Real Analysis - Math 524

Fall 2020

INSTRUCTOR INFORMATION:

Instructor: Tatiana Toro
Class meetings: MWF 11:30-12:20 PT
Class location: **zoom** link posted on canvas (you need to be registered)
Phone: 206-543-1173.
E-mail: toro@uw.edu
Course website here.
Office hours: Wednesday 12:30-1:30 PT or by appointment.

TA INFORMATION:

TA: Max Goering
E-mail: mgoering@uw.edu
Office hours: Monday 2:30 - 4:20 or by appointment.

TEXTS:

- [F] Real Analysis, Folland, 2nd Edition (required) Errata
- [SS] Real Analysis, Measure Theory, Integration & Hilbert Spaces, Stein & Shakarchi (recommended)

OTHER USEFUL BOOKS:

- Real Analysis, Royden, 3rd Edition
- Real and Abstract Analysis, Hewitt & Stromberg.
- Real and Complex Analysis, Rudin.
- Functional Analysis, Rudin.
- Functional Analysis, Yosida

In Math 524 - 525 students are expected to learn the fundamental tools needed to work in the general field of analysis. The sequence includes: Measure and Integration and Functional Analysis. The following list of topics should give you a reasonable idea of what lies ahead this quarter.

MATH 524 TOPICS:

- Metric Spaces
- Lebesgue measure & abstract measure (Chapter 1 in [F] and Chapters 1 & 6 in [SS])
- Integration (Chapter 2 in [F] and Chapters 2 & 6 in [SS])
- Differentiation and Integration (Chapter 3 in [F] and [SS])

FREQUENTLY USED TERMS:

- **Synchronous learning:** Students have a common, real-time learning experience, e.g., a live class discussion.
- **Asynchronous learning:** Students learn the same material at different times, e.g., a demonstration video recorded and shared by a teacher, teacher notes or assigned movies.
- **Screencast:** An online video of a presenter's screen overlaid with their voice to demonstrate a process or idea.
- **Video conference:** A conference in which participants in different locations are able to communicate with each other in sound and/or vision (via Zoom)

Course structure: This term we will use a mixture of learning/teaching modalities. Student will have access to the lectures (notes and partial recordings of screencasts). Students are expected to go over the lectures (asynchronous learning). Class time Monday, Wednesday and Friday (synchronous learning) will include class discussion. We will go over the concepts presented in the notes as well as problems labeled **R** in the homework (see below). A Q&A session will be included in the Monday, Wednesday and Friday meetings as well. If possible we will use a video conference format for these meetings. My intention is to record the discussion of the problems labeled **R** and the Q&A session, and make it available after class.

The learning process will consist of four major parts:

- Class time – lectures, discussions, questions and presentations by the students
- Independent study: reviewing lecture notes, reading, working on homework assignments and preparing for presentations
- Office hours: informal time for questions/discussions with the instructor/TA
- Collaborative space/ Homework study groups: virtual space to come together to collaborate on homework assignments/study for exams/preparing for presentations.

IMPORTANT DATES:

- Midterm (written, remote): **Friday, November 13th, 2020** (11:30-12:30 pm PT)
- Final exam (written component, remote, cumulative): **Wednesday December 16th, 2020** (2:30-6:30 pm PT)
- Final (oral component, via video conference): **December 17-18**, schedule for individual appointments to be posted on the last week of class.

University Holidays (no class)

- Wednesday, November 11 - Veteran's day
- Friday, November 27 - Thanksgiving holiday

GRADING POLICY:

- Weekly homework 40% (There will be 10 homework assignments due on Wednesday by 10pm)
- Participation 20%
- Midterm 10%
- Final Exam (written and oral components) 30%
- 60% of the total will guarantee a 2.0 or higher.
- 70% of the total will guarantee a 3.0 or higher.
- The grading policies described above apply to students in good standing; students who engage in misconduct will be reported to the office of Community Standards & Student Conduct. Their grades will be handled differently.

Class participation: The class (video conferences on MWF 11:30-12:20) will include class discussion and Q&A, as well as student's presentations of problems labeled **R**. Student's involvement in these activities will be counted toward class participation. Although not mandatory, office hours are highly recommended and will be taken into account in terms of class participation. The specific format of each one of the scheduled office hours will be discussed in class. Engagement with the course via canvas and/or email with either the TA or the instructor will also count as participation.

Homework policy: Homework problems will be labelled:

- **R** = Required,
- **TI** = Turn In,
- **E** = Enrichment.

You are **R**esponsible for knowing the material in the **R** problems, but do not have to write them up to hand in. Some of them may provide **R**esults you will use in later **TI** Problems or in class. **TI** problems should be written up neatly and clearly to turn in. A selection of the **TI** problems will be graded for correctness. The rest will be graded for 2 points each for "completion." The **E** problems are recommended if you are looking for additional practice problems, some of them appeal to people with particular interests.

Academic Integrity: The University takes academic integrity very seriously. Behaving with integrity is part of our responsibility to our shared learning community. If you are uncertain about whether something is academic misconduct, ask me. I am willing to discuss any questions you might have. Acts of academic misconduct include cheating but are not limited to it.

- You may discuss homework with each other, but you must solve the problems yourself and everything you turn in must be your own work.
- Copying from solution manuals, internet sites, each other or any other source is strictly forbidden.

Technology:

- Classes will take place on line via zoom. Your invitations to class will be sent to your @uw.edu account. Open the first one ahead of time so that you can download zoom. If you prefer you can downloadUW zoom here.
- You will turn in the homework assignments, the midterm and the final in Gradescope. You can either upload a pdf file created on your devise or a scanned version of your work. Pdf files produced using latex are highly appreciated. Free scanning apps are available for smart phones: Genius Scan and CamScanner are some options. If you lack the technology required to submit your work please let me know.
- For instructions on how to submit your work in Gradescope, go here.

Religious Accommodations: Washington state law requires that UW develop a policy for accommodation of student absences or significant hardship due to reasons of faith or conscience, or for organized religious activities. The UW's policy, including more information about how to request an accommodation, is available at Religious Accommodations Policy . Accommodations must be requested within the first two weeks of this course using the Religious Accommodations Request form .

The UW Food Pantry: A student should never have to make the choice between buying food or textbooks. The UW Food Pantry helps mitigate the social and academic effects of campus food insecurity. They aim to lessen the financial burden of purchasing food by providing students with access to food and hygiene products at no-cost. Students can expect to receive 4 to 5 days' worth of supplemental food support when they visit the Pantry. For information including operating hours, location, and additional food support resources visit The UW Food Pantry. They can be found on the North side of West Campus' Poplar Hall at the corner of Brooklyn Ave NE and 41st.