

# Math 121, Spring 2011

**Dr. Sarah Raynor**

**Textbook:** We will not be using a text for this course. Notes will be provided as the semester progresses, and the class will collaboratively create a wiki containing all course information.

**Office:** Manchester 343

**Office Phone Extension:** 4466

**Office Hours:** Please feel free to drop by my office at any time, but I recommend that you email first to make sure that I am available. I will generally be around in the afternoons after class so feel free to come by then.

**Email:** raynorsg@wfu.edu

**Course Website:** <http://www.wfu.edu/~raynorsg/math121.html>.

**Course Wiki:** We will be using a course wiki in this course. Each proof that we complete in class will be posted online by one of you, and then checked and edited by a second student. You are also encouraged to post other course-relevant information to the wiki, and the wiki will have a discussion forum on which you are encouraged to share your questions and concerns about assignments. I, the TA, and other students will watch the discussion forum and answer questions as they come up.

**TA:** Our TA this semester will be Quinn Morris. He will be holding a proof-writing session on Thursdays at 11am in Manchester 018 or 122 (depending on how many people attend). In addition, he will be holding help sessions on Sundays from 7-9pm, Tuesdays 2-4pm, and Thursdays 12noon-1pm. Help sessions will be held in Manchester 122.

**Course:** This semester, we will be exploring the subject of linear algebra. Linear algebra is the study of systems of linear equations, matrices, and linear transformations. It has many applications to computing, economics, business, science, and other areas of math. We will begin by reviewing functions in one dimension, and then move on to studying linear transformations in two dimensions and then three dimensions. Finally, we will discuss the abstract subject of vector spaces.

This course will also include an introduction to mathematical proof. You will learn how to write correct proofs of the results we study, which will be an excellent introduction to upper level mathematics.

Each day in class, we will begin with student presentations of an assignment from the day before. We will then discuss some examples and new ideas, and students will write up their solutions before the next class period.

**Assignments:** Several different types of assignments will be assigned each day:

- **Presentation Problems:** Students should prepare homework designated as presentation problems for the next class day. At the beginning of class, you will "check in" to indicate whether you are ready to present the problem or not. I will select one person to present the problem on the board. A second student, will be selected to post the completed problem on the wiki, and a third student will be in charge of making sure that the finished work on the wiki is correct and looks good.
- **Practice Problems:** Practice problems are additional examples for you to work at home to help you understand the concepts. They do not need to be turned in.
- **Calculation Problems:** Calculation problems are to be completed and turned in. They are due one week from the class day in which they are assigned. Late problems will not be accepted, and they will be graded on an all or nothing basis per problem.
- **Proof Problems:** Proof problems are to be completed and turned in. They are due one week from the class day in which they are assigned. Late problems will not be accepted, and they will be graded on an all or nothing basis per problem. If you do not get credit for a proof problem, you may correct it and turn it back in as many times as you like to get credit, but you must submit a serious first attempt within one week of the original assignment, and your final score will decline depending on how long it takes you to get credit.
- **Projects:** Open-ended projects will be assigned every few weeks to explore applications of linear algebra.

**Tests:** The course will have two midterm exams. The tentative dates of the exams are Friday, February 11, and Wednesday, March 23. You must contact me by January 19 if you will have any conflicts with these dates. Otherwise, you may miss the exam only in the case of serious illness or emergency. The course will have a final exam at 2:00pm on Wednesday, May 4. Each exam will have a take-home and an in-class component.

**Evaluation:** There are 4 components of your final grade.

- **Class Participation (20%):** This includes class attendance, positive participation in class discussions, willingness to do in-class presentations, quality of in-class presentations, completion of proof posts and editing assignments on the class wiki, additional participation in the class wiki, and participation in the class discussion forum.
- **Homework Assignments (25%):** This includes calculation problems, proof problems, and projects.
- **Midterm Exams (15% each, 30% total):** This includes the two midterm exams.
- **The Final Exam (25 %)**

**Optional Resources:** The following are free online linear algebra textbooks. I recommend not looking at them unless you are completely stuck on an assignment, and the course wiki and discussion forum have not helped you. However, any of these are preferable to using Wikipedia.

- <http://linear.ups.edu/download/fcla-electric-2.22.pdf>,
- <http://joshua.smcvt.edu/linearalgebra/book.pdf>, and
- <http://www.math.brown.edu/~treil/papers/LADW/LADW.pdf>.

### Important Notes

- No late assignments will be accepted, and makeup exams will not be given. Should you be forced to miss an assignment or exam due to a legitimate excuse, it will not count toward your grade. This will have the effect of making your other assignments or exams worth more.
- I encourage you to talk to other students, the TA, and myself about assignments. When completing written assignments to turn in for a grade, you must sit down and write up the assignment on your own after asking your questions.  
When completing take home exam components, you may use the course notes and course wiki but you may not consult any other source, be it a person, a book, or the internet. During a take-home exam, changes to the wiki and new posts on the discussion forum are not allowed.
- Please contact me ASAP if you will need to miss class due to a university-sponsored activity, such as athletics. Also, if you have a disability that may require an accommodation for taking this course, please contact the Learning Assistance Center (758-5929) within the first two weeks of the semester.