

Winter 2019
Math 377: Differential Equations 2
MWF 11:00 - 11:50, Samuelson 108,
occasional Fridays Samuelson 138

Instructor: Dr. Jim Bisgard

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Office Hours: M-F 9:00 - 9:50, and by appointment.

Course Goals: The goal of the course is to introduce you to the ideas of systems of differential equations: how to use analytic, graphical and/or numerical methods to investigate the solutions of systems of differential equations, as well as how to derive systems differential equations to describe phenomena in different sciences. More precisely, we will study systems of linear first order equations, and how to describe the behavior of their solutions using the language of linear algebra. We investigate the bifurcation of linear systems. In addition, we will explain the behavior of nonlinear systems near their equilibria. As time allows, we will introduce Laplace transforms and use them to solve differential equations. If time allows, we may cover some topics from the calculus of variations and its application to boundary value problems.

Required Text: Noonburg, Virginia W.;

Ordinary Differential Equations: From Calculus to Dynamical Systems; published by MAA

1 Grades/Exams/Homework

- Grades

Grades will be calculated using the following weighting system:

Exams: 55% total, broken up as follows: 15% for each mid-term and 25% for the final;

Homework: 45%;

and the following scale:

	87 – 89.9 : B+	77 – 79.9 : C+	67 – 69.9 : D+	below 60 : F
93 – 100 : A	83 – 86.9 : B	73 – 76.9 : C	63 – 66.9 : D	
90 – 92.9 : A–	80 – 82.9 : B–	70 – 72.9 : C–	60 – 62.9 : D–	

- Exams

There will be two exams during the course of the quarter, and a final exam. The exams during the quarter will be Wednesday, January 30 and Wednesday, February 20. The final exam is cumulative, and will be Wednesday, March 13 (8 - 10 am).

- Homework

We will have weekly homework assignments. With the exception of the first homework assignment, they will be handed out on Wednesday, and be due the following Wednesday **at noon**. To do some of the problems, you may need to do some reading in the book and you might also need to use a computer. You may work with your classmates on homework (and in fact, I encourage you to do this!), but you should write your solutions using your own words. **Copying of work is not allowed!** To avoid copying when you are working with others, use only scratch paper when working with others, and then go write your final

solutions by yourself on the the assignment. There will be a homework assignment due the last week of class.

- **Expectation for Homework and Exams**

Your homework and exams should be written up neatly and legibly, using complete sentences where appropriate. (For example, I don't expect you to write $(a + b)^2 = a^2 + 2ab + b^2$ using complete sentences!) Remember that you earn points by showing you know what you are doing. Thus, in order to earn full credit, you must use some words to describe what you are doing. For example, if you are calculating the eigenvalues of a matrix, you should write: "Finding eigenvalues: [appropriate calculations here]". Your solutions are like directions, and good directions are a combination of writing and good diagrams (the mathematical symbols). Disorganized solutions, with arrows pointing all over, and/or solutions with no "sign posts" will not earn full credit.

- **Late Policy**

Homework is due at noon on its due date. Homework handed in after that time on its due date will lose 5 points immediately, and 5 more points for every 24 hours after. That means: if you hand in homework at 12:30 on Wednesday, you can earn at most 20 out of 25 on your homework. If you hand in your homework on Thursday at 12:30 pm, you can earn at most 15 out of 25, since over 24 hours will have passed. If you are unable to physically hand in your homework during class, you may email a photo (or text it to my email address) as a placeholder - you must still turn in a physical copy of your homework to grade!

2 Important Dates

January 9 - Last Day for Add/Drop

January 30 - Mid-term Exam #1

February 15 - uncontested withdrawal deadline

February 20 - Mid-term Exam #2

March 13 - final exam (this is the Wednesday of final exam week - **DO NOT** plan to take your final early!)

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Central Washington University is committed to creating a learning environment that meets the needs of its diverse student body. If you anticipate or experience any barriers to learning, discuss your concerns with the instructor. Students with disabilities should contact Disability Services to discuss a range of options to removing barriers, including accommodations. Student Disability Services is located in Hogue 126. Call (509) 963-2214 or email ds@cwu.edu for more information.