Instructor: Tom Reuterdahl

Meeting Time: Wednesday 7:00 pm – 10:00 pm  
Office Hours: Wednesday 6:00 pm – 7:00 pm  
Thursday 6:00 pm – 7:00 pm  
Tuesday 7:00 pm – 8:00 pm  

TBA Hours: This course requires 1 TBA hour per week  

CRN 80580

Required Course Materials:


NOTE: Previous editions of the text are not acceptable!

Student Study Guide

TI-83 calculator or equivalent

Dates:  
August 17  Math 270 begins  
December 14  Final exam

Prerequisite:  
Math 252 (Calculus II) with grade of C or better.

Technology: You must have internet access for course materials. In addition, you must have access to a printer as there will be a number of documents you will be required to print out and turn in during the semester. If this is a problem, let me know immediately.

My email address for all correspondence is reuterdahlt@smccd.edu. Note: My last name is Reuterdahl not reuterdahlt as in my email address! In order to be sure your messages don't get lost, ALWAYS put the text string MATH 270 in the Subject line of your message. If you fail to do so I probably will not respond to your message.

It is IMPERATIVE that you check the course website frequently for updates and new course materials!! To avoid missing important messages from me or the College/District, please activate your student email account by logging in at http://my.smccd.edu/ if you have not already done so. Messages regarding your registration status, as well as other necessary information, will be sent to you through this means of communication. Failure to know what's going on in the course because you did not look at the course website is no excuse!

ALL SMART PHONES, DUMB PHONES, TABLETS, COMPUTERS, OR ANY OTHER DEVICE(S) USED FOR COMMUNICATING WITH THE OUTSIDE WORLD MUST BE TURNED OFF WHEN CLASS IS IN SESSION. I WANT YOUR UNDIVIDED ATTENTION AT ALL TIMES. NO EXCEPTIONS!!

Note: I will limit any use of hand-held or wireless technology that disrupts learning opportunities, degrades the learning environment, promotes academic dishonesty, or illegal activities. Students who require access to hand-held or wireless technology as assistive measures for documented disabilities may use them according to their accommodations as provided by the Disabled Student and Services program. A violation of this policy will result in disciplinary action to be determined by the instructor. Sanctions are explicitly stated in the College's Student Code of Conduct.
A word about teaching

"Teachers open the door. You enter by yourself." - Chinese Proverb.

Teaching means to organize and present the material, provide exercises and projects which challenge you, and to evaluate your work. What you learn depends on the work you do -- if you get a good grade, don’t thank me, thank yourself.

When I evaluate your work, I must judge what you say and particularly write. When I hear someone say "I understand the material, but I can’t do the problems." I know that it means "I have a superficial understanding of the material, but I have not yet mastered it to the level which will allow me to do the problems." Be professional about your written work. **There is no excuse for sloppy work and it will not be accepted.**

**How to Forward Your my.smccd.edu Email to Another Email Address:**

Your instructor (that's me!), and Skyline College, will use your my.smccd.edu email account to share information with you. If you don’t check that email, you will miss important news. If you don’t want to check your my.smccd.edu account, and you would rather use an email account such as hotmail, yahoo, Gmail, or another, please take a few minutes to set up forwarding for your my.smccd.edu email to your regular account. Follow these steps:

1. Go to Websmart at https://websmart.smccd.edu/
2. In your student account area, click on the link that says "New! Student Email"
3. Here, you may view your email address and password, and you may reset your password.
4. IMPORTANT: Open your my.smccd.edu email.
5. Click "Settings" at the top of the page.
6. Click the "Forwarding and POP/IMAP" tab.
7. Under Forwarding, click the "Forward a copy of incoming mail" button.
8. Enter the email address you want to forward your email to
9. Click "Save Changes."

Let me know ASAP if you have any difficulties with this!

**Preparation for Class:** Come to class prepared to ask and/or answer questions regarding the assigned material. You are expected to spend a minimum of two hours outside of class for each hour spent in class. I expect nothing less than your best effort. **If that is a commitment you are unwilling to make, drop the course now.**

Attendance is expected and required. I begin class on time and I come to class prepared. I expect you to do the same. If you miss a class, you remain responsible for the material covered. Attendance will be taken each day using a sign-in sheet. Irregular or poor attendance is grounds for being dropped from the course. Any student who misses two of the first three classes will be dropped from the class. Also, any student who misses three or more classes prior to the last day to withdraw will be dropped from the class. No excuses, no exceptions.

**Breaks:** We will take breaks during the evening. **DO NOT** wander in and out of class while in session, it is distracting and annoying. We’re not in high school anymore.

**Code of Student Conduct:** You are responsible for adhering to the Code of Student Conduct outlined in the Skyline College Catalog and the Skyline Student Handbook, available online. Students who engage in disruptive behavior - conduct that interferes with the instructional, administrative, or service functions of the course - may be subject to disciplinary action, including suspension and/or expulsion from the course and/or college. Specifically, **cell phone interruptions**, the use of iPods, habitual profanity or vulgarity, and continued willful disobedience will result in disciplinary action.
Academic Integrity: The work you submit/present must be your own. The Skyline College Student Handbook has a complete statement defining cheating and plagiarism, available online. If you are caught cheating or plagiarizing another person's work, you may be disciplined in one or more of the following ways:
1. Dropped from the course.
2. You may be referred to the College Disciplinarian for further sanctions which range from a warning to expulsion from Skyline College.

Dropping the course. If you decide to drop the course BE SURE to do so properly. If you fail to notify the Skyline administration office you will receive a grade of "F" for the course. No exceptions. This is not my responsibility.

Grading Policy:
There is no "grade curve" in the course. I will set grades as follows:

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<th>Grade Range</th>
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<tr>
<td>90-100%</td>
<td>A</td>
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<td>80-89.999%</td>
<td>B</td>
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<td>70-79.999%</td>
<td>C</td>
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<tr>
<td>60-69.999%</td>
<td>D</td>
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<tr>
<td>below 60%</td>
<td>F</td>
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Your grade will be determined as follows (Dates are tentative and subject to change):

- **Homework** 3% Late homework not accepted
- **TBA Assignments** 12% Late TBA assignments not accepted
- **Midterm exam 1** 25% 9/21
- **Midterm exam 2** 25% 11/9
- **Final exam (cumulative)** 35% 12/14

Final exam: You must pass the final exam with a minimum of 70% to pass the course.

Makeup exams: In general there are NO makeup exams in the course. However, in case of an emergency, a makeup exam will be considered only if the event is documented, in writing, by a health professional or other responsible person familiar with the event. Otherwise, if you miss an exam you will receive a zero for that exam.

Extra Credit Policy: There is no extra credit for this course - please don't ask!

TBA hours: 1 TBA hour per week is required for the course. There will be TBA quizzes given throughout the course. Each quiz will be posted on the course website. Due dates will be specified along with each quiz. No late TBA assignments will be accepted.

Homework assignments:
Homework is due every week. If you do not do the homework it will be very difficult, if not impossible, to pass the exams and the course. Mathematics is not a spectator sport!! Good hard work is the best approach to maximize your probability of success. Each homework assignment is due the week after it is assigned and will be collected and graded. Late homework will not be accepted. No exceptions.

I will post homework "cover sheets" on the course website which will contain the assigned problems and other information for each assignment. Print out a copy of the cover sheet and append it as the first sheet of the homework assignment before you hand it in. No cover sheet, no credit for the assignment.
**Student Learning Outcomes:**
Upon successful completion of this course, a student will meet the following outcomes:
- Formulate linear systems as mathematical models.
- Represent any linear system with a suitable matrix equation.
- Compute the general solution to any linear system.
- Recognize inherent geometric and analytical properties of a given matrix or matrix equation.
- Compute, interpret and use eigenvalues and eigenvectors for linear systems.
- Understand the relationship between linear algebra and other branches of mathematics

**Available Support Services:** The Learning Center (Building 5) provides support for writing, reading, mathematics, and other subjects. Sign up for LSKL 800 for general tutoring. Librarians, on the 2nd floor of building 5, can assist with research projects and library questions. Academic counselors, health services, and other student support services are available in the Student Services Center in Building 2.

**Disability:** In coordination with the DSPS office, reasonable accommodation will be provided for eligible students with disabilities. If you do not yet have an accommodation letter, please contact the DSPS office at (650) 738-4280.

**Course Content:**
Chapter and Section numbers refer to the text, *Linear Algebra and its Applications*, 4th Edition, by David C. Lay

- Chapter 1 Linear Equations in Linear Algebra, Sections 1.1 - 1.9
- Chapter 2 Matrix Algebra, Sections 2.1 - 2.3
- Chapter 4 Vector Spaces, Sections 4.1 - 4.8
- Chapter 5 Eigenvalues and Eigenvectors, Sections 5.1 - 5.5, 5.7

**IMPORTANT NOTE:** This topic schedule is tentative and subject to change in the event of extenuating circumstances. In addition, homework assignments are, depending on circumstances, subject to change at any time.

**WEEK 1**

8/17 Homework assignment
Chapter 1 Linear Equations in Linear Algebra
Read Sections 1.1 - 1.4
Exercises
- Section 1.1 # 7, 11, 15, 19, 23, 25, 33
- Section 1.2 # 1, 3, 7, 9, 11, 13, 19, 21, 23, 25, 27, 33
- Section 1.3 # 11, 13, 17, 19, 21, 23, 25, 26
- Section 1.4 # 3, 7, 11, 15, 17, 19, 23, 27, 31
Exercises for Sections 1.1 - 1.3 and TBA assignment #1 due 8/24
How to Study Linear Algebra

A first course in linear algebra is dramatically different from most mathematics courses that precede it. The focus shifts from learning computational procedures to digesting and mastering basic concepts that underlie the computations. To survive, you may need to learn a new way to study mathematics. That’s why I wrote this Study Guide—to show you how to succeed in the course and to give you tools to do this.

Because you are likely to use linear algebra later in your career, you need to learn the material at a level that will carry you far beyond the final exam. I believe that the strategies below are crucial to success.

STRATEGIES FOR SUCCESS
IN LINEAR ALGEBRA

1. **Study before you start to work on exercises.** Most students don’t do this in courses that precede linear algebra. They survive by looking at the examples when they cannot solve an exercise. That simply will not work in linear algebra. If you “copy” an example (with necessary modifications), you may think you understand the problem, but very little true learning has taken place. (You’ll find that out on your first exam.) For this course, in addition to knowing how to carry out a certain procedure, you must learn when that procedure is appropriate and (most importantly) why it works.

   For success with homework, read the text section first, perhaps taking a few notes. Then, read the **Key Ideas** or **Study Notes** in the Study Guide for that section. Finally, start to work on the assigned exercises. In the long run, this approach will improve your performance and save you time. The preparation time spent here will greatly reduce your exam preparation.

2. **Prepare for each class period as you would for a language class.** Mastery of the subject requires that you learn a rich vocabulary. Your goal now is to become so familiar with concepts that you can use them easily (and correctly) in conversation and in writing. For homework, try to write complete sentences, such as you’ll find in the Study Guide solutions. Pay attention, too, to the warnings here about misuse of terminology.
This course resembles a language course because of the preparation needed between class meetings, to avoid falling behind. Most sections in the text build on preceding sections. Once you are behind, catching up with the class is often difficult. The fact that concepts may seem “simple” does not mean that you can afford to postpone your study until the weekend. The homework may be harder than you expect. The most valuable advice I can give is to keep up with the course.

3. **Concentrate more on learning definitions, facts, and concepts** than on practicing routine computations or algorithms. See connections between concepts. Many theorems and boxed “facts” describe such connections. For examples, see Theorem 2 in Section 1.2, and Theorems 3 and 4 in Section 1.4. Your goal is to think in general terms, to *imagine* typical computations without performing any arithmetic, and to focus on the principles behind the computations.

4. **Review frequently**. Review and reflection are key ingredients for success in learning the material. At strategic points in this *Guide*, I have inserted special subsections labeled “Mastering Linear Algebra Concepts.” They provide specific help for your review of each main concept. I urge you to prepare the review sheets described as you reach each review point. Later, you may choose to add further notes. Of course, use the sheets to review for exams. A Glossary Checklist at the end of each chapter in the *Guide* may help you learn important definitions.

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**CAUTION** Because you can find complete solutions here to many exercises, you will be tempted to read the explanations before you really try to write out the solutions yourself. Don’t do it! If you merely think a bit about a problem and then check to see if your idea is basically correct, you are likely to overestimate your understanding. Some of my students have done this and miserably failed the first exam. By then the damage was done, and they had great difficulty catching up with the class. Proper use of the *Study Guide*, however, will help you to succeed and enjoy the course at the same time.

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**A PERSONAL NOTE**

Students who have used this material have told me how much it helped them learn linear algebra and prepare for tests. The first time my students used the *Study Guide* notes, they had already taken one exam. Grades on the next exam were substantial. For some students, the improvement was dramatic. I hope the *Study Guide* will encourage you to master linear algebra and to perform at a level higher than you ever dreamed possible.

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David C. Lay
Please list all mathematics courses that you have taken including dates and grades. This form must be completed and returned to me at the first class meeting.

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<th>COURSE #</th>
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<td>MATH 270</td>
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