

# **Introduction to Algebraic Topology (Honours)**

**Winter 2020, MATH 4206/5206**

School of Mathematics and Statistics, Carleton University

**Instructor:** Colin Ingalls

**Office:** #4229 HP, **Tel:** (613) 520 2600 (Ext. 2136)

**Email:** cingalls@math.carleton.ca

**Lectures:** Available Online

**Office hours:** Online office hours by request.

**Description:** An introduction to homotopy theory. Topics include the fundamental group, covering spaces and the classification of two-dimensional manifolds. Also offered at the graduate level, with additional or different requirements, as MATH 5206, for which additional credit is precluded.

**Textbook:** “Algebraic Topology”, by Allen Hatcher, Cambridge University Press, 2001. Freely available online at <http://pi.math.cornell.edu/~hatcher/AT/ATpage.html>

## **Other books:**

“Algebraic Topology” Tammo Tom Dieck.

“Algebraic Topology, A first course” Greenberg, Harper.

“Basic Concepts of Algebraic Topology” Fred H. Croom.

“Elementary Concepts of Topology” Paul Alexandroff.

“Elements of Algebraic Topology” James R. Munkres.

“Algebraic Topology: An Introduction” W. S. Massey.

## **Topics to be Covered:**

**Chapter 1** The Fundamental Group

**Chapter 2** Homology

**Chapter 3** Cohomology

**Chapter 4** Homotopy Theory

**Classes begin:** January 11, 2021.

**Classes end:** April 14, 2021.

**Take home exams due:** April 27, 2021.

**Term mark:** There will be 7 assignments, Each worth 10%.

You are expected to do all the assignments. No make up, early, or delayed assignments. Any missing assignments will be counted as zero.

The assignments must be your own work. In particular, you must cite everything you are taking from the literature or that you discussed with someone else. Total portion of the final mark in assignments: 70%.

**Evaluation:** Term mark is 70%; final exam is 30%,

**Academic Accommodation:** You may need special arrangements to meet your academic obligations during the term. For an accommodation request the processes are as follows:

**Pregnancy and Student Parental Leave:** write to me with any requests for academic accommodation during the first two weeks of class, or as soon as possible after the need for accommodation is known to exist. For more details see the Parental Leave Guide.

**Academic Accommodations for Students with Disabilities:** The Paul Menton Centre for Students with Disabilities (PMC) provides services to students with Learning Disabilities (LD), psychiatric/mental health disabilities, Attention Deficit Hyperactivity Disorder (ADHD), Autism Spectrum Disorders (ASD), chronic medical conditions, and impairments in mobility, hearing, and vision. If you have a disability requiring academic accommodations in this course, please contact PMC at 613-520-6608 or [pmc@carleton.ca](mailto:pmc@carleton.ca) for a formal evaluation. If you are already registered with the PMC, contact your PMC coordinator to send me your Letter of Accommodation at the beginning of the term, and no later than two weeks before the first in-class scheduled test or exam requiring accommodation (if applicable). After requesting accommodation from PMC, meet with me to ensure accommodation arrangements are made. Please consult the PMC website for the deadline to request accommodations for the formally-scheduled exam (if applicable).

**Religious obligation:** write to me with any requests for academic accommodation during the first two weeks of class, or as soon as possible after the need for accommodation is known to exist. For more details see the Religious Observation Guide.

**Contact Information:** e-mail: [cingalls@math.carleton.ca](mailto:cingalls@math.carleton.ca)