

Mathematics 527 — Homotopy Theory

(3:00 MWF, 241 Altgeld)

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Course requirements:

Homework: There will be seven homework assignments, to be given out approximately once every two weeks.

Prerequisites: Math 526, or instructor consent.

Texts: The primary text will be:

- Allen Hatcher, *Algebraic Topology*, Cambridge University Press, 2001.
This book is also available for free at
<http://www.math.cornell.edu/~hatcher/>

This will be supplemented with additional course notes.

Course schedule: This course is an introduction to the basic concepts of homotopy theory. Homotopy theory began as the study of continuous deformation of continuous maps between topological spaces.

Topics will include:

- homotopy groups
- CW-complexes and Whitehead's theorem
- the relation between homotopy groups and homology groups (Hurewicz theorem),
- fibrations and cofibrations, closed model categories,
- Eilenberg-MacLane spaces and Postnikov approximation,
- stable homotopy theory and spectra.