DIFFERENTIAL EQUATIONS

St. Olaf College · Math 230

Prof. Matthew Wright · Fall 2018

Meeting Times: Math 230A: Monday, Wednesday, and Friday 9:05 – 10:00am

Math 230B: Monday, Wednesday, and Friday 10:45 – 11:40am

Location: Tomson 184

Office Hours: Mon. 1–2, Tues. 10–11, Wed. 2–3, Thurs. 10–11, Fri. 1–2, whenever the door is open, or by appointment in RMS 405

Professor's Contact Info: wright5@stolaf.edu

Text: *Differential Equations*, 4th Edition, by Blanchard, Devaney, and Hall

Help Sessions: to be announced

Web Site: The course web site is:

http://math230.mlwright.org/

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

Course Objectives

1. To demonstrate how differential equations model real world phenomena.
2. To investigate different techniques for finding, analyzing, and visualizing solutions to differential equations, and to understand their long-term behavior.
3. To thoroughly understand the behavior of linear systems and what they imply about nonlinear systems.
4. To use computational tools such, as *Mathematica*, to find approximate solutions to differential equations.

Grading

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

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

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 nearly every class day. *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*.

Homework will be due in the homework mailbox at 4pm on the next class day after it is assigned. For example, homework assigned on Wednesday will be due at 4pm Friday. Late work will *not* be accepted in general. However, your lowest *two* homework grades 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 three exams, including the 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.

Exam 1: Wednesday, October 10 on Chapters 1 and 2
Exam 2: Wednesday, November 14 on Chapters 3 and 4
Final Exam: cumulative, roughly on Chapters 1 – 5 and 7
        Math 230A: Friday, December 14, 9:00 – 11:00am
        Math 230B: Tuesday, December 18, 9:00 – 11:00am

Help Resources

There are many help resources available for students in Math 230. Prof. Wright's office hours are a primary resource – stop by at any of the times listed at the top of this syllabus! The teaching assistants will offer two help sessions per week, at times to be announced. Furthermore, the Academic Support Center (ASC) offers tutoring, academic coaching, and other services – talk with Prof. Wright or visit the ASC for more information. If you have any concern at all related to this course, feel free to email 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).

Disability and Access

Prof. Wright is committed to supporting the learning of all students. If you have already registered with Disability and Access (DAC) and have your letter of accommodations, please meet with the professor early in the course to discuss, plan, and implement your accommodations in the course. If you have or think you have a disability please contact the Disability and Access office at 507-786-3288 or wp.stolaf.edu/asc/dac.