

MAT414, INTRODUCTION TO ORDINARY DIFFERENTIAL EQUATIONS Spring 2013

Instructor: Dr. Yuesheng Xu

Office: 206 E Carnegie Hall
Phone: 3-1575, E-Mail: yxu06@syr.edu
Class Meeting Time: 3:45-3:35, MW
Office Hour: 10:00-11:0, MW

Text book: *Elementary Differential Equations*, by William E. Boyce and Richard C. DiPrima, Ninth Edition, by John Wiley & Sons, Inc.

The course covers selected sections of Chapters 1, 2, 3, 6, and 7.

Prerequisites: 12 credit hours of calculus or equivalent. Credit will not be given for both MAT 514 and MAT 485

Students Must Know Before Taking This Course: partial derivatives, evaluation of integrals, integration by parts, elementary linear algebra

Learning Goals of the Course: Understanding the basic concepts and mathematical development in ODEs, mastering the basic techniques in solving the equations, ability to do hand calculations accurately and appropriately in finding the solution.

Course Description: This course introduces students to basic topics of ordinary differential equations. We shall cover the following topics:

- Classification of Differential Equations
- Method of Integrating Factors
- Separable Equations
- Exact Equations and Integrating Factors
- The Existence and Uniqueness Theorem
- Second Order Linear Equations
- Linear Independence and the Wronskian
- Complex Roots of the Characteristic Equation
- Variation of Parameters
- Laplace Transform
- Systems of First Order Linear Equations
- Matrices, Eigenvalues and Eigenvectors

Homework, Quizzes, Exams and Grading: There will be an in-class midterm exam and a comprehensive final examination.

- Homework: Homework will be assigned on a regular basis but will not be graded.
- Quizzes: 30%. Quizzes will be given weekly.

- Midterm Exam: 30%
- Final Exam: 40%. The final exam will be on May 7 (Tuesday), 12:45 PM - 2:45 PM.

Make-up Exams: The usual policy for a missed exam is that, if a student can justify the absence and informs the instructor **before** the midterm exam, then the student's grade on the relevant portion of the final exam will be substituted for the missing grade. If a student cannot justify the absence from an exam or fails to inform the instructor before the exam, then the student will receive a grade of zero for the midterm exam. No make-up quizzes or final exam.

Homework: Attached is a schedule of sections to be covered in this course together with the recommended homework problems. Homework will not be graded. However, students are expected to do all recommended homework problems. Problems in quizzes will be chosen from the recommended homework problems and those in the midterm exam and the final exam will be similar to some of the recommended homework problems.

Attendance: Students are expected to attend every class, every exam, and the final exam.

Academic Integrity: The Syracuse University Academic Integrity Policy holds students accountable for the integrity of the work they submit. Students should be familiar with the Policy and know that it is their responsibility to learn about instructor and general academic expectations with regard to proper citation of sources in written work. The policy also governs the integrity of work submitted in exams and assignments as well as the veracity of signatures on attendance sheets and other verifications of participation in class activities. Serious sanctions can result from academic dishonesty of any sort. For more information and the complete policy, see <http://academicintegrity.syr.edu>

Special Need Students: Students who may need academic accommodations due to a disability are encouraged to discuss their needs with the instructor at the beginning of the semester. In order to obtain authorized accommodations, students should be registered with the Office of Disability Services (ODS), 804 University Avenue, Room 309, 315-443-4498 and have an updated accommodation letter for the instructor. Accommodations and related support services such as exam administration are not provided retroactively and must be requested in advance." For more information about services and policy, see Office of Disability Services Syracuse University Office of Disability Services 804 University Avenue Room 309 Syracuse, New York 13244-2330 Phone: Voice: (315) 443-4498 TDD: (315) 443-1371 E-Mail: odsched@syr.edu

Schedule and Homework

Dates	Section (Homework)
1/14, M	1.1 (2,4,7,13,29); 1.2 (1,3,5,15)
1/16, W	1.3 (2,6,9,11,19,26)
1/23, W	2.1 (2,11,13,15,16,20,30)
1/28, M	2.2 (1,3,6,10,15,21,25,30)
1/30, W	2.4 (1,4,8,13,17,23,27)
2/4, M	2.5 (3,9,16); 2.6 (3,5,7,12,15,19,23,27)
2/6, W	2.8 (1,4,14,15); 2.9 (2,5,10,15,17,30,31)
2/11, M	3.1 (3,5,10,19,24)
2/13, W	3.2 (2,4,8,14,21,28); 3.3 (2,7,15,24,27)
2/18, M	3.4 (1,5,11,14,18,25)
2/20, W	3.5 (1,5,9,14,17)
2/25, M	3.6 (1,4,6,11,13,27)
2/27, W	3.7 (2,5,11,14,22)
3/4, M	Review
3/6, W	Midterm Exam
3/18, M	6.1 (1,5,9,13,16,21); 6.2 (2,4,7,11,14,17)
3/20, W	6.3 (2,4,8,14,21,27)
3/25, M	6.4 (1,3,10,19); 6.5 (1,3,5,7,10,17)
3/27, W	6.6 (1,4,14,18,26)
4/1, M	7.1 (2,4,8,12,20);
4/3, W	7.2 (1,6,10,14,25)
4/8, M	7.3 (1,2,3,8,15,24); 7.4 (1,2,6)
4/10, W	7.5 (1,5,6,7,9,20)
4/15, M	7.6 (1,7,11,16,21)
4/17, W	7.7 (2,4,6,10,11)
4/22, M	7.8 (1,3,5,9,11,17,19)
4/24, W	7.9 (1,2,4,12,14)
4/29, M	Review for Final Exam
5/7, T	Final Exam 12:45 PM - 2:45 PM.