MATH 3500(H): Multivariable Mathematics (part I)
Fall 2016 Syllabus

Instructor: Professor Michael Usher (usher@uga.edu)

Scheduled class meetings: MWF 11:15-12:05 and T 11:00-12:15 in Boyd 222.

Office hours (tentative): T 12:30-2, W 2:30-4:30, and F 1:15-2:30 in Boyd 447.

Required textbook: *Multivariable Mathematics: Linear Algebra, Multivariable Calculus, and Manifolds*, by Shifrin. John Wiley & Sons, 2005, ISBN 047152638. (Up-to-date list of typos at http://math.uga.edu/˜shifrin/Multivariable_Errors.pdf.)

Recommended book for students seeking help with proofs: *How to Think Like a Mathematician: A Companion To Undergraduate Mathematics*, by Houston. Cambridge Univ. Press, 2009, ISBN 052171978.

Subject matter: This is the first semester of a one-year course that gives an integrated treatment of multivariable calculus and linear algebra (corresponding to MATH 2270 and MATH 3000, respectively). This semester, we will cover Chapters 1-5 of Shifrin's text, which deal with:

- vectors and matrices;
- limits and continuity for multivariable functions;
- derivatives of multivariable functions;
- solving systems of linear equations;
- multivariable maximum/minimum problems.

In addition to covering the above material, another goal of the course is to develop students' abilities with mathematical abstraction and proof.

Prerequisites: MATH 2260 (second-semester calculus) or equivalent. Students coming from AP Calculus require a 5 on the BC exam.

Homework (30% of your grade): The (roughly) weekly homeworks are a central part of the course. For the most part they will have on online component[1] which will be mostly computational and will be due Sunday night, and a written component consisting mostly of more conceptual problems, including some proofs, due in my office by Thursday morning. You are encouraged to cooperate on the homework assignments, but the solutions that you hand in must be written up independently and represent your own understanding of how to solve the problems. I have many office hours for this course, as there are likely to be lots of questions about the homeworks, which are intended to be intellectually stimulating and challenging. So please come, but be aware that I will expect you to have attempted and thought about a problem before you ask me about it.

Midterms (2*20%=40% of your grade): There will be two in-class midterms. **Tentative** dates are September 27 and November 8. You will be allowed to bring one 3x5 card with handwritten notes to the midterms and final.

Final (30% of your grade): The final will be comprehensive and is scheduled for Friday, December 9, at 12pm. If you do better on the final than on one or both midterms, then I will replace your lowest midterm grade by the final grade (so that midterm will be dropped and the final will count 50% instead).

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[1] We will use the WeBWorK system, which can be found at https://webwork.math.uga.edu/webwork2/Math3500_Usher_F16/; your username is your MyID and your password (which you can change after logging in) is your 9-digit student ID number starting with 81.

Make-ups: A medical excuse (confirmed by a medical professional) will be required for you to make up any exams that you miss without giving me advance warning. If your schedule requires you to miss an exam and you tell me about this in advance, then, at my discretion, we might find an alternative time for you to take it.

Academic honesty: As a University of Georgia student, you have agreed to abide by the University's academic honesty policy, "A Culture of Honesty," and the Student Honor Code. All academic work must meet the standards described in "A Culture of Honesty" found at http://www.uga.edu/honesty. Lack of knowledge of the academic honesty policy is not a reasonable explanation for a violation. Questions related to course assignments and the academic honesty policy should be directed to the instructor.

Obligatory disclaimer: The course syllabus is a general plan for the course; deviations announced to the class by the instructor may be necessary