• **Instructor:** E. Alper Yıldırım, EA 311, Ext. 3442 (290 34 42 from outside of Bilkent), yildirim@bilkent.edu.tr

• **Time & Place:** Tuesday, 9:40–10:30 and Thursday, 10:40–12:30, EB102.

• **Recitation:** Tuesday, 8:40–9:30, EB102.

• **Teaching Assistant:** Esra Koca, ekoca@bilkent.edu.tr, EA 325, Ext. 1438.

• **Office hours:** EAY: By appointment, EK: TBA.

• **Prerequisites:** There are no formal prerequisites for this course. However, students will be expected to have some basic background in calculus.

• **Recommended Textbook:** We will not have a formal textbook in this course. However, we will loosely follow the following textbooks:
  - *Principles of Mathematical Analysis*, Walter Rudin.

• **Course Objectives:** The main objective of this course is to equip beginning graduate students with a level of mathematical sophistication that would be necessary to follow the latter courses in the program. The main focus will be on establishing “formal mathematical reasoning.” The course will cover methods of proof, which will expose students to different types of proof techniques (including wrong approaches). In addition, several basic mathematical concepts will be introduced in different levels of detail.

• **Homeworks:** Homework will be assigned biweekly (approximately), and will be due in class on the due date.

• **Homework Policy:** No late homework will be accepted unless prior arrangements are made with the instructor. You are allowed to discuss questions with other students and with the instructor, however, every student is supposed to write up her/his own solutions. Since this is a graduate level class, a lot of emphasis will be placed on your reasoning. Please be sure to explain your reasoning well. Please write legibly and remember to staple.

• **Exams:** There will be an in-class midterm on **Wednesday, November 10 at 17:40 in EB 101 and EB 102** and an in-class comprehensive final exam during the final exam period. Both tests will be open notes and closed books.

• **Make-up Policy:** A make-up examination will only be given under highly unusual circumstances (such as serious health or family problems). The student should contact the instructor as early as possible and provide the instructor with proper documentation (such as a medical note certified by Bilkent University’s Health Center). The (comprehensive) make-up exam will be given during or right after the final exam period.

• **Grades:** Your overall score will be computed based on 15% homework, 40% midterm, and 45% final exam.

• **Important Note:** Please make sure that you have a STARS password and a valid e-mail in the STARS system. All of our communications including homework announcements and distribution of solution sets will be conducted through the STARS system.

• **Tentative Course Outline:**
  - Introduction to Methods of Proof
  - Sets and Functions
  - Metric Spaces
  - Functions on Metric Spaces
  - Fundamentals of Linear Algebra
  - Differential and Integral Equations (time permitting)
USEFUL REFERENCES

Here are some other useful references available at Bilkent University Library along with their call numbers:

- *Principles of mathematical analysis*, W. Rudin, QA300.R8 1986 (on reserve)
- *Real analysis with economic applications*, Efe A. Ok, HB135.O45 2007 (on reserve)
- *Principles of mathematics in operations research*, Levent Kandiller, T57.6 .K267 2007 (on reserve)
- *Real analysis*, H. L. Royden, QA331.5.R888 1988
- *Real and complex analysis*, W. Rudin, QA300.R82 1987
- *Basic real analysis*, Houshang H. Sohrab, QA300.S83 2003
- *Real analysis: Modern techniques and their applications*, G. B. Folland, QA300.F67 1999
- *Real mathematical analysis*, C. C. Pugh, QA300.P994 2002
- *Introduction to real analysis*, M. Stoll, QA300.S887 1997
- *A radical approach to real analysis*, D. M. Bressoud, QA300.B685 1994
- *An introduction to real analysis*, B. Randol, QA331.R33 1969
- *Introduction to the methods of real analysis*, M. Sion, QA331.5.S54 1968