

## **Math 2373, CSE Linear Algebra and Differential Equations, Spring 2017**

University of Minnesota, Twin Cities Campus

### **COURSE SUPERVISOR:**

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**QUESTIONS:** Any questions about the course should be directed first to your workshop leader, then your lecturer, and after that to the course supervisor.

**ANNOUNCEMENTS:** All announcements related to the class and classwork are made in class and are not necessarily posted on any website. All announcements about administrative details such as office hours, office locations, and exam locations are made in lecture and workshop and are not necessarily posted on any website.

**REQUIRED TEXT:** Differential Equations & Linear Algebra, 2nd ed. by Farlow, Hall, McDill, and West.

**EXAMS:** (all times p.m.)

Thurs., February 23rd: Midterm (5:00-5:55 or 6:05-7:00)

Thurs., March 30th: Midterm (5:00-5:55 or 6:05-7:00)

Thurs., April 27th: Midterm (5:00-5:55 or 6:05-7:00)

Monday, May 8th: Final (1:30-4:30)

The locations of these exams will be announced later, in workshop. Stay tuned.

**CALCULATORS:** On exams, any calculator is permitted, but we draw the line at laptops—these are forbidden. All other devices, especially those with wireless capabilities, must be turned off and stowed out of easy reach during exams. During exams you may not have stored notes on your calculator or use it to communicate surreptitiously with others. You are required to have a graphing calculator for this course. Besides having graphing and scientific calculator functions, your calculator must be capable of evaluating determinants and finding the reduced row echelon form of a matrix. There are lots of used graphing calculators for sale with these capabilities.

**STATUTE OF LIMITATIONS:** Requests for regrading of written work (midterm exams, homework, and lab reports) will be honored only for a period of one week after the items in question have been returned to the class. Failure to pick up an item when it is returned to the class does not stop the clock on the statute of limitations unless there is a written excuse for the absence.

**SPECIAL NEEDS:** Please inform us of any accommodations granted through the Disability Resource Center (DRC) within the first two weeks of class. More specifically, please present a copy of your accommodation letter to your lecturer in the first two weeks and set up your accommodations for the whole semester. The lecturers will be glad to assist you. For any questions you may have about these issues please visit the following website:

<https://diversity.umn.edu/disability/syllabusstatement>

**S/N GRADE:** If you are registered S/N we will submit a grade of S if your letter grade is C- or above, and otherwise a grade of N.

**MAKE-UPS** (for one-time extraordinary events)

Exam absences due to recognized University-related activities, religious holidays, verifiable

illness, and family/medical emergencies will be dealt with on an individual basis. For university activities or religious holidays you should make arrangements with your workshop leader well in advance. **If you are suddenly unable to take an exam, you should e-mail your workshop leader ASAP. If you are too sick to take an exam, do not take the exam. There are no retakes. In all cases of absence from exams a written excuse is required for a make-up to be granted.** Ignorance of the time and place of an exam will not be accepted as an excuse for absence from an exam. If you do not take an exam you will be assigned a grade of zero for that exam.

MAKE-UPS (for recurring conflicts with classes or work)

If you have a class to attend, or a job to hold down every Thursday evening during the semester, or a similar recurring conflict, you must inform your workshop leader in person during the third week of the semester. (We'll remind you about this in workshop in the third week.) You must supply written documentation, e.g. a print-out of your class schedule, or a signed note from your supervisor at work. You will then take the exam on the next day, Friday, during the day. The times and places available for this make-up exam will be announced in workshop. Stay tuned. Students taking the Friday make-up without previously clearing it with their workshop leader will receive a grade of zero on that exam.

#### PROCEDURE FOR CALCULATING GRADES IN MATH 2373

**In fairness to all students, course grades are assigned based solely on the points earned in this course.** For each student the workshop leader will compute a \*total score\* (on a scale of 0-1000) by adding up the following point contributions:

- \*homework scores\* (total score on a scale of 0-100);
- \*lab scores\* (total score on a scale of 0-100);
- \*midterm exam scores\* (each on a scale of 0-150); and
- \*final exam score\* (on a scale of 0-350).

The distribution of course grades in each recitation of MATH 2373 will be determined by its students' performance on the common midterm and final exams. An individual student's course grade within that distribution will depend on ALL of the work of the course, including the work graded individually by the student's TA.

**Note:** There will be 13 homework assignments and 13 labs. For convenience we grade each of these on a scale of 0-10 but in the end we will multiply the total homework score by  $\frac{100}{130}$  and the total lab score by  $\frac{100}{130}$  in order to compute your total points for the course.

**INCOMPLETES:** We will consider giving you an incomplete only if some severe, unexpected event prevents you from completing the course AND you have taken at least 2 midterms AND to date you have been doing work at the C level or better. In order for us to grant an incomplete, you will have to sign a contract stating exactly what you must do to complete the course. We do not grant incompletes just because you've gotten behind in your work. You may drop without permission from any class up through the 8th week of the semester.

**MIDTERMS:** There are three midterm exams, each 55 minutes long and given on a Thursday evening. The ground rules are closed book, closed notes, open calculator and no "cheat sheets" other than those we may provide. There are no multiple choice questions.

Questions are loosely based on homework and worksheet problems but are never quoted verbatim. Students who elect to take the exam starting at 5 must stay in the exam room in their seats until time is called to end the exam. Students who elect to take the exam in the second session after 6 may leave when they are finished with the exam. Scientific and graphing calculators are allowed on exams, but laptops, cell-phones, iPods, etc are not allowed. You may not have notes stored in your calculator or use it to communicate surreptitiously with others. In the absence of specific instructions to the contrary, you are expected to show all the work needed to justify your answers by hand (rather than machine) calculation. Answers appearing without supporting calculations and explanation, even correct ones, will receive no credit. Please use the results of the first midterm to help you decide if you're in danger of failing and should either drop the course or get extra help.

**HOMEWORK:** Homework is assigned once a week and is due on Tuesdays in workshop at the \*beginning\* of class, on paper. No credit for late homework. We encourage you to discuss homework problems with your classmates, including strategies for solving different kinds of problems. Indeed this is one of the best ways to improve your understanding of the course. However, when you write up your solutions you must do this on your own. Handing in homework that is almost identical to a classmate's is a form of cheating and will not be tolerated. Your homework must be neatly, clearly and logically written. Hard copies are required. Staple or clip your homework together. You are required to show methods of solution, not just final answers, and to explain yourself with reasonable clarity. You will lose homework points if you fail to meet any of these standards.

**LABS:** Each week you spend 50 minutes in the lab interacting with MATLAB and you are expected to produce a report on your laboratory activities, due at the \*beginning\* of lab the next week, on paper. No credit for late labs. We discourage verbatim transcription of all your interactions with the computer – that's too much to read. We want just enough computer printout and additional commentary to answer all the questions on the lab handout and to convince us that you understood your assignment. Typically all commands used are included in the report but intermediate output is suppressed. This should be a complete lab report written using sentences. Hard copies are required. Handing in a lab report that is almost identical to a classmate's is a form of cheating and will not be tolerated. Each lab has specific instructions as to what to turn in.

**FINAL EXAM:** The final exam is three hours long. The ground rules are the same as for the midterms: closed book, closed notes, open calculator. Questions will be in the same format as on the midterms. In particular, there are no multiple choice questions and unless otherwise instructed you have to show all the work needed to solve problems by hand. Please note the date and time of the final exam. You commit to that date and time when you sign up for the course. No exceptions.

See <http://www.policy.umn.edu/Policies/Education/> for

University GRADING STANDARDS and standards of SCHOLASTIC CONDUCT.

Finally: STUDENTS ARE HELD RESPONSIBLE FOR ALL ANNOUNCEMENTS AND ALL COURSE CONTENT DELIVERED IN CLASS AND IN WORKSHOP. All official announcements occur in class and workshop only. We will not make extraordinary efforts to contact students outside of lecture and recitation. Those who choose not to attend class

do so at considerable peril to their grade.

### THE FIRST SEVERAL HOMEWORK ASSIGNMENTS

All assignments are from the required text by Farlow, Hall, McDill and West (except for a few “home-made” problems written right on this sheet). Answers to all problems must be justified—unexplained numerical answers will get no credit. Calculations must be done by hand unless you are given specific instructions to do otherwise. Remember that you are practicing up for the exams.

#### **Week 1: Due Tuesday, January 24th:**

Sec. 3.2, pp.143–145: 6,7,9,11,14,18,25,26,34,35,73

Do not use a calculator for this assignment (well, unless you want to check your answer). Use the row operation notation on p.134 of the text to explain each step of row-reduction. In the case of more than one solution, follow the pattern set in Example 7 on pp. 139–140 of the text.

#### **Week 2: Due Tuesday, January 31st:**

Do not use your calculator for this assignment. Sec. 3.1, pp. 127–130: 6,12,14,20,22,52,59  
Sec. 3.2, pp.143–145:2,4,52,62,64 Sec. 3.4, pp. 164–167: 4,6,12,18,40,42 (When/if using row operations, use the notation from p.134 of the text.) Sec. 2.2, pp. 70–73: 8,14,18 (We use only the integrating factor method to solve first order linear differential equations in this course.)

#### **Week 3: Due Tuesday, February 7th:**

Sec. 3.3, pp.154–156: 2,6,10,20

Sec. 3.3: 15 is not assigned but you must know it!

Sec. 1.1, pp. 9–11: 2,4 (This section introduces many types of differential equations we will later be studying in detail and introduces important vocabulary.)

Sec. 1.2, pp. 20–24: 2,14, 16—21 (for 16-21, just match them up, no reason need be given here)

Sec. 1.3, pp. 29–32:12,14

#### **Week 4: Due Tuesday, February 14th:**

Sec. 3.4, pp. 164–167: 46, 50 (The method of 50 also makes quick work of 46.) You can use a calculator to multiply matrices.

Sec. 2.2, pp. 70–73: 22,24,26

Sec. 2.3, pp. 77–80: 6,8,20

Sec. 2.4, pp. 84–87: 6,8,16

Your answers to the questions in Secs. 2.3 and 2.4 will require a few words (or pictures) of explanation over and above the calculations.

#### **Week 5: Due Tuesday, February 21st:**

Sec. 3.6: p. 191: 8,10,11 (You may use your calculator here for row reduction operations)

Sec. 4.1, pp. 205–210: 4,6,8,26,28,47,49

Sec. 4.2: pp. 222–229: 2,6,8,18,20

(You should know the material from 3.6 that is also covered in lab).

**MT I: Thur. February 23rd, 5–5:55 or 6:05–7pm**

**Week 6: Due Tuesday, February 28th:**

Sec. 4.3: pp. 238–243: 2,6,12,14,64

**Homework assignments for the remainder of the semester will be announced in workshop. Stay tuned.**