

## Syllabus for Math 6211, Autumn 2024

**Professor.** David Penneys

**Classroom.** Cockins Hall 312

**Time.** Monday, Wednesday, Friday 10:20am - 11:15am

**Office.** Math Tower (MW) 752

**Hours.** (Subject to change) Tuesdays 12:30-1:30p, Wednesdays 3-4p, or by appointment

**Email.** penneys.2(at)osu.edu

**Course website.** The course website is: <https://people.math.osu.edu/penneys.2/6211/Autumn2024/Math6211Autumn2024.html>

**Textbook.** I will mainly be teaching out of my typset 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 Prof. Sarason at UC Berkeley in Autumn 2005. 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: topology, measures, integration, signed measures and differentiation, elementary functional analysis, and Radon measures. This loosely correlates with the content in Chapters 1-3,4-5, and 7 of Folland, with topology first.

**Prerequisites.** Math 5202 (653) or equivalent.

**Technology.** Students are expected to have access to a computer with reasonably good internet. Use of laptops and tablets in class is permitted, but not during exams. If you think that your use of your devices may be distracting to other students, please sit towards the back of class. If you must text or surf on your phone, please keep it where no one can see it.

**Discussion.** There are two discussion sections run by Professor Chuah which meet Tuesday and Thursday 10:20-11:15 and 11:30-12:25.

**Homework.** I will assign weekly homework assignments. The assigned problems are a lower bound of what students are expected to do. Students may work together to solve the problems, but each student/pair is responsible for their own solutions. In particular, students/pairs must write up solutions separately, and any copying will be regarded as academic misconduct/plagiarism. Students may use whatever resources they want for their homework, but they must cite all resources. **Lack of citation will be regarded as academic misconduct/plagiarism.**

Students may either choose to work individually or in a pair (group of 2). Some weeks, working in pairs will be required. In the event there is a single student who cannot find a pair to work in, the instructor may permit the student to work in a group of three.

There is a strict format for homework. Students should hand in a final copy of their homework on plain white paper without lines, perforations, or holes. Please use a new page for each problem. Solutions should be written in complete sentences rather than strings of symbols. The final copy should represent the student's best effort, as homework counts for a substantial portion of the class grade. Students are encouraged to typeset their homework with  $\text{\LaTeX}$ , in which case they do not need to stick to one page per problem. Students submitting their homework in **pairs must typeset** their homework.

Homework is due by 12pm on Thursdays. Preferably, students/pairs will hand in their homework on Thursdays in class, or upload it to Carmen/Canvas before noon Thursdays. Late homework will be discounted at a rate of 1 point for every 2 hours that it is late, rounded up. For example, the homework score will be reduced by 6 points if it is submitted between 10pm Thursday-12am Friday, 12 points if it is submitted between 10am-12pm on Friday, etc. This penalty will be applied to all resubmissions of homework returned without review; a resubmission before the deadline incurs no penalty.

**Exams.** There will be one exam per module, which will occur **in class during the discussion section**.

Students may only consult a printed out copy of my course notes for the specific module they are being tested on during an exam. The printout of the notes may be annotated (typos fixed, short hints for exercises of about 3 words, etc.), but no new proofs or substantial content may be added. Accessing any other resource, including websites, 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	8/21, 23, 26, 28, 30 9/4, 6	9/2	9/17
Measures	9/9, 11, 13, 16, 18, 20, 23		10/3
Integration	9/25, 27, 30, 10/2, 4, 7, 9	10/11	10/24
Signed measures and differentiation	10/14, 16, 18, 21, 23, 25, 28		11/14
Functional analysis	10/30, 11/1, 4, 6, 8, 13	11/11	12/3
Radon measures	11/15, 18, 20, 22, 25, 12/2, 4	11/ 27, 29	

Final cumulative exam: 12/10, 10am in classroom.

**Grading.**

- 25% homework
- 10% each exam, with the lowest exam dropped
- 25% final exam

In the event that the schedule changes to only cover 5 modules instead of 6, homework will count for 35% 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 3335-5-487). For additional information, see the Code of Student Conduct <http://studentlife.osu.edu/csc/>.

**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](http://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](http://suicidepreventionlifeline.org).

**Religious Accommodations Statement.** It is Ohio State's policy to reasonably accommodate the sincerely held religious beliefs and practices of all students. The policy permits a student to be absent for up to three days each academic semester for reasons of faith or religious or spiritual belief.

Students planning to use religious beliefs or practices accommodations for course requirements must inform the instructor in writing no later than 14 days after the course begins. The instructor is then responsible for scheduling an alternative time and date for the course requirement, which may be before or after the original time and date of the course requirement. These alternative accommodations will remain confidential. It is the student's responsibility to ensure that all course assignments are completed.

**Disability Services Statement.** The University strives to make all learning experiences as accessible as possible. 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](mailto:slds@osu.edu); 614-292-3307; [slds.osu.edu](http://slds.osu.edu); 098 Baker Hall, 113 W. 12th Avenue.