

## Syllabus for Math 2410 (Fall 2015)

**Instructor:** Sara Maloni ([http://www.math.brown.edu/~maloni/Brown\\_en/MA\\_520.html](http://www.math.brown.edu/~maloni/Brown_en/MA_520.html))

**Text:** Allen Hatcher, *Algebraic Topology*, Cambridge University Press, 2002.

We will cover most of Chapters 0-1-2.

**Topics:** The main topics will be:

- **Introduction:** Overview; Homotopy Equivalence; Cell Complexes; Operations on spaces; Criteria for Homotopy Equivalence; Homotopy Extension Property.
- **Fundamental group:** Definition; The Fundamental Group of the Circle; Van Kampen's theorem and applications; Covering Spaces and their classification; Deck Transformations and Group Actions.
- **Singular Homology:** Definition; Elementary computations; The Homotopy Invariance Theorem; Exact sequences and excision; Mayer-Vietoris Sequences; Homology with coefficients.