Math 256 Syllabus

Fall 2021

Instructor Information

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Pronouns: he, him, his

Office Hours:
Mon, Wed 5:30-6:00 pm in our Zoom Classroom
Sat 11 am - 1 pm in METL Zoom
Sun 3-5 pm in METL Zoom
by appointment in Zoom or by phone

Course Information

Class Time: Mon & Wed 6:00-8:20 pm
Final: !! Mon, December 13, 6:00-8:00 pm !!
Location: our Zoom Classroom

Course: MTH 256
CRN: 40584
Credits: 5

Resources For The World We Live In

First and foremost, COVID-19 is continuing to affect all of our lives in so many ways. I'll do my best to accommodate your learning needs this term.

Here is a resource list with information about childcare, work opportunities, unemployment benefits, food resources, health resources, and more that may help you navigate changes in your life this quarter. ASPCC student leadership compiled the list with your needs in mind.

The coronavirus has also amplified many of the inequities people of color and poor people are experiencing every day, leading to more deaths every day. I hope that many of us are engaged in protesting those inequities in whatever we we can and work toward systemic change that will have lasting impact.

If you are affected in any way by the current and daily challenges, please reach out to me so I can support you in finishing this class successfully and continuing your educational journey.

Tutoring

Free tutoring is available to all PCC students.

- You can access **Online Tutoring** via http://www.pcc.edu/tutoring/online Click on the general schedule to see the schedule for math tutoring.
- PCC is also offering Campus-based Virtual Tutoring! This will allow you to see familiar faces from the campus-based tutoring centers via both virtual appointments and drop-in virtual tutoring. Please visit the PCC Tutoring website to see what each campus is offering this term: https://www.pcc.edu/tutoring/

My Teaching Philosophy

I fully believe that everybody can do math and be successful in this class. In my experience, there are several helpful ingredients to successful completion of a math class: inspiration/motivation, supportive instruction, intentional practice, time, and support (inspired by Malcom Gladwell's "Outliers"). I will do what I can to contribute to your inspiration and motivation for this class, to teach you, to provide lots of opportunities to practice intentionally, and to support you in any way I can. I hope you bring motivation to complete your study goal and time to study and practice.

Furthermore, I recognize that each person has a different history and story of their education. Some positive and supportive, others negative and all on their own, most of us will have had some of each. In my class you are not alone. I will reach out to you as best as I can and you are always welcome to approach me with any question or concern you have. If I don't have an answer, we will either find it together or I will refer you to somebody who does. There will also be plenty of opportunity to connect with your peers and work together with them.

Due Date Extensions

You may request extensions Problem Sets, Quizzes, and Exams once each anytime before their deadline.

For all extension requests, please state clearly which new deadline you are requesting. Bear in mind that you still need to finish everything by finals week so don't push deadlines out too far. However, I will accept all requests.

If you need any additional extensions, please email me to set up a phone or Zoom meeting so we can discuss how you can best get back on track with your assignments. And then I will be happy to give you another extension.

The most important thing is that you communicate with me by emailing me if you are experiencing any challenges in your life and/or studies. I will work with you as best as I can to support you in finishing our class successfully.

Important Deadlines

You are responsible for dropping or withdrawing from your classes if you wish to do so. If you need help, please schedule an appointment with an advisor or with me well *before* the deadline. You can **drop** this class and receive a full refund **until Tuesday, October 5th, 4pm, online**. You can **withdraw** from this class (W grade) or change your grading options between A-F and P/NP **until Saturday, December 4th, 10 pm, online**.
For more information, see http://www.pcc.edu/enroll/registration/dropping.html

Required Materials

Internet Access!!	at home
	https://www.SageMath.org
	or another Computer Algebra System such as MaplePlayer or GeoGebra
Other	Ruler, Eraser, Pencil

Highly Recommended Materials

Textbook	Differential Equations Computing and Modeling; 5th Edition
	by Edwards, Penney, and Calvis
Binder	1-inch 3-ring binder with divider tabs and paper.

Portfolio (Binder)

Get a 1-inch 3-ring binder and tabs. This binder and everything in it will be your portfolio for this class. It will help you especially for Test 2 and Finals preparation. A successful student follows the following guidelines:

Organized:	Your binder is well organized, meaning that papers are filed correctly and labeled with section and date.
Complete:	Relevant Syllabus Documents, Lecture Notes, Problem Sets, Quizzes, Mock Exams, and Tests are all there.
Problems are worked out:	You are making a sincere effort to write problems out mathematically correct and well readable.

To achieve the best success in this class, I recommend the following tabs:

1. Syllabus and Support Documents
2. Lecture Notes
3. Problem Sets
4. Quizzes
5. Project
6. Mock Exams and Exams
7. Blank and Graph Paper

Grading

Graded Elements of the Course

Activity	Weight %
Problem Sets	15%
Quizzes	15%
Project	10%
Mock Exam 1	5%
Midterm 1	15%
Mock Exam 2	5%
Midterm 2	15%
Mock Exam Final	5%
Final	15%
Total	**100%**

Course Grading Scale

Grade	Grading Criteria %
Exemplary (A)	Your mathematical work is correct, you are documenting your work well, and you are completing your required assignments.
Accomplished (B)	Your mathematical work is mostly correct, you are documenting your work so that I can understand it, and you are completing most of your required assignments.
Developing (C)	Your mathematical work is developing, you are documenting your work some, and you are completing half of your required assignments.
Beginning (D)	Your mathematical work is beginning, you are documenting your work a little, and you are completing some of your required assignments.
No evidence (F)	You have not (yet) submitted any mathematical work.

Link to Portland Community College's Grading Options and Grading Guidelines:
http://www.pcc.edu/student-records/grade-options/
http://www.pcc.edu/resources/student-records/grading/

Attendance

Attending every class is very important for your success in this class. For the first part of class, I will go over the material, deepening what you watched in the beginning videos. That part I will record. If you are not able to attend, make sure you watch those class recordings.

During the second part of the class, we will start on the homework by completing select problems in groups in breakout rooms. That will give you the opportunity to practice what we did in class. If you are not able to attend, make sure to attend office hours and/or make appointments with me to get all your questions answered when completing your homework. I also recommend that you connect with your classmates who were in class.

Problem Sets (Homework)

You can find the problems you need to complete in your book. The due dates are given on your Class Schedule. However, the due dates might change depending on how our class goes. You will find the most current due dates on D2L Brightspace: https://online.pcc.edu Problem Sets are always due

Sundays at 11:59 pm. If you turn them in significantly after the due date, it will take longer for me to grade them.

On the due date, you will submit each problem set that is due as a separate submission. It is essential that you work out all the assigned practice problems in the book. Solution hints and often full solutions are posted on D2L to support you heading in the right direction, not to do the work for you. You are expected to work on your problem sets and study outside of class for *at least* 10 hours per week for this class.

There are many more problems in the book than I assign. If you feel you cannot do certain kinds of problems well yet, do more problems. All odd problems have answers in the back of the book.

Your work should follow Mathematics Department Notation Standards (e.g. MTH095 Standards).

Quizzes

Quizzes are your opportunity to show me that you have learned the material and skills that we covered in class and that you practiced in your homework. They are always due Sundays at 11:59 pm. If you turn them in significantly after the due date, it will take longer for me to grade them. So you will miss out on my feedback.

Project

Differential Equations are one of the most applicable topics of math. This project gives you the opportunity to explore changes you are interested in and/or that relate to your world. I have broken the project up into 7 small pieces that will be due each week that you are not preparing for an exam. The 8^{th} piece will be a summary of your entire work as a final project submission. All the project pieces are always due Sundays at 11:59 pm. If you turn them in significantly after the due date, it will take longer for me to grade them. So you will miss out on my feedback.

Examinations

There will be three in-class examinations: two midterm tests and a final. Each examination will consist of a group presentation (mock examination) carrying 5% of your grade and a two part individual examination carrying 15% for each exam. The two-part individual examinations will consist of a no-technology portion and a technology-allowed portion. No technology means also no calculator. Really no technology for the no-technology portion. If you do use technology for that part, the no-technology part of your exam will receive zero points. So please don't use any technology on the no-technology portion of the exams.

Results from the final examination and the two midterm examinations will be used for end of term grade computation. All examinations will be cumulative and will include material from assumed

previous knowledge.

For all in-class examinations:

- You can use of one $8\frac{1}{2}$" x 11" x 6 mil cheat sheet.
- You cannot use textbooks, lecture notes, and other supplementary paper materials.
- Any hint of cheating during an examination will result in a zero for the exam. I will decide what constitutes a hint of cheating. However, in our current environment, it usually means any hint of technology on the no-technology portion.

If you are eligible for time extensions on in-class tests or other accommodations, please talk to me during the first week of term. I will be happy to work with you.

If you miss a test or the final, you must contact me latest on the day of the test or final to let me know about your intention of taking a make-up test. If you fail to do so, a make-up midterm or final cannot be guaranteed.

Points will be given for correct answers, showing your work, proper solution steps, and readability. Only one point will be given if work is not shown but the solution is correct unless otherwise noted on the exam.

I really wish that you show me on the exam what *you* can do. In my experience, students usually get a lot more points if they trust their own answers, even if they are partially wrong. If you are using unauthorized help on a midterm or the final, you run the risk that they have the wrong answers and/or that I notice. If I notice it while grading, the exam will receive no points.

If you use technology on the no-technology portion of a midterm or final, the no-technology part will receive no points.

Here are things you can do to **prepare for the midterms and final**:

- Review your class notes
- Read in the book
- Review problem sets and quizzes
- Work example problems in the book
- As needed:
  - do additional exercises in the book,
  - contact your classmates,
  - get help in the Tutoring Center,
  - go to office hours

Presentation Points

You are encouraged to write and speak using proper mathematical language and notation. Therefore the clarity and readability of the work submit does factor into your grade. Criteria for awarding

presentation points are described in the Assignment Submission Requirements portions of this syllabus and Mathematics Department Notation Standards (e.g. MTH095 Standards).

Assignment Submission Requirements

Submit all your out of class assignments at 11:59 pm on the specified Sunday due date. Wether you submit scanned hard copies or fully electronic copies write out your work on $8\frac{1}{2}$" X 11" paper if possible. Each of your assignments should:

1. provide legible, coherent presentations of problem solutions, with the problem being worked clearly identified and resulting conclusions and/or final solutions unambiguously stated (e.g., PCC MTH095 Guidelines),
2. have a one inch margin (border) surrounding every submitted sheet that shall be free of any markings (on the final scan) so that I have space to write you feedback, and
3. write clearly page numbers at the bottom right of every page.

I may not be able to give you clear feedback otherwise.

Since you will upload all your work to D2L Brightspace, all written submission files have to be in pdf format, else it will be very hard for me to grade and for you to read my feedback.

Zoom Meeting Recordings

Our course will be meeting in Zoom. I will record some or perhaps all online class meetings, where everyone in the class is online at the same time. I will pause if you go into breakout rooms. I will record our meetings in the main room so that if you cannot join us for a particular class, you can watch the recording at your own time. If I forget to start the recording, please remind me.

These recordings will be shared only with students who are registered for our MTH 256 spring term course. You are required to follow the guidelines for recording provided by PCC's Student Code of Conduct Policy and Procedures (http://www.pcc.edu/student-conduct/conduct/). I will notify you before recording a class meeting. If you'd like to opt-out of being video recorded, you can turn off your video in Zoom. Your audio or chat responses will still be recorded.

Course Description

Includes a variety of differential equations and their solutions, with emphasis on applied problems in engineering and physics. Differential equations software will be used. Students communicate results in oral and written form. Graphing calculator required. TI-89 Titanium or Casio Classpad 330 recommended. Prerequisites: (MTH 252 and MTH 261) and (WR 115 and RD 115) or IRW 115 or equivalent placement. Recommended: MTH 254. Audit Available.

Course Outcomes

Upon successful completion students should be able to:

- Analyze real world scenarios to recognize when ordinary differential equations (ODEs) or systems of ODEs are appropriate, formulate problems about the scenarios, creatively model these scenarios (using technology, if appropriate) in order to solve the problems using multiple approaches, judge if the results are reasonable, and then interpret and clearly communicate the results.
- Recognize ODEs and system of ODEs concepts that are encountered in the real world, understand and be able to communicate the underlying mathematics involved to help another person gain insight into the situation.
- Work with ODEs and systems of ODEs in various situations and use correct mathematical terminology, notation, and symbolic processes in order to engage in work, study, and conversation on topics involving ODEs and systems of ODEs with colleagues in the field of mathematics, science or engineering.

View the Course Content and Outcome Guide at:
http://www.pcc.edu/ccog/default.cfm?fa=ccog&subject=MTH&course=256

Policies regarding Cell Phones and Other Electronic Devices

All technological devices (phone, laptops, etc.) should either be off or in silent mode while class is in session. The devices should be put away — i.e. not sitting on your desk. Texting, snap-chatting, face-booking, and other sorts of electronic interfacing should not take place while class is in session.

Exceptions:

- Your calculator or your calculator app should be accessible at all times (except during no-calculator testing).
- You may access notes on a tablet or laptop computer. If you choose to do so, I trust that you will leave other applications closed while class is ongoing.
- If there is an unusual situation where you simply must be able to read and/or send a message without delay, have your phone in vibrate mode and leave the room before reading and/or responding to the message.
- You have an ADA accommodation that involves the use of one or more of the proscribed devices.

Email Notice

Due to Federal laws and concerns about privacy, all email communication between instructor and student shall be done via **PCC assigned email addresses**. You can access you PCC email via MyPCC. See your instructor during office hours if you're unfamiliar with using MyPCC.

Flexibility Statement

The instructor may revise the class calendar, modify content, and/or substitute assignments in response to institutional, weather, or class situations. Portland Community College has an emergency alert notification system that can send text messages and emails in the event of an emergency or school closure. www.pcc.edu/about/announcements/closure-information.html

Accessibility and ADA Accommodations

PCC is committed to ensuring that classes are accessible. Disability Services works with students and faculty to minimize barriers. If you elect to use approved academic accommodations, you must provide me in advance formal notification from Disability Services.
For more information and resources, see www.pcc.edu/disability/

Equity & Inclusion, Nondiscrimination, Non-harassment (Title IX)

PCC is committed to creating and fostering a learning and working environment based on open communication and mutual respect. This is an integral part of the College's academic mission to enrich our students' educational experiences and prepare them to live in and contribute to a global society. If you believe you have encountered sexual harassment, sexual misconduct, sexual assault, or discrimination based on race, color, religion, age, national origin, veteran status, sex, sexual orientation, gender identity, or disability please contact the Office of Equity and Inclusion at (971) 722-5840 or equity.inclusion@pcc.edu

PCC is a sanctuary college.

PCC takes intentional action that creates a climate of learning where people from all backgrounds and abilities enjoy equal access to the opportunity to teach, learn, work, and serve the community and the world. PCC promotes the success, dignity, and worth of each individual by providing a safe environment where the examination of divergent ideas, experiences and systems of inequality adds depth to the learning experience.
For more information and resources, see http://www.pcc.edu/resources/undocumented-students/

Student Rights and Responsibilities

The Student Rights and Responsibilities Handbook establishes students' freedoms and protections as expectations of appropriate behavior and ethical academic work. The Handbook includes items such as Policy on Student Rights, and the Student Code of Conduct Policy and Procedures.
For more information and resources, see:

Student Rights and Responsibilities Handbook: http://www.pcc.edu/about/policy/student-rights/

Student Code of Conduct: http://www.pcc.edu/student-conduct/conduct/

Grade Appeal Procedure: http://catalog.pcc.edu/policies/grievanceprocedure/

Academic Integrity Policy: http://www.pcc.edu/student-conduct/conduct/academic-integrity-at-pcc/

Consensual Relationship Statement: http://www.pcc.edu/about/equity-inclusion/consensual.html

Resources and Services

For more see below, **next page**, and http://www.pcc.edu/resources

- **Food and Housing**
  If you face challenges affording food or housing, this will naturally affect your classwork. PCC wants you to be successful and offers some resources that may help:
  - Emergency Funds (https://www.pcc.edu/enroll/paying-for-college/emergency-funds.html)
  - Food pantries (https://www.pcc.edu/student-leadership/services/free-resources/).
  - You can also contact a campus Student Conduct and Retention Coordinator at conductandcare@pcc.edu

- **Counseling Services** (SY CC 210, 971-722-8153)
  Get help dealing with personal or career concerns that may be impacting your academic success. Trained professional counselors can also assist you with decision-making, goal-setting, and personal development. https://www.pcc.edu/resources/counseling/

- **Listening Intervention Team for Equity (LITE)**
  LITE is a PCC resource for students, faculty, and staff who have experienced inequity or need guidance to navigate challenging dynamics at the college across cultures, races, ethnicities, gender identity or expression, sexual orientations, ability, faiths, and other aspects of identity. The LITE listener will offer compassion, help you process your experiences, share skill-building techniques and problem-solving strategies, and connect you with other existing support resources. To talk to a LITE listener about experiences of inequity you have had at PCC, go to https://www.pcc.edu/about/equity-inclusion/listening-intervention-team-for-equity.html then click on a coordinator or listener name for contact information.

- **Multicultural Center** (SY CC 231, 971-722-4112)
  A welcoming and inclusive space for diverse students. One of the many services is one-on-one help for math courses, drop-in or by appointment:
  https://www.pcc.edu/multicultural/sylvania/

- **Queer Resource Center** (SY CC 228, 971-722-8515)
  A welcoming and safe space to hang out and be yourself. Free computer use, coffee and more:
  http://www.pcc.edu/queer/sylvania/

- **Veteran's Resource Center** (SY CC 226, 971-722-8793)
  Relax, connect, computer workstations, work study and volunteer opportunities, and more. For additional information: https://www.pcc.edu/resources/veterans/sylvania

- **Women's Resource Center** (SY CC 232, 971-722-8101)
  A wide variety of services that support the academic achievement of women:
  https://www.pcc.edu/resources/women/sylvania

Academic Support

- **Student Learning Center** (SY Library, 971-722-4540)
  An informal, open study area, with the added benefit of free tutoring assistance. The Math Center resides here. For more information: https://www.pcc.edu/SylvaniaSLC

- **ALC/ALM Classes:**
  We offer self-paced labs to support your success in math. For more information: https://www.pcc.edu/programs/math/alternative-learning-courses.html

- **Online Math Resources**
  Videos, explanations, and practice problems for many of PCC's math classes. For more information: https://spot.pcc.edu/slc/mathresources/output/html/frontmatter.html

- **Calculator Handbooks:**
  Handbooks for the TI-89, TI Voyage 200, and the Casio ClassPad 330 are available. For more information: https://www.pcc.edu/programs/math/course-downloads.html

- **College Success Courses**
  There are several one credit courses available to help you maximize your success in the college experience. These include courses specifically geared to study skills. The following site offers information on these courses as well as tips for success:
  https://www.pcc.edu/programs/career-guidance/

- **Student Computing Center** (SY Library, 971-722-4325)
  - internet access, mathematics computer programs, and more (orientation required) https://www.pcc.edu/resources/computer-labs/
  - allocation of 100 double-sided pages of free printing per term (does not roll over to next term) https://www.pcc.edu/resources/printing/
- **Sylvania Math Department** (ST 203, 971-722-4149)
  https://www.pcc.edu/math Fax: 971-722-8259
- **Sylvania Campus** https://www.pcc.edu/sylvania
  12000 SW 49th Ave, Portland, OR 97219
- **Portland Community College** https://www.pcc.edu
  PO Box 19000, Portland, OR 97280

Course Schedule

The course schedule is tentative and might change. I will announce any changes to the course schedule in class. I therefore recommend that you exchange phone numbers with other students in case you get sick.

Wk	Day	Day	Date	Topics covered	Videos, Quizzes, and Problem Sets (PS)
1	1	Mon	☐ 9/27	Intro & Book 1.1 (OER 1.1)	☐ PS 1.1: 3, 8, 17, 26, 34, 36, 37, 42 ☐ Quiz 1
	2	Wed	☐ 9/29	Intro & Book 1.2 & 1.3 (OER 1.3 & 1.6)	☐ watch videos before class ☐ PS 1.2: 8-11, 18 - 22, 24 (assume g = 32 ft/s^2), 35, 42 ☐ PS 1.3: 3, 7, 9, 26 ☐ PS 1.3 optional: 11, 12, 14, 18, 27 ☐ Quiz 5 ☐ Project - Part 1
2	3	Mon	☐ 10/4	Book 1.4 (OER 1.2)	☐ Watch videos before class ☐ PS 1.4: 1, 5, 9, 20, 28, 58, 65 ☐ PS 1.4 optional: 29, 39, 41 ☐ Quiz 6
	4	Wed	☐ 10/6	Book 1.5 (OER 1.5)	☐ watch videos before class ☐ PS 1.5: 1, 10, 19, 34, 37, 38 ☐ PS 1.5 optional: 29, 31, 32, 42 ☐ Quiz 7 ☐ Quiz 8 ☐ Project - Part 2

Wk	Day	Day	Date	Topics covered	Videos, Quizzes, and Problem Sets (PS)
3	5	Mon	☐ 10/11	Book 2.1 & 2.2 (OER 1.7)	☐ watch videos before class ☐ PS 2.1: 1, 5, 23, 24, 32 ☐ PS 2.2: 1, 3, 5, 7, 9 ☐ PS 2.2 optional: 19, 24
	6	Wed	☐ 10/13	Mock Exam	☐ review your classmates' work before class ☐ be ready to present your Mock Exam problem
4	7	Mon	☐ 10/18	**Exam 1** (over 1.1–2.2)	☐ be ready for Exam 1
	8	Wed	☐ 10/20	Book 2.3 & 2.4 (OER 1.4)	☐ watch videos before class ☐ PS 2.3: 2, 4, 10, 12 ☐ PS 2.3 optional: 13, 14, 15, 16, 17 ☐ PS 2.4: 1, 2, 5, 7, 19, 20, 22 ☐ Project - Part 3
5	9	Mon	☐ 10/25	Trig Review	☐ watch videos before class ☐ Quiz 3
	10	Wed	☐ 10/27	Book 3.1 (OER 4.1)	☐ watch videos before class ☐ PS 3.1: 3, 12, 27, 28, 33, 35, 38, 39 ☐ PS 3.1 optional: 51 ☐ Project - Part 4
6	11	Mon	☐ 11/1	Book 3.3 & 3.4 (OER 4.1)	☐ watch videos before class ☐ PS 3.3: 1, 5, 6, 9, 22, 23, 43 ☐ Quiz 9 ☐ PS 3.4: 4, 10, 14, 15, 18, 19 ☐ PS 3.4 optional: 8 ☐ Quiz 10
	12	Wed	☐ 11/3	3.5 (OER 4.2)	☐ watch videos before class ☐ PS 3.5: 1, 6, 10, 31, 33, 34, 38 ☐ Project - Part 5
7	13	Mon	☐ 11/8	Book 3.6 & 3.7 (OER 4.3 & 4.4)	☐ watch videos before class ☐ PS 3.6: 1, 3, 5, 6, 7, 11 ☐ PS 3.6 optional: 26 ☐ Quiz 11 ☐ PS 3.7: 9, 17 ☐ PS 3.7 optional: 7, 10
	14	Wed	☐ 11/10	Mock Exam	☐ review your classmates' work before class ☐ be ready to present your Mock Exam problem

Wk	Day	Day	Date	Topics covered	Videos, Quizzes, and Problem Sets (PS)
8	15	Mon	□ 11/15	**Exam 2** (over Chapter 3)	□ be ready for Exam 2
	16	Wed	□ 11/17	Book 7.1 & 7.2 (OER 6.1 & 6.2)	□ watch videos before class □ PS 7.1: 1-4, 6-10, 13, 16, 18, 23, 26, 27, 28, 29 □ PS 7.1 optional: 5, 15, 39, 40 □ Quiz 12 □ PS 7.2: 1, 5, 6, 8, 10 □ PS 7.2 optional: 35, 36, 37 □ Quiz 13 □ Project - Part 6
9	17	Mon	□ 11/22	Book 7.3 & 7.4 (OER 6.4)	□ watch videos before class □ PS 7.3: 1, 4, 5, 7, 11, 12, 13, 27, 28, 29, 38 □ PS 7.4: 1, 2, 3, 6, 7, 12
	18	Wed	□ 11/24	Book 7.5	□ watch videos before class □ PS 7.5: 1, 2, 3, 8, 10, 31, 33 □ PS 7.5 optional: 29 □ Quiz 14 □ Project - Part 7
10	19	Mon	□ 11/29	Book 7.6 (OER 6.3)	□ watch videos before class □ PS 7.6: 1, 2, 5, 7 □ PS 7.6 optional: 19, 20, 22 □ Quiz 15
	20	Wed	□ 12/1	Systems of DEs	□ watch videos before class □ 256_psHO1.pdf □ Project - Part 8
11	21	Mon	□ 12/6	Systems of DEs	□ watch videos before class □ 256_psHO2.pdf
	22	Wed	□ 12/8	Mock Exam	□ review your classmates' work before class □ be ready to present your Mock Exam problem
12	23	Mon	□ 12/13	**Final Exam** (all Chapters)	□ be ready for your Final
	24	Wed	□ 12/15	**No Class**	□ Have a good winter break!

Chapters and Sections we will cover

Chapter	Section	Title
1		First-Order Differential Equations
	1	Differential Equations and Mathematical Models
	2	Integrals as General and Particular Solutions
	3	Slope Fields and Solution Curves
	4	Separable Equations and Applications
	5	Linear First-Order Equations
2		Mathematical Models and Numerical Methods
	1	Population Models
	2	Equilibrium Solutions and Stability
	3	Acceleration-Velocity Models
	4	Numerical Approximation: Euler's Method
3		Linear Equations of Higher Order
	1	Introduction: Second-Order Linear Equations
	2	General Solutions of Linear Equations
	3	Homogeneous Equations with Constant Coefficients
	4	Mechanical Vibrations
	5	Non-homogeneous Equations and Undetermined Coefficients
	6	Forced Oscillations and Resonance
	7	Electric Circuits
7		Laplace Transform Methods
	1	Laplace Transforms and Inverse Transforms
	2	Transformation of Initial Value Problems
	3	Translation and Partial Fractions
	4	Derivatives, Integrals, and Products of Transforms
	5	Periodic and Piecewise Continuous Input Functions
	6	Impulses and Delta Functions
4		Introduction to Systems of Differential Equations
	1	First-Order Systems and Applications
	2	The Method of Elimination
5		Linear Systems of Differential Equations
	1	Matrices and Linear Systems
	2	The Eigenvalue Method for Homogeneous Systems
	4	Second-Order Systems and Mechanical Applications
6		Nonlinear Systems and Phenomena
	1	Stability and the Phase Plane
	3	Ecological Models: Predators and Competitors