

THE UNIVERSITY OF TEXAS AT EL PASO
COLLEGE OF SCIENCE
DEPARTMENT OF Mathematical Sciences

Course #: 12556/12557
Course Title: Principles of Analysis/Real Analysis (Math 5321/4341)
Credit Hrs: 3
Term: Fall 2023
Course Meetings & Location: MW, 4:30-5:50 PM
Bell Hall 130A
Prerequisite Courses: Math 3341 (Introduction to Analysis).
Course Fee: (if applicable)
Instructor: Dr. B. D. Rouhani
Office Location: Bell Hall 327
Contact Info: Phone # 747-6767
E-mail address: behzad@utep.edu
Fax # 747-6502
Emergency Contact
Office Hrs: MW, 3:00-4:00 PM, and by appointment
Textbook(s), Materials: Required: Walter Rudin, Principles of Mathematical Analysis, 3rd Edition, Mc Graw-Hill, 1976.
Suggested: (For more advanced and motivated students):
J. Dieudonne, Foundations of Modern Analysis, Academic Press, 1960.
E. Kreyszig, Introductory Functional Analysis with Applications, Wiley Classics Library Edition, 1989, John Wiley & Sons, New York. ISBN 0-471-50459-9 (pbk).

Course Objectives (Learning Outcomes): The main objective of Math 5321 (or Math 4341) is to continue after Math 3341 to build your knowledge of basic concepts, principles, and theorems in Analysis, in such a way that by the end of the course you would have acquired all the basic knowledge necessary for undergraduate analysis, as well as being prepared to take more advanced graduate courses in Analysis. In particular, analysis on function spaces, which are therefore infinite dimensional, will be of particular importance.

Course Activities/Assignments: The class is a student run class. Therefore, besides the core lecture, as well as some computer demonstrations, the instructor will regularly ask questions to students who are expected and strongly encouraged to actively participate in the group discussions that will follow. The instructor will regularly assign homework. It is essential for your success in this class that you diligently work all the homework problems. Homework will include reading assignments, as well as group projects. It is expected that you spend an absolute minimum of six hours a week outside of class on solving homework problems, working on the lab assignments, reading the textbook and reviewing your class notes.

Assessment of Course Objectives: Besides the group class discussions and the homework assignments that were mentioned above, students are expected to work on (group) projects. There will be 4 tests (one on each of the chapters 2, 3, 6, and 7) and a comprehensive final exam.

Course Schedule: We will cover topics from chapters 2, 3, 6, 7 and 8, which include: Metric and Banach spaces, Compact sets, Perfect sets, Connected sets, Numerical sequences and Series, Upper and lower limits, Power series, The Riemann-Stieltjes integral, Sequences and Series of functions, uniform convergence, Equicontinuous families of functions, Ascoli-Arzela Theorem, Stone-Weierstrass Theorem, Fourier Series.

Some important dates in the class schedule are as follows:
Monday, September 4 is the Labor Day. No classes.
Wednesday, September 13 is the last day to drop without "W" (Census day).
Friday, November 3 is the last day to drop with an Automatic "W".
Thursday and Friday, November 23 and 24 is the Thanksgiving Holiday. No classes.
Friday, December 8 is the Dead Day. No classes.
Final Exam: Monday, December 11, at 4:00 PM in Bell Hall 130A.

(NOTE: Final exams must be given at the scheduled time; any/all exceptions must be approved by both the department chair and the dean.)

Notes:

- 1) The instructor will NOT assign a "W" for students dropping the course after the deadline.**
- 2) Help: There is plenty of help available to you provided you are willing to take advantage of it.** Besides my office hours I will gladly meet with you on a drop in basis any time I am free to do so. Talk to me before or after class or by phone or by email to set up an appointment.
- 3) If a student is caught cheating on any quiz, test and/or exam, in particular by using a cell phone and/or a calculator, he/she will be assigned a grade of "F" for the entire course, and may be referred to the office of the Dean of Students as well, for further action.**

Grading Policy: The usual grading scale will be used for this course (90 or above corresponds to an A, 80 to 89 is a B, 70 to 79 is a C, 60 to 69 is a D, below 60 is an F).

If H denotes the average Homework grade, P the project grade, T the average grade for the 4 tests, and F the final exam grade, then the final grade G is calculated as follows:

$$G = \text{Max} \{0.1 H + 0.3 P + 0.6 T, 0.3 P + 0.7 F\}.$$

Make-up Policy: Make-ups will only be given under extraordinary circumstances (as determined only by the instructor), and only if you notify the instructor prior to the exam date.

Attendance Policy:

- Attendance to all classes is required; late arrivals are not allowed; more than three consecutive absences without prior notice or justification will result in the student's drop from the class list with an "F".

Academic Integrity Policy: See UTEP's policy cited in <http://academics.utep.edu/Default.aspx?tabid=23785>

Civility Statement: Active participation and teamwork is strongly encouraged; use of cell phone and talking during class, which results in the disruption of other students, are not allowed.

Disability Statement: **If you have a disability and need classroom accommodations, please contact The Center for Accommodations and Support Services (CASS) at 747-5148, or by email to cass@utep.edu, or visit their office located in UTEP Union East, Room 106. For additional information, please visit the CASS website at www.sa.utep.edu/cass.**

Military Statement: For example: If you are a military student with the potential of being called to military service and /or training during the course of the semester, you are encouraged to contact me as soon as possible.

- **General remark:**

If you have problems with the course material, need to be absent, or have any other circumstance that may affect your performance in the course, contact me as soon as possible. I will do everything I can to enable you to succeed in this course and I expect you to be as diligent in your efforts as I am in mine.

If you have any question, please send it to Dr. B.D. Rouhani via e-mail at behzad@utep.edu