The Hebrew University of Jerusalem

Syllabus

INTRODUCTION TO TOPOLOGY - 80516

Last update 23-03-2025

<u>HU Credits:</u>   4

<u>Degree/Cycle:</u> 1st degree (Bachelor)

<u>Responsible Department:</u> Mathematics

<u>Academic year:</u> 0

<u>Semester:</u> 2nd Semester

<u>Teaching Languages:</u> Hebrew

<u>Campus:</u> E. Safra

<u>Course/Module Coordinator:</u> Shahar Moes

<u>Coordinator Email:</u> shahar.mozes@mail.huji.ac.il

<u>Coordinator Office Hours:</u> See in Moodle

<u>Teaching Staff:</u>

Prof. Shahar Mozes,
Mr. Daniel Iosub

Course/Module description:
Topology is a branch of Geometry, which studies the properties kept under continuous transformations. Although Topology was created in the 18th century, the modern approach to it was formulated only around the 1950s. The most familiar example is the Real Line, and after that, the n-Dimensional space. These and other examples will be highlighted throughout the course.

Course/Module aims:
Introduction to Topology.

Learning outcomes - On successful completion of this module, students should be able to:
Familiarity with the concept of a Topological Space.

Familiarity with the concept of continuity from a topological perspective.

Familiarity as well as being able to apply to Separation Axioms.

Understanding the concept of compactness.

Introduction to basic ideas and notions in Algebraic Topology such as Homotopy, the fundamental Group, and various theorems in that field.

Attendance requirements(%):
0

Teaching arrangement and method of instruction: Lecture + exercise

Course/Module Content:
The subjects studied in the course are:

Metric Spaces; Topologies; Open and closed sets; Topological Spaces; Subspaces; Continuous Functions; Homeomorphisms; Product Spaces; Tychonoff's Theorem; Separation Axioms; Connectivity; Compactness; Local Compactness; Compactifications; Urysohn's Lemma; Tietze's Theorem; Metrizable Spaces; The Fundamental Group; the Circle; Brouwer's Fixed Point theorem in dimension 2.

Required Reading:

 Additional Reading Material:
  Munkres, Topology

 Grading Scheme:
  Written / Oral / Practical Exam 90 %
  Submission assignments during the semester: Exercises / Essays / Audits / Reports / Forum / Simulation / others 10 %

Additional information: