Math 357
syllabus
Fall 2015

Professor:	Matthew Neal (`nealm@denison.edu`)
Office and phone:	Olin 202 (6288)
Office Hours:	M 2:30 -3:30, 5 - 6 p.m., W 1:30 - 3:30, 5 - 6 or by appointment
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Course

This course concerns the theory and applications of:

1. Parametric curves and surfaces, focusing on their geometry and applications to gravitational motion.
2. Calculus of vector fields and differential forms on curves and surfaces ("Vector Calculus") and their applications to heat and fluid flow, electricity and magnetism, and gravitational force.
3. Infinite dimensional linear algebra ("Fourier Analysis"), and its applications to heat flow, wave mechanics, quantum mechanics, image processing, sound processing, and data processing.

We will spend about 6 weeks on #1 an #2 and 8 weeks on #3.

Book

Multivariable Mathematics by Shifrin and *A First Course in Fourier Analysis* by Kammler

Sections covered:

- Shiffrin: 2.2, 3.5, parts of chapter 6, lots of chapter 7
- Kammler: Easier parts of chapters 1-4, 7,8,9, and 11
- Some additional material from me

Grades and Expectations

The grade breakdown is

- 35 % for homework problems done jointly with a partner
- 25 % for homework problems completed individually
- 20 % for midterm exam (On October 14th in evening - 6:30 - 9)
- 20 % for the final (Date: Tuesday, December 15th 6:30 -8:30 (extra time allowed however)

Every week I will assign a group of problems to be completed with a partner. You may discuss these only with your partners, your book, or me. Your partners will change each week. The purpose of this is to test collaborative problem solving skill with new problems. These are due on Thursdays by 11 am.
Each week I will also assign homework to be completed alone. If you discuss them with other students you may not write anything down or consult any written math during the conversation. These are also due on Thursdays by 11 am. These problems deal with material worked on with a partner the previous week. The purpose of this is to tests individual problem solving skill with new problems and to test how much you have learned from feedback given from the previous week.

NO OUTSIDE SOURCES OR INTERNET RESEARCH IS ALLOWED FOR INDIVIDUAL OR PAIRED PROBLEMS.

You will also have a midterm and final exam. Time will not be much of an issue. These exams are drawn from the joint homework and a list of problems provided by me in advance of the exam. On midterm week we will not have hw due

Office Hours

Please come to office hours so I can get to know you better!

Late Work

I will accept no late hw or tests unless you have (1) a note from whistler or (2) a valid Denison activity-related excuse that is presented to me prior to the due date with documentation.

Academic Integrity

The students and faculty of Denison University and the Department of Mathematics and Computer Science are committed to academic integrity and will not tolerate any violation of this principle. Academic honesty, the cornerstone of teaching and learning, lays the foundation for lifelong integrity.

Academic dishonesty is, in most cases, intellectual theft. It includes, but is not limited to, providing or receiving assistance in a manner not authorized by the instructor in the creation of work to be submitted for evaluation. This standard applies to all work ranging from daily homework assignments to major exams. Students must clearly cite any sources consulted, not only for quoted phrases but also for ideas and information that are not common knowledge. Neither ignorance nor carelessness is an acceptable defense in cases of plagiarism. It is the students responsibility to follow the appropriate format for citations.

Proposed and developed by Denison students, passed unanimously by DCGA and Denisons faculty, the Code of Academic Integrity requires that instructors notify the Associate Provost of cases of academic dishonesty, and it requires that cases be heard by the Academic Integrity Board. Further, the code makes students responsible for promoting a culture of integrity on campus and acting in instances in which integrity is violated.

For further information about the Code of Academic Integrity see http://www.denison.edu/about/integrity.html

Disabilities

Any student who feels he or she may need an accommodation based on the impact of a disability should contact me privately as soon as possible to discuss his or her specific needs. I rely on the Academic Support and Enrichment Center in 102 Doane to verify the need for reasonable accommodations based on documentation on file in that office.