

American University of Beirut
MATH 214: Topology I
Course Syllabus (2025–2026 Fall)

General course information:

- Number of credits: 3
- Course level: Undergraduate
- Course format: Lectures
- Pre-requisites: MATH 210
- Schedule: TR 12:30–13:45 (August 26 – November 27)
- Location: Bliss 205

Instructor: Siamak Taati (Email: st71@aub.edu.lb; Office: Bliss Hall 312B; Extension: 4328)

Office hours:

- Mondays 14:00–15:00 and Thursdays 14:30–15:30 (to be updated at the beginning of the semester)

Course description: This course is an introduction to *general topology* (also known as *point-set topology*). General topology is a branch of mathematical analysis (and of topology) that concerns the study of concepts such as limits, continuity, connectedness, compactness and denseness in general spaces with appropriate “topological” structures. You have encountered some of these concepts in real analysis, in the concrete setting of Euclidean spaces; the power of general topology is that it develops a theory of these concepts in an abstract setting which can then be applied in a variety of concrete scenarios. General topology is a part of the toolbox for working mathematicians in virtually all branches of mathematics.

Course learning outcomes: Upon completion of this course, you are expected to

- Acquire a working knowledge of the language of general topology in concrete and abstract settings;

and be able to

- Use and reproduce standard definitions, terminology, and notations from general topology;
- Recall (or quickly rediscover) the basic facts from general topology;
- Accurately reproduce the statements of central theorems in general topology;
- Apply abstract topological facts and concepts to concrete settings;
- Critically follow mathematical arguments regarding topological facts;
- Solve topological problems and develop proof strategies for topological facts at an intuitive level;
- Produce counter-examples for false topological statements;
- Turn intuitive proof strategies regarding topological facts into rigorous mathematical proofs;
- Communicate topological definitions and arguments orally and in writing;
- Spot errors and inconsistencies in topological arguments, terminology, notations, etc.

Program learning outcomes addressed in the course:

- Communicate mathematical concepts orally and in writing.
- State theorems and give examples where they are used.
- Develop clear, organized, and rigorous mathematical proofs.
- Define and give good concrete examples of mathematical structures.

Textbooks:

- Primary: *Topology* (2nd edition) by James Munkres (roughly Chapters 2–8)
- Alternative: *Topology* (2nd edition) by Marco Manetti
- Alternative: *Topology* by Klaus Jänich
- Feel free to ask for more suggestions if these are not to your liking.

Note: The electronic versions of the second book can be accessed via the [university library](#). You may be prompted to log in with your AUB account.

Tentative contents:

- Topological spaces
- Sequences and their convergence
- Continuous functions and topological properties
- Product topology
- Quotient topology
- Separation and countability axioms
- Compact topological spaces; compactification
- Connected and path-connected topological spaces
- Metrizable spaces
- Locally compact spaces
- Complete metric spaces
- Baire spaces and the Baire category theorem

Homework:

- Weekly assignments due on Tuesday.
- You are allowed to discuss the questions with one another, but you must write your solutions individually. You may be asked to explain your solutions. (Discussing solutions: OK; Copying solutions: NOT OK)
- If you come up with a solution in collaboration with other students, please clearly indicate their names. If you learn the solution or an idea from another student (entirely or in part), make sure to give them credit.
- If you use any resources other than the course textbooks and lectures, you must cite them.

Exams:

- Midterm 1: Monday, September 29, 18:30 (venue TBA)
- Midterm 2: Friday, October 31, 18:30 (venue TBA)
- Final: To be scheduled by the Registrar's office

The exams will be cumulative. The midterms will be oral exams. You will be provided with the questions ahead of time (like assignments). During the exam, you will be asked to demonstrate some of your solutions on the board for the rest of the students and to participate in the discussions. The same policies as for the assignments apply.

Grading policy:

- 5% Active participation
- 10% Homework
- 35% or 50% Midterms
- 50% or 35% Final

Unique Learning Needs of Students with Disabilities: AUB strives to make learning experiences as accessible as possible. If you anticipate or experience academic barriers due to a disability (including mental health, chronic or temporary medical conditions), please inform your instructor so that we can privately discuss the options. In order to help establish reasonable accommodations and facilitate a smooth accommodation process, you are encouraged to contact the [Accessible Education Office](#) (Email: accessibility@aub.edu.lb; Phone: +961-1-350000 ext. 3168; Location: West Hall 304).

Academic Integrity: Please refer to [AUB Student Code of Conduct](#), in particular to Section 1.1, which concerns academic misconduct including cheating, plagiarism, in-class disruption, and dishonesty. Please be aware that misconduct is vigorously prosecuted and that AUB has a zero tolerance policy. The course policy is that credible evidence of cheating will result in failure in the course and referral to the disciplinary committee.

Non-Discrimination: In line with its commitment to the principle of equal opportunity in education and employment, AUB policies protect you from discrimination on the basis of protected characteristics, including discriminatory harassment and sexual harassment. Protected characteristics include: race, color, religion, age, national or ethnic identity, sex, gender or gender identity, sexual orientation, pregnancy, marital status, disability, genetic predisposition or carrier status, alienage or citizenship status, and political affiliation.

If you think you have experienced discrimination, discriminatory harassment, or sexual harassment, we encourage you to inform the Equity/Title IX Coordinator, Mitra Tauk at +961-1-350000 ext. 2514, or titleix@aub.edu.lb, report to a Title IX deputy at your faculty or at any other faculty [<https://www.aub.edu.lb/titleix>], or report online [<http://www.aub.ethicspoint.com>]. Reports may be submitted anonymously or not. Please know that the University will maintain the confidentiality of the complaint and privacy of the persons involved to the greatest extent possible, consistent with its goal of conducting a thorough and complete investigation and to the extent permitted by law.