Department of Mathematics & Statistics
Concordia University

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MATH 467 (MAST 669), Sec. D
Measure Theory
Winter 2023

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Instructor: Dr. A. Shnirelman, Office: LB 927-17 (SGW), Phone: 848-2424, Ext. 5222
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Office Hours: _____

Textbook: *Measure, Integration & Real Analysis,* by S. Axler, Springer, 2020.
https://measure.axler.net/

Other Textbooks: *Real Analysis*, by H.L. Royden (3rd or 4th Edition).

Real Analysis, Measure Theory and Integration, by E.M. Stein and R. Shakarchi, Princeton University Press, 2005.

Functional Analysis, by E.M. Stein and R. Shakarchi, Princeton University Press, Macmillan, 2011.

These and other texts will be available on reserve at the Webster library.

Topics: The main part of the course will consist of the following topics taken from the text:

- Outer measure, Lebesgue measure on R, positive measures (Ch. 2)
- Lebesgue integration and convergence theorems (Ch. 3)
- Differentiation and the maximal function (Ch. 4)
- Lebesgue (L^p) spaces (Ch. 7)
- Product measures (Ch. 5)
- Real and complex measures, Radon-Nikodym Theorem (Ch. 9)

Additional topics may be covered if time permits.

Assignments: Homework will be assigned approximately once every two weeks, posted on Moodle. It is the student's responsibility to find out the homework assignment and turn in the homework on time. **Late homework will not be accepted.**

Understanding of the homework is essential to success on the exams.

Prerequisites: Previously or concurrently: real analysis/metric spaces (equivalent to MATH 464)

Midterm Exam: There will be an in-class test in week 7 or 8. The exact date of the exam will be announced in class at least a week in advance.

Final Exam: To be scheduled by the Exams Office.

Evaluation: Homework 15%, Midterm exam 25%, Final exam 60%.
Graduate students will be required to do additional or alternative work, to be determined, according to their level (Master's/PhD).

If the grading scheme for this course includes graded assignments, a reasonable and representative subset of each assignment may be graded. Students will not be told in advance which subset of the assigned problems will be marked and should therefore attempt all assigned problems.

Communication: Communication between the students and the instructor will take place in person and online via lectures, Zoom meetings, Moodle announcements and email messages. **Students are responsible for reading and taking note of all electronic communication from the instructor and the University.**

Academic Integrity and the Academic Code of Conduct
This course is governed by Concordia University's policies on Academic Integrity and the Academic Code of Conduct as set forth in the Undergraduate Calendar and the Graduate Calendar. Students are expected to familiarize themselves with these policies and conduct themselves accordingly. "Concordia University has several resources available to students to better understand and uphold academic integrity. Concordia's website on academic integrity can be found at the following address, which also includes links to each Faculty and the School of Graduate Studies: concordia.ca/students/academic-integrity." *[Undergraduate Calendar, Sec 17.10.2]*

Use of Zoom
Note: Zoom is included as an institutionally-approved technology. This means we have been assured of the privacy protections needed to use freely within the classroom)

Zoom might be used in this course to facilitate learning at a distance. It may be used to record some or all of the lectures and/or other activities in this course. If you wish to ensure that your image is not recorded, speak to your instructor as soon as possible.

Also, please note that you may not share recordings of your classes and that the instructor will only share class recordings for the purpose of course delivery and development. Any other sharing may be in violation of the law and applicable University policies, and may be subject to penalties.

Behaviour
All individuals participating in courses are expected to be professional and constructive throughout the course, including in their communications.

Concordia students are subject to the Code of Rights and Responsibilities which applies both when students are physically and virtually engaged in any University activity, including classes, seminars, meetings, etc. Students engaged in University activities must respect this Code when engaging with any members of the Concordia community, including faculty, staff, and students, whether such interactions are verbal or in writing, face to face or online/virtual. Failing to comply with the Code may result in charges and sanctions, as outlined in the Code.

Intellectual Property

Content belonging to instructors shared in courses, including, but not limited to, lectures, course notes, and video recordings of classes remain the intellectual property of the faculty member. It may not be distributed, published or broadcast, in whole or in part, without the express permission of the faculty member. Students are also forbidden to use their own means of recording any elements of a class or lecture without express permission of the instructor. Any unauthorized sharing of course content may constitute a breach of the Academic Code of Conduct and/or the Code of Rights and Responsibilities. As specified in the Policy on Intellectual Property, the University does not claim any ownership of or interest in any student IP. All university members retain copyright over their work.

Extraordinary circumstances

In the event of extraordinary circumstances and pursuant to the Academic Regulations the University may modify the delivery, content, structure, forum, location and/or evaluation scheme. In the event of such extraordinary circumstances, students will be informed of the change.