

Spring 2015 Texas A & M-Commerce Math 597 – Foundation of Analysis

This is the syllabus for Math 597-Foundation of Analysis, Section 01S (41R, 71R) for the Spring 2015. Please read it carefully. You will be responsible for all information given in the syllabus, and for any modification to it that may be announced in the classes.

Instructor: Dr. Yelin Ou

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Office hours: MW: 11:00am-12:00 pm, MR: 1:30pm-3:0pm.

Class meetings and room: MW 5:00-6:15p, BA 244.

Text and references: Introduction to Real Analysis, 4th Edition, by R. Bartle and D. Sherbert. Portions of Chapters 2-7 and 11 in the textbook will be discussed.

Course Description: The theory of the real number system, the convergence of sequences and series, the limit, continuity, differentiation, and integration of functions with emphasis on the mathematical ideas, analytic skills and learning the proofs. Some topics like continuity in a metric space or a topological space may be included. Prerequisite: Math 314.

Learning Outcomes: Upon successful completion of this course, all students will be able to:

1. Write mathematical definitions and explain the basic concepts of convergence, the limit, continuity, differentiation and integrations.
2. Explain and verify some basic principles and examples concerning the convergence, the limit, continuity, differentiability and integrability based on topological notions of distance and neighborhoods.
3. Write mathematical proofs for some important theorems in the theory of convergence, the limit, continuity, differentiation and integrations of functions of one variable, including the Completeness Property of \mathbb{R} , Density of Rational numbers, Characterizations of limit superior, Bolzano-Weierstrass Theorem, Cauchy Criterion for Convergence, Bolzano's Intermediate Value Theorem, and Caratheodery's Theorem.

Instruction: Instruction will include lectures, discussions, and some group work projects, based on time available.

Computer & supplies: Using of Mathematica (a computer algebra system available in computers in Math Lab located in 328 Binnon Hall) is helpful but not required for this course.

Attendance: Attendance will be checked and it is your responsibility to sign the daily roll sheet. It is your benefit to attend the class.

Tests: There will be two midterm and a final exams for the course. The tentative schedules for the exams are:

Test 1: Feb. 25, Wednesday 5:00pm-6:15pm.

Test 2: April 15, Wednesday 5:00pm-6:15pm.

Final exam: The comprehensive final exam is scheduled on
May 13, Wednesday 5:00pm-7:00pm.

No makeup exam will be given unless you have verifiable evidence showing an acceptable reason to have to miss a test and, in that case, you must notify the instructor before the test or in the earliest possible time.

Homework & Quizzes: Homework assignments are attached to this syllabus. You are strongly recommended to work out homework assignments on a regular basis since **No one can learn mathematics without doing it!** The assigned homework will be collected for grading on the following dates: 02/04, 02/18, 03/11, 04/08, 04/29. Some homework problems or their similar forms will be used as test questions.

Course grades: The course grade consists of
Homework & Quizzes: 15%
Two Tests : 50%
Final exam: 35%.

The letter grades will be assigned using the following scale:

A: 90-100% B: 80-89% C: 70-79% D: 60-69% F: 0-59%

Withdrawal Policy: Concerning the deadlines and consequences of withdrawals please check on: <http://www.tamuc.edu/admissions/registrar/academicCalendars/>

Basic Tenets of Common Decency: “All students enrolled at the University shall follow the tenets of common decency and acceptable behavior conducive to a positive learning environment.” (Student’s Guide Handbook, Policies and Procedures, Conduct.) This means that rude and/or disruptive behavior will not be tolerated.

Students with Disabilities: The Americans with Disabilities Act (ADA) is a federal anti-discrimination statute that provides comprehensive civil rights

protection for persons with disabilities. Among other things, this legislation requires that all students with disabilities be guaranteed a learning environment that provides for reasonable accommodation of their disabilities. If you have a disability requiring an accommodation, please contact:

Office of Student Disability Resources and Services/ Gee Library
Room 132 . Phone (903) 886-5150 or (903) 886-5835, Fax (903) 468-8148, and
Web: StudentDisabilityServices@tamuc.edu

Getting help: A better way to learn math is to keep progress and leave no gaps in one's study. So please get help as soon as you need it. You are welcome to come to me or use email communication for help.

Homework assignments for Math 597:

Section 1.1: 7, 8, 10, 14, 15, 21.

Section 1.2: 6, 10, 14.

Section 1.3: 3, 7, 9.

Section 2.1: 7, 8, 9, 14, 17.

Section 2.2: 4, 13, 16, 17.

Section 2.3: 1, 2, 3, 4, 14.

Section 2.4: 1, 2, 4(b), 6(1st part), 8(2nd part)

Section 2.5: 1, 2, 7, 8.

Section 3.1: 1(a), (d), 2(c), (d), 5(a), (d), 7.

Section 3.2: 1(c), (d), 2, 5(b), 7, 8.

Section 3.3: 1, 3, 12(a), (b), 13

Section 3.4: 1, 3, 4, 13, 19.

Section 3.5: 1, 2(b), 3(b), 4, 9.

Section 3.6: 1, 3, 4(a), 8(d).

Section 3.7: 2, 3(a), 4, 5, 6(a)

Section 4.1: 2, 3, 8, 9(b), 11(a).

Section 4.2: 1(b), 2(c), 4, 6, 7.

Section 4.3: 2, 5(a), (b), (c), (d), 7, 10

Section 5.1: 2, 4(b), (c), 5, 6, 10.

Section 5.2: 1(a), (d), 2, 3,

Section 5.3: 1, 7, 8.

Section 5.4: 1, 5, 6, 10.

Section 6.1: 1(b), 2, 3,

Section 6.2: 1(b), (d), 2(c), 3(a), 9.

Section 6.3:6, 7(c), (d), 9(a), 14

Section 6.4: 4, 5, 6, 9.

Section 7.1: 1(a), (c), 2(c), (d), 7, 8, 14.

Section 7.2: 2, 8, 9, 10.

Section 7.3: 2, 3, 5, 17.

Section 7.4: 1, 3, 5 7.

Section 7.5: 1, 2, 12,

To be extended/continued