

# MAP 2302 Elementary Differential Equations

## INSTRUCTOR

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## CLASS TIME AND LOCATION

MWF 1:55-2:45 (7<sup>th</sup> Period), Little 205

## OFFICE HOURS

MWF 3:00-3:50: (8<sup>th</sup> Period), Little 483 or by an appointment.

## DESCRIPTION AND GOALS

Differential equation arises in many physical phenomena of science and engineering. Students will learn how differential equations can be modeled from reality under certain assumption. They will also study the techniques for solving ordinary differential equations.

## TEXTBOOK

R. K. Nagle, E. B. Saff and A. D. Snider, Fundamentals of Differential Equations , 8<sup>th</sup> Edition., Pearson Education, ISBN-10: 0-321-74773-9

## TOPICS

The following chapters are going to be covered from the mentioned textbook

Chapter 1 Introduction

Section: 1.1, 1.2, 1.3.

Chapter 2 First-Order Differential Equations

Section: 2.1, 2.2, 2.3, 2.4

Chapter 3 Mathematical models

Section: 3.2, 3.4, 3.5

Chapter 4 Linear Second-Order Equations

Section: 4.1, 4.2, 4.3, 4.4, 4.5, 4.6, 4.7

Chapter 5 Introduction to the Systems and Phase Plane Analysis

Section: 5.1, 5.7

Chapter 7 Laplace Transforms

Section: 7.1, 7.2, 7.3, 7.4, 7.5, 7.6, 7.7

Chapter 8 Series solutions of Differential equations (If time permits)

Section: 8.1, 8.2, 8.3, 8.4

## COURSE CALENDAR (Tentative)

22 AUG LECT.1	INTRODUCTION SECTION 1.1	23AUG	24 AUG LECT.2	SECTION 1.2	25 AUG	26 AUG LECT.3	SECTION 1.3
29 AUG LECT.4	SECTION 2.1 SECTION 2.2	30 AUG	31 AUG LECT.5	SECTION 2.3	01 SEPT	02 SEPT LECT.6	SECTION 2.4
<b>05 SEPT HOLIDAY</b>		06 SEPT	07 SEPT LECT.7	SECTION 2.6	08 SEPT	09 SEPT LECT.8	SECTION 3.1 SECTION 3.2
12 SEPT LECT.09	SECTION 3.2	13 SEPT	14 SEPT LECT.10	SECTION 3.4	15SEPT	<b>16 SEPT LECT. 11</b>	<b>REVIEW</b>
<b>19 SEPT</b>	<b>TEST 1</b>	20 SEPT	21 SEPT LECT.12	SECTION 4.1 SECTION 4.2	22 SEPT	23 SEPT LECT.13	SECTION 4.2 SECTION 4.3
26 SEPT LECT.14	SECTION 4.4	27 SEPT	28 SEPT LECT.15	SECTION 4.5	29 SEPT	30 SEPT LECT.16	SECTION 4.6
03 OCT LECT.17	SECTION 4.7	04 OCT	05 OCT LECT.18	SECTION 4.9 SECTION 4.10	06 OCT	07 OCT LECT.19	SECTION 5.1 SECTION 5.2
10 OCT LECT. 20	SECTION 3.5 SECTION 5.7	11 OCT	<b>12 OCT LECT. 21</b>	<b>REVIEW</b>	13 OCT	<b>14 OCT HOLIDAY</b>	
<b>17 OCT</b>	<b>TEST 2</b>	18 OCT	19 OCT LECT.22	SECTION 7.1 SECTION 7.2	20 OCT	21 OCT LECT.23	SECTION 7.3
24 OCT LECT.24	SECTION 7.3 SECTION 7.4	25 OCT	26 OCT LECT.25	SECTION 7.4 SECTION 7.5	27 OCT	28 OCT LECT.26	SECTION 7.6
31 OCT LECT.27	SECTION 7.6 SECTION 7.7	01 NOV	02 NOV LECT.28	SECTION 7.7	03 NOV	04 NOV LECT 29	SECTION 7.8
07 NOV LECT.30	SECTION 7.8	08 NOV	<b>09 NOV LECT.31</b>	<b>REVIEW</b>	10 NOV	<b>11 NOV HOLIDAY</b>	
<b>14 NOV</b>	<b>TEST 3</b>	15 NOV	16 NOV LECT.32	SECTION 8.1	17 NOV	18 NOV LECT.33	SECTION 8.2
21 NOV LECT.34	SECTION 8.2	22 NOV	<b>23 NOV HOLIDAY</b>		24 NOV	<b>25 NOV HOLIDAY</b>	
28 NOV LECT.35	SECTION 8.3	29 NOV	30 NOV LECT. 36	SECTION 8.4	01 DEC	<b>02 DEC LECT. 37</b>	<b>REVIEW</b>
<b>05 DEC</b>	<b>TEST 4</b>	06 DEC	<b>07 DEC LECT. 38</b>	<b>FINAL REVIEW</b>	08 DEC	09 DEC	
12 DEC		13 DEC	<b>14 DEC FINAL EXAM</b>		15 DEC	16 DEC	
19 DEC GRADE		20 DEC	21 DEC		22 DEC	23 DEC	

# HOMEWORK

The list of homework problems is as shown below. Try to solve all assigned problems.

Chapter 1:

Sect. 1.1: Page 5: 1-12, 13, 15, 16.

Sect. 1.2: Page 13: 1, 2, 3, 5, 9, 13, 15, 21, 22, 25, 26, 31.

Sect. 1.3: Page 21: 1, 2, 7, 11, 13.

- Chapter 2:

Sect. 2.2: Page 43: 1, 4, 5, 7, 10, 15, 17, 18, 21, 23, 28, 31.

Sect. 2.3: Page 51: 1, 3, 5, 7, 10, 15, 17, 19, 21, 25, 27.

Sect. 2.4: Page 61: 1, 3, 5, 7, 9, 11, 13, 16, 21.

Sect. 2.6: Page 74: 1, 3, 4, 9, 11, 21, 23, 29.

- Chapter Two Review: Page 77: 1, 3, 5, 7, 9, 11, 13, 17, 19, 23, 33, 35, and 37.

- Chapter 3:

Sect. 3.2: Page 99: 1, 3, 5, 7, 9, 11, 13, 14, 15, 23, 25.

Sect. 3.4: Page 114: 1, 5, 7, 12, 24, 25.

Sect. 3.5: Page 121: 1, 3, 5, 7.

- Chapter 4:

Sect. 4.1: Page 157: 3, 5, 7.

Sect. 4.2: Page 165: 3, 7, 9, 13, 15, 20, 27, 29.

Sect. 4.3: Page 173: 1, 3, 7, 9, 16, 23, 27, 29.

Sect. 4.4: Page 182: 1, 3, 5, 7, 9, 13, 19, 23, 27, 29

Sect. 4.5: Page 187: 1, 3, 5, 7, 11, 13, 17, 19, 25, 29, 31, 33, 37, 43.

Sect. 4.6: Page 193: 1, 3, 5, 7, 9, 11, 13.

Sect. 4.7: Page 200: 1, 3, 5, 7, 9, 13, 15, 17, 19, 29, 31, 33, 37, 39.

Sect. 4.9: Page 222: 1, 3, 5, 7.

Sect. 4.10: Page 230: 3, 9, 11, 13

- Chapter 4 Review: Page 233: 1–36 odd

- Chapter 5:

Sect. 5.2: Page 250: 3, 5, 13, 17, 19, 21, 23, 31

Sect.5.7: Page 291: 1, 3, 5, 11

- Chapter 5 Review: Page 308: 1, 3, 7.

- Chapter 7

Sect. 7.2: Page 360: 1, 3, 5, 7, 9, 11, 13, 15, 17, 19, 21, 23, 25.

Sect. 7.3: Page 365: 1, 3, 5, 7, 9, 11, 13, 15, 21, 24, 25, 33, 35

Sect. 7.4: Page 374: 1, 3, 5, 7, 9, 11, 13, 15, 17, 21, 23, 25, 33, 35

Sect. 7.5: Page 382: 1, 3, 5, 7, 9, 11, 13, 15, 17, 21, 23, 25, 31, 32, 35.

Sect. 7.6: Page 393: 1, 3, 5, 7, 9, 11, 13, 15, 17, 21, 23, 25, 31, 32, 35, 39, 49, 51, 57.

Sect. 7.7: Page 403: 1, 3, 5, 7, 9, 11, 13, 17, 19, 23, 25, 27.

Sect. 7.8: Page 410: 1, 3, 5, 7, 9, 11, 13, 15, 17, 21, 23, 25, 27, 29.

- Chapter 7 Review: Page 416: Problems 1–25 odd, 29.

- Chapter 8:

Sect. 8.1: Page 426: 1, 3, 5, 7, 13, 15.

Sect. 8.2: Page 434: 1, 3, 5

Sect. 8.3: Page 445: 1, 3, 5, 7, 9, 11, 13, 15, 25, 27, 35

Sect. 8.4: Page 450: 1, 3, 5, 7, 9, 11, 13, 15, 21, 23

- Chapter 8 review: Page 491: Problems 1–6, 9.

## EXAMS

There will be four class exams (25 points each) and a final exam (25 points).

Only three best scores of class exams will count.

Hence Final grade will be (three best scores of class exams + Final exam).

The dates and times of the class exams appear in the course calendar.

All exams will take place in the usual classroom Little 205.

The final exam will be on Wednesday, December 14th, 10:00 a.m.–12:00 noon

No make-up exams will be given except for documented special reasons, such as medical emergencies. Exams can be rearranged for student athletes only if I am notified at least three weeks in advance. It is the responsibility of each student to make sure that he or she is available to take every exam or, in the allowable cases, to inform me as soon as possible so that alternative arrangements can be made.

If you think that a score has been **computed incorrectly**, please bring the matter to my attention within one day of your work being returned.

If you think that your work has been **graded incorrectly**, please submit an appeal in writing within seven days of your work being returned, explaining your reasons in detail. Appeals may result in a higher, unchanged, or lower score, depending on the merit of the appeal. Decisions on appeals are final. The final exam cannot be appealed.

## GRADING SCALE

**Grades: A : 90-100**

**A- : 87-89**

**B+ : 83-86**

**B : 78-82**

**B- : 75-77**

**C+ : 70-74**

**C : 65-69**

**C- : 60-64**

**D : 50-59**

**E : 0-49**

The UF regulations on grades are here: <https://catalog.ufl.edu/ugrad/current/regulations/info/grades.aspx>

The UF policy on minus grades is here: <http://www.isis.ufl.edu/minusgrades.html>.

## CLASS ATTENDANCE POLICY

Requirements for class attendance and make-up exams, assignments, and other work in this course are consistent with university policies that can be found in the online catalog at:

<https://catalog.ufl.edu/ugrad/current/regulations/info/attendance.aspx>

## SPECIAL ACCOMMODATIONS

Students requesting classroom accommodation must first register with the Dean of Student Office. The Dean of Students Office will provide documentation to the student who must then provide this documentation to the instructor when requesting accommodation.

## HONOR CODE

UF students are bound by The Honor Pledge which states, "We, the members of the University of Florida community, pledge to hold ourselves and our peers to the highest standards of honor and integrity by abiding by the Honor Code. On all work submitted for credit by students at the University of Florida, the following pledge is either required or implied: "On my honor, I have neither given nor received unauthorized aid in doing this assignment."

The Honor Code (<http://www.dso.ufl.edu/sccr/process/student-conduct-honor-code/>) specifies a number of behaviors that are in violation of this code and the possible sanctions. Furthermore, you are obliged to report any condition that facilitates academic misconduct to appropriate personnel. If you have any questions or concerns, please consult with the instructor of this class.

## COURSE EVALUATIONS

Students are expected to provide feedback on the quality of instruction in this course based on 10 criteria. These evaluations are conducted online at <https://evaluations.ufl.edu>. 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/>.

Disclaimer: I reserve the right to change the above policies if situations warrant.