MA 26600: Ordinary Differential Equations
Section 353 & 364— Spring 2024

Instructor Information

- **Name:** Ying Liang
- **Office:** MATH 403 (Office Hours: Wed 1:00 pm - 4:00 pm)
- **Email:** liang402@purdue.edu
- **Personal Webpage:** www.math.purdue.edu/~liang402

Course Information

- **Time:** Section 353: MWF   9:30 am - 10:20 am
-           Section 364: MWF 10:30 am - 11:20 am
- **Classroom:** PHYS 110
- Department Coursepage and Class Webpage

Course Description

Credit Hours: 3.00. First order equations, second and n th order linear equations, series solutions, solution by Laplace transform, systems of linear equations. It is preferable but not required to take MA 265 either first or concurrently. Not open to students with credit in MA 262, 272, 360, 361, or 366. Typically offered Fall Spring Summer.

Learning Resources

Textbook: Differential Equations and Boundary Value Problems, 6th edition, by Edwards, Penney, and Calvis.

Brightspace: The Brightspace course page will be a source of communication to you aside from class. There, you will find notes, supplemental studying material and some important announcements.

Exams

All examinations are close book and note.

Two Midterm Exams
EXAM 1 Wednesday, Feb 21, 6:30-7:30pm
EXAM 2 Tuesday, Apr 2, 6:30 -7:30 pm
More information will be announced closer to each exam, including the location.

Final Exam
There will be a two-hour comprehensive common final exam given during final exam week.

Homework

Online homework: There are 36 online homework assignments from MyLab Math that are accessed through Brightspace.   Quick Student Guide to MyLabMath

Handwritten homework: There are also some handwritten problems will be

collected electronically through Gradescope.

Submit PDF homework in Gradescope Details of homework can be found on the

schedule table.

Missed or Late Work

 Except in cases of University approved reasons, late homework will not be accepted. At the end of the semester, the 3 lowest online homework scores will be dropped. No handwritten scores will be dropped.

Grading Scale

Please check MA26600 course ground rules for the grading scale.

Attendance Policy

This course follows Purdue's academic regulations regarding attendance, which states that students are expected to be present for every meeting of the classes in which they are enrolled. When conflicts or absences can be anticipated, such as for many University-sponsored activities and religious observations, the student should inform the instructor of the situation as far in advance as possible. For unanticipated or emergency absences when advance notification to the instructor is not possible, the student should contact the instructor as soon as possible by email or phone. For cases that fall under the University's excused absence regulations, the student or the student's representative should contact or go to the Office of the Dean of Students (ODOS) website to complete appropriate forms for instructor notification. Under academic regulations, excused absences may be granted byODOS for cases of grief/bereavement, military service, jury duty, parenting leave, or emergent medical care.

Learning outcomes

Upon successful completion of this course, students will be able to:

- Use differential equations to model mechanical and electrical systems.
- Solve basic first order differential equations and initial-value problems.
- Understand the conditions required for a first order differential equation to have a unique solution.
- Find the equilibrium points of an autonomous differential equation and determine their stability.
- Solve homogeneous second order linear differential equations and initial value problems with constant coefficients.
- Use the methods of Undetermined Coefficients and Variation of Parameters to find solutions to non-homogeneous second order linear differential equations and initial value problems with constant coefficients.
- Use Laplace Transforms to solve basic initial value problems.
- Determine the mathematical and practical effect of step functions and impulse functions on second order linear initial value problems with constant coefficients.
- Use Power Series to solve second order linear differential equations.
- Write a higher order differential equation as a system of first order differential equations.
- Solve homogeneous systems of first order linear differential equations.
- Conduct qualitative analysis of 2 by 2 systems of linear first order differential equations with constant coefficients.

Academic Integrity

Purdue prohibits "dishonesty in connection with any University activity. Cheating, plagiarism, or knowingly furnishing false information to the University are examples of dishonesty." [Part 5, Section III- -B- -2- -a, Student Regulations] Furthermore, the University Senate has stipulated that "the commitment of acts of cheating, lying, and deceit in any of their diverse forms (such as the use of substitutes for taking examinations, the use of illegal cribs, plagiarism, and copying during examinations) is dishonest and must not be tolerated. Moreover, knowingly to aid and abet, directly or indirectly, other parties in committing dishonest acts is in itself dishonest." [University Senate Document 72- -18, December 15, 1972] Please refer to Purdue's student guide for academic integrity (https://www.purdue.edu/odos/osrr/academic-integrity/index.html).

Students with disabilities

Purdue University strives to make learning experiences accessible to all participants. If you anticipate or experience physical or academic barriers based on disability, you are welcome to let me know so that we can discuss options. You are also encouraged to contact the Disability Resource Center at: drc@purdue.edu or by phone at 765-494-1247.

If you have been certified by the Disability Resource Center (DRC) as eligible for accommodations, you should contact your instructor to discuss your accommodations as soon as possible. Here are instructions for sending your Course Accessibility Letter to your instructor: https://www.purdue.edu/drc/students/course-accessibility-letter.php

Nondiscrimination Statement

Purdue University is committed to maintaining a community which recognizes and values the inherent worth and dignity of every person; fosters tolerance, sensitivity, understanding, and mutual respect among its members; and encourages each individual to strive to reach his or her potential. In pursuit of its goal of academic excellence, the University seeks to develop and nurture diversity. The University believes that diversity among its many members strengthens the institution, stimulates creativity, promotes the exchange of ideas, and enriches campus life. A hyperlink to Purdue's full Nondiscrimination Policy Statement is included in our course Brightspace under University Policies.

Emergency Preparation

In the event of a major campus emergency, course requirements, deadlines and grading percentages are subject to changes that may be necessitated by a revised semester calendar or other circumstances beyond the instructor's control. Relevant changes to this course will be posted onto the course website or can be obtained by contacting the instructors or TAs via email or phone. You are expected to read your @purdue.edu email on a frequent basis.