

**Syllabus**  
**Math 266: Differential Equations, 3 credits.**  
**MTWRF 1:00 - 1:50, Dolve 118**  
**Spring 2015**  
**North Dakota State University**

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**Instructor:** Thomas Dunn

**Office:** Minard 408E30

**Office Hours:**

MWF 2:00 - 4:00 PM

(Or by appointment)

**Telephone:** (701)/231-9542

**Email:** thomas.dunn@ndsu.edu

**Text:** *Elementary Differential Equations With Boundary Value Problems*, Free Edition 1.01, 2013. Available at [http://ramanujan.math.trinity.edu/wtrench/texts/trench\\_FREE\\_DIFFEQ\\_II.PDF](http://ramanujan.math.trinity.edu/wtrench/texts/trench_FREE_DIFFEQ_II.PDF)

**Calculators:** Simple scientific (not graphing) calculators are allowed.

**Course Description:** Methods of solving first order differential equations with and without initial conditions, second order differential equations with and without initial conditions, higher order differential equations, Laplace transforms, systems of differential equations, and applications.

**Course Objectives:** To give students an understanding of and an appreciation for the theory and many applications of differential equations. Both computational and conceptual skills will be developed. The students will be exposed to both theoretical and applied points of view and applications to other disciplines will be stressed.

**Prerequisite:** Math 259 or Math 265

**Corequisite:** Math 128 or 129

**Attendance:** You are expected to attend every class, take notes, participate in discussions, be attentive, and be respectful of your classmates' learning. If you miss class, you are responsible for finding out what you missed, as well as any announcements that were made.

**Assignments:** Homework and classwork will be given regularly. A total of eight assignments will be collected in class in preparation for the quizzes and exams.

**Quizzes:** Quizzes will be given in lecture. They are to ensure that you are keeping up with the pace of the course. There will be three quizzes given about half way through exam material. A sheet of equations will be provided for you as necessary. Make-up quizzes will not be given, unless the absence is excused by the instructor.

**Exams:** We will have four exams and a final exam. A sheet of equations will be provided for you during these exams. Make-up exams will not be given, unless the absence is excused by the instructor. **The final exam is scheduled on Wednesday, May 13 at 8 am.** Appeals for exam scores must be made within one week after the exam was handed back. To make an appeal, you must present the instructor a valid written argument pertaining to the exam problem(s) you wish you appeal.

**Grading & Evaluation:** Course grades are computed as follows: Exams 100 pts each; Quizzes 40 pts each; Final exam 200 pts; Homework and Other Assignments 10 pts. each

Letter Grade:	A	B	C	D	F
Grade:	700 - 800	620 - 699	540 - 619	460 - 539	< 460

Letter grades will be assigned according to the above grading scale. Do not expect grades to be curved or adjusted when computing your overall course grade. Grades will not be discussed over email or phone under any circumstances.

**Dead Week:** Dead week (May 4-8) will be used in part for additional material that was not covered during class. There will be one homework/classwork assignment during this time.

**ADA Statement:** Any students with disabilities or other special needs, who need special accommodations in this course are invited to share these concerns or requests with the instructor as soon as possible. The Americans with Disabilities Act requires that reasonable accommodations be provided for students with physical, cognitive, systemic, learning, and psychiatric disabilities in order to ensure their equal access to course content. If you have a documented disability and require accommodations, please let me know. For more information, please contact Disability Services at 231-7671 or go to:  
<http://www.ndsu.edu/counseling/disability.shtml>.

**Military Needs:** Veterans and student soldiers with special circumstances or who are activated are encouraged to notify the instructor in advance.

**Academic Honesty:** The academic community is operated on the basis of honesty, integrity, and fair play. NDSU Policy 335: Code of Academic Responsibility and Conduct, applies to cases in which cheating, plagiarism, or other academic misconduct have occurred in an instructional context. Students found guilty of academic misconduct are subject to penalties, up to and possibly including suspension and/ or expulsion. Student academic misconduct records are maintained by the Office of Registration and Records. Informational resources about academic honesty for students and instructional staff members can be found at: <http://www.ndsu.edu/academichonesty>.

**Additional Help:** If you need help in this course, please see your instructor immediately. The ACE center, located in the basement of the West Dining Hall, also provides tutoring for this course.

**Tentative Schedule:** Modifications to this schedule may be made at any time during the semester.

<b>Dates</b>	<b>Topics/ Sections</b>
<b>January 14 - February 6</b> Friday January 23 Monday January 26 Wednesday February 4 Friday February 6	<b>First Order Differential Equations</b> Homework 1 Quiz 1 Homework 2 Exam 1
<b>February 9 - March 6</b> Monday February 23 Wednesday February 25 Wednesday March 4 Friday March 6	<b>Second Order Differential Equations</b> Homework 3 Quiz 2 Homework 4 Exam 2
<b>March 9 - April 17</b> Friday March 27 Monday March 30 Wednesday April 15 Friday April 17	<b>Higher Order w/ Laplace Transforms</b> Homework 5 Quiz 3 Homework 6 Exam 3
<b>April 20 - May 1</b> Wednesday April 29 Friday May 1	<b>Systems of Differential Equations</b> Homework 7 Exam 4
Friday May 8 Wednesday May 13	Homework 8 Final Exam

**Important Dates:**

January 12	Classes begin
January 19	Holiday - Martin Luther King, Jr. Day
January 22	Last day for no-record drop, 100% refund
March 16-20	Holiday - Spring Break
April 3-6	Holiday - Spring Recess
April 10	Last day to drop with 'W'
May 8	Last day of class
May 13	Final Exam
May 21	Grades available online

**Tentative Detailed Schedule:**

<b>Week</b>	<b>Dates</b>	<b>Topics/ Sections</b>
1	Wednesday	Introduction
1	Friday	Separable Equations
2	Monday	Holiday
2	Wednesday	Integrating Factor/First order linear differential equation
2	Friday	Homework
3	Monday	Quiz
3	Wednesday	Homogeneous Equation
3	Friday	Exact Differential equation
4	Monday	Bernoulli Equation
4	Wednesday	Homework
4	Friday	Exam
5	Monday	Complex numbers and Linear algebra
5	Wednesday	Second order linear w/ constant coefficients
5	Friday	Method of undetermined coefficients
6	Monday	Holiday
6	Wednesday	Variation of parameters
6	Friday	Variation of parameters
7	Monday	Homework
7	Wednesday	Quiz
7	Friday	Homogeneous Cauchy-Euler Equation
8	Monday	Nonhomogeneous Cauchy-Euler Equation
8	Wednesday	Homework
8	Friday	Exam
9	Monday	Higher order differential equations
9	Wednesday	Basic Laplace Transforms
9	Friday	Properties of Laplace Transforms
10	Monday	Inverse Laplace Transform
10	Wednesday	Convolution
10	Friday	Homework
11	Monday	Quiz
11	Wednesday	Solving initial value problems
11	Friday	Holiday
12	Monday	Holiday
12	Wednesday	Solving initial value problems
12	Friday	Discontinuous/Impulse problems
13	Monday	Peicewise/periodic functions
13	Wednesday	Homework
13	Friday	Exam
14	Monday	Eigenvalues/Eigenvectors and systems of differential equations
14	Wednesday	First order homogeneous system
14	Friday	First order nonhomogeneous system
15	Monday	Laplace system
15	Wednesday	Homework
15	Friday	Exam
16	Monday	Dead Week
16	Wednesday	Dead Week
16	Friday	Homework