

## Math 335, (Honors) Advanced Calculus

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Lecture:	MTWTh 10:30, SIG 227
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Text:	<i>Advanced Calculus</i> (required)
Author:	Gerald Folland

Math 335 investigates the properties of sequences and series of numbers and functions. It is an introduction to topics that will be covered in more depth, for example, in Math 424, 428, and 429. We will also finish up the material on several variable calculus that remain from last quarter. In addition I intend to cover the topics on the following list. Fourier analysis and its applications are the highlights. Fourier analysis is the motivation for much of the development of modern analysis. You can blame it for the sharpening of the definition of function,  $\epsilon - \delta$  definition continuity, Riemann integration, and the whole theory of convergence. You can't learn too much Fourier analysis. I will scatter the material on several variable calculus throughout the quarter.

1. Surface integrals, Divergence theorem, Stokes' theorem, and applications to physics
2. Infinite series
3. Uniform convergence
4. Introduction to power series
5. Improper integrals and special functions
6. Fourier Analysis

Homework will be collected at regular intervals and will count 20% of the course grade. There will be two 50 minute midterm tests which will count 20% of the course grade. The midterm tests will be closed book but you will be allowed to bring notes on **one side** of a notebook size sheet of paper. There will be a two hour closed book final exam which will count 40% of the course grade. For the final you will be allowed to bring notes on **both sides** of a notebook size sheet of paper. No electronic devices will be allowed on tests.

Here are the homework assignments :

DATE	ASSIGNMENT (from Folland)
Jan. 8	§5.3: 2, 4, 7; §5.4: 2c, 3, 8, 9; §5.5: 2, 3, 4, 5, 6;
Jan. 15	§4.5: 1, 4, 5, 6, 7; §4.6: 3e, 4, 8, 11; §4.7: 3, 4
Jan. 22	§5.6: 1, 2; §5.7: 2, 5, 6, 7, 8; §5.8: 1acg, 2, 3, 4
Jan. 29	§6.1: 1d, 2bcd; §6.2: 2, 5, 12, 13, 19, 20, 21, 23, 24
Feb 1	<b>MIDTERM</b>
Feb. 5	§6.3: 1, 3, 4, 5; §6.4: 5, 11, 14, 16, 17; §6.5: 3, 4, 7
Feb. 12	§7.1: 1cg, 2ce, 3, 4, 5, 6, 8,9; §7.2: 1, 3, 5, 6; §7.3: 1, 3, 7, 9, 11
Feb. 19	§7.5: 3, 5, 7, 8, 10, 11; §7.6: 2, 3, 5
Feb. 22	<b>MIDTERM</b>
Feb. 26	§8.1: 1, 2; §8.2: 1, 3ab
Mar 5	§8.3: 4, 5, 6; §8.4: 2ab; §8.5: 2, 7
Mar. 12	§8.6: 2, 3, 4, 5, 6, 9acd
Mar. 14	<b>FINAL EXAM</b> (8:30-10:20 a.m.)

These assignments are due at the beginning of class on the due date.

Classes start on January 4. January 18 and February 15 are holidays.