Syllabus

MATH 105A (Real Analysis) • Fall 2020 • MWF: 11:00 AM – 12:05 PM

Instructor: Deewang Bhamidipati
(Please address me by my first name, which is pronounced *thee-waang*. Pronouns: he/him/his.)

Lectures: The lectures will be **synchronous**-ish and will take place on Zoom (so will Office Hours), I will start the lectures 20 minutes later than the time on the schedule i.e. at **11:00 AM (to 12:05 PM) on Mondays, Wednesdays and Fridays**. Lectures **will be recorded** and will be available for asynchronous viewing (available via Canvas).

Office Hourse: Tuesdays and Fridays 2:00 - 3:30 PM, or by appointment

Teaching Assistant: Erol Barut **TA's Office Hours**: TBD

Discussion Sections: Wednesdays 2:40 PM – 3:45 PM (or) Tuesdays, 12:00 PM – 1:05 PM
(Sections will begin on/after October 7th.)

Canvas: I will be using Canvas primarily as a course repository. It will also be a place where you will receive course announcements, where you can view your grades etc.
(Log in at `https://canvas.ucsc.edu` using your CruzID and Gold password.)

Zoom: I will be using Zoom to teach; links and more details will be available on Canvas.

Zulip: We will be using Zulip as a discussion forum for anything and everything course related. It will be a place for you to hold discussions amongst yourselves (an invaluable tool for your success), with the TAs, and me. See guidelines below.

Gradescope: Any assessment (see below) that needs to be turned in will have to be uploaded to Gradescope; links and more details will be available on Canvas.

Learning Outcomes:
- You will be able to write clearly, concisely, and precisely; this is a writing-intensive course.
- You will develop a healthy respect for the importance of definitions.
- You will understand the structure and importance of theorems.
- You will understand the structure and importance of proofs.
- You will be able to abstract appropriately.

References:

Primary	*Introductory Real Analysis - Lecture Notes* by François Monard [FM] (available on Canvas)
Recommended	*Real Analysis: A Long-Form Mathematics Textbook* by Jay Cummings (can be bought HERE) *Understanding Analysis* by Stephen Abbott (available digitally HERE)
Other	*Principles of Mathematical Analysis* by Walter Rudin *Introductory Real Analysis* by A. N. Kolmogorov & S. V. Fomin *The Way of Analysis, Revised Edition* by Robert S. Strichartz

Assessment Distribution:

- PROBLEM SETS (30%)

  There will be weekly problem sets, a total of 9, due by 7AM on Sundays. It will have problems from the content covered in the Friday class of the preceeding week and the Monday and Wednesday classes in the week the problem set is due. The best 7 of 9 scores will count towards your final grade.

- SECTIONS (10%)

  There will be short quizzes during your sections, the aim of these quizzes will be to help you think of counterexamples. The lowest two scores will be dropped.

- UNIT EXAM A (15%)

  This take-home exam will have problems from the content covered in Chapters 1 and 2 of [FM]. Dates will be available on Canvas.

- UNIT EXAM B (20%)

  This take-home exam will have problems from the content covered in Chapters 3 and 4, and a few problems from Chapters 1 & 2, of [FM]. Dates will be available on Canvas.

- UNIT EXAM C (25%)

  This take-home exam will have problems from the content covered in Chapters 5 and 6, and a few problems from Chapters 1 – 4, of [FM]. Dates will be available on Canvas.

Extra Credit: You can earn additional points, maximum 10, by completing surveys on Canvas, extra credit problem sets (and problems), and participation on Zulip.

LaTeX: LaTeX (LAH-tekh or LAY-tekh) is the preferred choice among mathematicians for creating mathematical documents. You will need to learn basic LaTeX for this course. This will likely be done by looking at the `.tex` (tekh, the LaTeX file extension) files that I provide you, mimicking the LaTeX in those files, and googling anything that is not included in those files (**TeX Stack Exchange** should have answers to almost all your queries). I expect that most of you will be able to pick up the basics very easily. You can start this journey by using **Papeeria** or **Overleaf**, both online LaTeX editors. **Please contact me if this is not a viable option for you for any reason**, and, of course, if you need help getting started.

Course Schedule: Will be available and updated on Canvas throughout the quarter.

Guidelines:

- PROBLEM SETS
  - ▷ Turn in the problem set on the due date, without fail.
    (If you need an extension, please ask, but make sure you ask before the due date.)
  - ▷ Discuss the problem set with your peers on Zulip. (I insist on this.)
  - ▷ Write your work, **individually**, using LaTeX.
  - ▷ Pay close attention to the presentation and clarity of your reasoning in your answers.
  - ▷ Cite resources you have used while solving the problem set.
  - ▷ Name your peers with whom you have discussed the problem set.
  - ▷ Half of the problems will be graded, chosen at the grader's discretion.

- COMMUNICATION
  - ▷ Please contact me primarily via Canvas.
  - ▷ If your question is math-related, please contact me on Zulip.
  - ▷ If your question is of a sensitive or personal nature, please contact me via Canvas or email (see below) and NOT via Zulip.
  - ▷ Please make sure you give me as much information as you possibly can about the subject you intend to discuss when you contact me.
  - ▷ You can send me an email (at bdeewang@ucsc.edu) if, and only if, your attempts at contacting me on Canvas have yielded no response from me.
  - ▷ **Never hesitate to reach out, I always want to hear from you.**
- ZULIP
  - ▷ If you feel you're more comfortable asking questions anonymously then name yourself, while registering, in the following fashion: **[last letter of your last name] [favourite number] [favourite math term/phrase]**, e.g. I would be *i8obviously*. Feel free to use your name otherwise.
  - ▷ You will be automatically assigned to one of four groups; these are not set in stone.
  - ▷ You will receive an answer from me or your TA if: a question has gone unanswered in your groups for at least two days; or if you ask your question in #general. General enquiries will also be asked on #general.
  - ▷ You're always expected to conduct yourself responsibly and ethically.

SUBSEQUENT ADDENDUMS, IF ANY, TO THIS SYLLABUS WILL BE MADE VIA CANVAS.

I RESERVE THE RIGHT TO CHANGE ANY PARTICULAR OF THE SYLLABUS ABOVE.

(ANY CHANGES WILL BE TO YOUR ADVANTAGE, AND YOU WILL BE INFORMED OF THEM PROMPTLY VIA CANVAS.)

Other Important Information

Key dates for Registration & Enrollment:
https://registrar.ucsc.edu/soc/key-dates-enrollment.html

Mathematics Department's Enrollment Info:
https://www.math.ucsc.edu/courses/enrollment-info.html

DRC Remote Accommodations: The Disability Resources Center (DRC) reduces barriers to inclusion and full participation for students with disabilities by providing support to individually determine reasonable academic accommodations. Operations continue via remote appointments. If you have questions or concerns about exam accommodations or any other disability-related matter, email the DRC Schedulers at drc@ucsc.edu for an appointment; you can also visit their website at http://drc.ucsc.edu.

CAPS (Counseling and Psychological Services): This is a stressful time, so if you are in distress, managing heightened stress and anxiety, or want to get more support and a counselor's perspective on something you're going through, CAPS provides a variety of services for your needs, please visit their website for more information https://caps.ucsc.edu.

Small Group Tutoring: Small Group Tutoring (SGT) supports students academically to advance educational equity by designing inclusive learning environments outside of the classroom. In SGT, you can expect the Tutor to facilitate cooperative group activities designed to have students work together on the course content and develop study skills for the course, please visit their website for more information https://lss.ucsc.edu.

Academic Integrity: Academic integrity is the cornerstone of a university education. Academic dishonesty diminishesvthe university as an institution and all members of the university community. It tarnishes the value of a UCSC degree. All members of the UCSC community have an explicit responsibility to foster an environment of trust, honesty, fairness, respect, and responsibility. All members of the university community are expected to present as their original work only that which is truly their own. All members of the community are expected to report observed instances of cheating, plagiarism, and other forms of academic dishonesty in order to ensure that the integrity of scholarship is valued and preserved at UCSC. For the full policy and disciplinary procedures on academic dishonesty, students and instructors should refer to the Academic Integrity page at the Division of Undergraduate Education.

Title IX: The university cherishes the free and open exchange of ideas and enlargement of knowledge. To maintain this freedom and openness requires objectivity, mutual trust, and confidence; it requires the absence of coercion, intimidation, or exploitation. The principal responsibility for maintaining these conditions must rest upon those members of the university community who exercise most authority and leadership: faculty, managers, and supervisors.

The university has therefore instituted a number of measures designed to protect its community from sex discrimination, sexual harassment, sexual violence, and other related prohibited conduct. Information about the Title IX Office, the online reporting link, applicable campus resources, reporting responsibilities, the UC Policy on Sexual Violence and Sexual Harassment, and the UC Santa Cruz Procedures for Reporting and Responding to Reports of Sexual Violence and Sexual Harassment can be found at titleix.ucsc.edu.

The Title IX Office is actively responding to reports and requests for consultation. If you are not currently working with someone in the office and want to make a report/request a consult, you can expect the fastest response by using our online reporting link.

For more information please visit the Title IX Operations under Covid-19 page.