

Math 732: Knot Theory Syllabus, Spring 2011

Professor: **Dr. Jason Parsley**

Office: 330 Manchester Hall

Office hours: M 2-3, WTh 2-3:30; and also by appointment

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Course website: <http://www.wfu.edu/~parslerj/math732/>

1. Course Time & Location: MWF 1-2, Manchester 124

2. Texts: (1) Cromwell, *Knots and Links*. (2) Adams, *The Knot Book*

3. Topics: We will cover the first half of Cromwell's book before considering other topics

- a) Introduction to knots; symmetries (Cromwell, ch. 1; Adams, ch. 1-3) [1.5 weeks]
- b) Useful topology skills (Cromwell, ch. 2) [1.5 weeks]
- c) Link diagrams (Cromwell, ch. 3) [2 weeks]
- d) Constructions and decompositions of links (Cromwell, ch. 4) [2.5 weeks]
- e) Seifert surfaces (Cromwell, ch. 5; Adams, ch. 4) [2.5 weeks]
- f) Knots and DNA, chemistry, physics (Adams, ch. 7) [2 weeks]
- g) Selected other topics (possibly ropelength, link symmetries, knot invariants) [2 weeks]

4. Homework: Working problems, both individually and together, is fundamentally important in learning mathematics well. Since this is a topics course, we require a baseline amount of work to be submitted. I will suggest many other exercises; my hope is that you will choose to work on additional exercises that are not required.

Written assignments will be due on the specified day at the start of class. Late work is discouraged; each day late earns a 5 point deduction from your score; no work over 1 week late is accepted. I'm willing to work with you – if there are circumstances which will not allow you to submit homework on time, let me know and we can work something out.

The written homework should be neatly written using proper English grammar. I anticipate using the following grading system: most graded problems are worth 5 points; problems which are ungraded are checked for 'completeness' – whether you have made an honest attempt; these are worth 2 points.

Academic integrity is something I take quite seriously. Here are my expectations: you may discuss course material freely with each other. The written assignments that you submit must be your original work, i.e., when writing your solutions, you should be working independently, not together.

5. Midterm Exams Two of the assignments will be designated as midterm exams. These will be open-book, open-notes take-home exams. (Dates are tentative.)

- 1st midterm: *Feb. 23-25*
- 2nd midterm: *Apr. 6-8*

6. Problem Sessions. We will meet biweekly (on Thurs., 11am, barring objections) for discussing homework problems.

7. Final Project: A final project forms the capstone of this course. You will select a topic from knot theory, explore it using some external references, and write a 6-12 page report on it with significant mathematical content. You will also prepare a presentation about your project. The default date for the final presentations is our scheduled exam period: *Mon., May 2, 2pm.*

8. Grade Calculation:

Homework	30%
Midterm Exam 1	20%
Midterm Exam 2	20%
Final Project	30%

If you have a disability which may require an accomodation for taking this course, please contact the Learning Assistance Center (758 5929), then contact me, within the first 2 weeks of the semester.