MATH 3013.001/01G—Linear Algebra—Spring, 2015
MWF 10:30 AM-11:20 PM, HS 004

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Office Hours: MWF 2:30–3:20 PM, or by appointment

Online Classroom (Desire to Learn, "D2L"): `https://oc.okstate.edu`
Check this site for announcements, lecture notes, updates, homework assignments, reviews, quiz and exam scores and solutions, grade estimates, and other material.

Text: *Linear Algebra, A Modern Introduction, Third* or *Fourth Edition*, by David Poole. We will cover sections 1.1-1.4, 2.1-2.4, 3.1-3.7, 4.1-4,4, 4.6, 5.1-5.5, 6.1-6.2, and 6.4. Additional topics may be covered as time permits.

Quizzes and Homework: Several times during the semester a quiz (closed book and closed notes, unless otherwise indicated) will be given. Homework will be assigned, but it will not be collected or graded. Nevertheless, it is extremely important that you work on the homework problems; the quizzes and exams will include similar problems. Quizzes will be announced in class and on the D2L Course Homepage. The list of homework problems will be posted on D2L under Content. Note that the numbering of the homework problems is different for the two editions.

Exams: There will be three fifty-minute midterm examinations. They will be announced in class and on D2L. A comprehensive final examination will be administered from 10:00 to 11:50 AM on Friday, May 8. Unless otherwise indicated, exams will be closed book, closed notes.

Grading: Each 50-minute exam is graded on a 100 point scale and counts 20% of your total course score. The final is graded on a 200 point scale and counts 30% of your total score. There is no curving of exam scores.

The individual quizzes may be graded on different point scales. At the end of the semester your total quiz score will be adjusted to a 100 point scale as follows. A certain number of quiz points will be dropped from the maximum possible number of points to obtain a certain "perfect score". For example, suppose that there were six quizzes and that their individual point scales were 25, 20, 30, 25, 30, and 20. Then the maximum possible number of quiz points would be 25+20+30+25+30+20=150. If 30 points were dropped, then the "perfect score" would be 120. You would then be assigned the percentage (up to 100) of this "perfect score" that you have earned. Continuing with our example, if your scores were 20, 0, 10, 25, 20, and 15 you would have 20+0+10+25+20+15=90 quiz points. Then your total quiz percentage would be 75 (90 out of 120) instead of 60 (90 out of 150). If, in this example, you earned 120 or more quiz points then you would receive the maximum of 100. The number you are assigned will then count 10% of your total course score.

The following formula will give you a total course score which is some number out of 1000.

$$\text{TOTAL} = 2\,(\text{EXAM}\,1 + \text{EXAM}\,2 + \text{EXAM}\,3) + (1.5)\,\text{FINAL} + \text{QUIZ}\%$$

If you make at least the following total score, you will make at least the indicated letter grade. (Depending on the distribution of scores, it is possible that lower cutoffs may be used.)

900 points–A, 800 points–B, 700 points–C, 600 points–D

Partial Credit: On quizzes there will be very little, if any, partial credit. On exams the amount of partial credit will depend primarily on how much of a problem you do correctly. On both quizzes and exams it is extremely important that you write down all of the steps involved in getting your final answer, not just the final answer by itself, in order to ensure credit. In general, once you make a mistake or deviate from the method required on that problem you will receive no credit on the rest of the problem.

CONTINUED ON THE BACK

Differences from the Book: The course will sometimes use notation, terminology, and procedures which differ from those in the book. For example, the book uses the notation $R_i + kR_j$ for the elementary row operation in which the i^{th} row of a matrix is replaced by the sum of the i^{th} row and k times the j^{th} row. This is bad notation because it does not clearly indicate which row is being replaced. We will use the notation $R_i \to R_i + kR_j$ instead. The book also uses the notation kR_i for the elementary row operation in which the i^{th} row of a matrix is replaced by k times the i^{th} row. We will use the notation $R_i \to kR_i$ instead. On quizzes and exams you are expected to use this notation, not the book's. **Points may be deducted for failure to use this notation.** As another example, the book is rather vague about the procedures it calls "Gaussian elimination" and "Gauss-Jordan elimination." These are procedures for changing a matrix into a special form ("row echelon form" or "reduced row echelon form", respectively) by applying a sequence of elementary row operations. The book's description of these procedures seems to allow any sequence of elementary row operations which puts a matrix in this form. Unfortunately this freedom of choice allows some students to make unfortunate choices, for example doing things that they think are shortcuts but which in fact make the problem much longer to solve; I have seen people taking twelve steps to solve a problem which can be solved in only four. The point is that there are specific patterns of row operations which usually solve the problem quickly and efficiently. Some people never learn these patterns and consequently don't do well in the course. We will call these patterns "Gauss reduction", "Jordan reduction", and "Gauss-Jordan reduction." These procedures have very limited freedom of choice. There are also versions of them in which there is NO freedom of choice; we will call them "strict Gauss reduction", "strict Jordan reduction", and "strict Gauss-Jordan reduction." If a problem on a quiz or exam specifies one of these six procedures you will be **required** to use it; the first time you deviate from the procedure you will receive **no credit** for the rest of the problem, even if the final answer is correct; you are being tested on the **method**, not just the end result.

Online Material: The Online Classroom site for this course will contain general information and announcements, lecture notes, quiz and exam keys, review sheets, and possibly other material, such as notes and exercises on supplemental topics and links to linear algebra resources on the Web.

MLSC: The Mathematics Learning Success Center, located on the fifth floor of Edmon Low Library, provides several services which may be useful to you; the website is at `http://www.math.okstate.edu/mlsc` and the phone number is 744-5818.

In particular it provides tutoring for this course. Tutoring will be available at certain specified times which will be announced on the MLSC website.

The MLSC computers have mathematical software, including Maple, Mathematica, and Matlab, which can be used to solve various linear algebra problems. Some of these programs are also available in various computer labs on campus as well as online via the virtual computer labs. See `it.okstate.edu/students` for more information. You are not required to use such software, but I urge you to familiarize yourself with it. In particular, it is an excellent way to check your homework.

Electronic Device Usage: On quizzes and exams you may use a calculator no more powerful than a TI-89. **You may not use any other electronic devices, including computers, tablets, phones, music players, radios, or any device with a QWERTY keyboard.** TI-83 calculators can be checked out for the semester for free from the Mathematics Department office, 401 MSCS during normal business hours as long as supplies last.

The main point in allowing you to use a calculator is to help you avoid making silly arithmetic mistakes. Although graphing calculators can usually do matrix calculations the input process is generally laborious and for small matrices one can generally do the calculation more quickly by hand. Remember also that you are expected to show each step of a problem. In general if you just write down the final answer to a problem without showing the intermediate steps you should expect no credit on the problem. For example, if you are required to compute the determinant of a matrix by cofactor expansion but instead use your calculator to do it then you should expect no credit on the problem even if you obtain the correct number.

Makeups: The procedure described earlier of dropping a certain number of quiz points to obtain a "perfect score" is the official mechanism for dealing with missed quizzes. Therefore, **there will be no makeups for missed quizzes, no matter what the reason why the quizzes were missed.**

Makeups for exams will be given only for serious and unavoidable reasons. You should try if at all possible to contact me before the regularly scheduled exam time. These makeup exams may be somewhat harder than the original exams.

Syllabus Attachment: This document contains further information on such things as drop dates, incomplete grades, special accomodations for students with disabilities, academic integrity, and general university policies. It is available on the course D2L site as well as at `http://academicaffairs.okstate.edu/faculty-a-staff`. Go to this website and then click on Syllabus Attachment `Spring 2015`.