

Math 107: Explorations in Mathematics Syllabus, Spring 2012

Professor: **Dr. Jason Parsley**

Office: 330 Manchester Hall

Office hours: MW 10-11, W 3:30-4, Th 2-4; and also by appointment;

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1. Course Time & Location:

section A: MWF 12:30-1:45, Manchester 125

section B: MWF 2-3:15, Manchester 125

We are scheduled to meet for 200 out of these 225 minutes each week.

2. Texts:

a) Tannenbaum, *Excursions in Modern Mathematics*, 6th ed.

b) Adams, *The Knot Book*

c) Abbott, *Flatland*

3. Topics: Our plan is to do 7 different two-week topics. The rough starting date and chapter (in Tannenbaum) is listed for each one.

	Topic	Chapter	length
1	Number theory	(notes)	5 classes
2	Graph theory	5-6	4-5 classes
3	Voting	1	6-7 classes
4	Weighted voting	2	3-4 classes
5	Surfaces	(notes)	8-9 classes
6	<i>tbd</i>		4-5 classes
7	<i>tbd</i>		4-5 classes

We will, as a class project vote on the remaining two topics, chosen from the following list:

- Fair Division (ch. 3)
- Apportionment (ch. 4)
- more Graph Theory (ch. 6-7)
- Fractals (ch. 12)
- Statistics (ch. 13)
- Probability (ch. 15)
- more Knot Theory (Adams)

We will spend roughly 75% of our time each week on the topics above. We will take frequent *knot breaks* to talk about Knot Theory.

4. Teaching Assistant: We are fortunate to have **Lata Kodali** and **Robert Sizemore**, both mathematics graduate students, as the teaching assistants for math 107. They will grade papers, hold evening help sessions (M-Th nights, 7-9pm, room *tba*), and occasionally help out in class.

5. Flexible Scheduling: We will meet 75 minutes each day, which is $9/8$ as much as we should. In other words, we will skip a class roughly every three weeks – 5 total classes. Here are some days we will not meet:

two (consecutive) days in Feb. (*tba*), March 9, April 27, one more spring day (*tba*)

6. Attendance Quizzes: Each day (other than test days), we will spend the first 2-5 minutes with some short, simple 'quiz'. These are graded out of 5 points on the following scale: ✓ - = 4 pts; ✓ = 5 pts; ✓ + = 6 pts (rare); unhappy face = 1-3 pts (hopefully more rare). By my count, there are 37 days; your lowest 3 scores will be dropped. These quizzes cannot be made up, even if you are merely late for class.

7. Homework: Working problems, both individually and together, is fundamentally important in learning mathematics well. Written assignments will be due on **Fridays** at the start of class. Late work is discouraged; each day late earns a 5 point deduction from your score; no work over 3 days 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 3 points; problems which are ungraded are checked for 'completeness' – whether you have made an honest attempt; these are worth 20 points total.

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.

7. Tests and Final Exam At the end of every other topic, we will have a 30-minute test.

- 1st test: M., Feb. 13
- 2nd test: F., Mar. 23
- 3rd test: M., Apr. 23

The final exam will be during the **Math Block** timeslot: M., May 7, 9am-12 noon.

8. Projects and Group Work. Many topics will include some sort of project, group work, or collaboration. Some will utilize Sakai. For instance, in the third topic you will conduct an election of your own and determine who wins via different voting systems. Under the fifth one (geometry), you will read *Flatland* and create your own follow-up. You will also have a 'pet knot'. For the first project, we will, as a class, build a table of divisors.

9. Grade Calculation:

Attendance Quizzes	15%
Homework	20%
Tests	20%
Projects and Group work	20%
Final Exam	25%

10. Final Exemption: If you satisfy three requirements, the final exam is optional for you.

- Average on April 30 is at least 90.0%
- Test average is at least 85 %
- No more than 2 absences

11. Front Row Seats: Each non-test day, 4 people will be chosen to sit front & center. They will be my helpers for the day's class.

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.