

Syllabus for Math 6211, Autumn 2020

- Professor.** David Penneys
Classroom. Virtual Zoom Classroom
Time. Monday, Wednesday, Friday 10:20am - 11:15am
Office. Math Tower (MW) 752
Hours. (Subject to change) Friday 4-5p or by appointment
Email. penneys.2(at)osu.edu

Course website. The course website is: <https://people.math.osu.edu/penneys.2/6211/Autumn2020/Math6211Autumn2020.html>

Textbook. I will mainly be teaching out of my hand-written notes, which are freely available on the course website. These notes are largely based on Folland (see below) and notes from when I took graduate analysis from Sarason in Autumn 2005. During the semester, and in particular during lectures which I will record and post to Carmen, I plan to live \TeX these notes during the class period and make the product freely available on my website. As an additional resource, students may wish to consult Folland:

- Folland, Gerald B. Real analysis. Modern techniques and their applications. Second edition. Pure and Applied Mathematics (New York). A Wiley-Interscience Publication. John Wiley & Sons, Inc., New York, 1999. xvi+386 pp. ISBN: 0-471-31716-0

Material. My course notes are divided into 6 modules: measures, integration, product measures and differentiation, topology, elementary functional analysis, and Radon measures. This loosely correlates with Chapters 1-3,4-5, and 7 of Folland.

Prerequisites. Math 5202 (653) or equivalent.

Technology. Class will given online via Zoom. A large portion of the class will involve working with others on a shared \TeX editor. Some options include:

- Circle Z: Jim Fowler's online collaborative \TeX editor tool. To access, go to <https://tex.rossprogram.org/> and start working. You'll be redirected to a web address of the form <https://tex.rossprogram.org/RanD0mStr1Ng>, and sharing this web address with your collaborators will allow you to edit the same document.
- Overleaf: <https://www.overleaf.com/>
- CoCalc: <https://cocalc.com/doc/latex-editor.html>
- Google Docs: Unfortunately, Google Docs does not support \TeX , but you can add some kind of Google Drive \TeX editor plugin.

One can make free accounts at CoCalc and Overleaf, but Overleaf charges for 3+ people to edit the same document (see <https://www.overleaf.com/user/subscription/plans>).

Students are expected to have access to a computer with reasonably good internet. It is understandable that there may be connectivity issues at any time, and this may interfere with testing. As such, all quizzes and exams (see below) will be given asynchronously via Carmen.

Discussion. There is one discussion section run by Professor Johnson which meets Tuesday and Thursday 10:20-11:15.

Homework. I will assign weekly homework assignments. The assigned problems are a lower bound of what students are expected to do.

Students **must** work together to solve problems in groups of 2 or 3. These groups will be assigned weekly so that no one works with the same collaborators for the entire semester. Ideally, every student will work with every other student at least once.

Each group will write up their solutions using T_EX. Each group should include in their T_EX file the course preamble, available on the course webpage. Groups should upload the T_EX file of their solutions (and NOT a pdf) into Carmen or submit it via email. This document should represent the group's **best effort**. Homework not written in T_EX, or homework that does not compile, will be returned to the group **without review**. The front page must indicate a statement of who wrote which parts of the document, together with which other groups/resources were consulted. Groups may use whatever resources they want, but they must cite all their sources. **Lack of citation will be regarded as academic misconduct/plagiarism** (see section on academic misconduct below).

Homework is due by 12pm on Wednesdays. Late homework will be discounted at a rate of 1% per hour that it is late, rounded up. For example, the homework score will be reduced by 5% if it is submitted between 4-5pm on Wednesday, 24% if is submitted between 11am-12pm on Thursday, etc. This penalty will be applied to all resubmissions of homework returned without review; a resubmission before the deadline incurs no penalty.

Quizzes. There will be a one problem quiz on the Thursday of each week. The quiz will be made available through Carmen during a 24 hour period. Students will have **1 hour** from the time they access the quiz to when the T_EX file (and NOT a pdf) of their solutions must be uploaded to Carmen or submitted via email. Students should copy the course T_EX preamble into the top of their T_EX file for all quizzes.

The last 20 minutes of each Thursday discussion section will be devoted to the quiz. Students may choose to work in their same assigned weekly homework group to solve the problem in a shared T_EX editor. In the event the students choose to work together, only one quiz should be submitted per group, and all students will be assigned the same score. Students may also choose to work alone.

Students may only consult their course notes or Folland during a quiz. Accessing any other resource, including websites, other books, and other groups, will be considered academic misconduct.

Solutions will be graded out of 10 points. Two out of 10 points will go to the T_EX typesetting, which is why the T_EX file must be submitted. The remaining eight points will go to the proof submitted. The lowest 2 scores will be dropped.

Exams. There will be one exam per module which will be made available through Carmen during the 24 hour period on the date given. Students will have **2 hours** from the time they access the exam to when their solutions must be uploaded in Carmen or submitted via email. Just like the quizzes, students must submit the T_EX file for their solutions, and not a pdf, and 2/10 points per problem will be assigned to the T_EX typesetting. Students should copy the course T_EX preamble into the top of their T_EX file for all exams.

Students may only consult their course notes or Folland during an exam. Accessing any other resource, including websites, other books, and other students, will be considered academic misconduct.

Schedule. Here is a tentative schedule for the course. This schedule is subject to change. Exam dates will always be set **two weeks in advance**.

Module	Class dates	Holidays	Exam date
Topology	8/26, 28, 31, 9/2, 4, 9	9/7	9/18
Measures	9/11, 14, 16, 21, 23, 25		10/5
Integration	9/28, 30, 10/2, 7, 9, 12		10/23
Product measures and differentiation	10/14, 16, 19, 21, 26, 28		11/6
Functional analysis	10/30, 11/2, 4, 9, 13, 16	11/11, 27	11/23
Radon measures	11/18, 20, 25, 30, 12/2, 4		12/9, 10am

or

Module	Class dates	Holidays	Exam date
Topology	8/26, 28, 31, 9/2, 4, 9, 11	9/7	9/18
Measures	9/14, 16, 21, 23, 25, 28, 30		10/9
Integration	10/2, 5, 7, 12, 14, 16, 19		10/30
Signed measures and differentiation	10/21, 23, 26, 28, 11/2, 4, 6		11/20
Functional analysis	11/9, 11/13, 16, 18, 23, 25, 30,	11/11, 27	12/9, 10am
Extra days	12/2, 4		

Grading.

- 20% quizzes
- 30% homework
- 10% each exam, with the lowest exam dropped

In the event that the schedule changes to only cover 5 modules instead of 6, quizzes will count for 30% of the grade so that the lowest of 5 exams is still dropped. If a student must miss a test for reasons beyond their control, and the student has proper documentation, a makeup test will be given.

Incomplete grades.

From <http://artsandsciences.osu.edu/academics/current-students/advising/policies>

An 'I' indicates that a student has completed a major portion of the work in the course in a satisfactory manner, but for reasons judged by the instructor to be legitimate, a portion of the course requirements remains to be completed. If illness or an emergency prevents you from finishing a course, you may request an 'Incomplete' from the instructor. When you receive this grade, you must consult with the instructor as soon as possible to make arrangements for completing the course requirements. Incomplete work must be completed no later than the sixth week of the following semester. If the work is not made up by the due date, the 'I' mark will be changed to the alternate grade the instructor reported.

Academic Misconduct Statement. It is the responsibility of the Committee on Academic Misconduct to investigate or establish procedures for the investigation of all reported cases of student academic misconduct. The term "academic misconduct" includes all forms of student academic misconduct wherever committed; illustrated by, but not limited to, cases of plagiarism and dishonest practices in connection with examinations. Instructors shall report all instances of alleged academic misconduct to the committee

(Faculty Rule 3335-5-48.7). For additional information, see the Code of Student Conduct at <http://studentlife.osu.edu/csc/>.

Disability Services Statement. The university strives to make all learning experiences as accessible as possible. In light of the current pandemic, students seeking to request COVID-related accommodations may do so through the university's request process <https://slds.osu.edu/covid-19-info/covid-related-accommodation-requests/> managed by Student Life Disability Services. If you anticipate or experience academic barriers based on your disability (including mental health, chronic, or temporary medical conditions), please let me know immediately so that we can privately discuss options. To establish reasonable accommodations, I may request that you register with Student Life Disability Services. After registration, make arrangements with me as soon as possible to discuss your accommodations so that they may be implemented in a timely fashion. SLDS contact information: slds@osu.edu; 614-292-3307; <http://slds.osu.edu>; 098 Baker Hall, 113 W 12th Ave.

Counseling and Consultation Services. As a student you may experience a range of issues that can cause barriers to learning, such as strained relationships, increased anxiety, alcohol/drug problems, feeling down, difficulty concentrating and/or lack of motivation. These mental health concerns or stressful events may lead to diminished academic performance or reduce a student's ability to participate in daily activities. The Ohio State University offers services to assist you with addressing these and other concerns you may be experiencing. If you or someone you know are suffering from any of the aforementioned conditions, you can learn more about the broad range of confidential mental health services available on campus via the Office of Student Life Counseling and Consultation Services (CCS) by visiting ccs.osu.edu or calling 614-292- 5766. CCS is located on the 4th Floor of the Younkin Success Center and 4th Floor of the PAES Building. 24 hour emergency help is also available through the National 24/7 Prevention Hotline at 1-800-273-TALK or at suicidepreventionlifeline.org.