Course syllabus

Mathematics 290
Handout date: Monday, August 31

Course website:

http://math.pugetsound.edu/~jbernhard

Contact information

James Bernhard • jbernhard@pugetsound.edu • Thompson Hall 390G

See the course website for my office hours. My office phone number is 253.879.3812, but the phone is usually one of the slowest ways to reach me. Email is usually much faster. (All of my email is forwarded to another account, so you may receive email from me at that account as well.)

The course website is the best resource for information about the course. Among other things, it contains a complete calendar for the semester, including all assignments. Also, if you email me a password when I request one, you will be able to access your grade-to-date any time during the semester via the course website.

Learning objectives

The main goals of this course are:

• To learn how to read and write mathematical proofs, in the higher mathematics sense of the term.
• To gain an understanding of introductory linear algebra, which involves connecting algebra and geometry in a way that develops a geometric intuition in spaces of more than three dimensions.

We will study linear algebra for its intrinsic interest, for its applications, and as an introduction to reading and writing mathematical proofs.

Prerequisites

The prerequisite for this course is Mathematics 181 (Calculus II) or the equivalent. If you have not met this requirement or are not sure if this is an appropriate course for you, please see me and we can discuss the course’s suitability.

Course materials

The primary text for the course is Linear Algebra, Annotated, a book that I am writing. The first part of this book is available at the bookstore. If you would like a pdf version of it, just let me know. I plan to make the rest of the book available later in the semester.
No particular technology is required for this course, although access to a computer might be helpful (for word processing and such). We will not use calculators or computers for most of the mathematics in the course, but toward the end of the semester, when you have gained a good understanding of the material, we will talk about how to do so in order to speed up your linear algebraic calculations.

Coursework

The coursework consists of:

- Approximately weekly homework assignments, usually due in class on Wednesdays.
- Two in-class tests (on Chapters 1 and 2) during the first part of the semester.
- Two take-home tests (on Chapters 3 and 4) later in the semester.

There is no final exam for this course. The course is finished on the last day of class.

The homework assignments are to help you learn the course material and to develop your mathematical proof-writing skills. You will submit your homework assignments electronically in LaTeX format. I am not assuming that you are already familiar with the free, open source mathematics word processor LaTeX, and we will cover how to use it in class. The two main reasons that we will use LaTeX are: (1) word processing your mathematics helps you learn to write good mathematical prose, and (2) LaTeX is the nearly universal standard for word processing in mathematics and in the mathematical sciences. It is not hard to use, but it is different from typical word processors, such as Microsoft Word.

Each homework assignment will contain one proof that is a solo problem. You may not work with others on the solo problems (but you may do so on other homework problems). Also, in order to pass the course, you must rewrite and resubmit each solo problem as many times as necessary in order to have a successful proof according to my judgment. This can be a labor intensive process (for me as well as for you), but the payoff in terms of the mathematical maturity that you develop is immense.

For each homework assignment, you will receive two grades: a “pass” or “no pass” on the solo problem, and a separate ordinary score on the other problems. You must earn a passing grade on all the solo problems (resubmitting them as many times as needed) in order to pass the course.

The first part of the semester will have two in-class tests. Internalizing the material from this part of the course is particularly important, both for the rest of the course and for later mathematical study. Having tests in class is designed to give you an incentive to do this.
The second part of the semester will have two take-home tests. While you may eventually want to internalize this material, doing so is not crucial at this point in your mathematical studies. As such, you will be allowed a greater time span and wider access to mathematical resources for these tests.

**Grading**

Your grade will be based on my assessment of your understanding of the material. By default, I will weight the various components of the course as follows:

<table>
<thead>
<tr>
<th>Component</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>Homework assignments</td>
<td>30%</td>
</tr>
<tr>
<td>Chapter 1 test (in-class)</td>
<td>15%</td>
</tr>
<tr>
<td>Chapter 2 test (in-class)</td>
<td>15%</td>
</tr>
<tr>
<td>Chapter 3 test (take-home)</td>
<td>20%</td>
</tr>
<tr>
<td>Chapter 4 test (take-home)</td>
<td>20%</td>
</tr>
</tbody>
</table>

However, these weights are subject to change due to individual circumstances, so if you believe the above components do not accurately represent your understanding of the material, please let me know. If the circumstances dictate, I can work with you to find another way to demonstrate your understanding of the material.

**Late work policy**

I will not accept late work without an appropriate reason, which you should explain to me before the work is late if possible. If you are falling behind or need to turn something in late, please see me so that we can discuss it.

**Attendance policy**

I will not be taking attendance in this class. You are responsible for the material that we cover in class whether or not you are in attendance. Since it is extremely difficult to keep up in the course without attending regularly, I expect absences to be rare. I do not ordinarily give make-up tests, so if you must be absent on a test day, please let me know as early as possible so that we can discuss the situation.

**Academic honesty**

You are allowed to work with anyone (including each other, tutors, and me) on homework problems not designated as solo problems, as long as you do so in a way that helps you learn the material. You are not allowed to work with anyone else on the homework problems designated as solo problems. You are not allowed to work with anyone on any of the tests, and you should not discuss a test with anyone until the class
has completed it and turned it in. If you have any questions on the solo problems or tests, you are allowed to ask me but no one else.

For general information on issues of academic honesty, see the official University of Puget Sound academic honesty policy at:

http://www.pugetsound.edu/student-life/student-resources/student-handbook/academic-handbook/academic-integrity/

**University emergency response procedures**

Please review university emergency preparedness and response procedures posted at www.pugetsound.edu/emergency/. There is a link on the university home page. Familiarize yourself with hall exit doors and the designated gathering area for your class and laboratory buildings.

If building evacuation becomes necessary (e.g. earthquake), meet your instructor at the designated gathering area so she/he can account for your presence. Then wait for further instructions. Do not return to the building or classroom until advised by a university emergency response representative.

If confronted by an act of violence, be prepared to make quick decisions to protect your safety. Flee the area by running away from the source of danger if you can safely do so. If this is not possible, shelter in place by securing classroom or lab doors and windows, closing blinds, and turning off room lights. Lie on the floor out of sight and away from windows and doors. Place cell phones or pagers on vibrate so that you can receive messages quietly. Wait for further instructions.

**Disabilities**

If you have a physical, psychological, medical or learning disability that may impact your course work, please contact Peggy Perno, Director of the Office of Student Accessibility and Accommodation, 105 Howarth, 253.879.3395. She will determine with you what accommodations are necessary and appropriate. All information and documentation is confidential.

**Other**

Feel free to contact me with any questions you have regarding the course. I look forward to an enjoyable class with you this semester!