DIFFERENTIAL EQUATIONS

St. Olaf College · Math 230
Prof. Matthew Wright · Fall 2020

Course Meetings

Monday, Wednesday, and Friday 9:05 – 10:00am

We will meet online through Sept. 2. We plan to meet in RML 115 starting on Sept. 4.

Contact the Professor

If you have any question or concern about the course, email Prof. Wright at **wright5@stolaf.edu**, or join online office hours. Prof. Wright tries to respond quickly to email from students during the week, but responses may take a bit longer on the weekends. Online office hours are scheduled daily:

Mon. 11–12, Tues. 1:30–2:30, Wed. 10:30–11:30, Thurs. 10–11, Fri. 12:30–1:30

Please check your email or the course Moodle page for the Zoom link for office hours. If the hours above don't work for you, just send Prof. Wright an email to arrange a meeting at another time!

Text

Differential Equations, 4th Edition, by Blanchard, Devaney, and Hall

This text is required. You do not need the "DETools" access code that comes with some copies of the text.

Web Site

The course web site is:

math230.mlwright.org

You will refer to this web site frequently for homework assignments and course files. The course will use Moodle for

Course Objectives

1. Demonstrate how differential equations model real world phenomena.
2. Use qualitative, analytic, and numerical techniques for finding, analyzing, and visualizing solutions to differential equations.
3. Thoroughly understand the behavior of linear systems and what they imply about nonlinear systems.
4. Deepen understanding of mathematics as a human activity that combines abstract elegance with real-world utility, in which all people can find success.

Grading

Your final grade will be a weighted average of the following:

Reading Questions	5%	
Homework:	25%	
Lab assignments:	10%	
Exams:	40%	(20% for each of two exams)
Final Exam:	20%	

Reading Questions

The textbook is an important resource for this class. The professor will assign readings, paired with comprehension questions on Moodle. Answers to these questions will be due at the beginning of class and will be graded for completion. Thorough, active reading of the assigned textbook sections will help you to stay on top of the material and get the most out of this course. Reading questions will *not* be accepted late, but your lowest *two* reading question grades will be dropped.

Homework

Homework will be assigned and collected frequently—approximately every other class period. Assignments and due dates will be announced in class and posted in the course web site. *Keeping up with the homework is important, not only to get a good grade, but also for mastering the course material!* The proper way to work on a homework problem is as follows:

1. Read and attempt to understand the problem, looking up definitions or theorems if necessary.
2. Make a plan for solving the problem.
3. Attempt to carry out the plan. Revise the plan. Spend time thinking about the problem.
4. If you have spent significant time on the problem and still can't solve it, then talk to Prof. Wright or another student who is working on the same problem. Then go back to step 2.
5. If you think you have solved the problem, then check your answer. Ask yourself, "Is my answer reasonable? Can I verify it in some way?" See if you can improve your solution.
6. Write your solution neatly and thoroughly.

Collaboration on homework is encouraged (see #4 above), but *you must hand in your own work*. For full credit, explain your solutions clearly and *show all work*.

Write your solutions clearly and neatly, explaining your reasoning. Homework will be due at 5pm on the due date. Late work will *not* be accepted in general. However, your lowest homework grade will be dropped.

Lab Assignments

Lab assignments will involve numerical experimentation and use of technology beyond what is required for the regular homework problems. In addition, these assignments will require you to explain your work in writing, which is an important part of the learning process. There will be approximately four lab assignments throughout the semester. More information about these assignments will be distributed in class and posted on the course web site.

Computers

We will make frequent use of computers, and especially use the computer algebra system *Mathematica*, in this course. *Mathematica* is available on many computers across campus. You are encouraged to install *Mathematica* on your personal computer and bring your computer to class. Please talk with the professor if you have any questions or concerns about this.

Exams

This course will have two midterm exams and a final exam. Plan to be present at each exam. Make-up exams will be given only in circumstances that are truly exceptional, and must be arranged in advance. In particular, travel plans are not a valid excuse to miss an exam. Midterm exams are tentatively scheduled as follows:

> **Midterm Exam 1**: Monday, September 21 on Chapters 1 and 2
> **Midterm Exam 2**: Wednesday, October 21 on Chapters 3 and 4

The **final exam** will be Thursday, November 19, 9 – 11am. This exam will be cumulative, covering roughly on Chapters 1 – 5 and 7.

Further information will be communicated in advance of each exam.

Strategies for Success

- Complete the reading, videos, and pre-class questions before class.
- Attend class faithfully and participate in class activities.
- Keep up with the homework assignments. Start early — don't wait until the last minute to get started!
- Practice is essential for learning mathematics! Work each problem carefully and thoroughly.
- Work with other students. Mathematics is a collaborative activity! You will find that you will both learn from and teach your classmates.
- Ask questions!
- If you are having trouble, seek help! Prof. Wright is happy to talk with you.

Getting Help

Prof. Wright is your primary resource for help in this course and is happy to talk with you. When you need help, or if you have any concerns about the course, please email Prof. Wright or visit his office hours.

The course teaching assistant will hold an additional evening office hour, at a time to be announced.

Your classmates are a valuable resource. The professor encourages you to course topics and homework problems with your classmates, as long as you turn in your own work. Mathematics is a collaborative activity!

Furthermore, the Academic Support Center (ASC) offers tutoring, academic coaching, and other services – talk with Prof. Wright or email the ASC for more information. If you have any concern at all related to this course, feel free to email Prof. Wright.

Community Standards

We all share the responsibility of acting to keep our St. Olaf community safe, especially in this time of the COVID-19 pandemic. Each student, faculty, and staff member has acknowledged the Community Pledge (wp.stolaf.edu/covid-19/community-pledge) and must remain committed to the community standards throughout the semester. The following items are especially important for our class:

- Do not come to class if you are sick. Stay home and contact the professor for alternate arrangements regarding class work.
- Face masks are required during in-person class sessions. Masks must be properly worn, covering both the nose and mouth, and must not have vents. A student who attends class without a mask will be asked to leave. If a student refuses to either wear a mask or leave, then class will be dismissed and the Dean of Students Office will be notified of this violation of community standards.
- We will practice social distancing during in-person class sessions.

If you have any questions or concerns about the community standards in this class, don't hesitate to talk with Prof. Wright.

Academic Integrity

Claiming someone else's work as your own will earn you a failing grade on the work in question. Don't do it. For more information, see the *Academic Integrity* section of *The Book* (wp.stolaf.edu/thebook/academic/integrity).

The Honor Pledge applies to exams in this course. The Honor Pledge reads:

> *"I pledge my honor that on this examination I have neither given nor received assistance not explicitly approved by the professor and that I have seen no dishonest work."*

The Honor Pledge is violated when information could result in an unfair advantage for one or more students is given or received before, during, or after a test. On each exam, students will be asked to either affirm the Honor Pledge or indicate awareness of violations by intentionally not signing the pledge.

Inclusivity and Access

Prof. Wright is committed facilitating a safe, caring, and inclusive learning community, respecting those of differing backgrounds and beliefs. As part of St. Olaf College, we aim to be respectful to everyone in this class, regardless of race, ethnicity, religion, gender, or sexual orientation. All students are capable of success in mathematics, and Prof. Wright aims to create an environment in which all can succeed. If you have any questions or concerns, don't hesitate to talk with Prof. Wright.

If you have any concerns about access to course materials, or if English is not your first language and this causes you concern, please talk with Prof. Wright.

Health and Accommodations

Prof. Wright is committed to supporting all students. He recognizes that emotional, physical, or psychological experiences, both in and out of the classroom, have the potential to distract students from learning. If you have any concerns, please do not hesitate to contact

the professor—he is available to listen and to discuss what resources may be available to you.

If you have an accommodation letter from the Disability and Access (DAC) office, please meet with the professor early in the course to discuss, plan, and implement your accommodations in the course. Otherwise, if you have or think you have a disability please contact the Disability and Access office at 507-786-3288 or wp.stolaf.edu/academic-support/dac/.