

MA26200 SPRING 2023 COURSE SYLLABUS

THIS DOCUMENT CONTAINS INFORMATION COMMON TO ALL MA26200 SECTIONS
YOUR INSTRUCTOR MAY HAVE ADDITIONAL INFORMATION ABOUT THEIR PARTICULAR
SECTIONS. CHECK THE BRIGHTSPACE PAGE FOR YOUR LECTURE.

Course Information

1. MA 26200 - Linear Algebra and Differential Equations
2. Credit Hours: 4.00. Linear algebra, elements of differential equations. Not open to students with credit in MA 26500 or 26600. 4.00 Credit hours.
3. Prerequisites: Undergraduate level MA 26100 Minimum Grade of C- or Undergraduate level MA 18200 Minimum Grade of C- or Undergraduate level MA 17400 Minimum Grade of C- or Undergraduate level MA 27100 Minimum Grade of C- or Undergraduate level MA 27101 Minimum Grade of C- or Undergraduate level MATH 26100 Minimum Grade of C- or Undergraduate level MA 17200 Minimum Grade of C- or Undergraduate level MA 26300 Minimum Grade of C-
4. Instructors: J. Brown, G. Caviglia, Y. Chen, C. Hokaj, P. Li, R. Polak, J. Xia, S-K Yeung.
5. All lectures and recitations will be in person. Some lectures may be BoilerCast for the convenience of the students, but there will be no purely online instruction in MA262 during the Spring 2023 semester.
6. There will be different meeting times for lectures and their linked recitations. Consult the schedule for times and location.
7. Course Brightspace page. There are different Brightspace pages for lectures and linked recitations.

Instructors Contact Information

- [Johnny Brown](#)
- [Giulio Caviglia](#)
- [Ying Chen](#)
- [C. Hokaj](#)
- [Peijun Li](#)
- [R. Polak](#)
- [Jianlin Xia](#)
- [Sai Kee Yeung](#)

Learning Resources, Technology & Texts

- Required text: **Differential Equations & Linear Algebra**, by Edwards, Penney & Calvis, 4th ed.
- MyLab is required. Students will use it to do online homework.
- An electronic version of the textbook comes with MyLab. A hard copy of the textbook is not required.
- Students can only access MyLab through their recitation [Brightspace](#) page. Their lecture page is not linked with MyLab.
- We recommend that students buy a MyLab access code which they can access from their recitation Brightspace page. This insures they are buying the correct code.
- Students get a two-week grace period at the beginning of the semester. After the grace period expires, they must purchase access to MyLab.
- MyLab access is based on the textbook. Students who bought MyLab for Calculus will have to purchase it for MA262, even if their Calculus book code has not expired.
- The MA262 textbook is not used in any other math class at Purdue. Students only need to purchase access for one semester.
- Students can find [qualified tutors](#) through the Mathematics Department Home page. Your instructors do not select those tutors.

Learning Outcomes

- Learn the basic properties of matrices.
- Learn how to solve systems of linear equations.
- Learn the basic properties of determinants.
- Learn about linear independence, spanning sets and bases in the context of vector spaces.
- Learn the statement of the theorem of existence and uniqueness of solutions of first order differential equations and standard methods of solving linear, and some special non-linear, differential equations of first order.
- Learn the standard methods of solving linear differential equations of constant coefficients of arbitrary order.
- Learn basic numerical methods for solving differential equations.
- Learn about the applications of differential equations to mechanical, physical, and biological models.
- Learn the theory of eigenvalues and eigenvectors and how it applies to systems of differential equations.

Assignments

Assignments	Due	Points
MyLab Math Online Homework	Throughout the semester	100
Quizzes during	Throughout the semester during Recitation	100
Two evening midterm exams	February 21 and April 4	200
FINAL EXAM	Set by University	200
		Total = 600 points

Online Homework

- There are 36 online homework assignments. Students do all homework using MyLab.
- TAs will assign online homework and their due dates in MyLab. Different sections may have different due dates for the same assignments.
- The lowest **three** homework scores will be dropped.
- Partially done homework will be graded accordingly.
- Students will get a score of **0** on homework they did not attempt to do.
- Students who want to appeal a homework score due to possible computer error should contact their TA.

Quizzes

- TAs will prepare and give weekly quizzes (except during the first week, exam weeks and Quiet Period) during recitation according to what has been covered in lecture and recitation.
- Students who are entitled to special accommodations will get the appropriate time and conditions for quizzes. They need to speak with their TA to make arrangements.
- TAs will manually grade the quizzes.
- The lowest **three** quiz scores will be dropped.

Exams

- There will be two multiple-choice evening midterm exams and one multiple-choice final exam, all in person.
- **Exam 1:** Tuesday, February 21 (6:30pm to 7:30pm) covering **Lessons 1 to 15.**
- **Exam 2:** Tuesday, April 4 (6:30pm to 7:30pm) covering **Lessons 16 to 27.**
- Exams will be computer graded.
- Students who are entitled to special accommodations will get the appropriate time and conditions for exams from the DRC. See more details in section Accessibility below.
- Final Exam (date TBA). The comprehensive final exam will cover Lessons 1 to 36.
- No exam grades will be dropped.

Grading Scale

A+	570 — 600
A	540 — 569
A-	510 — 539
B+	480 — 509
B	450 — 479
B-	420 — 449
C+	390 — 419
C	360 — 389
C-	330 — 359
D+	300 — 329
D	270 — 299
	No D- grade
F	0 — 269

These cut-offs may be lowered at the end of the semester, but they will not be raised. Borderline cases will be considered on a case-by-case basis.

Course Schedule

The following lectures will be covered on different days by different instructors. Your instructor will give you more precise information.

TEXTBOOK: *Differential Equations & Linear Algebra*, by Edwards, Penney, and Calvis, 4th edition.

Online homework problems and due dates are listed in MyLab Math.

- Sec 1.1 - Differential Equations and Mathematical Models
- Sec 1.2 - Integrals as General and Particular Solutions
- Sec 1.3 - Slope Fields and Solution Curves
- Sec 1.4 - Separable Equations and Applications
- Sec 1.5 - Linear First-Order Equations, Part I
- Sec 1.5 - Linear First-Order Equations, Part II
- Sec 1.6 - Substitution Methods and Exact Equations, Part I
- Sec 1.6 - Substitution Methods and Exact Equations, Part II
- Sec 2.1 - Population Models
- Sec 2.2 - Equilibrium Solutions and Stability
- Sec 2.4 - Numerical Approximation: Euler's Method
- Sec 3.1 - Introduction to Linear Systems
- Sec 3.2 - Matrices and Gaussian Elimination
- Sec 3.3 - Reduced Row-Echelon Matrices
- Sec 3.4 - Matrix Operations
- Sec 3.5 - Inverse of Matrices
- Sec 3.6 - Determinants
- Sec 4.1 - The Vector Space \mathbf{R}^3
- Sec 4.2 - The Vector Space \mathbf{R}^n and Subspaces
- Sec 4.3 - Linear Combinations and Independence of Vectors
- Sec 4.4 - Bases and Dimension for Vector Spaces
- Sec 4.5 - Row and Column Spaces
- Sec 5.1 - Introduction: Second-Order Linear Equations
- Sec 5.2 - General Solutions of Linear Equations
- Sec 5.3 - Homogeneous Equations with Constant Coefficients, Part I
- Sec 5.3 - Homogeneous Equations with Constant Coefficients, Part II
- Sec 5.4 - Mechanical Vibrations
- Sec 5.5 - Non-homogeneous Equations and Undetermined Coefficients, Part I
- Sec 5.5 - Non-homogeneous Equations and Variation of Parameters, Part II
- Sec 6.1 - Introduction to Eigenvalues
- Sec 7.1 - First-Order Systems and Applications
- Sec 7.2 - Matrices and Linear Systems
- Sec 7.3 - The Eigenvalue Method for Linear Systems
- Sec 7.6 - Multiple Eigenvalue Solutions
- Sec 7.4 - A Gallery of Solutions Curves of Linear Systems, Part I
- Sec 7.4 - A Gallery of Solutions Curves of Linear Systems, Part II

Grade check during the semester

MyLab gives the percentage of the total number of points students have obtained at any given time during of the semester, compared to what they have completed. They can then multiply that percentage by 600 to see where they would be at the end of the semester given the above criteria, provided they keep performing at the same level. At the end of the semester the percentages tend to go up slightly after the lowest quiz and homework scores are dropped. Of course, that only helps those who have done all the assignments. Students who complete all assignments will have very accurate information during the semester. On the other hand, students who have not completed many assignments may see a higher partial grade than what they actually have. In case of doubt, check with your TA.

Attendance

1. Anticipated absences: 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.
2. For other absences such as Grief/Bereavement, Military Service, Jury Duty and Parenting Leave, please consult [Purdue's attendance policy](#)
3. **Medically Excused Absence Policy for Students (MEAPS).** Students will be excused, and no penalty will be applied to a student's absence for situations involving hospitalization, emergency department or urgent care visit and be given the opportunity to make up coursework as defined in the course syllabus. Students experiencing hospitalization, emergency department or urgent care visits can provide documentation to ODOS who will then assess the student's request for a Medical Excused Absence, and issue notification of the start and end of the absence to the student's instructors. The student should then follow up with the instructor to seek arrangements as per the policy. Consult [Purdue's attendance policy](#) for more details.

Important Dates

Students should consult the [Academic Calendar](#) to find information about important dates, such as the last day to withdraw from the course, etc. Important dates include:

1. Classes begin Monday, January 9.
2. No classes MLK Day, Monday, January 16.
3. Last date to cancel course with **W** or **WF**, Monday, February 6 (5pm).
4. Midterm Exam 1: Tuesday, February 21, 6:30pm to 7:30pm.
5. Spring Break: Monday-Sunday, March 13-19.
6. Midterm Exam 2: Tuesday, April 4, 6:30pm to 7:30pm.
7. Quiet Period: Monday - Saturday, April 24 – 28.
8. Classes end Saturday, April 29.
9. Final Exam Week: Monday - Saturday, May 1 – 6.
10. Grades due by 5 p.m. Tuesday, May 9.

Academic Guidance in the Event Students are Quarantined/Isolated

If you become quarantined or isolated at any point in time during the semester, in addition to support from the Protect Purdue Health Center, you will also have access to an Academic Case Manager who can provide you academic support during this time. Your Academic Case Manager can be reached at acmg@purdue.edu and will provide you with general guidelines/resources around communicating with your instructors, be available for academic support, and offer suggestions for how to be successful when learning remotely. Importantly, if you find yourself too sick to progress in the course, notify your academic case manager and notify your professor and TA via email or Brightspace. They will make arrangements based on your particular situation. The Office of the Dean of Students odos@purdue.edu is also available to support you should this situation occur.

Academic Integrity

All homework will be online:

- The online homework will be done using MyLab and students can access it through Brightspace. TAs will assign the online homework.
- Students are encouraged to discuss homework problems with other students, faculty and TAs. They may consult their textbook and use calculators while they do their homework. With the exception of online graphing sites, dfield, pplane, and Euler's Method, no other online sources are to be used. Chegg and similar sites are not to be used at all for any purpose in this course. Using outside online sources generally does not help students learn the material for this course or them performing well on the exams.

There will be one quiz per week (except for the first week, exam weeks, and Quiet Period) during recitation.

- Quizzes will be hand graded by the TA.
- Students are not allowed to discuss quiz problems with other students, or anyone else, during exams. If they have a question, they can only ask their TA.
- Students are not allowed to use calculators during quizzes.
- Students are not allowed to use any electronic devices during quizzes.
- Students caught cheating on quizzes will get a zero on the quiz.

The two midterms and the final exam will be in person:

- The exams are multiple choice and will be computer graded.
- Students are not allowed to discuss exam problems with other students, or anyone else, during exams. If they have a question, they can only ask their professor or their TA.
- Students are not allowed to use calculators during exams.
- Students are not allowed to use any electronic devices during exams.
- Students caught cheating on an exam will get a zero on the exam and may get F in the course.

All cases of cheating will be reported to the Office of the Dean of Students. Students are encouraged to report to their professor or TA if they have knowledge that other students have cheated on exams or quizzes, and the more evidence they can present the better. Students can also report issues of academic integrity that they observe anonymously, through the OSRR by calling 765-494-8778 or emailing integrity@purdue.edu.

Accessibility

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 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 TA to discuss your testing accommodations as soon as possible. For all in-class accommodations please contact your TA and your professor as soon as possible. You should make sure you send your Course Accessibility Letter to your TA and to the professor. Instructions for how to do this can be found at: <https://www.purdue.edu/drc/students/course-accessibility-letter.php>

Quiet Period

In April 2022, the University Senate updated the regulations on the week prior to final exams week (Quiet Period). The main change is that during Quiet Period, in addition to exams and quizzes, one can no longer assign or collect any assessments, including homework, contributing to the final grade. (There is an exception for courses without comprehensive final exam.) Here are more details on this policy

<https://catalog.purdue.edu/content.php?catoid=15&navoid=18634#c-quiet-period>

Course and Instructor Evaluations

During the last two weeks of the semester, you will be provided an opportunity to evaluate this course and your instructor(s) through online course evaluations. On Monday of the 14th week of classes, you will receive an official email from evaluation administrators with a link to the online site. You will have two weeks to complete this evaluation. Your participation in this evaluation is an integral part of this course. Your feedback is vital to improving education at Purdue University. We strongly urge you to participate in the evaluation system.

Classroom Guidance Regarding Protect Purdue

The [Protect Purdue Plan](#), which includes the [Protect Purdue Pledge](#), is campus policy and as such all members of the Purdue community must comply with the required health and safety guidelines. Required behaviors in this class include: staying home and contacting the Protect Purdue Health Center (496-INFO) if you feel ill or know you have been exposed to the virus, wearing a mask [in classrooms and campus building](#), at all times (e.g., no eating/drinking in the classroom), disinfecting desk/workspace prior to and after use, maintaining proper social distancing with peers and instructors (including when entering/exiting classrooms), refraining from moving furniture, avoiding shared use of personal items, maintaining robust hygiene (e.g., handwashing, disposal of tissues) prior to, during and after class, and following all safety directions from the instructor.

Students who are not engaging in these behaviors (e.g., wearing a mask) will be offered the opportunity to comply. If non-compliance continues, possible results include instructors asking the student to leave class and instructors dismissing the whole class. Students who do not comply with the required health behaviors are violating the University Code of Conduct and will be reported to the Dean of Students Office with sanctions ranging from educational requirements to dismissal from the university.

Any student who has substantial reason to believe that another person in a campus room (e.g., classroom) is threatening the safety of others by not complying (e.g., not wearing a mask) may leave the room without consequence. The student is encouraged to report the behavior to and discuss next steps with their instructor. Students also have the option of reporting the behavior to the [Office of the Student Rights and Responsibilities](#). See also [Purdue University Bill of Student Rights](#).

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 own 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. More details are available on our course Brightspace table of contents, under University Policies.

Mental Health Statement

If you find yourself beginning to feel some stress, anxiety and/or feeling slightly overwhelmed, try [WellTrack](#). Sign in and find information and tools at your fingertips, available to you at any time.

If you need support and information about options and resources, please contact or see the [Office of the Dean of Students](#). Call 765-494-1747. Hours of operation are M-F, 8 am- 5 pm.

If you find yourself struggling to find a healthy balance between academics, social life, stress, etc. sign up for free one-on-one virtual or in-person sessions with a [Purdue Wellness Coach at RecWell](#). Student coaches can help you navigate through barriers and challenges toward your goals throughout the semester. Sign up is completely free and can be done on BoilerConnect. If you have any questions, please contact Purdue Wellness at evans240@purdue.edu.

If you're struggling and need mental health services: Purdue University is committed to advancing the mental health and well-being of its students. If you or someone you know is feeling overwhelmed, depressed, and/or in need of mental health support, services are available. For help, such individuals should contact [Counseling and Psychological Services \(CAPS\)](#) at 765-494-6995 during and after hours, on weekends and holidays, or by going to the CAPS office of the second floor of the Purdue University Student Health Center (PUSH) during business hours.

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.

Related Considerations and Guidelines

1. If you experience any symptoms of COVID-19 or suspect you may have been exposed to someone with COVID-19 stay home and call the Protect Purdue Health Center at 765-496-INFO.
2. Keep your cell phone on to receive a Purdue ALERT text message.
3. Emergency preparedness is your personal responsibility. Purdue University is actively preparing for natural disasters or human-caused incidents with the ultimate goal of maintaining a safe and secure campus. Let's review the following procedure
 - For any emergency text or call 911.
 - There are more than 300 Emergency Telephones (aka blue lights) throughout campus that connect directly to the Purdue Police Department (PUPD). If you feel threatened or need help, push the button and you will be connected right away.
 - If we hear a fire alarm, we will immediately evacuate the building. Do not use the elevator. Go over the evacuation route (see specific Building Emergency Plan).
 - If we are notified of a Shelter in Place requirement for a tornado warning we will stop classroom or research activities and shelter in the lowest level of this building away from windows and doors.
 - If we are notified of a Shelter in Place requirement for a hazardous materials release, we will shelter in our classroom shutting any open doors and windows.

- If we are notified of a Shelter in Place requirement for an active threat such as a shooting, we will shelter in a room that is securable preferably without windows.
- **(NOTE: Each building will have different evacuation & shelter locations. The specific Building Emergency Plan will provide specific locations and procedures)**