paper on baseball statistics that has only a formula for the standard deviation or a paper on shooting pool that only mentions the angle of incidence equals the angle of reflection, with no deeper mathematical development, is not acceptable.)
- A persistent vagueness about the concepts being discussed or incomplete mathematical arguments. (It suggests the writer doesn't really have a grasp of the material.)
- A nonstandard tone (autobiographical, poetic, whimsical1).
- Errors in mathematics, history, or grammar. Proofread, and don't count on a spellchecker finding all the mistakes on it's own.
- The paper you write should not simply be a repetition of what you heard in a talk. You are expected to do some outside reading and present some of the basic ideas from the talk supplemented by your own expository contribution to show that you have learned something (perhaps some additional examples or a proof which was stated but not explained in the talk, or an alternate proof of a theorem from the talk).

Writing the paper:
Papers for this course must be written using LaTeX, which is superior to any other type-setting package

for mathematical writing (it produces proper fonts, spacing, etc.). A LaTeX package can be downloaded from the internet (instructions are on the course website) and a LaTeX template for writing your paper along with basic instructions about using it are available on the course website. There will be a lesson on LaTeX and assignments to practice with it before drafts of your paper are due. Keep a realistic schedule for the preparation of your paper. It might happen, if you don't pick your topic well, that you find yourself wishing to write about a different topic late in the semester. Contact the instructor immediately if you want to switch topics, so you can discuss the situation and see what your options are. Good writing means lots and lots of rewriting. Proofread your work not only to correct mistakes but to check that the organization of the material flows well. Could some ideas in the paper be explained more clearly or more concisely? Does the introduction give a proper sense of what the topic is going to be about, or does it sound artificial?

Your responsibilities:
(1) Come to class and participate, sign up for individual meetings in a timely manner.
(2) Submit the comment form for each talk you attend by the end of the week in which you attend it. (The form can be downloaded from the course website.)
(3) Know and complete any assignments due for each class.
(4) Begin working on your paper topic once it is chosen. Papers that have the incorrect length or other problems (disorganized material, incorrect or incomplete mathematical arguments, many English mistakes) may require additional drafts to be submitted.
(5) Submit the final draft by its deadline

Concerning the use of jokes, follow the advice of Knuth, Larrabee and Roberts: “Humor is best used in technical writing when readers can understand the point only when they also understand a technical point that is being made."
This illustrates the previous footnote, if you were reading carefully.

Grading:
Your course grade will be based largely on how well-written your paper is at the end of the course. If you fail to come to class regularly, participate, or submit assignments during the semester, this will negatively impact your grade.

Comment sheets: 5%
Participation in class: 10%
Assignments during semester: 15%
Paper: 70%

Disability Accommodations:
Any students who need accommodations due to a disability should meet with me early in the semester and must also make sure the disability is documented properly and in a timely manner. See http://www.csd.uconn.edu/accommodation services.html for more information on the accommodations process.

W Center:
In addition to speaking with the instructor about writing, you can look for help at the W Center. Their website is http://www.writingcenter.uconn.edu/. Probably few W Center tutors will can talk with you about writing technical mathematics. But the W Center could help you with overall organizational ideas and suggest good ways to express an idea that you are finding difficult to write or introduce. Look over the W Center website before you show up there so that you understand the way they run their tutoring sessions, which is not exactly like tutoring at the Q Center