

# INTRODUCTION TO ANALYSIS

## Math 355, Spring 2018

**Meeting Times and Location:**

TTh 2:30-3:20pm SMUD 207  
WF 1:00-1:50pm MERR 3

**Professor:** Yusra Naqvi

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Office Hours: TF 11:00-11:50am, W 3:00-4:00pm, Th 1:30-2:20pm, and *by appointment*

**Math 355 Fellow:** Obinna Ukogu

**Prerequisites:** MATH 211 and prior experience with mathematical proofs

**Textbook:** *Understanding Analysis* (2nd Edition) by Stephen Abbott, published by Springer, 2015. (ISBN: 978-1-4939-2712-8)

This textbook is available electronically through the Amherst College library, and can be accessed as an e-reserve through Moodle.

**Course Webpage:** <http://ynaqvi.people.amherst.edu/math355sp18/>

**Course topics:** This course is an introduction to real analysis. We will cover the basic definitions and theorems related to the completeness of the real numbers, the topology of  $n$ -space (including the Bolzano-Weierstrass and Heine-Borel theorems), sequences, infinite series, properties of continuous functions, and uniform convergence. We will also see how these ideas are used to solve problems and to write clear and logical proofs.

This course will cover Chapters 0-7 from the textbook, although we will omit some sections of certain chapters. Time permitting, we may also include sections 8.1, 8.5, and 8.6.

**Homework:** Homework will be assigned regularly and will include both readings and written solutions to problems. Refer to the course website for assignments and their due dates. Written homework must be handed in at the beginning of the class in which they are due, and late homework will typically not be accepted for grading. Submitted work should be neat, organized, and stapled, and will be graded for both correctness and clarity of writing.

While you are strongly encouraged to work in groups, all submitted assignments must consist only of your own work, *written in your own words*. If you work with other students or with a tutor, you should include a note at the top of your homework saying who you worked with.

You are required to read the relevant sections from the textbook that we cover each day. It is also important to look at homework problems for each class before the start of the next class in order to keep up with the class effectively. The best way to understand mathematics is to solve a lot of problems!

**Absences:** You are expected to attend every class and arrive on time for class. An absence due to emergency may be excused, provided that you can supply acceptable written evidence if required, and that you notify me *as soon as possible*. You are responsible for obtaining class notes and covering the material that you have missed.

Two late arrivals will be treated as an absence. Students with more than four unexcused absences may have their grade lowered by one step (for example, a B- may be lowered to a C+).

**Exams:** There will be two midterm exams and a cumulative final exam. All exams must be taken at the scheduled time. Make-up exams will only be allowed if you can supply *acceptable* written evidence, and that you notify me *before the end of the missed exam*. The midterm exams are tentatively scheduled as follows:

Midterm Exam 1: Friday, March 2  
Midterm Exam 2: Tuesday, April 10

The final exam will be scheduled at some point during the semester. Please make sure you are available until the end of finals period on Friday, May 11.

**Grading:** Your overall grade will be determined using the following point distribution:

|                  |     |
|------------------|-----|
| Homework         | 125 |
| 1st Midterm Exam | 100 |
| 2nd Midterm Exam | 100 |
| Final Exam       | 175 |
| Total            | 500 |

However, students who do not submit at least 6 homework assignments (on time) will automatically get an F, regardless of numerical averages.

**About the Statement of Intellectual Responsibility:** While you are strongly encouraged to work on homework problems in groups, the work you write up and hand in must be your own. If you receive help from an outside source, please include a note in your homework specifying what this was. For exams, you are not permitted to work with other students or use any additional aids such as calculators, notes, formula sheets, etc. If you are unsure about whether something is allowed or not, please speak with me, and I would be happy to clarify.

Failure to comply with the above guidelines on homework or a midterm will result in a 0 for the assignment. Cheating on the final exam will result in an F for the course. All incidents will be reported to your class dean.