

Course Structure

Lectures

On Mondays, Wednesdays, and Fridays, we will have an in-person lecture that covers the core concepts and goes over basic examples. Lecture notes will be posted on D2L following each class.

Discussion Sections

On Tuesdays and Thursdays, you will have discussion sections with your teaching assistant. These are opportunities to discuss the course materials and ask for help with homework questions. The entire Tuesday session and the most of the Thursday session will be used for this. You will take a quiz in the second half of most Thursday sections. It is expected that you will attend all of the discussion sections and that you will **come prepared with questions to ask**.

Office Hours and Help Desk Hours

I will also hold weekly office hours. Two of these office hours will be held in-person in my office, 367 Cudahy Hall. One will be virtual, hosted on Teams. The hours are listed at the top of this syllabus. **You do not need an appointment to attend regularly scheduled office hours.** Feel free to drop by during any of those time slots.

The teaching assistants will also hold additional "Help Desk Hours" at several times during the week. I will post the schedule for the help desk hours on D2L. The schedule will also be posted on the department website (<https://www.marquette.edu/mathematical-and-statistical-sciences/student-resources.php>)

Assessments

The final grade is earned out of 1000 total points distributed as follows:

- Homework: 200 pts.
- Quizzes: 100 pts.
- Midterm Exams: Two exams at 200 pts each, 400 pts total.
- Lab Project: 50 pts.
- Final Exam: 250 pts.

Grading scale:

A	$93\% \leq \text{Percentage} \leq 100\%$	C	$73\% \leq \text{Percentage} < 77\%$
A-	$90\% \leq \text{Percentage} < 93\%$	C-	$70\% \leq \text{Percentage} < 73\%$
B+	$87\% \leq \text{Percentage} < 90\%$	D+	$67\% \leq \text{Percentage} < 70\%$
B	$83\% \leq \text{Percentage} < 87\%$	D	$60\% \leq \text{Percentage} < 67\%$
B-	$80\% \leq \text{Percentage} < 83\%$	F	Below 60% Percent
C+	$77\% \leq \text{Percentage} < 80\%$		

Your points score will be rounded to the nearest percentage point to determine your letter grade. For example, if your point score is 897 out of 1000, your percentage score would get rounded to 90% (an A-), while a score of 891 points would get rounded to 89% (a B+).

Online Homework with WileyPLUS

Homework will be assigned through WileyPLUS. You will need an access code that will come with your textbook bundle. Your answers will be automatically graded by the system. This is usually pretty reliable, but it may take a little practice to learn how to properly format your answers.

There will be 12 WileyPLUS assignments, due mostly on Wednesdays. Each assignment will be worth 20 points, for a total of 240 possible points. Your final WileyPLUS score will be calculated out of a total of 200 points, which means there are 40 points of “leeway” to account for technical issues, incorrectly entering answers, late assignments, etc. Therefore, **late assignments will not be graded and there will be no makeup WileyPLUS assignments.** For example, if you earn 215 points total, your WileyPLUS percentage will be 100%. If you earn 182 points total, your WileyPLUS percentage will be $182/200 = 91\%$. Some WileyPLUS tips:

- If the WileyPLUS problems are not loading try refreshing the page, using another browser, or temporarily disabling certain browser extensions (ad-blockers, etc.).
- Be careful to pay attention to the notation you’re using and the notation WileyPLUS is using. Some common errors include: using Π instead of π , using x when the variable is t , and misplacing parentheses.
- Unless the problem states otherwise, use exact answers (logs, fractions, etc.) instead of numerical approximations.

Suggested Written Homework

For each section, I will assign a handful of textbook problems for you to use to practice the material until you’ve mastered it. I recommend the following practice regimen. For each problem, try to solve it without the book or your notes. If you can’t figure it out, look at your notes or the book or the solution (if it’s in the back of the book). Here’s the key: if you couldn’t solve it, make a note of the problem so you can come back to it a day later after you’ve forgotten the answer. Then repeat the process until you can do the problems without assistance. You should keep your solved problems in a notebook to help you study for the midterm exams and the final exam.

Quizzes

In most weeks, there will be a short quiz in the Thursday discussion section that covers material from the previous week. The goal of these is to make sure that you are keeping up with the material, and as long as you are, they should not be too hard. **The quiz questions will come verbatim from the suggested textbook homework.**

Lab Project

At the end of the semester, there will be one lab project that requires you to use the MATLAB computing toolbox. Marquette University students may download MATLAB onto their personal computers: <http://www.marquette.edu/its/help/matlab/>. MATLAB is also available in the computer labs of Cudahy Hall and in Engineering and the library. Please contact ITS with questions about downloading and installing MATLAB on your device.

Exams

There will be two midterm exams and one comprehensive final. Students are permitted to fill one side of an 8.5" by 11" piece of paper with notes as a “cheat sheet” for the midterm exams. For the final exam a two-sided cheat sheet is allowed. Cheat sheets will be submitted with the exams.

How to Succeed in this Course

Here are my recommendations for doing well in this course.

- Stay on schedule! The WileyPLUS assignments and quizzes are at regular intervals, and ensure you cannot fall too far behind. Try the WileyPLUS problems for an assignment the same day as the corresponding lecture; don't leave them all for the day it's due.
- Do the suggested written textbook problems, even though they won't be collected. The point of homework in this course is to make sure you get enough practice on each topic, and doing the WileyPLUS assignments alone will definitely NOT be enough practice. Do each of the textbook problems I suggest (using the method in the "Written Homework" section above). You are encouraged to work with classmates on these problems. Whenever you get stuck, bring these problems to your next Discussion Section to go over with your TA. If you still feel a little shaky on a topic, pick more textbook questions to do. **All odd numbered exercises have full solutions in the e-textbook available through WileyPLUS.**
- Make use of office hours and the DiffEQ Help Desk as much as possible. They are great resources to help with homework problems, get advice, or just chat about the course or mathematics in general.
- Find a good study group early on in the course who you can work with and talk to if you get stuck on a problem.

Additional Course Policies

Class Conduct

Norms for classroom conduct are based on respect for the instructor and your fellow students. While in class, please silence your phones. Behaviors such as eating, sleeping, watching videos, or otherwise distracting your fellow students are inappropriate.

Grading Disputes

If you believe that there has been an error in scoring an assignment, you must bring it to the attention of your TA within one week of the graded paper being returned. Your TA will carefully reread, and if necessary rescore, the assignment.

E-mail Policy

Please follow the "Three-Before-Me" rule: If you have questions regarding the material, assignments, technical issues, etc., please seek out at least three other sources of information to obtain an answer before e-mailing me or your TA about it. These sources of information could include your classmates, an internet search, information posted on D2L, or this very document. Please do not message me or the TAs on the D2L or WileyPLUS platforms; we will not be checking these platforms for messages.

Excused Absences & Make-up Exams

Students with absences due to medical issues, legal obligations, religious observances, or participation in Division 1 athletics and other university sanctioned events will be given an opportunity to make up exams or other graded assignments, if a request is made to the instructor prior to the absence. After all absences,

excused or unexcused, you are responsible for contacting your classmates to obtain lecture notes and any other missed materials.

An unexcused absence from an exam is recorded as a score of 0. **Make-up exams will not be given unless the student informs, and has a come to a written agreement with, the instructor prior to the exam.** The student is responsible for scheduling their make-up exam, which ideally should take place within one week of the missed exam.

Accommodations for Disabilities

If you have a disability and will require accommodations under the Americans with Disabilities Act, you need to provide appropriate documentation to the Office of Disability Services. They will supply you with a letter to give to me detailing the accommodations. If you are unsure of whether or not you qualify for services, visit the Office of Disability Services' website, <http://www.marquette.edu/disability-services>, or contact them at (414) 288-1645. If you qualify for special accommodations you must work with the course instructor and come to an agreement no less than 7 days prior to the needed accommodation.

Academic Support

It is your responsibility to keep abreast of the course, to master the material covered, and to take the initiative for getting any help you may need. *You are encouraged to obtain help from the course instructor and TA by attending office hours and help desk hours.* If additional support is needed, the MUSC Tutorial Program offers tutoring services for MATH 2451. For more information see the website at <http://www.mu.edu/oses>.

Academic Integrity and Honesty

Academic dishonesty will not be tolerated. In particular, representing another person's work as your own is academic dishonesty. This applies to all activities, homework, project work, assignments, etc. Any time you use and present ideas that are not your own you must cite your sources. Failure to abide by the university "Academic Integrity Policy" (<http://bulletin.marquette.edu/undergrad/academicregulations/>) may result in disciplinary action.

Tentative Course Schedule

The schedule below is tentative and subject to change. Exam dates are listed in red.

		Dates	Content	Text Sections	Notes
Unit 1: 1st Order DEs	Week 1	1/18, 1/20	Intro to DEs	1.1, 1.2, 1.3	
	Week 2	1/23, 1/25, 1/27	Separable DEs, Integrating Factors	2.1, 2.2	HW 0 & HW 1 Due
	Week 3	1/30, 2/1, 2/3	Modelling, Existence and Uniqueness	2.3, 2.5, 2.4	HW 2 Due
Unit 2: 1st Order Linear Systems of DEs	Week 4	2/6, 2/8, 2/10	Linear Algebra and 1st Order Systems	3.1, 3.2, begin 3.3-3.5	HW 3 Due
	Week 5	2/13, 2/15, 2/17	Eigenvalue Method for Solving Systems	3.3, 3.4, 3.5	HW 4 Due
	Week 6	2/20, 2/22, 2/24	Linearization of Nonlinear Systems	7.1, 7.2	EXAM 1, Fri 2/24
Unit 3: 2nd Order Linear DEs	Week 7	2/27, 3/1, 3/3	2nd Order Linear DEs	4.1, 4.2, 4.3	HW 5 Due
	Week 8	3/6, 3/8, 3/10	Method of Undetermined Coeff., Var. of Parameters	4.5, 4.6, 4.7	HW 6 Due
Unit 4: Laplace Transforms	Week 9	3/20, 3/22, 3/24	Intro to the Laplace Transform	5.1, 5.2, 5.3	HW 7 Due
	Week 10	3/27, 3/29, 3/31	The Inverse Laplace Transform & Solving DEs	5.4, 5.5	HW 8 Due
	Week 11	4/3, 4/5	Discontinuous/Impulse functions	5.6, 5.7	HW 9 Due
	Week 12	4/12, 4/14	Midterm 2 Review		EXAM 2, Fri 4/14
Unit 5: Numerical Methods	Week 13	4/17, 4/19, 4/21	Euler's Method, Runge-Kutta Method	8.1, 8.3, 8.4	HW 10 Due
	Week 14	4/24, 4/26, 4/28	Application: SIR Models, MATLAB Primer	Supplement	HW 11 Due
	Week 15	5/1, 5/3, 5/5	Lab project	Supplement	Lab Report Due

Final Exam: Thurs 5/11, 10:30am-12:30pm, Marquette Hall 200