

# DIFFERENTIAL EQUATIONS II

---

St. Olaf College • Math 330

Prof. Matthew Wright • Fall 2023

---

## Course Meetings

Tuesdays 11:45am–1:10pm and Thursdays 12:45–2:05pm in Regents 206

## Contact the Professor

If you have any questions or concerns about the course, email Prof. Wright at **wright5@stolaf.edu**, or visit office hours. Prof. Wright tries to respond quickly to emails from students during the week, but responses may take a bit longer on the weekends. Office hours are scheduled daily in RMS 405:

Mondays 1 – 2pm, Tuesdays 1:30 – 2:30pm, Wednesdays 11am – noon, Thursdays 10 – 11am, Fridays 9 – 10am

If the hours above don't work for you, send Prof. Wright an email to arrange a meeting at another time.

## Web Site

The course web site is:

**<http://math330.mlwright.org/>**

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

## Text

Our textbook is *Introduction to Partial Differential Equations* by Peter J. Olver.

Note that this text is available electronically via the St. Olaf Library web site. We will study roughly chapters 1 through 6, though we won't have time for every topic in these chapters. See the course web site for a tentative schedule.

## Course Objectives

1. Demonstrate understanding of analytical, qualitative, and numerical methods for studying differential equations.
2. Construct and interpret solutions to partial differential equations using separation of variables, Fourier series, finite differences, and generalized functions.
3. Develop skills of communicating mathematics in writing, orally, and visually.
4. Deepen understanding of mathematics as a human activity that combines abstract elegance with real-world utility, in which all people can find success.

## Deliverables and Policies

This course will require you to complete the following types of assignments.

1. **Reading Questions:** 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. You will read pages from the textbook and answer comprehension questions before coming to class.
2. **Homework:** A strong commitment to solving problems outside of the classroom is crucial for your success in this course. Homework consisting of problems from the textbook and supplemental problems will be assigned and collected weekly.

Collaboration with peers is encouraged on homework, but you must submit your own work and completely understand your solutions. Inappropriate “collaboration” includes online tutors, solution forums, artificial intelligence, any resource that does the thinking for you, and other resources not listed in the course materials. Remember, the goals of this course are to develop and demonstrate your own understanding of differential equations. You will not achieve these goals if you outsource your thinking to other experts (human or artificial). You will achieve these goals through time and effort spent solving probability problems.

Your solutions must be typed in LaTeX (this requirement will be phased in over the first several assignments). Communication of your quantitative reasoning is just as important as your final answer.

3. **Midterm Exams/Tutorials:** There will be two midterm exams, each requiring you to prepare a tutorial on a specified topic. You will present this tutorial in a format of your choice (e.g., written report, presentation, video, annotated Mathematica notebook).

Your tutorial will be evaluated (on a scale of **Exceptional**, **Meets Expectations**, **Revision Needed**, or **Not Assessable**) based on a list of clear specifications. Because these specifications set a high bar, you will receive an opportunity for feedback and revision.

You will be expected to abide by the honor code while working on the midterm tutorials. Collaboration is not permitted, but you may ask questions or seek feedback from the instructor at any point.

4. **Final Project:** You will work with a team of students on a final project on a topic of your choice involving partial differential equations. The project will result in a paper and a presentation. More details will be available later in the semester.

Presentations will take place in the final exam period (**Saturday, Dec. 16, 1:00–3:00pm**). *As you plan your holiday travel, make sure that you will be present for the final exam period for this course!*

## Final Grades

The letter grade you earn at the end of the semester will be determined by the criteria in the following table. To earn a particular letter grade, you must meet the requirements for that letter grade in all of the deliverable categories.

Course Grade	Reading Questions	Homework	Midterm Tutorials	Final Project
A	90%	90%	2E	E
B	80%	80%	1E, 1M	M
C	65%	65%	2M	M
D	50%	50%	1M, 1R	R

A *plus* grade will be assigned for exceeding the criteria of a given letter grade in at least two deliverable categories without meeting all of the requirements for the next higher letter grade. A *minus* grade will be assigned for almost meeting the requirements of a given letter grade (missing the requirement in one deliverable category).

## Computers and Software

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

## 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.

Homework sessions, staffed by the course teaching assistant, will occur weekly at a time to be announced.

Your classmates are a valuable resource. The professor encourages you to discuss course topics and homework problems with your classmates, as long as you turn in your own work—see the Deliverables and Policies section above.

Furthermore, the Academic Success Center offers tutoring, academic coaching, and other services – talk with Prof. Wright or email the Academic Success Center for more information. If you have any concern at all related to this course, please 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](http://wp.stolaf.edu/thebook/academic/integrity)).

## **Inclusivity and Access**

Prof. Wright is committed to 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 are feeling sick, please do not come to class—instead, email the professor. Face masks to prevent the spread of respiratory diseases are welcome in class. Please respect individuals who may choose to wear face masks.

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/](http://wp.stolaf.edu/academic-support/dac/).