

Math 2280-01 (#20408)
Ordinary Differential Equations (3)
Spring 2015 (Monday, 12 January – Wednesday, 29 April 2015)
TH 1:00-2:15 PM SNOW 124

Instructor: Dr. Brent D. Albrecht
Office: SNOW 137
Office Hours: TH 12:00 NOON – 1: 00 PM
 & By Appointment
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Prerequisites: Math 1220 Grade of C or Higher.

Course Description: For Mathematics and pre-Engineering majors. Covers methods of solving ordinary differential equations with applications: separation of variables, homogeneous and non-homogeneous, exact, first and higher order, integrating factors, substitution methods, linear and non-linear, complex characteristic roots, variation of parameters, undetermined coefficients (superposition and annihilator approach), and Euler-Cauchy. Systems of equations, power series solutions, and the Laplace transform will be introduced. Required for the Utah Level 4 Math Endorsement.

Objectives: To convey to the students the beauty and utility of differential equations, and to illustrate some of their applications in modern society.

To convey, to the extent possible using the content of this course, the quantitative literacy skill set adopted by Dixie State University:

All mathematics courses at Dixie State University support the general education goal of the university, and will:

1. Employ mathematical techniques in solving computational problems.
2. Interpret mathematical models.
3. Construct quantitative and logical arguments.
4. Apply mathematical knowledge to solve real-world problems.
5. Communicate in the mathematical language through the proper use of notation and terminology.
6. Explore and analyze mathematical concepts, using technology to the appropriate extent.

Upon successful completion of this course, the students will demonstrate through testing the ability to:

1. Solve ordinary differential equations via the use of the following solution types: exact, implicit, series, and discrete application.
2. Solve systems of linear ordinary differential equations via the use of differential operators, Laplace transformations, and matrix methods.
3. Utilize ordinary differential equations as well as systems thereof to obtain solutions to related application problems.

“Philosophy is written in this grand book – the Universe – which stands continually open to our gaze, but it cannot be understood unless one first learns to comprehend the language and interpret the characters in which it is written. It is written in the language of mathematics, and its characters are triangles, circles, and other geometrical figures, without which it is humanly impossible to understand a single word of it.”

- Galileo Galilei

Text: A First Course in Differential Equations with Modeling Applications, 10th Ed. by Dennis G. Zill.

Attendance: It is essential that students attend class, and roll is taken on randomly selected days in order to ensure student attendance. Tardiness is strongly discouraged. Attendance records may be used in determining borderline grades. Absences due to university-sponsored activities are handled as stated in Dixie State University Policy #5-23 (located at <http://www.dixie.edu/humanres/policy/sec5/523.html>).

Classroom Etiquette: Students are responsible for helping to maintain a respectful classroom learning environment. Academic discipline for instances of disruptive behavior are handled as stated in Dixie State University Policy #5-33 (located at <http://www.dixie.edu/humanres/policy/sec5/533.html>).

Homework: Homework assignments are collected on a weekly basis and are graded predominantly by completion. Students must show all of their work in order to receive credit, and they are encouraged to check their answers in the back of the text whenever possible. Students are required both to write neatly and to organize their work with chapter, section, and problem numbers. If desired, students may also purchase the associated Student Resource with Solutions Manual.

Quizzes: Quizzes are administered in person during class and on a regular basis.

Exams: All exams are administered in person either during class or in the Dixie State University Testing Center (located in the North Plaza Building). There will be three midterm exams and one comprehensive final exam. Exams are administered according to the following (tentative) schedule:

- Midterm I: 1:00-2:15 PM on Tuesday, 3 February 2015
- Midterm II: 1:00-2:15 PM on Thursday, 19 March 2015
- Midterm III: 1:00-2:15 PM on Tuesday, 14 April 2015
- Final: 12:30-2:30 PM on Thursday, 7 May 2014

Make-up exams are given only in extenuating circumstances, and only if prior arrangements are made. The instructor reserves the right to make evaluations on a case-by-case basis.

Grading:	Homework & Quizzes	15%	94 – 100%	A
	Midterm I	20%	90 – 93%	A-
	Midterm II	20%	87 – 89%	B+
	Midterm III	20%	83 – 86%	B
	Final	25%	80 – 82%	B-
			75 – 79%	C+
			70 – 74%	C
			65 – 69%	C-
			60 – 64%	D+
			55 – 59%	D
		50 – 54%	D-	
		0 – 49%	F	

Academic Integrity: Students are expected to uphold the highest standards of academic integrity. Section 4, Article XI of Dixie State University Policy #5-33 (located at <http://www.dixie.edu/humanres/policy/sec5/533.html>) outlines the standards of student academic conduct. While students are encouraged to collaborate on homework assignments, their submitted work should accurately reflect the results of their individual efforts. Students must do their own work during exams. Talking, having discussions, comparing papers, copying, and collaborating are not allowed on exams. The use of notes, unapproved calculators, and communication devices such as cell phones is also prohibited during exams. Academic dishonesty will result in the failure of written work and may lead to failure of the course and/or university disciplinary action.

Accommodations: Any student seeking accommodations or services due to a disability must contact the Disability Resource Center (located in the North Plaza Building). Students may call the center at (435) 652-7516 or send an email to drc@dixie.edu. The Disability Resource Center determines eligibility for and authorizes the provision of accommodations and services. The center can arrange to provide materials (including this syllabus) in alternate formats if necessary.

Dmail: Important class and university information is sent to students' Dmail accounts. All Dixie State University students are automatically assigned a Dmail account. Students are responsible for knowing the information sent to their Dmail accounts.

Class Schedule: The Dixie State University Spring 2015 Semester Schedule is located online at <http://new.dixie.edu/reg/?page=spring2015>. The (tentative) schedule for the class is as follows:

MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY
January 12	13 1.1: 1-37 (odds)	14	15 1.2: 1-27 (odds) 1.3: 1-19 (odds)	16
19 <i>M.L.K. Day</i> <i>No Class</i>	20 2.1: 1-31 (odds) 2.2: 1-29 (odds)	21	22 2.3: 1-17 (odds), 25, 27	23
26	27 2.4: 1-35 (odds) 2.5: 1-17 (odds)	28	29 Review	30
February 2	3 Midterm I (Chapters 1-2)	4	5 3.1: 1-35 (odds)	6
9	10 3.2: 1, 5, 25 3.3: 7-13 (odds)	11	12 4.1: 1-35 (odds)	13
16 <i>Presidents' Day</i> <i>No Class</i>	17 4.2: 1-15 (odds) 4.3: 1-47 (odds)	18	19 4.4: 1, 7, 13, 19, 27, 35, 39, 41	20
23	24 4.5: 1-41 (every other odd)	25	26 4.6: 1-25 (every other odd)	27
March 2	3 4.7: 1-37 (every other odd)	4	5 4.9: 1-21 (odds) 4.10: 1-15 (odds)	6
9 <i>Semester Break</i> <i>No Class</i>	10 <i>Semester Break</i> <i>No Class</i>	11 <i>Semester Break</i> <i>No Class</i>	12 <i>Semester Break</i> <i>No Class</i>	13 <i>Semester Break</i> <i>No Class</i>
16	17 Review	18	19 Midterm II (Chapters 3-4)	20
23	24 7.1: 1-39 (odds)	25	26 7.2: 1-39 (odds)	27

30	31	April 1	2	3
	7.3: 1-45 (odds), 49-54, 57, 61		7.4: 1-53 (every other odd)	
6	7	8	9	10
	7.5: 1-13 (odds) 7.6: 1, 5, 9, 15		Review	
13	14	15	16	17
	Midterm III (Chapter 7)		8.1: 1-25 (every other odd)	
20	21	22	23	24
	8.2: 1-37 (every other odd)		8.3: 1-29 (odds) 8.4: 1-17 (odds)	
27	28	29	30	May 1
	Review		<i>Reading Day No Class</i>	
4	5	6	7	8
			Final Exam 12:30-2:30 PM	