MAT 327 Introduction to Topology

@**Dror Bar-Natan** ⤷ **(http://www.math.toronto.edu/~drorbn/)** @**Classes** ⤷
(http://www.math.toronto.edu/~drorbn/classes/) @**2024-25** ⤷
(http://www.math.toronto.edu/~drorbn/classes/#2425)

Agenda. Understand "continuity" in the most abstract!

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(mailto: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.

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Classes. Tuesdays 3-4pm and Thursdays 2-4pm at GB248.

Office Hours. With Dror on Tuesdays 9:30-10:30 at BA6178 and at **http://drorbn.net/vchat** ⤷
(http://drorbn.net/vchat) .

Tutorials. Mondays at 1pm-2pm at OI4422 with Kai, at 2pm-3pm at OI4422 with Brinda until October
7 and then with Kai, and at 5pm-6pm at OI8214 with Brinda.

Text. James Munkres' **Topology (https://www.pearson.com/en-ca/subject-catalog/p/topology-classic-**
version/P200000006299/9780137848669) (see **Errata** ⤷ **(http://drorbn.net/index.php?title=10-**
327/Errata_to_Munkres%27_Book)) (required reading!). The topology texts by Dugundji and Massey
are also recommended, and many other texts are also available.

Piazza Link. **https://piazza.com/utoronto.ca/fall2024/mat327,** ⤷
(https://piazza.com/utoronto.ca/fall2024/mat327,) access code 0k9rwtzm2wj.

Blackboard Shots. See **https://drorbn.net/bbs/show.php?prefix=24-327** ⤷
(https://drorbn.net/bbs/show.php?prefix=24-327) .

Course Calendar

#	Week of ...	
1	September 2-6	UofT classes begin on Tuesday September 3. Tutorials will only start next week. Handout: **About This Class (https://q.utoronto.ca/courses/355484/pages/about-this-class)** .

#	Week of ...	
		Tuesday: Course introduction and continuity in terms of open sets. HW1 is on Crowdmark, with a PDF copy **here (https://drorbn.net/AcademicPensieve/Classes/24-327-Topology/HW01.pdf)** . It was due on Tuesday September 10 at 11:59PM. Solutions sets (**warning (https://q.utoronto.ca/courses/355484/pages/solution-sets-warning)**): **HW01Sol1, (http://drorbn.net/AcademicPensieve/Classes/24-327-Topology/SS/HW01Sol1.pdf)** **HW01Sol2 (http://drorbn.net/AcademicPensieve/Classes/24-327-Topology/SS/HW01Sol2.pdf)** . Thursday: The definition of "topological spaces", reading the "**About This Class (https://q.utoronto.ca/courses/355484/pages/about-this-class)** " handout.
2	September 9-13	Monday: Tutorials. Tuesday: Comparing topologies, bases for a topology. HW2 is on Crowdmark, with a PDF copy **here (https://drorbn.net/AcademicPensieve/Classes/24-327-Topology/HW02.pdf)** . It was due on Tuesday September 17 at 11:59PM. Solutions sets (**warning (https://q.utoronto.ca/courses/355484/pages/solution-sets-warning)**): **HW02Sol1 (http://drorbn.net/AcademicPensieve/Classes/24-327-Topology/SS/HW02Sol1.pdf)** . Thursday: Bases, the order topology, product topologies.
3	September 16-20	Monday: Tutorials. Tuesday: The subspace topology, compatibilities. HW3 is on Crowdmark, with a PDF copy **here (https://drorbn.net/AcademicPensieve/Classes/24-327-Topology/HW03.pdf)** . It was due on Tuesday September 24 at 11:59PM. Solutions sets (**warning (https://q.utoronto.ca/courses/355484/pages/solution-sets-warning)**): **HW03Sol1 (http://drorbn.net/AcademicPensieve/Classes/24-327-Topology/SS/HW03Sol1.pdf)** , **HW03Q2Sol2 (http://drorbn.net/AcademicPensieve/Classes/24-327-Topology/SS/HW03Q2Sol2.png)** . Thursday: Closed sets.
4	September 23-27	Monday: Tutorials. Tuesday: Limit points, T_1 and T_2 spaces.

#	Week of ...	
		HW4 is on Crowdmark, with a PDF copy **here (https://drorbn.net/AcademicPensieve/Classes/24-327-Topology/HW04.pdf)** . It was due on Tuesday October 1 at 11:59PM. Solutions sets (**warning (https://q.utoronto.ca/courses/355484/pages/solution-sets-warning)**): **HW04Sol1 (http://drorbn.net/AcademicPensieve/Classes/24-327-Topology/SS/HW04Sol1.pdf)** . Thursday: More on continuity, the product topology.
5	September 30 - October 4	Monday: Tutorials. Tuesday: More on product topologies, metric spaces. HW5 is on Crowdmark, with a PDF copy **here (https://drorbn.net/AcademicPensieve/Classes/24-327-Topology/HW05.pdf)** . It was due on Tuesday October 8 at 11:59PM. Solutions sets (**warning (https://q.utoronto.ca/courses/355484/pages/solution-sets-warning)**): **HW05Sol1 (http://drorbn.net/AcademicPensieve/Classes/24-327-Topology/SS/HW05Sol1.pdf)** , **HW05Q3Sol2 (http://drorbn.net/AcademicPensieve/Classes/24-327-Topology/SS/HW05Q3Sol2.png)** . Thursday: Metrizability, sequential closures, and products.
6	October 7-11	Monday: Tutorials. Tuesday: Metrizability and products, quotient spaces. Thursday: Quotient spaces, connectivity. Friday: Pre Term Test office hours with Brinda at Bahen 2179 at 2-4pm.
7	October 14-18	Monday is Thanksgiving, no tutorials. Tuesday: Pre Term Test office hours with Dror at SU 432 at 9:30-11:30am (replaces the regular office hours!) Tuesday: Connected spaces. Tuesday: Pre Term Test office hours with Dror at AB 114 at 5-7pm. Wednesday: Pre Term Test office hours with Kai at SS 2112 at 2-4pm and then at BA 6180 at 4:10-5pm. Our Term Test took place on Wednesday at 7-9pm at Bahen 1180 and Bahen 1220. The class average was 79, the median was 87, and **here's the PDF** ↪

#	Week of ...	
		(https://drorbn.net/AcademicPensieve/Classes/24-327-Topology/24-327-TT.pdf) . Solutions sets (**warning (https://q.utoronto.ca/courses/355484/pages/solution-sets-warning) **): **TTSol1 (http://drorbn.net/AcademicPensieve/Classes/24-327-Topology/SS/TTSol1.pdf) **. Thursday: Products of connected spaces, path connectivity.
8	October 21-25	Monday: Tutorials. Tuesday: Introduction to compactness. HW6 is on Crowdmark, with a PDF copy **here (https://drorbn.net/AcademicPensieve/Classes/24-327-Topology/HW06.pdf) **. It was due on Tuesday November 5 at 11:59PM. Solutions sets (**warning (https://q.utoronto.ca/courses/355484/pages/solution-sets-warning) **): **HW06Sol1 (http://drorbn.net/AcademicPensieve/Classes/24-327-Topology/SS/HW06Sol1.pdf) **. Thursday: Compactness in $\mathbf{R}^n$.
R	October 28 - November 1	Reading Week - no classes, no tutorials, no office hours.
9	November 4-8	Monday is the last date to drop this class. Monday: Tutorials. Tuesday: Uniform continuity and the Lebesgue number lemma, **regrets ⤷ (https://drorbn.net/AcademicPensieve/Classes/24-327-Topology/WhatWeMiss.png) **. HW7 is on Crowdmark, with a PDF copy **here (https://drorbn.net/AcademicPensieve/Classes/24-327-Topology/HW07.pdf) **. It was due on Tuesday November 12 at 11:59PM. Thursday: A bit on groups and a bit on homotopies.
10	November 11-15	Monday: Tutorials. Tuesday: More on path homotopies. HW8 is on Crowdmark, with a PDF copy **here (https://drorbn.net/AcademicPensieve/Classes/24-327-Topology/HW08.pdf) **. It is due on Tuesday November 19 at 11:59PM.

#	Week of ...	
		Thursday: π_1, covering spaces.
11	November 18-22	Monday: Tutorials. Tuesday: Lifting properties. HW9 is on Crowdmark, with a PDF copy **here (https://drorbn.net/AcademicPensieve/Classes/24-327-Topology/HW09.pdf)** . It is due on Tuesday November 26 at 11:59PM. Thursday: Class.
12	November 25-29	Monday: Tutorials. Tuesday: Class. HW10 will be assigned on Tuesday and will be due on the following Tuesday. Thursday: Last class!
13	December 2-6	The last tutorials will take place on Monday. Fall Final Assessments begin on Friday.
FF1	December 9-13	Fall Final Assessments.
FF2	December 16-20	Our final exam will take place on Monday December 16 at 2-5pm at KC Knox (Knox Presbyterian Church, Fellowship Centre - GYM, 630 Spadina Avenue). Fall Final Assessments end on Saturday.

Further resources:

- The University of Toronto **Faculty of Arts & Science Calendar (https://artsci.calendar.utoronto.ca/)** .
- Academic integrity **Information for Students (https://www.artsci.utoronto.ca/current/academic-advising-and-support/student-academic-integrity#:~:text=Academic%20Integrity%20in%20the%20Faculty,%2C%20respect%2C%20responsibility%20and%20courage.)** .
- My personal **1982 topology** ⤷ **(http://drorbn.net/AcademicPensieve/Classes/82-Topology/index.html)** notebook (as a student).

- My personal **1993 topology** ⤷ **(http://drorbn.net/AcademicPensieve/Classes/93-131-Topology/)** notebook.
- My personal **1995-6 topology** ⤷ **(http://drorbn.net/AcademicPensieve/Classes/9596-Topology/index.html)** notebook.
- My 2010 MAT327 Introduction to Topology **class website** ⤷ **(http://drorbn.net/index.php?title=10-327)** and **personal notebook** ⤷ **(http://drorbn.net/AcademicPensieve/Classes/10-327/index.html)**.
- The Summer 2014 MAT327 Introduction to Topology **website (https://mikepawliuk.ca/teaching/mat-327-summer-2014/)**, by Micheal Pawliuk.
- The Summer 2017 MAT327 Introduction to Topology **website (http://www.math.toronto.edu/ivan/mat327/)**, by Ivan Khatchatourian.
- My personal **18-327-Topology** ⤷ **(http://drorbn.net/AcademicPensieve/Classes/18-327-Topology/)** notebook.
- My personal **24-327-Topology** ⤷ **(http://drorbn.net/AcademicPensieve/Classes/24-327-Topology/)** notebook.