



## **MTH 353 – Differential Equations (*we are using D2L for this class*)**

**Spring 2020, Section 001, Credits: 3, MWF 12:05-1:00 Wing 15**

### **Instructor Information**

- Instructor: Jeff Baggett
- Office Location: 1026 Cowley Hall
- Office hours: Typically available MWF 10:30-4:00pm so drop by
- Phone: 608-785-8393
- Email: jbaggett@uwlax.edu

**Course Description:** A first course on the modern study of differential equations including mathematical modeling and numerical solutions. Topics include the formulation of differential equations and interpretation of solutions, fundamental existence and uniqueness theory, first-order linear and separable equations, a dynamical systems approach to linear and nonlinear first order systems, numerical methods and qualitative analysis, and Laplace transforms. Applications and modeling of real world phenomena will be integrated throughout.

**Prerequisites:** MTH 309 and MTH 310

**Learning Outcomes:** Demonstrate an understanding of solving problems by recognizing the problem, reviewing information about the problem, developing plausible solutions, and evaluating the results. By the end of the course, you will know the basic theory, numerical techniques, and solution methods to elementary differential equations. You will be able explain and apply the basic concepts of calculus including the various forms of derivatives and integrals of continuous functions, their interconnections, and their uses in analyzing and solving problems from other disciplines of science. Finally, and most importantly, you will be able to articulate mathematical ideas verbally and in writing, using appropriate terminology.

### **Materials & Tools:**

- Primary Textbook: We'll mostly use the free HTML "book": [The Ordinary Differential Equations Project](#) by Thomas W. Judson. It is also available as a [pdf file](#), but the HTML version has interactive elements that are not available in the pdf version. We will cover most of Chapters 1-6.
- Supplementary Textbook: Differential Equations, Fourth Edition by Blanchard, Devaney and Hall, is available in Textbook Rental. While this is not the main text, it treats the topics in pretty much the same order and is a great source for additional examples.
- CoCalc is an online platform for using Sage, Python, LaTeX, etc. and will be used for all of the homework and projects and possibly other things. You need to sign up for an account using your UWL email address.

### **Homework and Exams**



- There are (tentatively) 16 homework assignments that will be completed in CoCalc.
- There are 3 projects that can be completed in groups of size at most 3. You can work alone if you like.
- There are about 26 “prep” assignments that require reading and completing a couple of problems that should take less than 60 minutes. The “prep” assignments can be completed by hand. The assignments will be available in Canvas (pdf files) and you can complete the problems on plain paper. You don’t need to print them out.
- There are 4 exams including the final.
  - Exam 1: Chapter 1, date TBA (about week 4 or 5)
  - Exam 2: Chapter 2 and 3.1-3.3 (shortly after Spring Break)
  - Exam 3: 3.4-3.7 and Chapter 4 (April, TBA)
  - Final Exam: Chapters 5 and 6 + cumulative portion, Thursday, May 14, 12:15-2:15pm.

## Grading Policies

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### Calculations

Your overall grade consists of the following assessments, arranged by type and value.

Assignments	Percent of Overall Grade
Homework Assignments	15%
Prep Assignments	10%
Projects	15%
3 Exams	15% each / 45% total
Final Exam	15%

**Late Assignments, Missed Exams:** Talk to me if you have extenuating circumstances, but otherwise no late homework and no makeup exams. If you’re ill or have an emergency you must contact me by email prior to the due date if possible.

**Attendance and Participation:** Attendance is up to you, but don’t expect me to help you makeup material without good reason. Participation in class activities may help you learn!

**Expectations for Graded Work:** I generally try and return assessments within 7 days. If I need more time I will let you know. Your graded coursework will be returned in compliance with FERPA regulations, such as in class, during my office hours, or via the course management system through which only you will have access to your grades.

### Grading Scale

Letter Grade	Percentage Equivalent
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A	At least 92%
AB	At least 88%
B	At least 82%
BC	At least 78%
C	At least 70%
D	At least 60%
F	Below 60%

## Student Course- and Faculty-Related Concerns, Complaints, and Grievances

### Informal Complaints:

If a student has a concern or a complaint about a faculty member or course, the general process for making **informal complaints** is outlined in steps 1-3 below. Students are welcome to bring a friend or a UWL staff member with them during the following steps. Students who report concerns/complaints/grievances, whether informally or formally, will be protected from **retaliation** and have the right to expect an **investigation** and the option to have regular updates on the investigation:

1. The student should speak directly to the **instructor**.
2. If the student is uncomfortable speaking with the instructor, or they are unsatisfied with the solution, they should go to the **chair** of the faculty member's home department.
3. If the student is uncomfortable speaking with the department chair, or the chair is the faculty member in question, or they are unsatisfied with the solution, the student should speak with their **college dean**.

**Academic Integrity & Misconduct:** Academic misconduct is a violation of the UWL Student Honor Code (<http://catalog.uwlax.edu/undergraduate/academicpolicies/studentconduct/>) and is unacceptable. I expect you to submit your own original work and participate in the course with integrity and high standards of academic honesty. When appropriate, cite original sources, following the style rules of our discipline. You may discuss homework problems with each other, but copied solutions will be awarded zero points and may result in a zero for the entire assignment.

PLEASE NOTE that whenever a grade penalty is imposed due to academic misconduct, the instructor is required to write a letter documenting the misconduct. **Copies are sent to the student, to the Office of Student Life (where the letter remains on file in the student's record), and to the Dean of the student's College.** Refer to <https://www.uwlax.edu/student-life/student-resources/student-handbook/> for a detailed definition of academic misconduct, and for possible sanctions and consequences. The Office of Student Life can also assist.

Plagiarism or cheating in any form may result in failure of the assignment or the entire course, and may include harsher sanctions. Refer to the Student Handbook #14.02

<https://www.uwlax.edu/student-life/student-resources/student-handbook/#tm-academic-misconduct--chapter-uws-14-> for a detailed definition of academic misconduct.



For helpful information on how to avoid plagiarism, go to “Avoiding Plagiarism” on the Murphy Library website (<http://libguides.uwlax.edu/plagiarism2>). You may also visit the Office of Student Life (<https://www.uwlax.edu/student-life/>) if you have questions about plagiarism or cheating incidents. Failure to understand what constitutes plagiarism or cheating is not a valid excuse for engaging in academic misconduct.

**Our Legal Obligations to You:** policies about sexual misconduct, religious accommodations, students with disabilities, and veterans and active military personnel may be found here <https://www.uwlax.edu/info/syllabus/>

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