



Differential Equations

MAP 2302 – 4985
Fall 2019

Time: MWF period 3
Place: Little 207
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Textbook: Fundamentals of Differential Equations (7th edition)
by Nagle, Saff, Snider

Office Hours: Monday, Wednesday, Friday period 4
(or by appointment)

Links

[homework](#)
[topics](#)
[messages](#)
[grades](#)
[cell phone policy](#)

Homework

Page 5 #1-16 odd

Page 13 #3,9,15,23,25,27

Page 21 #2,3

due Wed 28 Aug

Page 46 #17-25 odd, 33,34

Page 54 #7-11 odd, 17-21 odd,33

Page 64 #9-19 odd, 21-25 odd

Page 76 #9,11,13,17,19,21,23

due Fri 6 Sept

Page 100 #3,19,21,25

Page 107 #2

Page 115 #1,6

Page 28 (1.4) #3,5

Page 164 (4.2) #1,5,13,17,26,37

Page 173 (4.3) #9,11,13,21,23,28,32,33 (Lecture dates: 2/16 and 2/19)

Page 220 (4.9) #1,3,9 (Lecture 2/23)

Page 180 (4.4) #11,15,29,31 (Lecture 2/28)

Page 185 (4.5) #7,19,27 (Lecture 2/28)

Page 191 (4.6) #1,3,5 (Lecture 3/2)

Page 200 (4.7) #41 (Lecture 3/2)

Page 360 (7.2) #9,17,18,23,24,29bcd (Lecture 3/12)

Page 365 (7.3) #1-20 (as many as you want) (Lectures 3/19, 3/21)

Page 374 (7.4) #7,8,21,23,24 (Lecture 3/26)

Page 382 (7.5) #3,4,7,8,12,25,35 (Lecture 3/28)

Page 390 (7.6) #3,9,21,23,27,29,30 (Lecture 3/30 and 4/2)

Page 396 (7.7) #5,7 (Lecture 4/2)

Page 404 (7.8) #1,2,8,9 (Lecture 4/4)

Page 410 (7.9) #4,10,14,29 (Lecture 4/9)

Page 271 (5.4) #1,5,7,13,28 (Lecture 4/11)

Page 500 (9.1) #1,6 (Lecture 4/16)

Page 513 (9.3) #21,27,35 (Lecture 4/16)

Page 531 (9.5) #11,12,17,31,32 (Lecture 4/18)

Topics

Introduction

- What is a differential equation
- Ordinary – partial; linear – nonlinear
- Order of a differential equation
- Exact vs numerical solutions to a differential equation
- Existence and uniqueness of first order ODEs
- Direction fields Euler's method

First Order Differential Equations

- Separable DEs
- Linear DEs
- Exact DEs
- Bernoulli equation
- Substitution

Modeling with First Order Equations

- Population models – logistic equation
- Mixing problems
- Newtonian mechanics
- Heating and cooling

Linear Second Order Equations

- Spring problems
- Constant coefficients – homogeneous
- Constant coefficients – non-homogeneous
- Variation of parameters
- Undetermined coefficients

Laplace transform methods

- Laplace transform and the inverse
- Solving initial value problems
- Laplace transform of discontinuous functions, periodic functions, Dirac Delta function
- Convolutions

Systems of Equations

Phase plane, equilibrium solutions, trajectories
Classification of critical points
Matrix methods for linear systems

Messages

Welcome to Differential Equations

Free tutoring at the Teaching Center, SW Broward Hall. Check [Teaching Center](#) for the time schedule.

Students with disabilities requesting accommodations should first register with the [Disability Resource Center](#) (352-392-8565) by providing appropriate documentation. Once registered, students will receive an accommodation letter which must be presented to the instructor when requesting accommodation. Students with disabilities should follow this procedure as early as possible in the semester.

The course will be conducted in accordance with the [academic honesty policy](#), and [policy regarding the use of copyrighted material](#).

“Requirements for class attendance and make-up exams, assignments, and other work in this course are consistent with university policies that can be found at: [attendance policies](#).

Information on current UF grading policies for assigning grade points may be found at: [grades](#).

Students are expected to provide feedback on the quality of instruction in this course by completing [online evaluations](#). Evaluations are typically open during the last two or three weeks of the semester, but students will be given specific times when they are open. Summary results of these assessments are available to students at <https://evaluations.ufl.edu/results/>.

Grades

Three exams: 30% each

Exam 1: September 18

Exam 2: October 23

Exam 3: December 2

Homework: 10%

(not the recommended method for remembering formulas)



