Cuyamaca College

Math 284 – Linear Algebra
Spring 2012

Instructor: Dan Curtis
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Class Times: TTh 12:30-1:45 pm
Room: H139
Office Hours: Monday 11:30 am-1:00 pm
Office: H115
Tuesday 2:00-4:00 pm
Wednesday 11:30 am-1:00 pm
Website: www.cuyamaca.edu/daniel.curtis

Prerequisites: A grade of C or better in Math 280 or the equivalent.

Text and Materials:

- **Linear Algebra and its Applications**, 4th Edition, David C. Lay
- A graphing calculator is required. The TI 84+, TI 89, Voyage 200 or TI-92+ are highly recommended.

Course Description: The topics covered in this course include matrix algebra, Gaussian Elimination, systems of equations, determinants, Euclidean and general vector spaces, linear transformations, orthogonality and inner product spaces, bases of vector spaces, the change of basis theorem, eigenvalues and eigenvectors, the rank and nullity of matrices and linear transformations. This course is intended for the transfer student planning to major in mathematics, physics, engineering, computer science, operational research, economics or other sciences.

Important Dates:		
	Last day to add classes/Last day to drop and qualify for a refund and to drop without receiving a "W"	Friday, Feb 3
	Last day to file a petition for credit/no credit	Friday, Feb 24
	Last day to drop with a 'W'	Friday, Apr 20
	Final Exam (Cumulative)	**Tues, May 22 12:00-2:00 pm**

It is the student's responsibility to take care of any administrative procedures involved in dropping should he/she stop attending class.

Grading: Your final grade will be based on the percentage of total points you earned, using the standard scale: A = 90% and above, B = 80-89.9%, C = 70-79.9%, D = 60-69.9%, F = below 60%.

Exams: There will be three exams (each worth 70-80 points) during the semester. Exam questions will be based on the homework, and I will review the material covered on the exam during class on the last class day before the exam. You will be allowed one 5 x 8 sheet of notes, front and back. No makeup exams will be given, but if you contact me **before** the day of an exam, I may be able to make arrangements for an alternate time for you to take the exam. The final (worth 150 points) will be cumulative and you will be allowed one 8½ x 11 sheet of notes, front and back.

Homework: Homework assignments will be collected on exam days (worth 2 points per section). Each section should start on a new sheet of paper and be clearly labeled. To receive credit, you must show your work. A list of answers is not acceptable. Your homework grade will be based on the number of problems you attempted.

Projects: Throughout the semester, there will be projects due (each worth 10-20 points each). The projects will consist of problems that are more interesting and involved than the typical homework and exam problems. Students are encouraged to work together on the projects, but each student is responsible for completing and submitting his/her own project.

Course Objectives (Expected Student Learning Outcomes)

To successfully complete this course, students must demonstrate the ability to:

- Solve systems of linear equations using several algebraic methods.
- Perform a variety of algebraic matrix operations including multiplication of matrices, transposes, traces, determinant, and the inverse of a matrix.
- Perform vector operations on vectors from Euclidean Vector Spaces including vectors from R^n.
- Perform linear transformations in Euclidean vector spaces including basic linear operators.
- Prove whether a given structure is a vector space and determine if a set of vectors spans a space, and if such a set is linearly dependent or independent.
- Solve for the basis and the dimension of a vector space.
- Calculate the rank, the nullity, the column space and the row space of a matrix.
- Describe orthogonality between vectors in a vector space and compute the QR-decomposition of a matrix using the Gram-Schmidt process.
- Perform changes of bases for a vector space including computation of the transition matrix, and determine an orthonormal basis for the space.
- Compute all the eigenvalues of a square matrix including any complex eigenvalues, and determine their corresponding eigenvectors.

Attendance: Good attendance is a must for success in this class. College policy states that a student may be dropped from the course for excessive absences or tardies. **My Policy**: Four absences during the first four weeks or six absences during the entire semester and you may be dropped – arriving significantly late or leaving significantly early counts as half an absence.

Disability Support Services: Academic accommodations are available for students with disabilities. Please identify yourself to your instructor and to DSPS staff so that the appropriate accommodations can be ensured. DSPS is at A-300, LRC (660-4239)

Academic Honesty: Academic dishonesty of any type by a student provides grounds for disciplinary action by the instructor or college. If you cheat, there will be consequences: I may give you a zero on the assignment or a zero in the course, or other additional consequences, regardless of whether you were the giver or receiver of the cheating.

Misconduct: Disruptive or threatening behavior or any conduct that interferes with my ability to teach or another student's ability to learn will not be tolerated. Such actions could result in a warning, removal from the class or referral to the Dean for disciplinary action. Please turn off your cell phones during class.

STEM Achievement Center: To support your efforts to succeed in this class, I refer you to the STEM Achievement Center (H-Building). The STEM Achievement Center is a resource center that provides individual assistance in mathematics and science. Instructors and student tutors are available to answer homework questions, give confidence, and support math students. Students also have access to graphing calculators, textbooks, instructional videos, and computer tutorial programs. Computers are also available for student use. The STEM Achievement Center is open Monday through Thursday from 8:300 am to 5:30 pm and Friday from 9:00 am to noon.

Class Schedule

Week	Tuesday	Thursday
Wk 1 (1/23)	Intro, 1.1	1.2
Wk 2 (1/30)	1.3	1.4
Wk 3 (2/6)	1.5	1.6
Wk 4 (2/13)	1.7	1.8
Wk 5 (2/20)	1.9, **Review**	**Exam #1, Sections 1.1-1.7**
Wk 6 (2/27)	2.1	2.2
Wk 7 (3/5)	2.3	3.1
Wk 8 (3/12)	3.2	4.1, **Review**
Wk 9 (3/19)	**Exam #2, Section 1.8, 1.9 Chapters 2& 3**	4.2
Wk 10 (3/26)	4.3	4.4
April 2 – April 6 Spring Break		
Wk 11 (4/9)	4.5	4.6
Wk 12 (4/16)	4.7	5.1
Wk 13 (4/23)	5.2	5.3, **Review**
Wk 14 (4/30)	**Exam #3, Chapter 4**	6.1
Wk 15 (5/7)	6.2	6.3
Wk 16 (5/14)	7.1	**Review for Final Exam**
Finals Week	**Final Exam Tuesday, May 22 12:00-2:00**	

Homework:

1.1	1-33 odd, 34
1.2	1-33 odd
1.3	1-33 odd
1.4	1-41 odd
1.5	1-39 odd
1.6	6-11 all
1.7	1-43 odd
1.8	1-39 odd
1.9	1-39 odd
2.1	1-39 odd, 18, 20
2.2	1-41 odd
2.3	1-41 odd
3.1	1-41 every other odd, 22
3.2	1-45 every other odd
4.1	1-37 odd
4.2	1-39 odd
4.3	1-37 odd
4.4	1-35 odd
4.5	1-33 odd
4.6	1-37 odd
4.7	1-19 odd
5.1	1-35 odd
5.2	1-27 odd
5.3	1-19 odd
5.4	1-31 odd
6.1	1-33 odd
6.2	1-33 odd
6.3	1-23 odd
7.1	1-35 odd