Salt Lake
Community
College
Mathematics Department

Math 2280-401
Ordinary Differential Equations
Spring 2024, MTWR (4 credits)

Professor:
Contact:
Office location:
Consultation hours:

READ: Welcome to Ordinary Differential Equations (ODEs)! It is wise to read this entire syllabus now and reread it when questions about the course arise. Ask your instructor course relevant questions you have that are not directly addressed in the syllabus; frequent communication with your instructor is highly recommended. Ignorance regarding course due dates, assignments, exams, etc. is not accepted or excused. Be aware and be prepared. Work well and work hard; if so, you will learn a lot in this course, and consequently, you will develop intellectually, which is part of its purpose. Have a great semester.

My course materials, e.g., the syllabus with the list of assigned text homework exercise and the tentative schedule, supplemental reading materials, and other items relating to your math class, e.g., course announcements, can be accessed from this course's **Canvas** site; see the "**Files**" folder. Students are advised to regularly check Canvas, daily is often wise.

Prerequisite: You must have completed both Math 1220 (calculus II) and Math 2270 (linear algebra) with a C or better in each. *Preferred* prerequisites are to have *at least* earned a B in each and to have also completed Math 2210 (calculus III) with at least a B.

We emphasize that prerequisites are "prerequisite." That said; sufficient student knowledge from them is absolutely expected and demanded. In fact, you may likely need to review material occasionally and even learn more prerequisite material than was covered in your classes (not all classes are instructed or setup comparably). Ignorance will not be excused or tolerated. The need to review is natural; there is no shame in reviewing, but there is when needing it and not conducting it. ODEs is a very beautiful and amazingly useful subject/language/conceptual toolbox. I hope that you enjoy the intellectual experience studying it.

Required Text: *Differential Equations and Boundary Value Problems*, 4th edition, by Edwards and Penney.

Text Coverage:
    Chapter 1, First Order Differential Equations
    Chapter 2, Mathematical Models and Numerical Methods
    Chapter 3, Linear Equations of Higher Order
    Chapter 4, Systems of Differential Equations
    Chapter 5, Linear Systems of Differential Equations

Course Description (CLOs): This course is an introduction to ordinary differential equations (ODEs) for mathematics, mathematics education and some science majors. This course prepares one for further study of related topics such as Laplace transforms, power series methods, and Fourier series methods in more advanced classes, e.g., partial differential equations (PDEs). Students will learn how to solve separable and linear first order ODEs, linear ODEs of higher order, exact ODEs,

and initial value linear ODEs using several methods, e.g., substitution. Students will learn find equilibrium solutions and determine stability of solutions of ODEs. Students will also learn to solve applications problems of ODEs in population models, including predator-prey models/systems, acceleration and velocity models, including common air resistance models. Students will make numerical approximations to ODEs using Euler's method, the improved Euler's method (RK-2), and a Runge-Kutta (RK-4) method. Students will solve homogeneous and non-homogeneous linear systems of ODEs using substitution. Moreover, students will apply much material from Linear Algebra, Math 2270, including the notion of a basis for a finitely dimensional vector space, Wronski's Theorem for independence, Vandermondes, Cramer's rule, the concept of an isomorphism, and the notions of eigenvalues and eigenvectors for solving associated homogeneous linear systems of ODEs. If time permits, students will solve ODEs using matrix series/matrix exponents.

An Honest Note to Students: This course consists of more than working mere rote/routine exercises by simply mimicking the text, online examples, or in-class examples. This course is an actual beginning-level theoretical mathematics course. It consists largely of putting intuitive ideas to formal mathematical definitions, surmising what must be true of our definitions, precisely formulating theorems, and constructing <u>proofs</u> or counterexamples to our conjectures.

Any student unwilling or unprepared to engage in the ever paramount, creative, critical, analytical, and deductive pursuit of reading and crafting valid mathematical arguments (proofs) should not take such a course. Your lack of ability and/or effort and/or time investment to understand course material, which necessarily involves reading and understanding your text and working through many exercises and proofs independently, is not a reflection of instructional or text quality; it reflects the student, their life, their choices/decisions, their time investments, etc.

Knowing (from memory) many definitions, theorems, and ideas behind their proofs are expected. Conducting deductive investigations and proving theorems (the underlying justifying theory), is an utterly essential and inescapable part of learning and "doing" mathematics; it is also an intensely challenging and extremely useful and ever beautiful part of the subject. I encourage you to fully engage and immerse yourself in the course material. Read and reread your well-written text and practice many of its beautiful exercises, over and over. If you do, you may learn a great deal and develop mathematically and intellectually, which is part of the purpose of such a course.

As your instructor, I will not misrepresent the subject in ways that some students may have experienced and grown accustomed. For example, I will not present inexactly stated theorems without needed hypotheses or proof; I will not work several simple-minded examples in class and merely encourage students to mimic my steps to solutions for their homework or exam problems. Despite what you may be used to seeing in previous mathematics courses, this does not well-promote independent problem solving or learning to think mathematically, nor creatively. This course is very much "theoretical," as mentioned. I will be presenting some of the remarkable theory of ordinary differential equations every day during class in course-level detail; do not be surprised by such.

This course on ordinary differential equations is a wonderful "capstone" to nearly every mathematics course that you have taken up to this point in your education. For example, this course requires knowledge from Math 1010, 1050, 1060, 1210, 1220, 2210, and 2270. Consequently, throughout this course, you may find it necessary or, at least, wise to review and deepen your understanding of relevant prerequisite topics (especially those from calculus and linear algebra). In this course, you will see interesting applications of a lot of mathematical material previously learned, e.g., partial fractional decomposition from college algebra and calculus II, hyperbolic functions from calculus I or II, complex numbers combined with infinite series (Euler's identity) from intermediate algebra, trigonometry, and calculus II, and the multivariate chain rule and Clairaut's theorem from calculus III, and a lot of elementary linear algebra. It is in a course like this, that students have finally learned enough mathematics that they should start to have clear and precise answers/examples to trite questions like, "what are applications of this?" Work hard and you may well succeed and even surprise yourself as you develop intellectually while learning some amazing, beautiful, and incredibly useful mathematics! Enjoy!

Written *Text* Homework: All homework in this class is *written* (no online homework) and comes from the text above. Problems are assigned from each section covered in the text (see the weekly schedule far below at the end for the list). These *written* homework problems will be submitted and graded as **four homework sets**, in total. Each homework set will be due by the day and starting time of the corresponding relevant exam that covers that homework's material; this includes the last (fourth) homework set, which is due the day of the final exam. The exact dates are below.

HEED: <u>No homework assignment will be dropped or accepted late, so plan accordingly</u>.

Students in my classes are *not* required to use any online homework software. Furthermore, in my sections, students cannot submit online homework via an OHM in lieu of written homework.

Homework Format: Students are to write out each homework problem (the full question and/or equation) followed by its solution using an iPad, for example, or using hardcopies with "clean," blank, lined, or graph paper. Problems are expected to be numbered as in the text, written neatly and legibly, and ordered chronologically according to the syllabus. Each page of your homework needs to be clearly marked from what section(s) of the text the problems on that page occur. It is wise to write your full name on each page of your homework.

Represent yourself well with good work. Under **no** circumstances will homework be accepted written on printed-out pages of the text's PDF! Do not turn-in notes from class with the assigned homework problems; no credit will result. If any of the above homework rules are broken, the instructor may refuse accept/grade the homework. This is a college-level course; you will be expected to submit college-level work.

How to Submit Homework Sets: Each homework set must be scanned and/or converted to a *single* PDF and sent to your instructor as a Canvas message's attachment by the **start time** of the associated exam occurring in-class that day (again, due dates are listed below). *So, by the time you enter our classroom to take a test on a scheduled exam day, you should have already organized your homework (ordered it according to sections, chronologically), scanned all its pages (in the organized order), converted it to a single PDF, and sent it to your instructor in a Canvas message.* Otherwise, it will be late and not accepted. Be aware, that *hardcopies* of homework will *not* be accepted for credit.

The electronic submissions are in part to prevent the unnecessary passing of germs, viruses, etc. Moreover, submitting homework through Canvas messaging time stamps it and backs it up on servers as examples of a student's work.

Please keep current on your homework and ask questions about the homework when/if needed (in class, using the Canvas online tutoring link, in person at the STEM Center in SI, etc.). It is very easy to feel overwhelmed if one gets too far behind, which can be just a few sections. Don't allow that to happen! Be and remain diligent!

Work Ethic: Practice is utterly crucial for learning any subject like mathematics. Keep up with the text reading and the assignments. Be prepared to ask questions on homework in class as you will not be allowed to make-up missed homework assignments. It is highly recommended that you attend class. Mathematics is, in many respects, a language, and, like learning any language, you can learn more effectively within environments where that language is being spoken and utilized; class is such an environment. You should be prepared to spend at *least* two hours studying outside of class for each one hour of class time, as is standard. However, most students find that much, much more time is required to perform as well as they desire, upwards of 40 – 80 hours per week is standard depending on the number of serious science/math courses that you are taking (no kidding!). If you are unwilling/unable to make this level of investment into your intellectual and mathematical development, and your education, then you ought to seriously reconsider taking this course, and perhaps even a science major.

Students in my classes are *not* required to use any online homework manager (OHM). In fact, at this level, I tend to discourage this adamantly. Again, considering that mathematics is a language, you can learn it well by reading, writing, and speaking it. Students cannot submit online homework in lieu of written text homework. Your well-written book contains more practice problems than you will ever likely be able to work in a single semester. Above all, read, read, read your text until understand it, and practice many, many of its exercises. If you need extra help, ask questions in and/or out of class, and/or visit the STEM Center on the second level in SI (Redwood) for free tutoring.

In-Person Testing Disclaimer: **All exams, regular exams and the final exam, must be taken *in-person*, no exceptions**. Any student not willing or not able to comply with in-person testing in their classroom should not register, or remain registered, for this class. Students should make arrangements early with employers, etc. to be free during scheduled exams. Being late or missing an exam for work, athletics, etc., is not excused as students are aware of the exam dates the first day of classes.

Exams: There will be **three** regular exams (about 60 minutes each) and a comprehensive final exam (about 2 hours); again, the dates are listed below. All regular exams after the first will be on a cumulative basis. No notes, note cards, texts, any collaboration, internet devices, which includes cell phones, or external aid of any kind are permitted on any exam. Scratch paper and a standard scientific calculator are allowed, e.g., a TI30, but no graphing or programmable calculators, and no calculators cable of algebraic manipulation are permitted; see the calculator rule below. **No** sample exams will be given to students by the instructor for any regular exams (this is a departmental rule).

Your lowest regular exam score will be dropped from your total course grade; final exams cannot be dropped. Absence from a regular exam will count as a zero or as the regular exam to be dropped; they cannot be taken early or late. Absence from the final exam will count as a zero and final exams also cannot be taken early or late. Plan your semester accordingly!

You must bring a valid ID to each exam in case that you are requested to show it.

The Exam, Homework, and e-Portfolio Due Dates are:

Exam 1 and 1st-homework set due   Thursday, February 8
Exam 2 and 2nd-homework set due   Thursday, February 29
Exam 3 and 3rd-homework set   Thursday, April 4

Final Exam and 4th-homework set due date:

Monday, April 29, 9:10 am – 11:10 am
(in our regular classroom unless otherwise announced)

The Final Exam: There is a mandatory, comprehensive final exam. Its format will be *paper and pen-or-pencil*, with 20 – 30 mandatory, show-your-work problems, no multiple choices. Students will show/write their work for each problem and all final exams will be graded according to the work shown; partial credit is possible for relevant, partial, correct work. Final exams are <u>not</u> given early (plan now) and the final exam may only be taken **once a semester**. **<u>All students must take the final exam in order to pass the class</u>**.

No note cards, notes, texts, collaboration, internet devices, programming/graphing calculators, or external aid of any kind are allowed on any exam. Scratch paper and a standard scientific, non-graphing calculator are that is approved by your instructor is allowed, e.g., a TI30. However, all exam work to be graded must be written on the exams' pages itself, so all work written on scratch paper to be graded must be rewritten on the final exam's pages themselves. There are no exam retakes and no exam corrections for extra points of any kind.

<u>60% Final Exam Rule</u> (*READ*): The Math Department's 60% Final Exam Rule is that if a student scores less than 60% on their final exam then their total course grade will be the lower of a D or their grade as calculated according to the grade weights on the syllabus below. *In other words, if a student fails their final exam (scores less than 60%), then the highest total course grade that they can earn for the course is a D*.

This is an important departmental rule, which must be enforced to help ensure the success of students taking courses that have Math 2280 as a prerequisite, e.g., a partial differential equations class. Rules such as this also help make, "seamless," transfers to other USHE institutions possible. Without such rules, your Math 2280 credit might not transfer to other higher ed institutions or you may have to retake it there!

<u>Grading</u>: Your grade will be computed (weighted) as follows, <u>if you score 60% or higher on the final exam</u>.

     Homework   20% of final grade
     Exams   50% of final grade (two exams after dropping one, 25% each exam)
     Final Exam   30% of final grade

The grading scale is (using interval notation):

A	[94% – 100%]	C	[73% – 77%)
A-	[90% – 94%)	C-	[70 – 73%)
B+	[87% – 90%)	D+	[67 – 70%)
B	[83% – 87%)	D	[63 – 67%)
B-	[80% – 83%)	D-	[60 – 63%)
C+	[77% – 80%)	E	[0% – 60%)

<u>Extra Credit</u>: There is NO extra credit opportunity available in this course. Moreover, there are NO exam retakes or opportunities to make assignment or exam "corrections" for extra points. Final course grades will reflect the quality of actual course work that has been completed within the time frame allotted for that work, nothing else.

Course Folder: In case of human or computer error, it is highly recommended that you keep all homework and exams in a folder until you have received an official grade for the entire course on your SLCC records.

Frequent Canvas Grade Checks: Grades are recorded and computed in Canvas throughout the semester. It is *highly* recommended that students *regularly* check their current grades/scores entered in Canvas after each exam is taken and after each assignment is submitted. If a claimed discrepancy is spotted, it is the students' responsibility to promptly contact the instructor about it and provide the physical exam or assignment, or the e-portfolio link for verification of the completed work.

Heed: I allow only *one* week after a score has been entered into Canvas for students to contest their grade for that exam or assignment, *no* exceptions (this includes scores of zeros). Also, once final course grades have been submitted, no grade changes will be made of any kind unless a mistake is discovered. Thus, again, I urge students to regularly check that their grades in Canvas are up to date and accurate; this is your responsibility alone. Failure to do so may result in a final course grade lower than expected.

Calculator Rule: No cell phone, iPad, or any device capable of connecting to the internet is allowed in use during any in-class quiz, regular exam, or the final exam. Likewise, programmable, graphing, or any calculator capable of algebraic manipulations will not be allowed on any in-class quiz, regular exam, or the final exam.

Prohibited calculators include all the various makes of the following base models: TI36, TI83, TI84, TI86, TI89, TI92, TI-Nspire, HP48, etc., as well as other similar models and brands. **An example of an acceptable standard, scientific, non-graphing calculator is the TI30**. Your instructor can verify if a calculator is acceptable for use during quizzes or exams. Moreover, calculator graphing or programming features will not be taught, but it will also not be assessed.

Occasionally, a standard scientific calculator, say, a TI30, is required for basic approximation of radicals, logarithmic expressions, and the like, even on exams, like the final exam. It is advised that students always have a basic calculator with them for quizzes and exams just in case that one is allowed and needed. Note that it is the instructor's prerogative to give quizzes, tests, or portions of tests that do not allow any calculator. Not having a calculator does *not* excuse a student from being responsible for taking a quiz or exam at the assigned time.

Students are expected to be able to perform basic calculations, such as fractional arithmetic, finding exact simplified root values, manipulating algebraic expressions at the course level, etc. **without a calculator**. While a few homework problems and applications may require the use of a graphing calculator or online app, e.g., Desmos, questions on in-person quizzes or exams will only test basic facts that must be demonstrated by students without aid beyond a blank scratch paper and a standard, scientific, non-graphing calculator.

A student's performance will be measured primarily on their understanding of the concepts and their competency in performing symbolic operations rather than a mere ability to use technology (bushing buttons) to get answers. **Full credit will only be awarded on exam questions when answers are justified by a legible and valid argument.**

Electronic Devices in the Classroom: Absolutely **no** video or audio recording in the classroom is allowed without *prior written authorization from the instructor*. Cell phones and other electronic devices should be in silence mode during lectures, tests, and final exams. Such devices should not be on the desk during lectures, tests, and final exam. In case of emergency, students should exit the classroom before they e-mail, text, or use their cell phones. If students choose to use a computer or electronic device to take notes, they may do so without distracting their classmates. Computer activities that are not related to the class directly should not be done during class time. Students who text, talk on the cell phone, or use their electronic devices to do activities not directly related to the class will be asked to leave the classroom.

Cheating Rule: Cheating on any assignment or exam will minimally result in a failing grade of 0% for that assignment without any possibility for that work to be made up, resubmitted, or for the failing grade to be substituted by any other work's grade. Moreover, cheating on a single assignment or exam can result in a failing grade for the entire class; this is typically the prerogative of the individual instructor. FYI, your instructor prefers to fail a cheating student for the entire course on the *first* offense.

Cheating is not tolerated, so, take heed and do honest work to learn and develop intellectually. For more details about academic dishonesty, consult the Student Code of Conduct, where this topic is addressed in section C (see below too):

https://www.slcc.edu/policies/policies/student_affairs/8.1.050.aspx,

Sanctions for Academic Misconduct (taken from the Student Code of Conduct):

Faculty, program directors, associate deans, deans, and the provost for Academic Affairs are authorized to impose any one or a combination of the following sanctions after finding a student responsible for acts of academic misconduct. The possible sanctions include, but are not limited to

- verbal warning and reprimand
- restriction of privileges, such as access to lab facilities, library facilities, or testing centers
- failure of the exam, quiz, project, or other assessment
- failure for the course
- withdrawal from the course, or
- withdrawal from the academic program

Classroom Deportment: Each student is responsible for their own behavior. Any student who shows a pattern of disrespect for others, or who at any time displays egregious disrespect for others, will be subject to penalties as per the student code of conduct.

Attendance: Attendance is absolutely **expected**. Lectures are given only once and consultation time is not for repeating lectures, but for assisting students with homework once they have read lecture notes and the text well. Points are not awarded for merely attending class; points are awarded only for assigned and acceptably completed course work. Typically, regular attendance is essential to achieve minimally satisfactory results. It will be your responsibility to learn any information you miss due to your absence. You will be held responsible for all material covered and all announcements made in class.

Important college-wide dates from the academic calendar.

January 8	Classes Begin
January 15	Martin Luther King Day (No Classes, College Closed)
January 16	Residency Deadline
January 17	Last Day to Add Classes (Waitlist Ends)
January 24	Tuition Due
January 29	Last Day to Drop Classes with 100% Refund (No refunds or adjustments after this date)
January 31	Tuition Payment Plan Application Deadline with ¼ Down

February 10	Tuition Payment Plan Application Deadline with ½ Down
February 19	President's Day (No Classes, College Closed)
March 4-9	Spring Break (No Classes)
March 19	Last Day to Withdraw (No refunds)
April 25	Last Day of Classes
April 25	Last Day to Apply for Spring Graduation
April 26	Reading Day
April 27-May 2	Final Exams

The college is very generous with such long extended withdraw deadlines. It is the student's responsibility alone to be aware of these dates and act accordingly. Students must appeal withdraws through the Registrar's Office. Note also that a student's class status will **not** be changed to **audit** by the instructor after the students' deadline to do so themselves.

Incomplete Rule: The grade of Incomplete is given only in certain very rare cases. Typically, an incomplete is given if the student needs extra time to complete a very limited portion of the course, e.g., just the Final Exam, due to some good reason, e.g., being ill in a hospital during the final. Incompletes are not given to repeat half or most of the entire course, nor are they given to extend time to learn course material better. At least 70% of the course material must be completed and the student must be passing the course before an incomplete is even remotely something I would consider. In my classes, this means that a student must have turned in all assignments including the very last homework assignment, which is due the day of the final exam, and the student must have taken at least 2 regular exams and be passing, leaving only the final exam to finish. I very rarely grant incompletes; do not be surprised if such a request is denied even in the case that all the above criteria are satisfied.

Neither incompletes nor audits will be allowed as a way to avoid an undesirable grade or a withdraw mark.

General Learning Support & Tutoring Services: General Learning Support & Tutoring Services provide support for SLCC students enrolled in any class at the College. You may also ask your instructor about discipline-specific learning support and tutoring services.

The following resources are provided free-of-charge.

- In your Canvas course, there is a (blue) tab, "Online Tutoring," in the left column of tabs. This literally provides free online tutoring during hours of operation.
- For in-person Redwood campus help in math, the next resource is highly recommended:
  STEM Center, which offers free STEM tutoring. Check online for their hours of operation.
  https://www.slcc.edu/stem/tutoring/subjects-hours-locations.aspx

Dumke STEM Learning Resource Center – Science and Industry Building (SI) 101

- **Tutoring**: index of all tutoring resources.
- **STEM Learning Centers**: provide free assistance in Math, Science, Accounting, CSIS and Allied Health Classes at 6 campus locations.
- **Student Writing Center**: provides in-person and online feedback on all writing assignments.
- **Library Services**: provides research help, print and online resources, computers and study space.
- **ePortfolio Lab**: provides drop-in assistance for all ePortfolio questions.
- **eLearning Support**: provides support for navigating online and hybrid classes.

Other online help:

- Online Tutoring: https://slcconline.helpdocs.com/lti-tool/how-can-students-utilize-online-tutoring
- Online workshops: http://www.slcc.edu/stem/workshops.aspx
- Library: https://libweb.slcc.edu/
- Writing center: https://www.slccswc.org/operations.php
- E-Portfolio help: http://www.slcc.edu/eportfolio/remote.aspx
- Study resources: https://www.slcc.edu/stem/student-resources.aspx

Of course, students may also choose to seek help outside of SLCC's resources, e.g., *private tutors for hire*.

Institutional Syllabus Items: The following next couple items are from the institutional syllabus; for more information, see Institutional Syllabus: Institutional Syllabus 2018-11 (instructure.com).

DRC Statement: SLCC values inclusive learning environments and strives to make all aspects of the College accessible to our students. If you have a disability and believe you need accommodations to improve access to learning materials or the learning environment, please contact the Disability Resource Center: Phone: 801-957-4659; Email: drc@slcc.edu; DRC Website: http://www.slcc.edu/drc/.

HEED for Testing Accommodations: Students taking their exams through the DRC or the Testing Center's services, must take all corresponding exams on the scheduled exam dates listed above and their scheduled exam times must *overlap* the class's scheduled exam time (no exceptions); failure to do so may result in your exam not being accepted. Thus, you cannot schedule your exam a day or two early, or late, or several hours before, or after, the time that the rest of your class takes the exam without prior instructor permission. It is your responsibility to schedule your exam's days and times with the DRC or the Testing Center well-ahead; you already know the exams' dates and times; do not delay scheduling.

Finally, read and be aware of the regulations set forth in the current Class Schedule for this semester in the SLCC college catalog.

This marks the end of the syllabus; however, assigned text homework problems are on the next few pages for your convenience.

Spring 2024 *Tentative* Schedule for M2280-401

Below is the list of assigned written homework problems from the text. These exercises are considered a minimum for sufficient exposure to the course's material. Students are encouraged to work other exercises too as other text problems may appear on exams.

Plagiarism and Cheating: Copying solutions from a solution manual or some website is typically unacceptable. Students should feel guilty for reading solutions without firstly having spent some serious time struggling with a problem. If you are having difficulty working a problem on your own, which is natural and expected from time-to-time, you should reread parts of the course's text, notes, or read other texts, get suggestions/ideas/hints from your peers or instructor, and try it again. Give yourself the time and opportunity to cogitate and try to work out problems on your own. To skip this necessary process is lazy and it will very likely show in one's lack of overall greater development long term.

Your intellectual, conceptual, critical, analytical, deductive, and mathematical growth will only take place with a necessary struggle in trying to figure out problems on your own. Just like physically working out our bodies, working out our brains require a struggle to get a growth response. What is more, being able to work many problems on your own is a very accurate measure of competency in scientific academia, and in the pursuit of learning, in general. Do not fool yourself otherwise; for it is far too easy to demonstrate this with a few basic questions from course material directed at anyone who disagrees. In general, it is quite easy to demonstrate/assess when someone knows certain material well, and when they really do not (instructors included). However, if you push yourself to grow, you will! I hope that you enjoy the many amazing problems below and the beautiful intellectual journey; it is a remarkable symphony of mathematics and its applications!

Text: *Differential Equations and Boundary Value Problems*, 4th edition, by Edwards and Penney.

These problems should be done within a few days after the section is covered in class, but prior to each exam.

Week	Section	Assigned Problems
1	1.1	1, 7, 9, 13, 15, 17, 21, 23, 25, 27, 28, 29, 32-42 all
	1.2	1, 3, 7, 9, 15, 17, 21, 24, 25, 35, 36, 37, 38
2(short week)	No school, Martin Luther King, Jr., Day, Monday, January 15th	
	1.4	1, 3, 7, 15, 17, 19, 21, 29, 35, 41, 43, 47, 54, 55, 57, 59, 60, 61
	1.3	1, 3, 5, 7, 11, 13, 14, 15, 27, 29
3	1.5	1, 5, 7, 13, 15, 19, 21, 27, 29, 31, 32, 33, 35, 37
	1.6	1, 3, 7, 11, 17, 21, 28, 29, 31, 35, 37, 39, 43, 45, 47, 55, 56, 63, 65, 68, 72
4	1.6 (cont.)	
	Ch1 Review	1-35 (choose 12 problems to work, practice, and improve your understanding)
	2.1	1, 3, 7, 9, 13, 21, 22, 23, 27, 28, 30, 32, 33, 39
5	2.2	3, 9, 23, 24, 25, 26, 27, 28
	exam1 and 1st hw-set due before class (all above problems) sent to me in a *single* PDF as a Canvas message's attachment**:** Thursday, February 8th	
6	2.3	2, 3, 11, 13, 14, 15, 16, 19, 21, 25, 27, 29, 30
	2.4	1, 5, 7, 9, 29ab
7(short week)	No school, Presidents' Day, Monday, February 19th	
	2.5	1, 5, 7, 9
8	2.6	1, 5, 7, 9 (tentatively, we will cover this section if time permits)
	3.1	1, 5, 7, 9, 11, 13, 15, 17, 21, 25, 29, 30, 31, 32, 33, 37, 41, 43, 47, 51, 53
	exam2 and 2nd hw-set due before class (all problems 2.3 – 3.1) as a Canvas message's attachment**:** Thursday, February 29th	
9	No school all week, spring break, Monday – Friday, March 4th – March 8th	
10	3.2	1-9 odd, 13, 17, 21, 23, 27-33, 36, 37
11	3.3	1, 3, 4, 5, 7, 9, 11, 13, 14, 15, 18, 21, 23, 25, 27, 31, 39, 43, 44
	3.5	1-33 odd, 43, 53, 47, 63
12	3.8	1, 3, 4, 7, 9, 10 (we will cover this section if time permits)
	4.1	1-9 odd, 11, 13, 17, 19, 21, 23, 24

| 13 | 4.2 | 1, 3, 6, 7, 10, 13, 16, 19, 20, 21, 22, 23, 24, 28 |

14	5.1	9, 11, 13, 14, 23, 27, 41, 32, 33, 41, 42, 43
	5.2	1, 3, 5, 11, 13, 15, 17, 21, 27, 29
15	5.4	1, 3, 5, 13, 17, 19 (if time permits)
	5.5	1, 3, 7, 9, 11, 17, 21, 23, 25, 27, 28, 31, 32 (if time permits)
16	5.6	If time permits, problems will be assigned

The last day of class is Thursday, April 25th