

# Syllabus for MATH 305 Abstract Algebra I

## Fall 2007

### ***Instructor Info***

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Instructor: Ismar Volic  
Meeting times: Mondays, Wednesdays, and Thursdays 9:50—11 am; in SCI 264  
Office hours: Tuesdays 3—5, Wednesdays 3:30—4:30, Thursdays 11—12, and by appointment; in SCI 352  
Phone: 781-283-3103  
Email: [ivolic@wellesley.edu](mailto:ivolic@wellesley.edu)

### ***Textbook, FirstClass Conference, and Webpage***

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Text: *Modern Algebra: An Introduction*, by J. Durbin, 5<sup>th</sup> edition, Wiley, 2005. We will cover most of Chapters I—IX and parts of Chapters XIII and XIV.

FirstClass Conference: The FirstClass conference for this course is *MATH305-F07*. Please add the icon to your desktop and check it often for new items. The conference will contain various important announcements, materials, and information about the course. You can also ask questions, have discussions, or arrange study groups through the conference. I will be checking the messages posted to it regularly.

Webpage: I will also post the materials for this course on my web page at <http://palmer.wellesley.edu/~ivolic/classes/MATH305AlgebraIFall07.html>. However, this page will not contain anything that is not already on our FirstClass conference and is just meant to be a backup source of information in case you cannot access FirstClass for whatever reason.

### ***Prerequisites and Policies***

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Prerequisites: MATH 206 Linear Algebra or equivalent.

Attendance: It is not required that you come to class, although it is doubtful that you will do well in the course if you miss too many lectures. If you do decide to attend, *please be on time*. If you miss a class, please copy the notes from a classmate. I will not relecture the material in my office hours, but will be happy to clear up any confusion you might still have after you have studied the notes and the textbook.

Special Arrangements: If you need special arrangements for the exams or any other aspect for the course due to religious observances or disabilities, please contact me as soon as possible. If you think you might need special arrangements, you should contact Jim Wice, the Director of Disability Services.

### ***Course Outline and Objectives***

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This course is a natural continuation of Linear Algebra, but the material is much more proof-driven and abstract. We will study groups, rings, and fields, which are standard objects in mathematics and are used in subjects as varied as quantum mechanics and digital communications. The subject originates with the study of symmetry and we will keep returning to this unifying theme throughout the course.

The more general objective of this course is to continue providing you with a deeper understanding and working knowledge of mathematics, while in the process strengthening your analytical skills, increasing your ability to communicate mathematics symbolically and orally, making you comfortable with reading and understanding mathematics on your own, and continuing to develop your appreciation for abstract mathematics.

## ***Assignments, Quizzes, Exams, and Grading***

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- Workload: You should expect to spend 3—4 hours of studying on your own for each hour of lecture.
- Homework: For all the homework assignments, see *Math305HW.pdf* in the *Homework* subconference. You are responsible for doing the exercises from each section as it is covered in class. Every Friday, you will turn in the problems from sections covered roughly up to and including that Monday's lecture (but I will tell you precisely what to turn in each time). Problems sets are due by 5 pm and you can leave them in an envelope in the box on my door (or you can give them to me in class any time). You will be graded on the content, but also in large part on clarity and presentation, and will be expected to follow the guidelines from the document *HWguidelines.pdf* which can be found in the *Homework* subconference. It is very important that you keep up with the assigned work since homework counts for a large portion of your final grade. In addition, exams will be based on the homework problems. Feel free to work on the homework assignments together, but write them up individually. Late homework will not be accepted, but you are allowed to turn in two homework assignments up to one week later than the due date. Solutions to the problem sets will be provided.
- Extra credit quizzes: Optional 15-minute quizzes will be given every Thursday at the end of class. They will contain 2-3 problems on the material covered in the most recent homework assignments that have been turned in. Each problem will count as much as a homework problem and the points you earn on the quizzes will count as extra credit on your homework. The goal of the quizzes is to give you an opportunity to practice doing problems under an exam-like time constraint and to get used to the format and style of the kind of questions you will see on the midterms and the final.
- Exams: There will be two in-class midterms and a self-scheduled final exam. The midterms will be given on Thursday, October 11, and Thursday, November 15.
- Extra credit assignment: If you go to <http://palmer.wellesley.edu/~ivollic/pages/reading.html>, you will find a variety of short stories, essays, etc., available for download and reading. These are all in one way or another mathematically motivated. You may choose one (or more) of the writings and write a 4-5 page essay explaining and elaborating its content and the effect it has had on you (or lack thereof). The essay will be due at the end of the semester. If you are interested, we might even devote some class time to discussion of some of the writings. I will tell you more about all of this in due time.
- Grading: 30% homework  
20% each midterm  
30% final

## ***Resources***

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- Office hours: Please take advantage of my office hours whenever you can. You do not need an appointment to come in. If you need help with the homework or material from class, if you feel that you are falling behind or that the material is consistently too difficult, or if you simply want to chat about anything, please see me. It is imperative that you talk me as soon as a problem arises so that we can fix it quickly. If you cannot make the office hours, feel free to contact me and we will arrange a time to meet. The best way to reach me is through email, although I cannot guarantee that I will reply to a message sent after 9 pm until the next morning or a message sent during the weekend until the following Monday. When communicating via email with me or with each other, please follow the suggestions from the **Netiquette** handout you received when you entered Wellesley (this can also be found online).
- Additional office hours: The grader for our class, Beth Romano, will also hold office hours. These will take place every Thursday, 7—9 pm in the math helproom, SCI 362.
- Other materials:
- <http://www.math.niu.edu/~beachy/aaol/>
- This website contains a lot of information on abstract algebra, including definitions, examples, and theorems.
- *Algebra*, by M. Artin, Prentice Hall, 1991.
- My favorite abstract algebra book (but unfortunately a little too advanced for us).

- *Problems in Group Theory*, by J. Dixon, Dover, 2007.

Has lots of excellent solved group theory problems.

- *Algebra*, by S. Lang, Springer, 2005.

This is the next step – a graduate school-level text in abstract algebra which is fairly standard.

Other resources:

Variety of assistance is available to you through the Pforzheimer Learning and Teaching Center. Please visit their website at <http://www.wellesley.edu/PLTC/>. Your academic dean is also a good source of information and advice.

### ***Important Dates***

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Friday, September 14	Last day to add
Friday, September 21	Credit/non ends
Friday, September 28	Last day to drop
Monday—Tuesday, October 9—10	No classes (fall break)
Thursday, October 11	First in-class midterm
Tuesday, November 6	No office hours (Tanner conference)
Thursday, November 15	Second in-class midterm
Wednesday—Friday, November 21—23	No classes (Thanksgiving break)
Tuesday, December 11	Last day of classes
Friday, December 14	Final exams begin
Thursday, December 20	Final exams end

For a more complete list of important dates, see <http://www.wellesley.edu/Registrar/0708calendar.html>