

MATH 562- TOPOLOGY II- Spring 2021

SYLLABUS

Time/Place: MWF 14:15—15:05, Ayres 121

Modality: variable. Early in the semester, we'll meet online, via Zoom. As the Covid-19 prevalence in Knoxville continues to decline, we'll start meeting in person (initially once a week, on Wednesdays.)

When we meet in person, the lecture will be recorded for later viewing (not simultaneous) by students unable to attend.

Instructor: Alex Freire

Office Hours for this course: Wednesday 4:30 PM to 6 PM

Zoom room: 865-974 4313

Content and goals: although we'll still discuss homotopy (covering spaces, fundamental group), the emphasis this semester will be on differential topology: transversality, stable and generic properties, degree theory, vector fields, Morse theory. See the separate document "course outline" for details.

Text: the main text is Guillemin-Pollack's *Differential Topology*, chapters 1, 2 and 3. Important additional references: Munkres *Topology*, Munkres *Elementary Differential Topology*, Milnor *Topology from the Differentiable Viewpoint*. (See the separate document "bibliography".)

Homework: there will be homework sets for each main topic in the course, often taken from the main text. Each student will be responsible for one problem per set, with the solution to be typeset in LaTeX, for posting to the rest of the class (and oral presentation, if time allows.) I expect a total of 6-7 sets during the semester.

Grading: in addition to the homework, there will be a 2h midterm and a 2h final (both online.) All problems (whether in the homework, the midterm or the final) will count with the same weight towards the grade.

IMPORTANT DATES

First Lecture: Wed, Jan 20

Last lecture: Wed, Apr 28

Final Exam: Tue, May 4, 10:30—12:45

Total Lectures: 43 (15 weeks)—no Spring Break this year