

## 18.125 course information, Spring 2016

<b>Class hours:</b>	MWF 10–11 in room 2-135
<b>Instructor:</b>	Semyon Dyatlov < <a href="mailto:dyatlov@math.mit.edu">dyatlov@math.mit.edu</a> >
<b>Course webpage:</b>	<a href="http://math.mit.edu/~dyatlov/125spring16/">http://math.mit.edu/~dyatlov/125spring16/</a>
<b>Office hours:</b>	Mon 3–4, Tue 1:30–2:30 in 2-273
<b>Textbook:</b>	Daniel Stroock, <i>Essentials of Integration Theory for Analysis</i>
<b>Grading:</b>	100% homework

18.125 is a graduate level course on measure theory. In this course we will review the Riemann integral and go on to construct Lebesgue measure and Lebesgue integral. Armed with these, we formally establish several familiar statements from calculus and real analysis, such as Fubini's Theorem, change of variables formula, and the divergence theorem. We next study functional spaces consisting of Lebesgue integrable functions and apply them to better understand Fourier series and Fourier transform. We finish with more applications of measure theory, such as the Riesz Representation Theorem.

I will follow the textbook and may assign some more technical parts of it for independent reading. For this reason I encourage you to read ahead – the sections that I plan to cover in the near future will be posted on the website. Some familiarity with real analysis (18.100A/B/C) and basic set theory will be necessary, but I will try to make the course as self-contained as possible.

Homework is due in class each Wednesday, see the class website for a detailed schedule. If you are not coming to class that day, you can either ask a friend to hand in your homework or slide it under my office door before 11:30 AM on Wednesday. The lowest homework score will be dropped at the end of class. Extensions to the homework deadline are only provided in exceptional circumstances and you must apply for them **before** the homework is due. You are not allowed to use solution manuals or materials from previous editions of the course when working on homework problems. Collaboration is encouraged, but you are required to each write your own solutions and state the names of your collaborators on the homework. I also ask you to write your name clearly and staple the sheets together to make life easier for our grader.

Last but not least, if you have any questions regarding the course, your performance, or just want to talk about math, do not hesitate to talk to me. I am available during office hours, after class, or by appointment.