

Syllabus for Math 4540: Differential Geometry

Morgan Weiler, Cornell University, Spring 2022

Time: TTh 9:40-10:55 AM Eastern.

Room: 207 Malott, or Zoom via Canvas. Course website: https://e.math.cornell.edu/people/Morgan_Weiler/4540/4540_main.html. I will send course announcements, post supplementary files, etc. through Canvas.

Email: mw795@cornell.edu, ****use “4540” in your subject line****

Office Hours: Mondays 10-11 AM (Zoom) and Thursdays 11 AM-12 PM (571 Malott 2/10 and after, Zoom before). Subject to change due to breaks, exams, etc.

Text: Pressley, *Elementary Differential Geometry* Ch 1-10 and 13, with any supplementary resources posted throughout the semester.

TA: Max Hallgren. Email: meh249@cornell.edu. Office hours: Fridays 3-4 PM.

HW: Due by Gradescope, add code on Canvas.

Prelim: In-class 3/15.

Final Exam: Take-home, due date TBA (set by the Registrar).

Overview: We will study the relationships between the geometry and topology of curves and surfaces in the plane and in three-space, culminating in a proof of the Gauss-Bonnet theorem, which relates the geometry of a surface to its topology. Students will be evaluated both on their ability to do computations and to construct proofs. This course provides a framework for more advanced study of differential geometry.

Assessment: Your grade will be the maximum of either

$$35\%(\text{hw}) + 25\%(\text{prelim}) + 40\%(\text{final})$$

$$35\%(\text{hw}) + 30\%(\text{prelim}) + 35\%(\text{final})$$

I will not accept late assignments, but I will drop your lowest two homework scores (including any zeroes from missed assignments) and allow one no-questions asked two-day extension, as long as you notify me two days in advance (e.g. if the assignment is due Tuesday morning, notify me by Sunday morning).

Homework: Generally due on Gradescope before class on Tuesday, with some exceptions. Your homework will be partially graded on clarity, neatness, legibility, and organization.

Working with others is encouraged, but your writeup must be your own. Please write the names of those you worked with at the top of your submissions.

Exams: The prelim will tentatively cover through Chapter 6, while the final will be cumulative.

Accommodations: If you require accommodations due to a disability, please let me know *as soon as possible*. Please also make sure SDS sends me an email.

If you have a conflict with the prelim date, you must let me know *at least two weeks in advance*, unless you have an unforeseeable emergency (e.g. contracting Covid). If you are sick, let me know as soon as you can and have SDS send me the appropriate documentation.

Academic integrity and collegiality: Students are required to abide by Cornell's code of academic integrity (<https://provost.cornell.edu/leadership/vp-undergrad-ed/academic-integrity/>), and to treat all other participants in this course with courtesy. In particular, you may not seek out or post solutions to assignments from others, including online.

This syllabus is subject to change at any time. I will do my best to inform students of all such changes as quickly as possible.