

# Math 3410-003 Course Syllabus - Spring 2014

**Meets:** TR 3:30-4:50, in Chilton Hall 245

**Instructor:** Dr. Pieter Allaart

**Office:** GAB, Room 417B; Phone: 369-7313

**E-mail:** [allaart@unt.edu](mailto:allaart@unt.edu)

**Office Hours:** TR 9:30-10:30 and 1:00-2:00, and by appointment. (There's a slight chance that these will change.)

You are also welcome to drop by outside office hours without an appointment. However, there will be occasions when I will be busy, and I may ask you to wait or to come back later.

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

**Prerequisite:** Math 1720

**Grading:** Grades will be based on three regular exams, homework, and a final. The regular exams are worth 100 points each, but your lowest score of the three regular exams only carries half weight. Thus, the regular exams are worth 250 points total. The homework is worth 100 points total, and the final is worth 150 points. This gives you a total of 500 possible points. To earn an A it is sufficient to make a total of 450 points, 400 for a B, 350 for a C, and 300 for a D. In fact, the grading scale may be slightly lower than the numbers indicated, depending on the level of difficulty of the exams.

**Exams:** The regular exams will be given in class on February 11, March 18 and April 22. (There is a slight chance these dates will change.) 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, May 6 at 1:30. 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 are expected to do all the assigned problems because you can only master the material through ample practise. You are expected to spend at least two hours on work for the course outside class for every class hour. That makes six (6) hours per week! Your two 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 (see below).

**Web page:** Homework assignments and other important information concerning this class will also be posted on the web at

<http://www.math.unt.edu/~allaart/classes.html>

Whenever you miss class, check this page to find out about assignments that you missed. *Posting homework assignments on the web is an extra service to you. In the rare instance that I forget to do so, this does not mean no homework is due - contact me to find out the assignment.* Do not look for homework assignments, exam reviews etc. on Blackboard - I do not use Blackboard for this course. You will find my personal class web page much more reliable and easier to use.

**Student Evaluation of Teaching Effectiveness:** The Student Evaluation of Teaching Effectiveness (SETE) is a requirement for all organized classes at UNT. This short survey will be made available to you at the end of the semester, providing you a chance to comment on how this class is taught. I am very interested in the feedback I get from students, as I work to continually improve my teaching. I consider the SETE to be an important part of your participation in this class.

**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	-	Exam 1
10	3.1	Homogeneous equations with constant coefficients
11	3.2	Solutions of linear homogeneous equations; the Wronskian
12	3.3, 3.4	Complex roots and repeated roots of the characteristic equation; reduction of order
13	3.5, 3.6	Nonhomogeneous equations; method of undetermined coefficients; variation of parameters
14	3.7, 3.8	Mechanical and electrical vibrations; forced vibrations
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	-	Exam 2
18	5.1	Review of power series
19	5.2, 5.3	Series solutions near an ordinary point
20	5.4	Euler equations; regular singular points
21	5.5, 5.6	Series solutions near a regular singular point
22	7.1	Systems of first order linear equations: introduction
23	7.2	Review of matrices
24	7.3	Systems of linear equations, linear independence, eigenvalues and eigenvectors
25	7.4	Basic theory of first order systems
26	7.5	Homogeneous linear systems with constant coefficients
27	-	Exam 3
28	7.6	Complex eigenvalues
29	7.8	Repeated eigenvalues
30	-	Review for final exam