UM 204 : INTRODUCTION TO BASIC ANALYSIS
SRRING 2019

Instructor: GAUTAM BHARALI   `http://math.iisc.ac.in/~bharali/teaching.htm`

THIS IS THE LAST TIME THAT A HANDOUT WILL BE PASSED OUT IN HARD-COPY!
All future announcements/assignments will be posted on the course web-page.

Course summary: This course is intended as a first course in Analysis, treated rigorously. The aim of the course is to establish the principles of Analysis, highlighting fundamental ideas that recur in the proofs in this subject. **To students auditing the course:** please note that the emphasis of this course is not on computation but on learning how to justify strong, general mathematical statements about sequences, series and functions.

The notion of convergence will be the unifying theme of this course. This notion is of importance in physics and engineering as well as in mathematics. This course will present all of the formal rigour necessary to understand the different meanings of the word "convergence" in different circumstances.

Recommended books:

1. Walter Rudin, *Principles of Mathematical Analysis*, 3rd Edition, McGraw-Hill International Editions, 1976.

2. Terence Tao, *Analysis–I*, 3rd Edition, TRIM Series, Hindustan Book Agency, 2014.

3. T.M. Apostol, *Mathematical Analysis*, 2nd Edition, Narosa, 1996.

Rudin's book is quite self-contained, but terse. This book will influence, to a great extent, the sequence of topics presented. Tao's book is extremely readable, and will be very helpful to students who would like a little more detail on concepts and results stated for subsets of $\mathbb{R}$.

Meeting times:
Lectures: Mondays, Wednesdays and Fridays, 11:00 a.m. to 12:00 noon.
Tutorials: Fridays, 12:00 noon to 1:00 p.m.

Assignments and quizzes: During the course of the lectures, I shall assign problems for homework. It is **essential** for your own understanding of the course material that you work on these problems. On **most** weeks, a new assignment will be posted on the course web-page some time between 5:30 p.m. on Friday and 5:30 p.m. the next day.

You will not be asked to submit homework assignments. Instead, assignments will form the material for **quizzes** that shall be given during the tutorials. The problems on each quiz will be drawn from the the most recent assignment that has been up on the course web-page for at least 5 days.

Assessment: Your assessment will be based on:
One mid-term exam: *25%*,   Quizzes: *25%*,   Final exam: *50%*

Examinations: To be held at times that we shall decide in class

Tutor for this course:
- Ramesh Chandra Sau (*e-mail:* `rameshsau@iisc.ac.in`)

- Prateek Kumar Vishwakarma (*e-mail:* `prateekv@iisc.ac.in`)