Math 212, Calculus II, Spring 2012
MWF 12:00-12:50pm SC 107, Th 9:30-10:45am UN 004

Instructor: Amy DeCelles

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Course Prerequisites: Successful completion (grade of C or better) of Math 211 (Calculus I)

Course Content: While in the first semester course we applied the techniques of calculus to fields outside of mathematics and practiced interpreting the mathematical results for a non-technical audience, this semester we will apply the techniques of calculus to a question within mathematics, the distribution of the prime numbers, and we will practice writing more formal mathematical arguments. Along the way we will develop the calculus techniques we need, treating more carefully some of the topics of last semester including the limit, the derivative, the integral, and the fundamental theorem of calculus, as well as new topics including advanced integration technques, sequences, and series. The question of the distribution of primes is an important question, both because of its significance in the history of mathematics and because of its connections to open questions in mathematics today, including the Riemann Hypothesis.

Course Materials and Resourses:

- Text: *Approximately Calculus*, by Shahriar Shahriari

- Computer algebra system: *Mathematica*, installed on all the lab computers

- Course webpage: http://people.goshen.edu/~adecelles/math212.html

Course Structure: We will be working through Shahriari's *Approximately Calculus*. I will assign reading and exercises for you to prepare for class. During class we will discuss the reading and the exercises, and occasionally we will have a quiz on the reading. In the lab, we will work on a variety of mini-projects involving, for example, extended mathematical investigation, writing in mathematics, and the use of text and computer resources. We will have three midterm exams, possibly with take-home components, and a cumulative final exam during the exam period designated by the registrar.

Homework: Reading and exercises will be assigned as preparatory work for each class. Exercises will be graded on a scale of 0-4. You will have opportunities for resubmission, provided that your first attempt was submitted on time. Presentation counts: to receive full credit, your work must be neat, organized, and complete.

Final Course Grade: The final grade for this course will be determined as follows:

- Homework exercises (30%): due each class

- Lab activities and writing assignments (25%): mini-projects in and outside of lab

- Midterm exams (10% each): tentatively scheduled for Feb 8, Mar 14, and Apr 11

- Final exam (15%): Thurs, Apr 19, 8:00am

Regular attendence is expected both in our MWF classes and in the Thursday lab. Since some of the lab activities are collaborative, an unexcused absence from lab can effect other students adversely. If you think you have a legitimate reason to be absent from lab, please come and talk to me about it a week in advance and send an official request via email.

Make-up midterm exams may be given to students with legitimate excuses such as verified illness, college-sponsored events, etc., as long as the make-up exam can be taken within a reasonable time frame. If it is not possible to schedule a make-up exam within a reasonable time frame, the grade for the midterm may be prorated from the final exam. Arrangements for a make-up exam must be made one week in advance, except in the case of sudden illness or family emergency, in which case the student must send notification within 24 hours of the exam. In all cases, written documentation is required.

Collaboration: I encourage you to collaborate on homework exercises and lab activities (and, in fact, you will be required to work with partners for some lab activities.) When you collaborate, you must acknowledge your collaborators on the work you turn in.

Disability Accommodations: Goshen College wants to help all students be as academically successful as possible. If you have a disability and require accommodations, please contact Lois Martin, the Director of the Academic Resource & Writing Center early in the semester so that your learnin needs may be appropriately met. In order to receive accommodations, documentation concerning your disability must be on file with the Academic Resource & Writing Center, Good Library 113, x7576, lmartin@goshen.edu. All information will be held in the strictest confidence. The Academic Resource and Writing Center offers tutoring and writing assistance for all students. For further information please see www.goshen.edu/studentlife/arwc/.

Peer Tutoring: The Peer Tutoring Program helps organize peer-tutored study groups of three to four students who meet every week for one hour. If you would like a tutor, please contact: Lois Martin, ARWC director, at lmartin@goshen.edu.