Syllabus for Math 434, *Advanced Linear Algebra*, Spring 2015

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Office Hours: MWF 11:15am -12:30pm and by appointment.

COURSE DESCRIPTION: This is a one semester second course in linear algebra. A good knowledge of the linear algebra covered in Math 238 or Math 300 is expected. Prerequisites are Math 238 or Math 300 and Math 245. This is a proof-based course. The first half of the course will consist of concepts that you have already learned in 238 or 300. There will be a few new applications. The second half of the course will consist of more in-depth topics from linear algebra that you did not learn in 238 or 300. 238 and 300 focused on concepts and computation with a little proof. 434 will focus on concepts and proof with very little computation.

TEXT: *Linear Algebra*, S. Friedberg, A Insel, L. Spence, Fourth edition (required).

  Supplementary Texts: (not required)
      Linear Algebra, Hoffman and Kunze (this is a classic and a good reference book)
      Linear Algebra and Differential Equations, Peterson and Sochacki.

GRADING: The grading will be assigned on the following scale: A: 90-100, B: 80-89, C: 70-79, D: 60-69, F below 60.
There will be no curves and no extra credit. I will assign +/- on an individual basis. WF's will not be assigned. Points are assigned as follows:
      Participation/Presentations- 150 points
      Midterm exams (2) - 100 points each
      Quizzes - 50 points
      Homework - around 80 points
      Final exam - 100 points

CLASS STRUCTURE: For the first half of the semester, class will be structured around students presenting solutions to the problems in the handout. These problems consist of definitions, proofs of theorems and homework problems. You should have the problems prepared before class. During class, I will ask for volunteers to present the problems on the board. Be prepared to answer questions from myself and other students. Your participation grade will be based on the number of presentations that you do, and the quality of the presentation. We will not have time to go over EVERY problem listed. Some will be assigned to turn in, and the rest you will need to do on your own. Almost all of these concepts will be review from 238 and 300. The second half of the semester will be more traditional lecture style, with a quiz each Friday covering the material from the previous week.

HOMEWORK: Throughout the semester you will be asked to turn in homework problems for grading that we did not have time to go over in class. These problems must be typed in LATEX. If you have not used LATEXyet in any of your classes, there is a tutorial on my website. You are encouraged to work together in groups on the homework problems, however you should NEVER give your LATEXcode to anyone else for any reason.

MIDTERMS and FINAL: There will be two midterms during the semester and a final exam worth worth 100 points each. The midterms will be given in the evenings to give you plenty of time to write out your proofs. The questions on the exams will consist of definitions, true/false and proofs. All definitions and most of the true false and proofs will come directly from the problem sheet. Dates for the midterms will be determined during the semester.

GROUP WORK: Working together in groups is very important in this class. The first week, you will be assigned to a group. You should plan to meet with your group at least once a week, but preferably before each class. Work on the problems on your own **before** you meet with your group. Then present your solutions to the group at the board. You should NOT divide up the problems, but should each work on each problem yourself. The only way to learn to do these problems is to do them yourself.

HONOR CODE: You are to abide by the JMU honor code at all times. Ignorance of the law is no excuse. Cheating will not be tolerated and will be prosecuted to the fullest extent. When turning in homework or groupwork, you may work together and discuss the problems, but you must write up the homework to turn in **by yourself**. Every answer requires an explanation, and no two people's explanations will be exactly the same. Copying someone else's homework and putting your name on it is a violation of the Honor Code. Do not share your LATEXcode with anyone. You are welcome to look at each other's code, but do not share files, and do not copy code from someone else word for word.