Math 210, Introduction to Analysis - Fall 2016

Classes meet: MWF 2-2:50 in Bliss 205 for **Section 1**.
MWF 10-10:50 in Nicely 212 for **Section 2.**

Professor: Mariam Mourtada . My office hours are MWF 12-1 pm, or by Appointment.
Office: Bliss104F.

Required textbook: Principles of Mathematical Analysis", 3rd edition, by W. Rudin.

Optional, but useful, supplementary textbooks: (On reserve at Jafet Library)

1. Elementary Analysis: The Theory of Calculus, by K. A. Ross. A gentler introduction than our textbook.
2. Real Mathematical Analysis, by C. C. Pugh. Another nice treatment, at a level similar to the textbook. Check out the exercises.
3. Introduction to Analysis, by M. Rosenlicht. An appealing and crisp treatment in a short (and cheap) book.
4. Elements of Real Analysis, by H. Gaskill and P. Narayanaswami. Has nice examples of how one should think about looking for a proof.
5. A First Course in Real Analysis, by M. Protter and C. Morrey. Also a standard treatment.
6. Introduction to Real Analysis, by W. F. Trench. Freely downloadable from http://ramanujan.math.trinity.edu/wtrench/misc/index.shtml

Course requirements: Each person's grade will be based on Homework 20% + Quiz1, 20%+ Quiz 2, 20% + Final 40%.
It is very important to keep up with the homework in this course, otherwise you will do badly on the quizzes and the final exam. You may collaborate with your classmates in finding out how to solve the homework problems, but you MUST write your problem set in your own words, based on your own understanding of the solution. **Plagiarism Will Not be Tolerated**.

Dates and times of Quizzes 1 and 2:
Quiz1, Saturday, **October 8**, 10-11:15 am, in Nicely 415.
Quiz2, Saturday, **November 12**, 10-11:15 am, in Nicely 415.

Prerequisites for this course: Math 201 and mathematical maturity at a level equivalent to having taken Math 211 or Math 219; in particular, facility with sets, logic, and mathematical induction, and some background in mathematical proof. Students from all majors are welcome, including from the Faculty of Engineering. Be prepared for some serious work in this course! It's the only way to learn.

Topics to be covered: Here is a tentative list of the topics that we will cover, with the corresponding chapters in Rudin.

1. The real and complex numbers R;C, completeness, basic inequalities. Notion of a metric space. Convergent sequences and continuous functions, including the properties of continuous functions on compact sets. (Most of chapters 1, 3, and 4, with elements of Chapter 2 as needed.)
2. Differentiation including maxima and minima and Taylor's theorem. The Riemann-Darboux integral and the fundamental theorem of calculus. (Chapters 5-6.)
3. Convergence of series and of sequences and series of functions. Power series. Uniform convergence. (Chapter 7 and selections from chapter 8.)