Special Topics
MAT 180

Dr. Melissa Zhang

Spring Quarter 2023

Course title: Knot Theory

Instructor: Melissa Zhang

Prerequisites: MAT 108 or equivalent

- Familiarity with proof-based mathematics is necessary.

- Basic abstract algebra is recommended, though not absolutely required.

Text: Colin Adams, *The Knot Book*

- This text is typically purchaseable for around $20–$40. Most homework problems will be assigned out of this book.

- Aside from the main text, we may supplement lectures with additional articles covering aspects of knot theory developed in the 21st century.

Course Description: Knot theory is one of the most concrete and hands-on subfields of modern topology, and has ties to many other parts of mathematics. Students will be introduced properties of knots, knot invariants, and topological objects related to knots. We will focus on hands-on computations and exercises involving visualizing and drawing physical objects, as well as algebraic representations of these objects.

Course grading: Precise grading criteria are yet to be determined. The course grade will depend on class participation, homework, and a final project. Students will be assigned weekly homework exercises, and must submit their solutions as LaTeX'ed PDFs; images may be hand-drawn and inserted as figures. For the final project, students will be responsible for independently studying a particular topic and producing both a written report as well as a short presentation on their topic.