

Introduction to algebraic topology, fall 2011

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Lecturer

Aleksandr Pasharin

Scope

10 cu.

Type

Advanced studies

Prerequisites

Topology II, Algebra I, Linear Algebra I.

Contents

The course is intended to be the first introduction to the singular homology theory and homological methods in algebraic topology.

We start off with the brief excursion to the world of simplices, simplicial methods and Delta-complexes. Then we move on to the main subject of the course - construction of the singular homology theory. We go through all the essential properties of the singular homology and apply it to prove the classical topological results such as the Invariance of Domain, Brouwer's fixed-point theorem, Brouwer-Jordan separation theorem, the main theorem of Algebra and others.

Lecture Notes

[Foreword](#)

[01 - Simplicial stuff](#)

[02 - Homological algebra](#)

[03 - Singular Homology](#)

[04 - CW complexes and cellular homology](#)

Exercises

[Exercises 1 Solutions 1](#)

[Exercises 2 Solutions 2](#)

[Exercises 3 Solutions 3](#)

[Exercises 4 Solutions 4](#)

[Exercises 5 Solutions 5](#)

[Exercises 6 Solutions 6](#)

[Exercises 7 Solutions 7](#)

[Exercises 8 Solutions 8](#)

[Exercises 9 Solutions 9](#)

[Exercises 10 Solutions 10](#)

[Exercises 11 Solutions 11](#)

[Exercises 12 Solutions 12](#)

Lectures

Weeks 36-42 and 44-50, Wednesday 10-12 in room B321, Friday 11-13 in room B322. Two hours of exercise classes per week.

Exams

Final exam. Also bonus points for the exercises: 25% - 1 point, 40% - 2 points, 50% - 3 points, 60% - 4 points, 75% - 5 points.

Bibliography

Allen Hatcher: Algebraic Topology

Registration

Did you forget to register? [What to do.](#)

Exercise groups

Group	Day	Time	Place	Instructor
1.	Tuesday	12-14	C322	Aleksandr Pasharin