

# MATH 311 - INTRODUCTION TO ANALYSIS - SYLLABUS

**Instructor:** Dennis Kriventsov

**Email:** `dnk34@math.rutgers.edu`

**Office Hours:** Th 17:40-19:00 online (tentative)

**Meetings:** MW 17:40-19:00, LSH-B105 (on Livingston)

**TA:** Victoria Chayes

**Email:** `vc362@math.rutgers.edu`

**Recitation:** Th 12:10-13:30, BE-121 (on Livingston)

## Textbook

The *required* textbook for this class is Stephen Abbot, *Understanding Analysis*, 2nd edition. You do not need to buy it (unless you really want to): get a full pdf for free from the Rutgers library instead.

## Prerequisites

The official prerequisites for this class are Math 300 with a grade of C or better AND Calculus 4.

## Contact Information

I will have scheduled office hours, most likely held online where I sit in a Zoom meeting and you are welcome to join. You can also talk to me after class. Outside of this, contact me by email with any questions.

## Topic

The course will mostly deal with limits, continuity, and derivatives of functions of one real variable. Unlike the calculus sequence, the emphasis will be on the rigorous foundations of the subject.

We will cover Chapters 1-5 of the textbook, which discuss the real numbers, limits, continuity, and differentiation.

## Class Structure

- We will be using Canvas extensively for all class material. Make sure you are familiar with how to use it.
- The first few meetings will take place synchronously online at the regularly scheduled times.

- The class meetings will consist partly of lecture and partly of group or individual work on problems and worksheets.
- The recitation will focus on problem solving. You need to attend the recitation. Participating in the recitation is worth 10% of your grade.
- There will be reading assignments from the textbook. You will need to *actually do the readings*.
- There will be short reading quizzes on Canvas. They will be worth 10% of the grade.
- There will be weekly homework problems assigned, due Monday. This will be worth 10% of the grade.
- There will be two midterm exams (23% each) and a final exam (24%).

## Objectives

- Be able to read mathematical prose (at the level of a textbook) and understand it.
- Be able to write mathematics, including proofs, proficiently.
- Be able to translate back and forth between rigorous mathematical writing and informal understanding of the underlying ideas.
- Be able to communicate mathematics verbally, at least with the help of some visual aids.
- Engage with the course content to a sufficient level of mastery, including applying it to writing proofs.

## Exams

Tentatively, the format will be written in-person exams (but if that is impossible, the most likely alternative will be online oral exams). If you are unable to attend an exam, you must let me know in advance; generally there will be no make-up exams.

## Homework

I will assign a handful of problems, often from the text. You may discuss them with others, but the written solutions must be your own. You should provide *careful, well-written* solutions; they will generally be proofs. We will discuss in class, frequently, how to write proofs.

Homework will be assigned and collected online. Late homework will not be accepted. The specific mechanism for collecting homework will be explained in class.

## Quizzes

There will be reading quizzes posted on Canvas: they will be available for 24 hours before a class and usually take five minutes. The quizzes will be over the assigned reading. I may make some adjustments to the specific format. At least the lowest two scores will be dropped.

## Recitation

Recitations will involve problem solving, working on writing proofs, and other activities. You are expected to attend all recitations. The grade will be based on your attendance and participation in activities.

## Technology

More information about technology:

- Some classes, office hours, and at least two recitations will be held via Zoom. Links to the meetings will be available on Canvas.
- You are encouraged (but not required) to use the webcam when in class.
- When online, the lecture portions of class will be recorded, and the recordings will be posted on Canvas. This is not a replacement for actually going to class. When in person, class will not be recorded.
- All course materials will be posted on Canvas.
- If there are oral exams, they will *require* you to use a microphone and webcam, and possibly write on paper or a shared whiteboard.

Department advice on scanning documents to pdf using your phone camera: On IOS 11+, go to Notes → any note → + icon above the keyboard → Scan Document → possibly change to b/w from color by tapping icon with three circles in top row. On Android devices (with Google account linked): Google Drive → Add (bottom right) → Scan → take photo, then possibly resize or add more pages → Done.

## Schedule

The schedule below is provisional, and subject to change.

Dates	Sections
1/19	Introduction
1/24-1/26	1.3-1.4
1/31-2/2	2.2-2.3
2/7-2/9	2.4-2.5
2/14-2/16	2.6, 3.2
2/21-2/23	Midterm 1
2/28-3/2	3.3-3.4
3/7-3/9	4.2-4.3
3/14-3/16	Spring Break
3/21-3/23	4.3-4.4
3/28-3/30	4.4-4.5
4/4-4/6	Midterm 2
4/11-4/13	4.5-4.6
4/18-4/20	5.1-5.2
4/25-4/27	5.3-5.4
5/2	5.4

## Student Wellness Services

**Counseling, ADAP & Psychiatric Services (CAPS)** (848) 932-7884 / 17 Senior Street, New Brunswick, NJ 08901/ [www.rhscaps.rutgers.edu/medical-counseling-services/counseling](http://www.rhscaps.rutgers.edu/medical-counseling-services/counseling)

CAPS is a University mental health support service that includes counseling, alcohol and other drug assistance, and psychiatric services staffed by a team of professional within

Rutgers Health services to support students efforts to succeed at Rutgers University. CAPS offers a variety of services that include: individual therapy, group therapy and workshops, crisis intervention, referral to specialists in the community and consultation and collaboration with campus partners.

**Violence Prevention & Victim Assistance (VPVA)** (848) 932-1181 / 3 Bartlett Street, New Brunswick, NJ 08901 / [www.vpva.rutgers.edu/](http://www.vpva.rutgers.edu/)

The Office for Violence Prevention and Victim Assistance provides confidential crisis intervention, counseling and advocacy for victims of sexual and relationship violence and stalking to students, staff and faculty. To reach staff during office hours when the university is open or to reach an advocate after hours, call 848-932-1181.

**Disability Services** (848) 445-6800 / Lucy Stone Hall, Suite A145, Livingston Campus, 54 Joyce Kilmer Avenue, Piscataway, NJ 08854 / <https://ods.rutgers.edu/>

Rutgers University welcomes students with disabilities into all of the University's educational programs. In order to receive consideration for reasonable accommodations, a student with a disability must contact the appropriate disability services office at the campus where you are officially enrolled, participate in an intake interview, and provide documentation: <https://ods.rutgers.edu/students/documentation-guidelines>. If the documentation supports your request for reasonable accommodations, your campus disability services office will provide you with a Letter of Accommodations. Please share this letter with your instructors and discuss the accommodations with them as early in your courses as possible. To begin this process, please complete the Registration form on the ODS web site at: <https://ods.rutgers.edu/students/registration-form>.

**Scarlet Listeners** (732) 247-5555 / <http://www.scarletlisteners.com/>

Free and confidential peer counseling and referral hotline, providing a comforting and supportive safe space.