MATH 4336 (CRN 28556)

Applied Analysis II

Spring 2019
The University of Texas at El Paso

Xianyi Zeng, Instructor

This course covers series solutions of differential equations, Fourier series, Bessel functions, Legendre polynomials, the Sturm-Liouville theory and eigenfunction expansions, and an introduction to partial differential equations.

Course number:	MATH 4336 (CRN 28556)
Course title:	Applied Analysis II
Credit hours:	3
Term:	Spring 2019
Time & location:	3:00–4:20pm MW, LART 208
Exam dates	Midterm exam 1: in class Monday, February 18, 2019 Midterm exam 2: in class Monday, April 1, 2019 Final exam: 1:00pm–3:45pm Monday, May 13, 2019
Drop deadline	Friday, April 5, 2019
Prerequisites:	MATH 2326 (Differential Equations).
Course fee:	None
Instructor:	Xianyi Zeng
	Office hour: 4:30pm–5:50pm MW, or by appointment Office location: Bell Hall 202 Office phone: 915-747-6759 Email: xzeng@utep.edu
Course website:	http://math.utep.edu/faculty/xzeng/2019spring_math4336
Textbook:	Erwin Kreyszig, Chapters 5,11,12, *Advanced Engineering Mathematics*, 10th Edition, Wiley 2011 The textbook is required at all class meetings

Important

The course website will be updated throughout the semester according to the progress in class. The instructor will send emails regarding class annoucements. It is your responsibility to check the emails and the course website frequently to keep up to date.

Course objectives

Differential equations are the foundations of many engineering, physical, and biological applications. In this class, the students will learn several powerful analytical approaches to solve ordinary or partial differential equations that frequently arise in practical problems. The first part of the course (Chapter 5 and Chapter 11) focuses on series solutions of various ordinary differential equations; topics include special functions such as Legendre polynomials, Bessel functions, Fourier series, and the general Sturm-Liouville theory for eigenfunctions. In the second part, we discuss a few basic partial differential equations and analytical approaches to their solutions.

Upon successful completion of the course, the students are expected to understand the structure of solutions to various ordinary and partial differential equations, as well as apply analytical tools to solve problems represented by the model equations discussed in class.

Grading

Your grade for the course will be based on the following:

- 30% quizzes.
- 20% midterm exam 1 (Chapter 5).
- 20% midterm exam 2 (Chapter 11).
- 30% final exam (comprehensive, but with emphasis on Chapter 12).
- 10% (Optional). in-class performance.

At the end of each lecture, I will assign suggested homework problems, which are not required to be turned in. There will be in-class quizzes, which generally take place weekly or biweekly, depending on the subject. The quiz problems are taken from the suggested homework ones, and will not be disclosed in advance. Missed quizzes **cannot** be made up, but I will drop **two** lowest quiz scores towards calculating your final grade.

In general, missed exams **cannot** be made up, either. Exceptions can be given only in extraordinary and unavoidable circumstances with reasonable proofs, and with advance notice in written.

The in-class performance credits are optional – these are additional points that you can earn by volunteering to or being selected by me to answer questions in class. The total credit can be accumulated to up to 10 points towards the final grade on a 100 point basis. Your final score, however, will not be greater than 100.

The letter grade will be guaranteed at the following levels: A $(90-100\%)$, B $(80-89\%)$, C $(70-79\%)$, D $(60-69\%)$. Depending on circumstances, the thresholds for each of the four letter grades could be lowered, but will be equal among all students. The letter grade F will be given if the final score does not reach the D threshold.

Attendance policy

Attendance to every class is strongly encouraged; my lectures will complement rather than simply echo the textbook materials. If you are absent, you are responsible to find out the material and homework that needs to be made up. Suggested homework problems, supplemental materials, and announcements will be notified by email and course website; it is your responsibility to read emails and regularly check the course website for updates.

Accommodations for students with disabilities

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 http://www.sa.utep.edu/cass.

Academic honesty policy

Make sure you understand the UTEP academic honesty policy. Students are encouraged to share ideas, but you must do your own homework and you must write your own code for the projects (you may copy code that is on the course website). If homework or program code is suspected of being duplicated or copied, you will receive an incomplete for the assignment, and your case will be referred to the Dean of Students for adjudication. If the instructor has reason to believe that you have cheated on a quiz or exam, your case will be referred to the Dean of Students for adjudication.

Military statement

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 as soon as possible.

Course drop deadline

April 5 is the university spring drop/withdrawal deadline. After the deadline, student-initiated drops will not garantee a grade of W; and the instructor will issue a grade of either W or F.

Course format and participation

The course is composed of lectures and after-lecture office hours. We cover three chapters of the textbook: Chapter 5, Chapter 11, and Chapter 12. Some sections may be skipped as will be announced in class in advance.

Course schedule

Below is a tentative schedule for this course.

Week 01 (01/23)	5.1
Week 02 (01/28, 01/30)	5.2, 5.3
Week 03 (02/04, 02/06)	5.4, 5.5
Week 04 (02/11, 02/13)	Chapter 5 review, 11.1
Week 05 (02/18, 02/20)	Midterm exam 1, 11.2
Week 06 (02/25, 02/27)	11.3, 11.4
Week 07 (03/04, 03/06)	11.5, 11.6
Week 08 (03/11, 03/13)	11.7, 11.8
Week 09 Spring Break	No class
Week 10 (03/25, 03/27)	11.9, Chapter 11 review
Week 11 (04/01, 04/03)	Midterm exam 2, 12.1, 12.2
Week 12 (04/08, 04/10)	12.3, 12.4
Week 13 (04/15, 04/17)	12.5, 12.6, 12.7
Week 14 (04/22, 04/24)	12.8, 12.9, 12.10
Week 15 (04/29, 05/01)	12.11, 12.12
Week 16 (05/06, 05/08)	Flexible, and comprehensive review
Week 17 (05/13)	Final exam