

© | [Dror Bar-Natan: Classes: 2018-19: MAT327F - Introduction to Topology:](#)

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About This Class

URL: <http://drorbn.net/18-327> and/or <http://www.math.toronto.edu/~drorbn/classes/18-327/Topology/>.

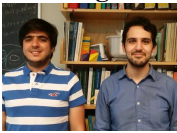
Agenda. Understand "continuity" in the most abstract!

Instructor. [Dror Bar-Natan](#), drorbn@math.toronto.edu (for course administration matters only; math on email is slow and prone to misunderstandings, so I generally avoid it). Office: Bahen 6178, 416-946-5438.

Classes. Tuesdays 3-4 and Thursdays 2-4 at [SS 2102](#).

Office Hours. Thursdays 4:30-5:30 at Dror's office, Bahen 6178, and also on video at <http://drorbn.net/vchat>.

Teaching Assistants. Clovis Hamel (c.hamel@mail.utoronto.ca) and Jamal Kawach (jamal.kawach@mail.utoronto.ca):



Tutorials. Mondays 12-1 at RS 310 and 1-2 at RS 211, both with Jamal Kawach.

Text. James Munkres' [Topology](#) (see [Errata](#)) (required reading!). The topology texts by Dugundji and Massey are also recommended, and many other texts are also available.

Course Description, taken from the Faculty of Arts and Science [Calendar](#):

Hours: 36L

Metric spaces, topological spaces and continuous mappings; separation, compactness, connectedness. Fundamental group and covering spaces. Brouwer fixed-point theorem. Students in the math specialist program wishing to take additional topology courses are advised to obtain permission to take MAT1300H, MAT1301H.

Prerequisite: MAT157Y1/(MAT237Y1, MAT246H1 and permission of the instructor).

Distribution Requirements: Science

Breadth Requirements: The Physical and Mathematical Universes (5)

Note that our choice of material will be a bit different than what is stated in the calendar, and will be closer to what was done in [2010](#).

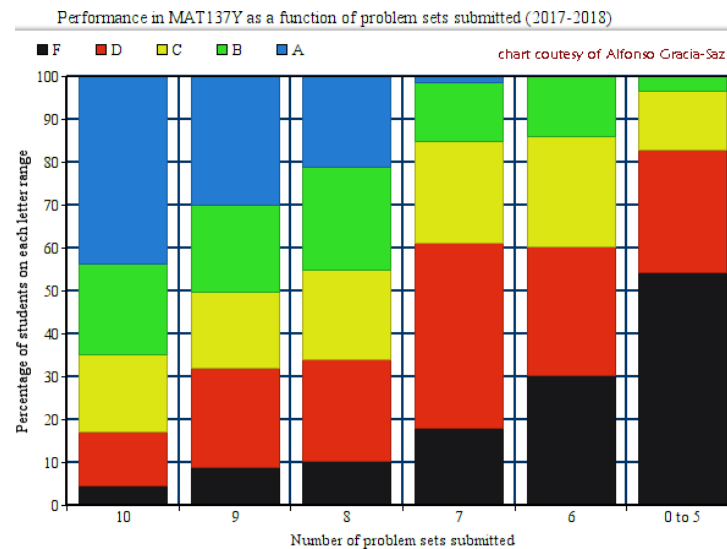
Warning and Recommendation. This will be a tough and very abstract class, designed for math specialists. I will make every effort to make it understandable, but certain parts of the material require a very high level of mathematical sophistication. Don't take this class unless you are ready to put in the tremendous intellectual effort that will be involved! Every bit of this class absolutely makes sense. But you'll have to think hard at all times, and be ready to repeatedly adjust your perspective, to see that this is so. Don't let go! If you'll fall behind you'll find it nearly impossible to catch up. This actually does not mean "do your homework in time" (highly recommended anyway). It means "**do your deep thinking in time**".

Marking Scheme. There will be one term test (25% of the total grade) and a final exam (60%), as well as about 9 homework assignments (15%). A renormalization function of the form $m \mapsto 100(m/100)^\gamma$ will then be applied, for a constant γ which will be chosen later with a bias in favour of $\gamma = 1$.

The Term Test will take place in the evening on Tuesday October 16th, 6-8PM at SF 3202. A student who misses the term test without providing a valid reason (for example, a doctor's note, which must be the one at <http://www.illnessverification.utoronto.ca/>) within one week of the test will receive a mark of 0 on the term test. There will be no make-up term test. If a student misses the term test for a valid reason, the weight of the problem sets will increase to 20% and the weight of the final exam to 80%.

Homework. Assignments will be posted on the course web page (usually on Thursdays) approximately on the weeks shown in the class timeline. They will be due a week later and they will be (at least partially) marked by the TAs. All students (including those who join the course late) will receive a mark of 0 on each assignment not handed in; though in computing the homework

grade, your worst two assignments will not count. I encourage you to discuss the assignments with other students or even browse the web, so long as you do at least some of the thinking on your own and you write up your own solutions. Academic integrity rules will not be enforced on homework, so cheating will be easy and may increase your homework grade a bit. But it will hurt your appreciation of yourself, your knowledge, and your exam grades a lot more.



Class Photo. To help us learn each other's names, I will take a class photo on Thursday of the third week of classes. I will post the picture on the class' web site and you will be *asked* to identify yourself in the picture. With your individual consent, I will also post your names on the picture page.

Quercus will be used in this class only for distributing marks and for emergency announcements. Here's the almost unnecessary [link](#).

Academic Integrity. Avoid these troubles! Carefully read the Office of Student Academic Integrity's [Information for Students](#).

Accessibility Needs. The University of Toronto is committed to accessibility. If you require accommodations for a disability, or have any accessibility concerns about the course, the classroom or course materials, please contact [Accessibility Services](#) as soon as possible.

How to Succeed in this Class

- **Keep up!** Don't fall behind on reading, listening, and doing assignments! MAT327 moves at a very high pace. New material is covered once and just once. There will be no going over the same thing again and again - if you fall behind, you stay behind.
- Unless you are an Einstein, there is no way to do well in this class merely by attending lectures - you must think about the material much more than just 3 hours a week if you want it to sink in. And if you are planning on not attending lectures, well, think again. Most people find it very hard to pace their own studies without a human contact; if you'll try, you are likely to discover the hard way that you belong to the majority.
- Take your own class notes, in your own handwriting, and strive to make them as complete as possible. Writing "burns" things into your brain and forces you to keep from daydreaming. And nothing beats reading your own notes when you review the material later on.
- Math is about understanding, not about memorizing. To understand is to internalize; it is to come to the point where whatever the professor does on the blackboard or whatever is printed in the books becomes yours; it is to come to the point where you appreciate why everything is done the way it is done, what does it mean, what are the reasons and motivations and what is it all good for. Don't settle for less!
- This said, you are expected know all definitions and all proofs, and memorizing helps. Memorizing is sometimes the first step towards understanding. If you remember something, you can think about it on the subway ride back home instead of reading advertisements.
- Keep asking yourself questions; many of them will be answered in class, but not all. Remember the old Chinese proverb:

"Teachers open the door, but you must enter by yourself"

"师傅领进门,修行靠个人!"