MATHEMATICS 2250
Ordinary Differential Equations and Linear Algebra
Spring Semester 2008

Time: MTWF 7:30–8:20am JTB 140 or MTWF 10:45-11:35am LCB 219

Instructor: Professor Grant B. Gustafson[1], JWB 113, 581-6879.

Tuesday Instructors: E. Meucci and L. Zhang

Office Hours: JWB 113, after the 7:30 class, MWF 8:45-9:20am. Other times appear on my door card. From computers, read the door card link at the course web site.

Web site: `http://www.math.utah.edu/~gustafso/`

Telephone: 581-6879. Please use email whenever possible.

Email: `ggustaf@math.utah.edu   meucci@math.utah.edu   lzhang@math.utah.edu`

Tuesday Lab: Please attend one or more times as advertised below,e.g., if your class is at 10:45, then you may attend 7:30 or later lab sessions. It is usual to attend two Tuesday sessions for 20 minutes each to obtain help on dailies, maple labs and midterm exam review.

Tuesday 7:30-8:20 a.m.	JTB 140
Tuesday 10:45-11:35 a.m.	LCB 219
Night course time arranged	E. Meucci, L. Zhang

Tutoring: The Math Department Tutoring Center is located in the basement of building LCB. Free tutoring is offered Mon–Thu from 8 a.m. to 8 p.m., and from 8 a.m. to 6 p.m. on Friday. Some, but not all of the math tutors welcome questions from Math 2250 students. To see the times and specialities of various tutors, browse web address `www.math.utah.edu/ugrad/tutoring.html`.

Texts:

Differential Equations and Linear Algebra, by C.H. Edwards Jr. and David E. Penney, Second Edition (the required text). New problems and text material appear in the second edition. The old blue first edition could be used, provided you can adjust to page number changes and missing text material.

The *Special Edition* at the UofU bookstore, called the *Fatbook*, binds the second edition and the student solution manual into one volume. Answers to problems are not in the back of the book, but sandwiched between the book and the solution manual.

Student Solution Manual, for the Edwards and Penney text *Differential Equations and Linear Algebra*. This is bound into the bookstore's *special edition*. You would need it only if you bought the standard second edition elsewhere.

Differential Equations, Cliff's Notes series. Contains concise examples and readable explanations of topics found in the Edwards-Penney text.

WWW documents for 2250 at web site `http://www.math.utah.edu/~gustafso/`. All are pdf or text documents that can be printed from `Mozilla Firefox`, `Opera` or MS `explorer` web browsers. Author: G.B. Gustafson. Located here are large-font printable projection slides in pdf format made for Adobe Reader, exam keys for past midterms and finals, maple code, solved problems and examples.

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[1]Pronunciation: In the phrase $\boxed{Gust\ of\ Wind}$ change $\boxed{Wind}$ to $\boxed{Sun}$

Prerequisites

Math 1210 and 1220 or the equivalent (Calculus I and II). This is first-year Calculus, with a very brief introduction to linear differential equations. The old Math courses 111-112-113 of 1997-98 fulfill the requirement. In addition, background is required in planar curves, velocity and acceleration vectors from Physics 2210 or Math 2210 (Calculus III), or their equivalent courses. The co-requisite is Physics 2210 (old 301), with actual use of physics minimal.

To cooperate with the engineering programs on campus, some `maple` contact is required in the course work for 2250. All computer code examples are supplied in `maple` only.

A passive knowledge of `maple` is assumed. Persons without the passive knowledge of `maple` and `unix` may attend one 50-minute *maple tutorial* offered during the second and third week of the term. The instruction coordinator for the tutorials is Angie Gardiner, 585-9478, `gardiner@math.utah.edu`. The dates and times are published at the 2250 web address cited above. Angie's web page is `www.math.utah.edu/ugrad/tutoring.html`. Her office is MC 155A in building LCB.

Persons without computer training and no maple experience can survive through Chapter 2 with a graphing calculator and Microsoft's `Excel` or the MathWork's `matlab`. Free software exists for PC Intel hardware to duplicate most of matlab's functionality. Only matlab has a licensed maple engine, and this is the main reason why matlab provides a route through the course, without learning a lot of maple details.

Free tutoring is available in the LCB tutoring center 8:00 a.m. to 8:00 p.m. daily, except until 6:00pm on Friday, closed weekends and semester holidays. Some maple help is available. Only a few of the tutors are capable of helping you on computer projects or on 2250 homework problems. The work hours of those individuals an be found by calling the math lab help desk.

Course material and requirements

This course is an introduction to linear algebra and differential equations in engineering and science. Chapters 1-7 and 10 in the Edwards-Penney text plus class notes and `www` documents will make up the course material. If you study in isolation, then please know that some topics are enriched in class. Your grade in the course may be reduced by isolation, because the enriched material is tested on exams (please browse old exams online).

Grading:

Final grades will be based on:

> Textbook problems, the major part of the **dailies**, about 105 scores.
>
> Six computer projects form the minor part of the **dailies**. Each project is counted like several textbook problems, for a total of 19 scores, making 105+19=124 dailies.
>
> Three written midterm examinations.
>
> Final exam. This in-class 2-hour examination counts as two additional midterm scores.

Written In-Class Exams:

There are three (3) midterm exams. There is a 2-hour in-class final exam as scheduled by the university. The midterm and final exams are graded by G.B. Gustafson and the Tuesday lecturers E. Meucci and L. Zhang. These exams are scheduled for Tuesday Lab time 7:15am and 10:35am

in JTB 140 and LCB 219, respectively. An additional exam time is scheduled for the next day at 8:40am in 113jwb (my office, 581-6879), to cover people who work, or have baby-sitting limits, or are simply ill and miss the Tuesday exam. Please notify me in advance of the exam date, that you will miss the Tuesday exam and take it the next day. Email `ggustaf@math.utah.edu` is best, phone `581-6879` works too. Please know that once you miss the exam, the crisis has ended, and recovery is the next plan. Please respond ASAP.

Hand-written Dailies:

There will be 141 dailies due during the semester, including textbook problems and six maple labs. They will be graded by a staff of readers employed by Angie Gardiner.

Records:

Accounting of exams and the dailies is initially on paper and ultimately by `excel` computer records. The electronic records are web-based, with keys replacing names. During the course, the currently available electronic record is printed and distributed in class like returned homework. This usually happens about the last day of class or shortly thereafter. Electronic records are available later, on the web.

If you ask for record information before it is electronic, then the request involves 20-30 minutes of my time, to retrieve it from paper records. This is in general a waste of time, and I will refuse the service, if it is only to find a few missing dailies. Please keep your own records. Correction of records, when required, can be made by email communication at the end of the semester.

Homework, computer labs, midterms and final

Textbook problems

Those problems to be submitted for grading are listed on the `gradesheet` for the course and also at the end of the syllabus. Visit the web site for extra copies. The due dates for problems appear only on the web site. They are dynamically updated to reflect the reality of what was discussed in class. Generally, problems are submitted shortly after class discussion.

All students must complete each textbook problem and submit their work in their own handwriting. Collaboration is permitted and encouraged on textbook problems in teams of not more than 2. Submit a separate handwritten report for each partner.

Homework problems are submitted one problem per package with your name, class time and a problem label. **Please write 7:30 or 10:45 and the problem label near your name**, e.g., write problem label $\boxed{\text{1.2-5}}$ for problem 5 in section 1.2 of Edwards-Penney.

There are certain **rules** for writing up the textbook problems. A full accounting of the *format suggestions* contributed by students of 2250 appears on the internet course page as *format for submitted work*. Kindly apply the ideas therein to your written work.

Computer projects

There will be six computer projects assigned during the semester, related to the classroom material. Each project counts the same as 2 to 6 daily problems from the textbook, for a total of 23 scores on the dailies. They will be written by hand and use the software package `maple`.

Maple labs may be requested in a stapled package of several parts. If not, then the rules for

homework problems apply.

There is a Math Department Computer Lab in building LCB at which registered students automatically own accounts, and there are other unix labs around campus where `maple` is also available, for example at the College of Engineering CADE lab. Most unix labs can launch remote X-windows sessions on math hosts using `ssh`. Remote files on math hosts can be transferred to your local unix computer with `sftp`. For information on how to do the same for personal computers, visit the campus computer help sites.

There is *free* tutoring support for these projects (Tuesdays) and for your other course work as well. The instructors are Chen and Todorov. Drop-in tutoring in the computer lab in the basement of building LCB starts the second week of the semester. The staff there is best at elementary topics from algebra and calculus. A few of them can handle 2250 questions.

Midterm exam details

Past midterm in-class exams appear on the web. Your exam is modeled after the old exams. Available on the web page are solution keys to old exams, including all midterm and final exams for the last three years. You may print these for reference. The final exam has a separate study guide, also available at the site.

Books, tables, notes and calculators are not allowed on exam day.

An in-class Midterm exam has different presentation rules, and none of the textbook problem rules apply in this case. Basically, the in-class exam is a first draft. No answer checks are expected.

Final exam details

Two hours are reserved for this written exam. As published by the university, the final exams are as follows.

7:30 class Monday, April 28, 2008 from 7:30am to 10am [JTB 140]

10:45 class Friday April 25, 2008, 10:10am to 12:30pm [LCB 219]

The final exam is comprehensive. It covers chapters 3, 4, 5, 6, 7 and 10 with weight distributed evenly across the chapters listed.

A study guide consisting of problem types by chapter plus several final exam solution keys for previous final exams appear at the web site. Students studying in isolation from the lectures or Tuesday sessions are expected to fill the gap themselves, by studying these materials in depth.

No notes, calculators, tables, books or aids of any kind are allowed on the final exam. Please bring pencils and eraser. Paper will be supplied.

Due dates, extra credit and late work

Due dates

Please prepare submitted work according to the tentative schedule of due dates. The actual due date is the same date, or one day later, as documented on the web site.

Due dates are updated dynamically at `www.math.utah.edu/~gustafso/2250duedateS2008.html`. Browse this site often. To repeat: **the due dates are not given in class**! Sometimes, email communication about due dates and exams will be made from the registrar's list.

Email notification

You will be sent email about due dates, exam reviews and exam dates during the semester. This service depends on your email address being up to date.

Look up your campus information data by visiting the registrar's campus WWW site (where you add classes). Find out your email address, then test it by emailing a message to yourself. To update the information, return to the registrar's site and edit your personal data.

When is work late?

Due to the number of dailies being collected, work is considered late and therefore unacceptable when the stack of papers exits 113JWB and goes to the grader. Registered students whose paper is not in the stack get a zero for the assignment.

Are you an exception? It is better to ask than to assume anything. Depend on extra credit problems (see below) to make up for work not submitted on schedule. The same advice applies, if submitted work earns a grade of 55 or 0. While a zero generally means no work was submitted or else the work contained nothing but a problem statement, graders sometimes reject a paper completely and mark it zero, as though nothing was written. You'll get the paper back and maybe an explanation of why they did that.

The state of submitted work is locked at the point the grader gets the stack. A grader's job is to filter out the good work from the bad work and record the result. This record is never appended, it is only corrected for errors. If you want to recover from not submitting work, then do extra credit problems for that chapter.

The lowest eight (8) dailies are dropped from consideration in order to eliminate makeups. There is no distinction between a problem from the textbook and a maple lab problem, they earn the same credit.

If more than ten (10) textbook problems have zero scores, then please call 581–6879 or email `ggustaf@math.utah.edu` and discuss the situation and options for getting a reasonable grade in the course.

Extra credit

Extra credit problems are enumerated at the web site, and do not appear in this syllabus or on the gradesheet. Instructions for extra credit problems appear at the end of this document, just before the lecture and homework list. Briefly, the deadline for extra credit in a chapter is the due date of the first problem two chapters later.

Withdrawal

It is the Math Department policy, and mine as well, to grant any withdrawal request until the University deadline. This promise also means that such a withdrawal requires no explanation.

Withdrawals are always initiated by the registered student. All paperwork is the duty of the student. My job is the signature.

ADA statement

The American with Disabilities Act requires that reasonable accommodations be provided for students with physical, sensory, cognitive, systemic, learning, and psychiatric disabilities. Please contact me at the beginning of the semester to discuss accommodation (113 JWB or 581-6879), which is to say, accommodation shall be made.

Grading details

Grading Scale

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A  = 95-100, A- = 92-94, B+ = 88-91, B  = 84-87,
B- = 80-83,  C+ = 75-79, C  = 65-74, C- = 60-64
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This scale is determined from 40% passing use GPA increments. It is used for grading and for final letter grade reporting. This scale is for internal use only. Fractional scores are truncated (not rounded) when fitting a score to a letter grade – see below for examples.

Final grade

A grade of E is assigned if the Dailies score sums to less than 5000, which is 50 dailies, or 40% of the required 124 dailies. Please read the **Rite of passage** paragraph below.

The letter grade is determined from the *Grading Scale* above as follows:
$$\text{Final Grade} = \frac{30}{100}(\text{Dailies Average}) + \frac{70}{100}(\text{Midterm+Final Average}).$$
An example: the Dailies Average for 130 textbook problems and maple labs is 91% and the Exam Average of the three midterms and the final exam is 86%. The final grade is $0.3(91) + 0.7(86) = 87.5\%$, which by the scale above is a B. While 87.5 rounds to 88, a $B+$, the deciding factor is really the exam average of 86, which is squarely a B. The final grade is B. If the dailies average was 93 or higher, then the final grade would be 88.1 or higher for a B+.

A precise description of the method of assigning letter grades follows. First, compute the course average $A = 0.3A_1 + 0.7A_2$ from the dailies average A_1 and the exam average A_2. Truncate A to an integer (e.g., $A = 94.96$ truncates to 94). Assign a letter grade L according to the grading scale (see above). Look at the final exam score F and the exam average A_2. If F would give a higher letter grade, then change L to the next possible higher letter grade, e.g., change a $B+$ to an $A-$ (but not $B+$ to A). In some cases, when F is low or A_1 is low, the average A_2 will be used to decide on the letter grade. An example: $A = 94.96$, $F = 92$, $A_1 = 94.86$, $A_2 = 95$. The letter grade is $A-$, but the exam average is 95 or A, therefore the letter grade $A-$ should be promoted to an A.

It is possible with a very low daily average to have rank one or two in the class and yet earn a final grade of **B**. This happens because the influence of the dailies score is just 30%. An example:

final exam grade 100, exam average 99, dailies 55. Then

$$0.3 * 55 + 0.7 * 99 = 85.8 = \mathbf{B}.$$

Rite of passage

A passing grade in the course requires submission of at least 50 of the 124 dailies, which includes all computer projects. A grade of E is assigned if less than 50 Dailies are submitted. The scores on the 50 dailies are expected to be 100%. This requirement is met by submitting dailies for chapters 1, 2 and 3 plus maple labs 1 and 2, each with a grade of 100.

The right of passage is absolute, similar to the European system, which requires a body of work to be presented before written and oral final exams are taken. For example, the Czech *vypočet* is a requirement to show a body of completed work as the entrance requirement to administration of written and oral final exams.

How dailies are graded

Graders assign scores on dailies as one of 100, 55 or 0. Based on grading history, about 90% of the scores on a given problem are 100%. A score of 0 is routinely given for work not submitted or work in which only a problem statement appeared.

A grade of 100 usually means a complete, correct solution was written. Graders are asked to be generous, and give a 100 score when the solution method is correct, even if the details contain arithmetic errors and a few missing steps. Flaws in logic are not excused, even if the correct answer was found, due to multiple errors canceling the logic error.

A grade of 55 means the written work lacked essential details. This score is often given for a written solution with just the answer and a few sketchy details. Examples of sketchy solutions, worth 55 or 0 for a score, appear in the textbook's solution manual. In particular, copying verbatim the solution manual gives the grader the right to assign a zero or 55 score.

The wrong answer is a reason for the grader to look for a flaw. Because all written solutions must have an answer check, a wrong answer signals a careless report. The graders have license to be kind, or unkind.

Extra credit problems

All extra credit problems are printed from the course web site, and appear nowhere else. Possible because of them is 100% credit on each chapter and 100% on each maple lab. To repeat, *extra credit problems don't appear in the book.*

Grades on extra credit problems and extra credit maple lab sections are 100 and 0. Generally expect an extra credit problem to be more difficult than the standard assignment. In rare cases, an extra credit problem may be scored 55, at the discretion of the grader.

To illustrate how credit is applied, suppose that chapter one has 15 dailies and 5 extra credit problems. Consider this record:

Problem Count	Score
9 Dailies	100
3 Dailies	55
3 Not submitted	0
4 Extra Credit	100

Then the average on chapter one is the smaller of $(9*100 + 3*55 + 4*100)/15 = 97.6$ and 100. The fifth extra credit problem could add 100, then the average is 100.

Extra credit is applied to each chapter individually. For example, an extra credit problem like Xc1.2-12 applies only to chapter 1. An exception to this rule is end-of-semester extra credit problems, which apply to increase the dailies average up to a maximum of 100%. Generally, this offer applies only to a few dailies which were skipped by decree (snow days can cause this), and to chapter 10 extra credit problems, which add credit across all chapters, not just chapter 10.

Purpose of the textbook problems

The *purpose* of the problems is to practice doing mathematics, that is, to write out in detail the solutions to problems. A textbook problem is generally an engineering–style "crank" problem, usually devoid of proofs. The process:

- **Understand the problem**. Understanding usually involves reading the *problem notes* and the textbook. Answers are usually not provided. You may get an outline of the solution, to increase the probability that the project gets completed on schedule. Problems are discussed in class in finer detail, often with the aid of transparencies, which are replicated at the web site. Slides cover a similar problem or sometimes the exact problem considered in the project. Classroom slides are mirrored at the web site as pdf files, ready to print from an internet browser.

- **Background reading**. To solve a problem, a second opinion of the theory and method is essential. It might be that you can flesh it out of your book's examples, the college algebra text, the calculus text or some engineering mathematics book. No matter, go to a source that works for you. This is *reading* and not a tutorial.

- **Scratch Paper Write–up**. The initial creation of a solution is the essence of the learning process. Everyone learns by repetition, and here is where you do it. Use a pencil and a big eraser, lots of paper, and flesh out a first draft at full speed. Don't submit this draft!

- **Final Copy**. The final copy of the solution uses the scratch paper draft as raw material to *present* the details of the solution. As such, it is more than a collection of formulas on paper. There is no strict requirement, except that *neatness* and *completeness* are a must.

- **Final Copy Format**. The most successful format to date was invented by several engineering mathematics students over the years 1990–2007. This format is described in some detail below and also in the internet document *format for submitted work*.

Some Format Suggestions

1. Use engineering paper or plain white paper. Lined notebook paper and graph paper are not acceptable for mathematics, because they introduce flaws in vertical white space.

2. Reports are hand-written in pencil. They start with a problem statement followed by the book's answer or by a final answer summary. Supporting material appears at the end, like a tax return.

3. Every report has an answer check. For problems with textbook answers, it is usual to see "*the answer matches the textbook*," or briefly **B.O.B.** For problems without a textbook answer, a full answer check is expected.

4. Mathematical notation is on the left, text on the right, about a 60% to 40% ratio. One equal sign per line. Justify equations left or align on the equal signs.

5. Text is left-justified on the right side. It includes explanations, references by keyword or page number, statements and definitions, references to delayed details, like long calculations, graphics and answer checks.

6. Rules 4 and 5 can be broken. They are suggestions, not rules.

Cooperative efforts are allowed and encouraged. Kindly produce individual handwritten reports. There is no penalty for getting help from others – it is encouraged. This includes tutorial staff in the Math Center LCB, teaching assistants and fellow students.

English language deficiencies are tolerated but not excused. Graders prefer short, precise English comments. If English is your second language, then try to improve your writing skills: (1) shorten comments and (2) use page references to the textbook.

Presentation is expected to improve throughout the 14 weeks of the course. You are not expected to be an expert in the first week. Correctness of answers will be checked. The problem notes might contain answers plus a solution outline. In class, further details are communicated. Your job is to *improve* on the initial start into the solution. Add the particulars, make comments, and chase down the details from algebra and calculus. College algebra and calculus skills need constant and careful review. Writing up the solution identifies the stumbling blocks and forces a review of background material.

References are required on the first occurrence. After that, omit the citation. It is appropriate to refer to the previous assignment on which the citations originated. A statement like *References parallel Exercises 1-5* is enough.

Extra credit instructions

Extra credit problems add credit to the chapter in which they appear. They do not add credit to any other chapter. The exception is Chapter 10, which adds credit to any and all chapters.

The maximum credit that can be earned in a chapter is 100%. An example:

> Standard problems and maple labs might total 1600 for a chapter, which counts as 16 items on the gradesheet. Extra credit problems could potentially add 5 times 100 or 500. If 1355 was earned on standard problems and maple labs, plus 300 on extra credit, then the total earned is $(1355 + 300)/16 = 103.44$. This total is truncated to 100, because you may earn no more than 100% for a chapter.

Location. The web site `http://www.math.utah.edu/~gustafso/index2250.html` has a link to print the extra credit problems for each chapter. They do not appear in the syllabus nor the gradesheet, which reference only standard problems and maple labs.

Submissions. Please submit extra credit problems with a special label. To illustrate, extra credit problem **1.2-12** would be submitted with label $\boxed{\textbf{Xc1.2-12}}$ next to your name and class time. To save time, staple a copy of the problems to the front of your submitted work, and mark those that are solved.

Deadline. The deadline for submitting extra credit is the due date for the first problem of two chapters later. The extra credit stack is delivered on that date to a grader. The records are locked by the grader and never appended, only corrected.

Tentative Due Dates and Lectures 2250 Spring 2008

Week 1, Jan 7,9,11
Sections 1.1,1.2,1.3.

07 Jan, Intro, GB Gustafson, nothing due.
08 Jan, Intro, Meucci and Zhang
09 Jan, Page 16, 1.2:   2,
11 Jan, Page 16, 1.2:   4, 6

Week 2, Jan 14,16,18
Sections 1.4,1.5.

14 Jan, Page 16, 1.2:   10
15 Jan, Begin maple lab 1.
16 Jan, Page 26, 1.3:   6, 14
17 Jan, First maple lecture, LCB115, TBA
18 Jan, Page 41, 1.4:   6, 10
18 Jan, Repeat maple lecture, LCB115, TBA.

Week 3, Jan 21,23,25
Sections 2.1,2.2,2.3,2.4.

21 Jan, Martin Luther King Holiday.
22 Jan, Tuition due. Begin maple 2. Discuss
L2.1.
23 Jan, Page 41, 1.4:   18, 26, 26
25 Jan, Page 54, 1.5:   6, 18, 22, 34

Week 4, Jan 28,30, Feb 1
Sections 2.5,2.6,3.1.

28 Jan, Page 86, 2.1:   6, 16
29 Jan, Discuss L2.2. Discuss L3.1. No maple.
30 Jan, Page 96, 2.2:   10, 18
01 Feb, Submit Intro Maple: L1.1, L1.2

Week 5, Feb 4,6,8
Sections 3.2,3.3,3.4.

04 Feb, Page 106, 2.3:   10, 20
05 Feb, Exam 1 review, problems 1,2.
05 Feb, Discuss L2.3.
06 Feb, Page 152, 3.1:   4, 18, 26
08 Feb, Page 162, 3.2:   10, 18, 24

Week 6, Feb 11,13,15

Sections 3.5,3.6.

11 Feb, Newton Cooling L2.1
11 Feb, symbolic sol L3.1, L4.1.
12 Feb, Midterm 1, five problems.
13 Feb, Page 170, 3.3: 8, 18
15 Feb, Page 182, 3.4:   18

Week 7, Feb 18,20,22.
Sections 4.1,4.2,4.3.

18 Feb, President's Day holiday.
19 Feb, Ch3 problem session in lab.
19 Feb, Discuss maple L3.2, L3.3, L3.4.
20 Feb, Page 182, 3.4:   30, 36, 40
22 Feb, Submit Newton Cooling L2.2, L2.3

Week 8, Feb 25,27,29
Sections 4.4,4.5,4.6,4.7.

25 Feb, Page 194, 3.5:   14, 26, 38
26 Feb, Ch3 and Ch4 problem session.
26 Feb, Discuss maple L4.2, L4.3, L4.4.
27 Feb, Submit maple Newton Cooling: L2.4
29 Apr, Page 212, 3.6:   6, 18, 30, 38, 64

Week 9, Mar 3,7,9
Sections 5.1,5.2,5.3,5.4.

03 Mar, Page 233, 4.1:   18, 22, 30
04 Mar, Exam 2 review.
05 Mar, Page 240, 4.2:   6, 16, 24
07 Mar, Page 248, 4.3:   20, 26
07 Mar, Page 255, 4.4:   4, 22

Week 10, Mar 12,14,16
Sections 5.5,5.6.

10 Mar, Exam review continued.
11 Mar, Midterm 2, five problems. 12 Mar,
Page 263, 4.5:   8, 22, 28
12 Mar, Page 271, 4.6:   4
14 Mar, Page 278, 4.7:   10, 22, 24
16 Mar, Submit maple Matrix Algebra,
  L5.1, L5.2, L5.3

Spring Break
Happy holiday!

17-23 Mar, No classes.

Week 11, Mar 24,26,28
Sections 6.1,6.2,7.1,7.2.

24 Mar, Page 294, 5.1:   34, 36,
    38, 40, 42, 46, 48
25 Mar, one stapled package L3+L4
25 Mar, Submit maple L3.2, L3.3, L3.4
25 Mar, Submit maple L4.2, L4.3, L4.4
25 Mar, Discuss maple L5.1, L5.2, L5.3.
26 Mar, Page 306, 5.2:   16, 24
26 Mar, Page 319, 5.3:   6, 12
28 Mar, Page 319, 5.3:   18, 30

Week 12, Mar 31, Apr 2,4
Sections 7.3,7.4,10.1.

31 Mar, Page 331, 5.4:   18, 34
01 Apr, Exam 3 review. Discuss maple L6.1,
L6.2, L6.3.
02 Apr, Page 346, 5.5:   6, 14, 27, 50, 62
04 Apr, Page 357, 5.6:   2, 10, 16

Week 13, Apr 7,9,11
Sections 10.2,10.3.

07 Apr, Page 370, 6.1:   10, 22, 30, 40
07 Apr, Page 379, 6.2:   8, 20, 26
08 Apr, Exam 3 review.
09 Apr, Page 400, 7.1:   6, 18
09 Apr, Page 413, 7.2:   8, 16
11 Apr, Page 425, 7.3:   10, 22, 40

Week 14, Apr 14,16,18
Section 10.4. Midterm 3 review.

14 Apr, Page 438, 7.4:   6
15 Apr, Midterm 3, five problems.
16 Apr, Page 576, 10.1:   22, 28
18 Apr, Page 588, 10.2:   6, 14, 22
18 Apr, Submit maple Mechanical Oscillations
L6.1, L6.2, L6.3

Week 15, Apr 21,23
Laplace. Final exam review.

21 Apr, Page 597, 10.3:   6, 16
21 Apr, Page 606, 10.4:   22, 28
22 Apr, Final Exam review.
23 Apr, Final exam review. Lectures end.
23 Apr, Reading Day. Office hours finished.
24 Apr, Extra credit due 113jwb by 9pm.
25 May, 2250-2 Final Exam LCB 219 10:10am.
28 Apr, 2250-1 Final Exam JTB 140 7:30am.

Exam Period, Apr 25 to May 3
Final exam for the 7:30 class is Monday, April 28,
2008 from 7:30am to 10am [JTB 140].
Final exam for the 10:45 class is Friday April 25,
2008, 10:10am to 12:30pm [LCB 219].

Extra Credit: Under the door, 113jwb.

24 Apr, Ch10 Extra Credit. About 9 problems
appear on the ch10 extra credit page.
24 Apr, Maple Optional Lab 7:
    Tacoma Narrows   L7.1, L7.2
24 Apr, Maple Optional Lab 8:
    Earthquake L8.1, L8.2, L8.3

Policy on Dailies: The highest 116 dailies will be counted. The lowest 9 of the 125 dailies will be dropped. Any record with less than 50 daily and lab scores earns a grade of **E**, regardless of midterm and final exam scores. Deadlines set at web site www.math.utah.edu/~gustafso/. Work not in the stack sent to the assistant earns a grade of zero. Please replace the zero by doing extra credit.

Extra credit Policy: Records are locked at 9pm on 24 Apr. Ch10 and maple 7,8 credits apply to the semester dailies total. Other extra credit applies only to its chapter.

Policy on Exams: The exam score is (mid1+mid2+mid3+final+final)/5.

Grading Scale: A = 95-100, A- = 92-94, B+ = 88-91, B = 84-87, B- = 80-83, C+ = 75-79, C = 65-74, C- = 60-64.