Math 310: Real Analysis
Fall 2018

Jay Daigle

Course Goals

In Math 310 we will learn to reason clearly and precisely about the underlying foundations of calculus. We will learn about the topology of the real numbers, then define metric spaces, which are the setting in which all limits and calculus make sense. We will then use this to study limits of sequences and functions, continuity, derivatives, series, and integrals.

During the course, students will learn to make precise and rigorous arguments about real numbers, and clearly write and communicate these arguments.

Instructor Info

Lectures:	MWF 1:55 – 2:50 PM	Fowler 110	
Instructor:	Jay Daigle	**Office Hours:**	MWF, 12:45 – 1:45 PM
Office:	Fowler 325	**Often in Office:**	MWF, 12:15 - 1:45 PM, 4:00 - 5:00 PM
Email:	gdaigle@oxy.edu		R, 1:30 - 3:00 PM, 4:30 - 5:00 PM
Course Webpage:	http://jaydaigle.net/analysis		

References

There is *no mandatory textbook* for this course. I will post complete lecture notes and homework assignments on the course webpage.

I will be using several textbooks as I prepare notes for this course.

- The primary reference I will be using is *Introduction to Analysis* by Maxwell Rosenlicht. It is available on Amazon for about $13.

- The secondary reference I will be using is *Basic Analysis I* by Jiří Lebl. It is available for free online at `https://www.jirka.org/ra/`, or for purchase in hard copy on Amazon or Lulu for about $13.

There are a couple other books you may find it useful to reference from time to time, which are also freely available online.

- *Mathematical Analysis Volume I* by Elias Zakon approaches the material from a somewhat more advanced perspective. It is available for free online at `http://www.trillia.com/zakon-analysisI.html` or for purchase in hard copy for about $30.

- *How We Got from There to Here: A Story of Real Analysis* by Robert Rogers and Eugene Boman provides a very different and more historical approach. I don't like it as much as a reference but it might give you a different way of thinking about much of the material. Available free online at `http://textbooks.opensuny.org/how-we-got-from-there-to-here-a-story-of-real-analysis/` or for purchase in hard copy for about $35.

Grading

- Homework: 45%

- Redo Problems: 15%

- Midterms: 10% each

- Final: 20%

Details

- **Homework:** Homework is by far the most important component of this course. Math is a skill that can only be learned by practice, and it's very difficult to understand the material until you have worked through applying it.

  Homework will be assigned weekly and collected on Fridays. I will do my best to return it by the following Monday. I will *not* except late homework without prior permission or a note from the dean or the health center. If you need an extension, please email me before the homework is due. I am usually up late.

  Please begin the homework early, and discuss it with your classmates and with me. This is important enough to get its own paragraph.

- **Redo Problems:** One problem on each week's homework will be starred. You may *not* discuss this problem with classmates, though you should of course feel free to discuss it with me as much as you like. You must submit the starred problem on a *separate, detached sheet of paper* each week.

  I will be exceptionally picky grading the starred problems, and in particular I will grade precision and clarity of writing. After receiving my feedback, you may resubmit the problem the following week with corrections and edits made, and the new grade will replace the earlier.

  If you go a full week without submitting a problem or getting an extension from me, your grade will be locked in. This mostly means you can't put them off and then redo all of them in the last week of the term. (This is a terrible idea and never works).

- **Exams:** There will be two midterms and a final. The midterm dates are tentatively October 5 and November 9. The final exam will be at 8:30 AM on Friday, December 14.

  The tests are less important than the homework, and of necessity can only test material shallowly. We will discuss the tests more when the test dates approach.

- **Disabilities:** It is the policy of Occidental College to make reasonable accommodations for qualified individuals with disabilities. If you are a person with a disability and wish to request accommodations to complete your course requirements, please make an appointment with the course instructor as soon as possible to discuss your request. For information on documentation requirements, contact the Center for Academic Excellence (x2545).