APMA 2130: Ordinary Differential Equations
Course Policies and Procedures

Instructor

Professor Farzad S. Dizaji
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Office: Albert Small Building, Room 112A
Office Hours: I will be holding office hours in-person this semester. Office Hours: Mon/Wed 11-12:00am, Tu 12:30-1:30pm

Class Meeting Time

Section 001:
MWF 9:00-9:50 am, in person in Olsson Hall 009
R 8:30-9:20 am, in person in Mechanical Engineering 205

Section 004:
MWF 10:00-10:50 am, in person in Olsson Hall 009
R 8:30-9:20 am, in person in Mechanical Engineering 205

Catalog Description

4 Units. First order differential equations, second order and higher order linear differential equations, undetermined coefficients, variation of parameters, Laplace transforms, linear systems of first order differential equations and the associated matrix theory, numerical methods. Applications. Prerequisite: APMA 2120 or equivalent.

Course Learning Objectives

Upon completion of this course, you will be able to:

1. Understand the basic concepts in differential equations such as: existence and uniqueness of solutions, non-linearity, continuous dependence of solutions on the initial conditions and the parameters of the equation, long-term behavior, and stability.
2. Master the mathematical techniques required to solve ordinary differential equations.
3. Pose physical problems and write them in the form of mathematical equations.
4. Determine which methods are suitable for solving equations arising from various applications and then use those methods to solve the equations.
5. Evaluate and interpret the mathematical results obtained in the context of the physical process being studied and the model used.

Course Textbook

This class won't be following a specific textbook. However, an acceptable reference textbook is *Ordinary Differential Equations* by Boyce, or *Elementary Differential Equations* by Boyce & DiPrima.

Required Materials

The following materials are required **for each class meeting**:

1. Paper or IPad/Surface for taking notes and working problems
2. Scientific calculator (Note: You will NOT be able to use a calculator on many assignments and during our exams)
3. Phone, laptop, or other device with internet **ONLY** for using applications in class worksheets [1]
4. A printer and device with scanning capability (eg. phone app with scanning app), digital tablet, or some other means of generating **neatly** presented PDF documents. You must be able to scan multiple pages as a single pdf file.
5. Gradescope: If you don't already have an account, create an account at Gradescope.com using your UVA email address. There is no charge.

Grading

Your final grade will be calculated according to the following weighting factors:

Midterm Exams (4)	40%
Worksheets (Pre-Class & In-Class)	20%
Written Homework	15%
Final Exam	25%

Letter grades will be assigned according to the following categories:

[97, 100]: A+	[93, 97): A	[90, 93): A-
[87, 90): B+	[83, 87): B	[80, 83): B-
[77, 80): C+	[73, 77): C	[70, 73): C-
[67, 70): D+	[63, 67): D	[60, 63): D-
$<$60: F		

I/we reserve the right to give a higher letter grade than that indicated above (based on perceived effort, improvement throughout the semester, and similar factors), but I/we will not reduce the grade you have earned. **All sections will use the same cutoff categories at the end of the semester for determining the letter grades.**

APMA 2130 ALL Canvas Site

The ALL site for this course is to be checked regularly for announcements

[1] Please review the section "Use of Technology in Class"

Worksheets

Pre-Class Worksheets (PCW):
Before each lesson, you'll be assigned a pre-class worksheet that will help you review the relevant topics for the next class, and also give you a preview of what we'll be covering during class. **For these assignments, you can discuss with your classmates, but no outside resources for questions that are not review questions.**. A large part of the point of these worksheets is for you to think about the new material on your own instead of just "passively" learning it from some other source. They will be graded for effort and completeness. To earn a full score, your neatly presented work must demonstrate careful consideration of each problem, as well as complete and thorough responses to **ALL** problems.

In-Class Worksheets(ICW):
During each class meeting, you will be asked to work with an assigned partner to complete an in-class worksheet. Learning through completing worksheets is intended to give you a more hands-on learning experience than a traditional lecture can provide on its own. These worksheets will be completed in assigned pairs, which will change weekly. Working in pairs will help give you practice with discussing your thought process, which is a skill you'll need as an engineer. Only one ICW per pair is submitted (except on recap days, then each persons submits), everyone works on their own ICW and the one who submits for the pair tags their partner on Gradescope. They will be graded for accuracy except for recap days where the worksheets are longer.

For PCW and ICW we ask that you not search the internet, including YouTube or any AI sources; to do so is a violation of the honor code. Please consult with your professor if you have questions or concerns.
All worksheets are to be submitted via the APMA 2130 / All Gradescope page. Unless otherwise specified on the Gradescope assignment, **all pre-class worksheets will be due at 8am** on their corresponding due date, and **all in-class worksheets will be due at 5pm on their corresponding due date. The lowest 8 worksheet scores (either pre-class or in-class) will be dropped at the end of the semester when calculating your final grade.** As such, **no late worksheets will be accepted**.

Exams

There are four midterm exams and a final exam scheduled for this course. Problems on the tests will consist of some basic computation questions as well as some more conceptual questions. **Midterm exams will be offered during our 50 minute class**. The **tentative** scheduled dates for these exams are:

Exam #1: Monday, February 3
Exam #2: Monday, February 23
Exam #3: Wednesday, March 18
Exam #4: Monday, April 13

Final Exam: Tuesday, May 6, 7-10 pm

Please note that this is a coordinated class; therefore, **no exams are given early** and the date and time of the final exam are the same for all sections and do not depend on what time your class meets.

Absent on Exam days

In order to maintain fairness to all students in the course, **no exams are given early**, all professors for APMA 2130 will be unreceptive to requests for rescheduling red ANY exam (midterm or final) except in the cases of official, university-recognized excused absences. In that case, if you know in advance that you will miss a mid-term exam for a university-approved function, it is your responsibility to provide documentation of this absence and to make alternate arrangements with your professor **at least 7 days before your departure**. If you fail to do so, you may (at our discretion) forfeit the right to take the exam.
The details of when, how, and if any makeup exams will be administered will be left to the discretion of the instructor, however **please anticipate an 8am testing time and possibly a different exam than the rest of the class.**

Written Homework

Each week, there will be assigned a written homework for you to complete on your own outside of class time. These assignments will often include "exploration" questions that ask you to do problems that we haven't directly covered in class. You may use your class notes and anything posted to Canvas to help you complete written assignments, and other than the fact that they have a due-date, there is no time constraint on them. You **may not use any outside resources (e.g. internet resources, textbooks, etc) with out risking violating the honor code**. Written homework assignments are meant to prepare you to do the type of thinking and problem solving you'll sometimes have to do on tests. Please review the Honor Code section of the syllabus for further details regarding collaboration with students currently enrolled in this course. You must list the name(s) of any students you consulted with on your submitted written HW assignment.

Each Written HW assignment will have a free 12 hour grace period. After that time, they will not be accepted.

Homework is to be submitted via the APMA 2130 / All Gradescope page.

Communication

I will on occasion need to communicate important information about the class to all students. In those cases, I will send an e-mail to the class mailing list, which will be delivered to your campus e-mail address. It is your responsibility to check this e-mail account regularly. It is also your responsibility to check **ALL Canvas** and our section Canvas daily for any announcements, adjustments to the schedule, etc.

Honor Code and Authorized Aid

"On my honor as a student, I have neither given nor received unauthorized aid on this assignment."

We take the Honor Code seriously. **Any honor violation will result in a "0" on that graded event and a reduction of a letter grade for the course.**
Please read this description of authorized aid carefully.
For pre-class worksheets, in-class worksheets, and written homework, students may consult with other students currently enrolled in this course or with faculty and TAs. Consulting means discussing the

problem in general or about some specific point, but it does not mean showing each other how to do the entire problem. Students working in an authorized fashion will not have identical answers to questions. Students may never copy another's work nor use the same file on a computer assignment. You must list all collaborators on each assignment. Unless other arrangements have been made ahead of time, you must be present (in person) to receive credit for classroom work. Materials provided for this course are for your use for this course only and not to be shared with anyone outside of the course. **It is also a violation of the honor code to use any materials from a previous semester**. The Honor Pledge (included above) must be written out and signed on each assignment. Additional notes regarding authorized aid can be found below:

- You may give and receive assistance with homework, but your submitted answers should reflect your own work.
- The questions on pre-class worksheets are to be completed without consulting books or the internet, unless they are review questions. It's OK to talk to your peers in this class about these questions, but your submitted answers should reflect your own work.
- In-class worksheets work will be collaborative. Unless other arrangements have been made ahead of time, you must be present (in person) to receive credit for classroom work.
- For written homework, you may use anything posted to our Canvas page as well as your class notes. Other resources are not allowed.
- For each test, you will be provided a formula sheet, but no other resources (including a calculator) are allowed.

Online Gradebook in ALL Canvas

All grades will be recorded online using **ALL Canvas**. It is your responsibility to review these grades regularly. Any inaccuracies must be reported to me **within two weeks of the assignment due date or exam date**.

Classroom Behavior

I expect you to demonstrate respectful behavior to everyone in the classroom at all times. This includes (but is not limited to) ensuring cell phones are silenced, electronic devices are only used for class-related purposes, and conversations are limited to the topic at hand. Moreover, we will hopefully have many interesting discussions as a class throughout the semester. I encourage **everyone** to participate in these discussions, particularly when you have a different opinion to offer. In fact, the most exciting conversations often arise when we have disagreement. However, to have these fruitful discussions, opinions must be shared in a respectful manner. Showing disrespect to myself or your colleagues **in any capacity** will not be tolerated.

Use of Technology in Class

In addition to the class Zoom session (with prior approval), this is the **ONLY** reason you should have any electronic devices (other than a scientific calculator) out during class. Furthermore, you are expected to **ONLY** use whatever device you choose for this application.

Attendance Policy

I expect you to attend all classes and come prepared for each lecture. This means arriving with any assigned reading and pre-class worksheets completed and with the required materials listed on the second page of this syllabus. To maintain fairness to all students, I will not distinguish between unexcused and excused absences on a case-by-case basis. The **only** absences that will be considered excused are for official, university-recognized reasons and those related to illness or extenuating circumstances. At my discretion, you may be required to provide documentation for such absences. If you miss class with an unexcused absence, you will receive a score of zero on that day's in-class worksheet. **Coming to class and actively working in class are key components, we highly encourage you to attend and participate. We also offer tailored attention to what ever questions you have during each class. We hope to make your time in class well spent and fruitful.**

If you are ill and need to miss class, you must inform me via e-mail **prior to the start of class**. Likewise, athletes, musicians and others who will need to miss class for university sanctioned activities must also provide documentation and notify me via e-mail **as soon as you find out you will miss class** for an absence to be excused. If you miss class with an excused absence, it is your responsibility to turn in any assignments on time or by the agreed upon adjusted due date.

Missing class for any other reason will be considered unexcused. You will not receive credit for that day's in-class worksheet.

Inclusion

Successful organizations thrive when made up of individuals who feel welcome to voice their unique opinions, ideas, and experiences. Likewise, our technical skills benefit from the influence of those with different perspectives. To that end, we will strive to establish a good rapport with one another. Our classroom should be welcoming and respectful, a venue in which we recognize the value of each other's points of view and build up our colleagues by sharing thoughtful commentary on their work regardless of their backgrounds, their identities, and their frames of mind or our own.

Class Cancellation Policy

Notifications of class cancellations will be made through Canvas with as much advance notice as possible. It will be both posted on Canvas and sent to your UVA e-mail address. If you don't check your UVA e-mail account regularly or have it set-up to be forwarded to your preferred e-mail account, you may not get the message. Please check BOTH Canvas and your UVA e-mail (or the e-mail address it forwards to) before coming to class.

Accommodations for Disabilities and Learning Needs

It is my goal to create a learning experience that is as accessible as possible. If you anticipate any issues related to the format, materials, or requirements of this course, please meet with me outside of class so we can explore potential options. Students with disabilities may also wish to work with the Student Disability Access Center (SDAC) to discuss a range of options to removing barriers in this course, including official accommodations. We are fortunate to have an SDAC advisor, Courtney MacMasters, physically located in Engineering. You may email her at cmacmasters@virginia.edu to schedule an appointment. For

general questions please visit the SDAC website: sdac.studenthealth.virginia.edu. If you have already been approved for accommodations through SDAC, please send me your accommodation letter and meet with me so we can develop an implementation plan together.

Religious Accommodations

It is the University's long-standing policy and practice to reasonably accommodate students so that they do not experience an adverse academic consequence when sincerely held religious beliefs or observances conflict with academic requirements.

Students who wish to request academic accommodation for a religious observance should submit their request in writing directly to me by email as far in advance as possible. Students and instructors who have questions or concerns about academic accommodations for religious observance or religious beliefs may contact the University's Office for Equal Opportunity and Civil Rights (EOCR) at UVAEOCR@virginia.edu or 434-924-3200.

Accommodations do not relieve you of the responsibility for completion of any part of the coursework missed as the result of a religious observance.

Harassment, Discrimination, and Interpersonal Violence

The University of Virginia is dedicated to providing a safe and equitable learning environment for all students. If you or someone you know has been affected by power-based personal violence, more information can be found on the UVA Sexual Violence website that describes reporting options and resources available - www.virginia.edu/sexualviolence.

The same resources and options for individuals who experience sexual misconduct are available for discrimination, harassment, and retaliation. UVA prohibits discrimination and harassment based on age, color, disability, family medical or genetic information, gender identity or expression, marital status, military status, national or ethnic origin, political affiliation, pregnancy (including childbirth and related conditions), race, religion, sex, sexual orientation, or veteran status. UVA policy also prohibits retaliation for reporting such behavior.

If you witness or are aware of someone who has experienced prohibited conduct, you are encouraged to submit a report to Just Report It (justreportit.virginia.edu) or contact EOCR, the office of Equal Opportunity and Civil Rights.

If you would prefer to disclose such conduct to a confidential resource where what you share is not reported to the University, you can turn to Counseling & Psychological Services ("CAPS") and Women's Center Counseling Staff and Confidential Advocates (for students of all genders).

As your professor and as a person, know that I care about you and your well-being and stand ready to provide support and resources as I can. As a faculty member, I am a responsible employee, which means that I am required by University policy and by federal law to report certain kinds of conduct that you report to me to the University's Title IX Coordinator. The Title IX Coordinator's job is to ensure that the reporting student receives the resources and support that they need, while also determining whether further action is necessary to ensure survivor safety and the safety of the University community.

Course Schedule

Please review the course schedule distributed on the first day of class and posted on ALL Canvas to find daily topics and assignment schedules. This might be adjusted with as much notice as possible.