

Syllabus for MATH 8
Transition to Higher Mathematics
Winter 2014
Tue & Thu 2-3:15p, North Hall 1105
TA Section #1: Mon & Wed 5-5:50p, HSSB 1207
TA Section #2: Mon & Wed 6-6:50p, HSSB 1224

Instructor: Sam Ballas

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Office Hours: Thu 12:30-2p & Wed 9-10:30a

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Office Hours 11a-12p Fri

Text: *A Concise Introduction to Pure Mathematics*, Martin Liebeck, 3rd Edition,

Course Objectives: The goal of this course is to introduce students to proof and rigor in mathematics in order to prepare them for upper division math courses. The objective of this course is two-fold. First we will focus on elements and techniques of proof in mathematics. The second aspect of the course will be the effective communication of mathematical ideas.

Grading: The grade distribution for this course is as follows:

Homework & Participation	30%
Exam 1	20%
Exam 2	20%
Final Exam	30%

Exams: There will be two exams and a final. These exams will be taken during class. The second exam may contain material covered on the first exam and the final will be cumulative. The exam schedule is as follows:

- Exam 1: Thursday, January 30.
- Exam 2: Thursday, February 27.
- Final: Tuesday March 18, 4-7p.

I place value on improving your performance and grasp of the material throughout the course of the quarter. For this reason your score on the cumulative final exam may be used to replace one of your midterm exam scores. This will be done automatically, if applicable. Please note that the final can only replace one of your midterms and that a midterm score cannot be used to replace the final. Additionally, all students must take the final exam.

Homework and Participation: Homework and participation constitute a significant portion of your grade in this course. The reason for this is that I firmly believe that the best way to learn mathematics is by working through examples and exercises and by discussing mathematics with others. With this in mind I will be assigning and collecting homework regularly (See Homework Submission for more details). Additionally, on certain days students will be presenting their solutions to selected homework problems to the class. Each student will be required to make multiple presentations throughout the quarter in order to receive a high participation grade. We will talk more on the first day of class about the logistics of the homework/presentation process.

Homework and participation grades will be determined by three different types of assignments:

1. **Weekly Homework Sets:** These weekly homework sets will be submitted in lecture on Thursdays (see Homework Submission section for more information about submission practices). The purpose of these assignments is to gain familiarity with the concepts being discussed in class and to work on clearly and concisely expressing mathematical ideas. It is OK to work together on homework. However, when it comes time for you to write up the solutions, I expect you to do this on your own, and it would be best for your own understanding if you put aside your notes from the discussions with your classmates and wrote up the solutions entirely from scratch. These problems will

be graded for both mathematical correctness and clarity of arguments. For example, a mathematically correct solution may not receive full credit if it is difficult to follow.

2. **Peer Evaluated Problems:** You will regularly submit a solution to a problem for peer review. Your submission will be anonymously evaluated by one of your classmates. Reading and critiquing mathematics is one of the best ways to improve your own mathematical writing and this process should benefit both the student being evaluated and the evaluator. While you will be receiving critiques from your classmates on these assignments, your grade will be based on completion of the assignment and not on the actual mathematics. However, if Ebrahim or I decide that you are not making an honest effort to write a quality solution then you may receive an incomplete for that assignment.
3. **Discussion Section Problems:** You will be placed in groups of 3-4 students in your TA sections. You will be assigned problems to be completed with your group and presented to the class in section. The purpose of this assignment is to help you learn to verbally convey mathematics to others. You should be focused not only on mathematical correctness, but also on clarity of expression. We will discuss the logistics of this assignment in class on the first day. You should not be discouraged if you end up presenting a solution that is either incomplete or ultimately incorrect since one of the goals of this assignment is to facilitate discussion with your classmates. Your grade for these assignments will be largely based on your progression throughout the course.

Homework Submission: Homework will be submitted at the beginning of class on the day that it is due. Late homework *will not* be accepted. If you know that you will miss class on a day that homework is due you should either make arrangements with me to submit the homework early or make arrangements for a classmate to submit your homework on your behalf. One of the most important aspects of your written homework is clarity of expression. This encompasses not only the mathematical ideas of your proofs, but also of the layout on the actual page. If your homework solutions require more than a single sheet of paper (which they often will) you will be required to staple all pages together. Homework that is not stapled *will not* be accepted and you should not count on a stapler being available in class.

Expectations: I expect that everyone will maintain a classroom conducive to learning. I like an informal atmosphere, but it must be orderly. Thus, everyone is expected to behave with basic politeness, civility, and respect for others. In particular, talking in class is OK if it's part of a class discussion or with me. Private communications are not permitted, especially

during quizzes and tests. I also expect that when you are in class that the mathematics at hand will receive your undivided attention. Indicators that your attention is divided include, but are not limited to:

- Texting,
- Using social media (Facebook/Twitter/etc.), or
- Playing games on your cell phone.

and such actions will result in a penalty to your participation grade.

Attendance: While there is not an explicit attendance policy for this course, you are expected to attend each class. If you miss several classes it is likely that you will not take part in enough in-class presentations and the result will be that your participation grade will suffer.

Academic Dishonesty: Cheating and other forms of academic dishonesty will not be tolerated in this course. A summary of the university's policies on academic misconduct can be found here <http://judicialaffairs.sa.ucsb.edu/CMSMedia/Documents/academicintegflyer.pdf>. To summarize, violations of these policies will result in a rather messy affair for you and me, so just don't do it.