

## MTH 327H: Honors Introduction to Analysis

**Instructor:** Kristen Hendricks

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Office Hours: M 11:20-12:20, W 3-4, Th 9-10.

**Course Webpage:** [www.math.msu.edu/~hendricks/MTH\\_327H.html](http://www.math.msu.edu/~hendricks/MTH_327H.html) Most course content can be found both here and on D2L.

**Location and Time:** MWF 10:20-11:10 in A316 Wells Hall.

**Content:** Real analysis is the study of the continuum of real numbers and other structures in mathematics constructed from the continuum. In this course, we will discuss some basic notions of logic, real and complex numbers, metric topology, sequences and series, real valued functions, continuity, differentiation, and integration. Some of these topics are familiar from calculus; however, our focus in this course is on theory rather than computation.

**Textbook:** W. Rudin, *Principles of Mathematical Analysis*, 3<sup>rd</sup> edition. We will cover Chapters 1-6 of this textbook. There are also some helpful supplemental materials for the first few weeks of class posted on the course website. Reading assignments will be distributed in advance of each week's lectures. You will get the most out of lecture if you read the text *before* coming to class.

**Prerequisites:** Approval of the department. Also, an interest in learning about the theoretical underpinnings of calculus and a willingness to work on challenging homework problems.

**Attendance Policy:** Attendance is not mandatory. However, you are very strongly encouraged to come to lecture. Lecture will often feature additional examples to complement those in the text, opportunities to briefly discuss the material with your classmates, and other useful things reading the textbook cannot provide.

**Homework:** Homework will be assigned weekly and due at the beginning of Friday's lecture. There will be eleven homeworks. (There will not be a homework due the week of Thanksgiving, or the week that either exam is due.) **No late homework will be accepted. Homework will not be accepted electronically.** However, your lowest homework score will be dropped when computing your grade.

Typically three homework problems will be graded carefully, and some points will be given for completeness of the rest of the assignment. To receive full credit, a solution must be written out in clear prose. (This means that a solution should usually take the form of a paragraph of text.) Solutions that are incompletely or unclearly explicated will not receive full credit even if it appears that the mathematical content is correct.

You are encouraged to work in groups on your homework – this is generally beneficial to your understanding and helps you learn how to communicate clearly about mathematics. However, you must write up all solutions yourself. Moreover, since crediting your collaborators is an important element of academic ethics, you should write down with whom you worked at the top of each assignment. You must also cite any sources you use other than the lecture or the textbook (other textbooks, a blog about analysis, a useful Wikipedia article, etc.)

**Exams:** There will be two take-home exams during the semester. One will be assigned October 12 and due in class on **October 19**. One will be assigned November 30 and due on **December 7**. There will not be a final exam.

**Grading:** Grades will be computed as follows:

- Homework: 40%
- Exam 1: 25%
- Exam 2: 35%

Semester grades may be higher than the grading scale below, but they will definitely not be any lower.

<b>Percentage</b>	<b>Grade</b>	<b>Percentage</b>	<b>Grade</b>
90-100	4.0	60-65	2.0
82-89	3.5	55-59	1.5
74-81	3.0	50-54	1.0
66-73	2.5	0-49	0.0