

# Math 3410-001 Course Syllabus - Fall 2017

**Meets:** TR 11:00-12:20, in Sage 231

**Instructor:** Dr. Pieter Allaart

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**Office Hours (tentative):**

- Tue, Thu 9:00-11:00
- and by appointment
- I will usually be able to answer a few brief questions immediately after class.

**Book:** Elementary differential equations and boundary value problems (10th Edition), by Boyce and DiPrima.

**Prerequisite:** Math 1720 with a grade of C or better

**Grading:** Grades will be based on three mid-term exams, homework, and a final exam, weighted as follows:

- Mid-term exams: 50% total
- Homework: 20%
- Final exam: 30%

**Exams:** The regular exams will be given in class on September 28, October 26 and November 30. (There is a slight chance these dates will change.) The lowest of your three regular exam scores carries only half weight. If you show up late for an exam, without a valid excuse, do not expect to be given extra time for the exam. The final exam is on Tuesday, December 12 at 10:30 am. If you miss an exam due to illness or other circumstances beyond your control, you should contact me within 24 hours in order to be granted a make-up exam. The make-up exam may be different from the original.

**Homework:** Homework will be assigned at the end of each class period, and will be collected the following class period. Even though not the entire homework assignment will be graded, you should do all the assigned problems because you can only master the material through ample practice. Your three lowest homework grades will be dropped. As a consequence, late homework will not be accepted, NO EXCEPTIONS. Homework which is messy or difficult to read will not be graded. If you could not come to class, and missed the assignment, it is your responsibility to find out what the assignment is. (Look it up in Blackboard.)

**Attendance:** Attendance is not required for this class. However, I strongly recommend that you come to class each class day, in order to keep track of what is going on and not to fall behind.

**Extra credit:** Do not expect to be able to do some extra work to help your grade either before or after the final exam. There will be no extra credit other than perhaps an extra problem on an exam. Your best bet to help your grade is to do the required work at the time it is assigned.

**Disabilities:** The University of North Texas makes reasonable academic accommodation for students with disabilities. Students seeking accommodation must first register with the Office of Disability Accommodation (ODA) to verify their eligibility. If a disability is verified, the ODA will provide you with an accommodation letter to be delivered to faculty to begin a private discussion regarding your specific needs in a course. You may request accommodations at any time, however, ODA notices of accommodation should be provided as early as possible in the semester to avoid any delay in implementation. Note that students must obtain a new letter of accommodation for every semester and must meet with each faculty member prior to implementation in each class. For additional information see the Office of Disability Accommodation website at <http://www.unt.edu/oda>. You may also contact them by phone at 940.565.4323.

**Cheating:** No cheating will be tolerated. Anyone caught cheating will be subject to any penalty the instructor deems appropriate, up to and including an automatic F for the course. Furthermore, a letter will be sent to the appropriate dean.

## List of topics:

Lecture(s)	Section(s)	Topic(s)
1	1.1	Basic mathematical models, direction fields
2	1.2, 1.3	Solutions of some differential equations; classification of differential equations
3	2.1	Linear equations; method of integrating factors
4	2.2	Separable equations
5	2.3	Modeling with first order equations
6	2.4, 2.5	Differences between linear and nonlinear equations; autonomous equations and population dynamics
7	2.6	Exact equations and integrating factors
8	2.8	The existence and uniqueness theorem
9	3.1	Homogeneous equations with constant coefficients
10	3.2	Solutions of linear homogeneous equations; the Wronskian
11	3.3, 3.4	Complex roots and repeated roots of the characteristic equation; reduction of order
12	3.5, 3.6	Nonhomogeneous equations; method of undetermined coefficients; variation of parameters
13	3.7, 3.8	Mechanical and electrical vibrations; forced vibrations
14	-	Exam 1
15	4.1	General theory of $n$ th order linear equations
16	4.2, 4.3	Homogeneous equations with constant coefficients; the method of undetermined coefficients
17	6.1	Definition of the Laplace transform
18	6.2, 6.3	Solution of initial value problems; step functions
19	6.4	Differential equations with discontinuous forcing functions
20	6.5, 6.6	Impulse functions; the convolution integral
21	7.1	Systems of first order linear equations: introduction
22	7.2	Review of matrices
23	7.3	Systems of linear equations, linear independence, eigenvalues and eigenvectors
24	7.4	Basic theory of first order systems
25	7.5	Homogeneous linear systems with constant coefficients
26	-	Exam 2
27	7.6	Complex eigenvalues
28	7.8	Repeated eigenvalues
29	-	Review for final exam