

## PMATH 467/667, Algebraic Topology, Winter 2020

**Time and Location:** MWF 9:30–10:20 am, ML 349

**Professor:** Doug Park

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Office hours: To be announced at LEARN

**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, Perseus Books Group (Westview Press). Original hardcover edition published in 1984 by Addison-Wesley. QA612.M86 1984

### 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 <http://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.

**Homework:** We will usually cover one section of the textbook in each class. Students will usually be assigned one or two problems from each section that has been covered. Homework problems will be posted on LEARN. Homework should be handed in by the due date at the start of class. Late homeworks will **not** be accepted.

**Presentations:** Graduate students will be asked to present informal talks in the second half of the term. Topics for the talks should be prearranged with the professor. Undergraduate students are expected to attend these talks. To accommodate everyone’s schedule, we may have to schedule some extra meetings in April.

**Tentative grading scheme:** Homework 50%, Midterm exam 20%, Final exam and/or presentation 30%. Exam times and locations will be posted on LEARN. Because of the high weight of homework, you are **not** allowed to collaborate on homework in this course. In case of a violation of the last rule, the exam scores will be weighed a lot higher.

**Academic integrity:** In order to maintain a culture of academic integrity, members of the University of Waterloo community are expected to promote honesty, trust, fairness, respect and responsibility.

[Check [www.uwaterloo.ca/academicintegrity/](http://www.uwaterloo.ca/academicintegrity/) for more information.]

**Grievance:** A student who believes that a decision affecting some aspect of his/her university life has been unfair or unreasonable may have grounds for initiating a grievance. Read Policy 70, Student Petitions and Grievances, Section 4, <http://www.adm.uwaterloo.ca/infosec/Policies/policy70.htm>. When in doubt please be certain to contact the department/school's administrative assistant who will provide further assistance.

**Discipline:** A student is expected to know what constitutes academic integrity to avoid committing academic offenses and to take responsibility for his/her actions. A student who is unsure whether an action constitutes an offense, or who needs help in learning how to avoid offenses (e.g., plagiarism, cheating) or about "rules" for group work/collaboration should seek guidance from the course professor, academic advisor, or the undergraduate associate dean. For information on categories of offenses and types of penalties, students should refer to Policy 71, Student Discipline,

<http://www.adm.uwaterloo.ca/infosec/Policies/policy71.htm>.

For typical penalties check Guidelines for the Assessment of Penalties,

<http://www.adm.uwaterloo.ca/infosec/guidelines/penaltyguidelines.htm>.

**Appeals:** A decision made or penalty imposed under Policy 70, Student Petitions and Grievances (other than a petition) or Policy 71, Student Discipline may be appealed if there is a ground. A student who believes he/she has a ground for an appeal should refer to Policy 72, Student Appeals,

<http://www.adm.uwaterloo.ca/infosec/Policies/policy72.htm>.

**Note for students with disabilities:** AccessAbility Services, located in Needles Hall, Room 1132, collaborates with all academic departments to arrange appropriate accommodations for students with disabilities without compromising the academic integrity of the curriculum. If you require academic accommodations to lessen the impact of your disability, please register with AccessAbility Services at the beginning of each academic term.