

PMATH 467/667
ALGEBRAIC TOPOLOGY
WINTER 2022

Time and Location: MWF 12:30–1:20 pm, RCH 211

Professor: Doug Park

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Audience: This course is intended to serve as an introduction to algebraic topology, aimed at an advanced undergraduate student or a beginning graduate student. Some familiarity with point-set topology and group theory will be assumed.

Textbook: “Elements of Algebraic Topology”, Paperback edition, J.R. Munkres, CRC Press. Original hardcover edition published in 1984 by Addison-Wesley. QA612.M86 1984

Other References:

1. “A Basic Course in Algebraic Topology”, W.S. Massey, Springer, 1997.
(This will be useful when we discuss fundamental groups and the classification of 2-dimensional manifolds.) QA612.M374 1991
2. “Topology”, 2nd edition, J.R. Munkres, Prentice Hall, 1999.
(This is a useful reference for point-set topology.) QA611.M82 2000
3. “Algebraic Topology”, Paperback edition, A. Hatcher, Cambridge, 2002.
Available for free download at <https://pi.math.cornell.edu/~hatcher/>
(This is a comprehensive reference containing much more in-depth material.)

The textbook and the first two references will be on reserve at the DC Library.

Material to be covered: We will try to cover Chapters 1–4 (homology theory) of the textbook, and possibly some part of Chapter 5 (cohomology theory) if time permits. We will also try to cover fundamental groups and other homotopy groups using Hatcher’s book.