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Remarks: The main prerequisites for this course are some basic set theory and number theory, which we will review. The content of this course is exclusively group theory, but this does not imply, in any way, that the scope of this course is limited. Indeed, group theory is an essential topic in mathematics. Groups are examples of algebraic systems that are rather different from, for example, the integers, rationals, or real numbers. As you will see, groups, especially finite groups, are self contained systems with their own ‘arithmetic’ that is often quite unexpected, but which are, nonetheless, perfectly well defined. Also, group theory problems are an excellent means of learning how to write good mathematical arguments. Some of the questions themselves will seem simple, but they are highly instructive, especially in how to think abstractly. At a deeper level, groups are a means of encoding the notion of ‘symmetry’ in a concise form. This has ramifications across many mathematical disciplines. As you will see if you take MA 542, symmetry is important, for example, in the study of the solutions of polynomial equations. In fact, questions regarding whether such equations have solutions can be decided based on group theoretic criteria.

Outline of topics to be covered:
(Note: Not all sections in a given chapter are covered.)

Part 1: Preliminaries - Chapter 0
Part 2: Groups - Chapters 1 – 10, 11 ← time permitting
Part 5: Special Topics - Chapter 24

Exams: During the semester, there will be two exams worth 100 points each, as well as a final exam worth 200 points. The schedule for these exams is given on the next page.
**Homework:** During the semester, I will generally assign homework on a daily basis. This homework is your primary means of learning the material, even more so than the lectures. Indeed, it is only by actually working out the solutions to problems that one really learns this material. Not doing homework is a bad idea and will result in a poor performance in the course.

Additionally, there will be, throughout the course of the semester, 10 turn-in homework assignments, each worth 10 points, for a total possible maximum of 100 points if you complete each perfectly. Each turn-in assignment will be due by the next class meeting after it was assigned.

**Grading:** Your grade in the course will be based on the combined sum of the two exams, the 10 turn-ins, and the final exam, out of a possible total of 500 points.

**Makeup Exams:** Except in cases of illness, and then, only with a signed doctor’s note, exams will be given only at scheduled times.

**Cheating:** I consider cheating and plagiarism to be very serious offenses and any cases of it will merit action by the University Academic Standards Committee.

**Important Dates:**

**Holidays:** Monday October 14
Thanksgiving Break: Wednesday November 27 – Friday November 29

**Exam 1 – Friday October 11**
**Exam 2 – Friday November 22**
**Final – Monday December 16, 12:30-2:30 PM**

Due to the day off on October 14, there will be a **substitute Monday schedule** on Tuesday October 15, that is, the class we would have had on the 14th will be held on the 15th.

The **last lecture** will be Wednesday, December 11.

**Web Page:** There is a web page for the course where you can find the homework assignments listed, as well as the syllabus and other materials that will be made available during the course.

The URL is:

http://math.bu.edu/people/tkohl/teaching/fall2002/MA541.html