

## Math 3592H

## Honors Mathematics I

Fall Semester 2010

**Text:** J.H. Hubbard and B.B. Hubbard. Vector Calculus, Linear Algebra, and Differential Forms.  
**Instructor:** Peter Webb  
350 Vincent Hall, 625 3491, webb@math.umn.edu,  
<http://www.math.umn.edu/~webb>  
**Office Hours:** 11:15-12:05 MWF or by appointment.  
**TA:** Xiaoqin Guo, 422 Vincent Hall, 625 0356, guoxx097@math.umn.edu

### Course Content

The aim of this course is to introduce the elements of linear algebra, and then to study the basics of differentiation where there are several variables. We will not do very much linear algebra and really at some time in the future you should study it further, since it is a very important and useful topic. My expectation is that you will already have studied the differential and integral calculus of functions of one variable. This semester we will use linear algebra as a language to formulate the notion of a derivative when there are several variables and to express the chain rule in this context. This material is covered in the first three chapters of the book by Hubbard and Hubbard, and I expect to cover Chapter 1, Chapter 2 as far as section 2.8, sections 3.3 and 3.4. We may also study some topics which are not well covered in this book, namely sequences, series, series of functions of one variable, particularly power series. Next semester we will go on to study integration in the context of several variables and the spectacular integration theorems of Green, Gauss and Stokes, which are fundamental in physics.

### Course Assessment

There will be three full-period mid-term exams, to be held on **Thursday October 7**, **Thursday November 11** and **Thursday December 9**. The final exam will be held at the scheduled time as announced in the Class Schedules, which is **1:30-4:30 Thursday December 16** (see [http://onestop.umn.edu/calendars/final\\_exams/common.html](http://onestop.umn.edu/calendars/final_exams/common.html)). The final exam will probably not be held in our usual classroom.

You will also have homework and quizzes organized by the TA in recitations.

Your final grade will be made up of homework and quizzes 20%, mid-term exams 15% each, final exam 35%.

### Homework

Assignments will usually be handed out on Monday or Wednesday. Some of the problems are to be handed in on Thursdays of the following week at the beginning of your recitation period (8-10 days after it is assigned). Late homework will receive a very reduced grade (no credit for problems already solved in class). If it is handed in after the assignment has been graded, there will be no credit given. The first homework will be due on Thursday September 16

### Quizzes

There will be a short quiz at the beginning of most of the Thursday recitation periods covering homework due that day. The first quiz will be on Thursday September 16.

### **Absence from exams**

Missing a midterm is permitted only for the most compelling reasons. Except in extraordinary situations, you should obtain permission from the **professor** to miss an exam in advance; otherwise you will be awarded a 0. If you are excused from taking a midterm, your course grade will be determined by giving extra weight to the final exam. No make-up exams or quizzes will be given. Except in extremely exceptional situations, all students missing the final exam will fail the course. Don't bother to obtain permission to miss a quiz: your lowest quiz score will be dropped.

### **Attendance**

Students are expected to attend all lectures and recitations. Attendance may be checked and included in the grade line.

### **Expectations of written work**

In a number of cases in the homework problems and the questions in the exams you will not get full credit if you simply write down the correct answer. To get full credit you will need to write an explanation of how you got your answer. Where explanations need to be given, these should be written out in sentences i.e. with verbs, capital letters at the beginning, periods at the end, etc. and not in an abbreviated form.

I encourage you to form study groups. However everything to be handed in must be written up in your own words. If two students hand in identical assignments, they will both receive no credit.

### **Computers and Calculators**

Everyone should have a graphing calculator. Computers may not be used on quizzes and exams. Calculators will be allowed on some quizzes and exams.

### **Incompletes**

These will only be given in exceptional circumstances. A student must have satisfactorily completed all but a small portion of the work in the course, have a compelling reason for the incomplete, and must make prior arrangements with the **professor** for how the incomplete will be removed, well before the end of the quarter.

The University requires the following be on all syllabi.

University Grading Standards

- A achievement that is outstanding relative to the level necessary to meet course requirements.
- B achievement that is significantly above the level necessary to meet course requirements.
- C achievement that meets the course requirements in every respect.
- D achievement that is worthy of credit even though it fails to meet fully the course requirements
- S The minimal standard for S is to be no lower than C-. The instructor or department must inform the class of this minimal standard at the beginning of the course.
- F (or N) Represents failure (or no credit) and signifies that the work was either (1) completed but at a level of achievement that is not worthy of credit or (2) was not completed and there was no agreement between the instructor and the student that the student would be awarded an I.
- I (Incomplete) Assigned at the discretion of the instructor when, due to extraordinary circumstances, e.g. hospitalization, a student is prevented from completing the work of the course on time. Requires a written agreement between instructor and student.

Academic Dishonesty. Academic dishonesty in any portion of the academic work for a course shall be grounds for awarding a grade of F or N for the entire course.

Credits and Workload Expectations. For undergraduate courses, one credit is defined as equivalent to an average of three hours of learning effort per week (over a full semester) necessary for an average student to achieve an average grade in the course. For example, a student taking a three credit course that meets for three hours a week should expect to spend an additional six hours a week on course work outside the classroom.

Date of this version of the schedule: 8/30/2010