

**MAT 2150—Winter 2018**  
**DIFFERENTIAL EQUATIONS AND MATRIX ALGEBRA**

**INSTRUCTOR:** Dr. Bruce Corrigan-Salter  
1219 FAB  
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**SECTION:** 003      **COURSE REFERENCE NUMBER:** 20463

**MEETING DAYS:** T R

**MEETING TIMES:** 4:30pm-6:10pm

**ROOM:** 0116 STAT

**OFFICE HOURS:** Monday 9:30am-10:20am, Tuesday 3:30pm-4:20pm, Friday 9:30am-10:20am

**QUALIFYING:** This course has a prerequisite of MAT 2030 or equivalent.

**COURSE OUTCOMES:** After completing this class, students will be able to:

- 1) Solve differential equations of several types, including systems of linear differential equations.
- 2) Use matrices to solve linear systems and eigenvalue problems.
- 3) Use mathematical modeling and differential equations to study applied problems.
- 4) Manipulate the abstract concepts underlying differential equations and matrices.

**TEXT:**

- “Fundamentals of Differential Equations” by Nagle, Saff, and Snider, 9<sup>th</sup> Edition
- “Matrix Operations” (Schaum’s Outline) by Bronson

**ATTENDANCE:** Attendance at class is expected. It has been found that there is a statistically significant correlation between attendance and grade. Showing up to class will generally increase your chances for a good grade.

**TARDINESS:** Coming in late disrupts other students and me. It also puts you at a disadvantage for doing well in the class. On the rare occasion that you may be late, please take a seat in the back of the class and see me after class.

**CODE OF CONDUCT:** Since every student is entitled to full participation in class without interruption, all students are expected to be in class and prepared to begin on time. All

cell phones or other devices that make noise must be turned off and out of sight when you enter the classroom. Disruption of class, whether by talking, noisy devices, eating in class or other inconsiderate behavior, will not be tolerated. Students who violate these rules will be asked to leave the classroom and will not be allowed to return until they have spoken privately with me.

**HOMEWORK:** Homework will be assigned on a regular basis and collected seven times throughout the semester. Though homework will not be included in the grade directly, completion of all seven assignments will allow the dropping of the two lowest quizzes and completion of six of the assignments will allow the dropping of the lowest quiz.

**TESTS AND QUIZZES:** There will be a quiz or exam every Thursday. No quizzes will be given during the week after an exam. Quizzes will typically last 15-20 minutes and exams will be expected to take the last 50 minutes of class. Students should be present for each quiz and exam. Students will be able to make up exams in emergency situations, but the exam may be made more difficult than the in-class exam and students are expected to contact the instructor as soon as possible in these situations. Quizzes may not be made up (see homework).

**GROUP PROJECT:** Students will be grouped in groups of 4-5 students and will be expected to complete three of the textbook projects. Toward the end of the semester, groups will present their best/favorite project in class.

**CALCULATORS:** **No calculators** will be allowed on tests or the final exam. However, a Scientific or especially a Graphing Calculator is a useful tool in the study of Mathematics. You are encouraged to bring one to class every day and to use one to check your homework.

<b>GRADES:</b> Exams	50%
Project	5%
Quizzes	15%
Final Exam	30%

<b>GRADING SCALE:</b>	93% - 100%	A	67% - 69%	D+
	90% - 92%	A-	63% - 66%	D
	87% - 89%	B+	60% - 62%	D-
	83% - 86%	B	Under 60%	F
	80% - 82%	B-		
	77% - 79%	C+		
	73% - 76%	C		
	70% - 72%	C-		

Any student who stops attending without filing an official withdrawal form will receive the grade of F.

The grade of WP will be awarded if a withdrawal form is filed when the student is passing.

The grade of WF will be awarded if a withdrawal form is filed when the student is failing.

**SYLLABUS:**

- 1<sup>st</sup> order, separable, exact and linear equations
- Mathematical models
- Linear Algebra I
- 2<sup>nd</sup> order linear equations
- Higher order linear equations
- Laplace transforms
- Power series solutions
- Linear Algebra II
- Linear systems

**TIPS FOR SUCCESS:** Commit yourself to the class on day one. If you devote ample time to working on homework, reading the textbook and your notes, and thinking about the concepts we are learning, you will learn this material and you will learn it well. You will build a strong foundation for future math and science classes, as well as good study and organizational habits, which will be essential throughout your university studies. You have the ability to reach success if you commit yourself to excellence. Moreover, you do not have to reach success alone. Get to know your classmates, and learn with and from each other. Come to see me whenever you have questions.

**RELIGIOUS HOLIDAYS** (from the online Academic Calendar): Because of the extraordinary variety of religious affiliations of the University student body and staff, the Academic Calendar makes no provisions for religious holidays. However, it is University policy to respect the faith and religious obligations of the individual. Students with classes or examinations that conflict with their religious observances are expected to notify their instructors well in advance so that mutually agreeable alternatives may be worked out.

**STUDENT DISABILITIES SERVICES** (edited statement from the SDS web site): If you have a documented disability that requires accommodations, you will need to register with Student Disability Services for coordination of your academic accommodations. The Student Disability Services (SDS) office is located in the Adamany Undergraduate Library. The SDS telephone number is 313-577-1851 or 313-202-4216 (Videophone use only). Once your accommodation is in place, someone can meet with you privately to discuss your special needs. Student Disability Services' mission is to assist the university in creating an accessible community where students with disabilities have an equal opportunity to fully participate in their educational experience at Wayne State University.

Students who are registered with Student Disability Services and who are eligible for alternate testing accommodations such as extended test time and/or a distraction-reduced environment should present the required test permit to the professor at least one week in advance of the exam. Federal law requires that a student registered with SDS is entitled to the reasonable accommodations specified in the student's

accommodation letter, which might include allowing the student to take the final exam on a day different than the rest of the class.

**ACADEMIC DISHONESTY -- Plagiarism and Cheating** (edited statement from the DOSO's web site): Academic misbehavior means any activity that tends to compromise the academic integrity of the institution or subvert the education process. All forms of academic misbehavior are prohibited at Wayne State University, as outlined in the Student Code of Conduct (<http://www.doso.wayne.edu/student-conduct-services.html>). Students who commit or assist in committing dishonest acts are subject to downgrading (to a failing grade for the test, paper, or other course-related activity in question, or for the entire course) and/or additional sanctions as described in the Student Code of Conduct.

**Cheating:** Intentionally using or attempting to use, or intentionally providing or attempting to provide, unauthorized materials, information or assistance in any academic exercise. Examples include: (a) copying from another student's test paper; (b) allowing another student to copy from a test paper; (c) using unauthorized material such as a "cheat sheet" during an exam.

**Fabrication:** Intentional and unauthorized falsification of any information or citation. Examples include: (a) citation of information not taken from the source indicated; (b) listing sources in a bibliography not used in a research paper.

**Plagiarism:** To take and use another's words or ideas as one's own. Examples include: (a) failure to use appropriate referencing when using the words or ideas of other persons; (b) altering the language, paraphrasing, omitting, rearranging, or forming new combinations of words in an attempt to make the thoughts of another appear as your own.

Other forms of academic misbehavior include, but are not limited to: (a) unauthorized use of resources, or any attempt to limit another student's access to educational resources, or any attempt to alter equipment so as to lead to an incorrect answer for subsequent users; (b) enlisting the assistance of a substitute in the taking of examinations; (c) violating course rules as defined in the course syllabus or other written information provided to the student; (d) selling, buying or stealing all or part of an un-administered test or answers to the test; (e) changing or altering a grade on a test or other academic grade records.

**COURSE DROPS AND WITHDRAWALS:** In the first two weeks of the (full) term, students can drop this class and receive 100% tuition and course fee cancellation. After the end of the second week there is no tuition or fee cancellation. Students may drop for an additional two weeks without instructor permission but will not receive a refund. Drops during the first four weeks of the term will be removed from the student's record. Students who wish to withdraw from the class after the first four weeks can initiate a withdrawal request on Academica. If the instructor approves the request, you will receive a transcript notation of WP (passing), WF (failing), or WN (no graded work) at the time of withdrawal. No withdrawals can be initiated after the end of the tenth week.

Students enrolled in the tenth week and beyond will receive a grade. Because withdrawing from courses may have negative academic and financial consequences, students considering course withdrawal should make sure they fully understand all the consequences before taking this step. More information on this can be found at: <http://reg.wayne.edu/pdf-policies/students.pdf>

### **STUDENT SERVICES:**

The Mathematics Resource Center is located in room 1198 FAB and provides individual tutoring in mathematics free of charge. No appointment is necessary. The center opens 1/16/18 and the hours are:

Mondays - Thursdays: 10:00 am – 6:00 pm (Room 1198 FAB)

Fridays: 10:00 am - 1:00 (Room 1198 FAB)

Check the following website for more details:

<http://clas.wayne.edu/Math/Mathematics-Resource-Center>

### **IMPORTANT DATES**

First day of class – Monday, 1/8/18

Holiday – Monday, 1/15/18 – No Class

Last Day for Tuition Cancellation – Monday, 1/22/18

#### **Test 1 – Thursday, 1/25/18**

Last Day to Withdraw and Not Show on Transcript – Monday, 2/4/18

#### **Test 2 – Thursday, 3/1/18**

Holiday – Monday, 3/12/18 – Saturday, 3/17/18

Last day to withdraw – Sunday, 3/25/18

#### **Test 3 – Thursday, 4/12/18**

Last day of classes – Monday, 4/23/18

Study Day – Tuesday, 4/24/18 No Classes

**FINAL EXAM—Tuesday, 5/1/18 2:45pm-4:45pm**