# Math 230
## Introduction to Linear Algebra with Applications
### Fall 2013

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| **Instructor:** Jill Nelipovich | **Text/Author:** *Linear Algebra and its applications David Lay, 4th edition* |
| **Office:** 2768 <br> **Phone:** (760) 355 – 6297 | **Chapters Covered:** 1 – 7 |
| **Office Hours:  Room 2768** <br> M: 4:45 – 6:15 p.m. <br> T: 8 – 8: 30 a.m. <br> W: 10:30 – 11:30 a.m. <br> Th: 11:50 – 12:50 p.m. | **Class Days/Times** <br> **Section 10674** <br> **Credit Hours:** 3 Lecture <br> **Prerequisites:**  Math 194 with a grade of "C" or better <br> **Grading Criteria:** Letter |
| **Email:** jill.nelipovich@imperial.edu | **Room:** 2721 |

*The mission of Imperial Valley College is to foster excellence in education that challenges students of every background to develop their intellect, character, and abilities; to assist students in achieving their educational and career goals; and to be responsive to the greater community.*
*The Institutional Learning Outcomes (SLOs) are:*

- *Communication Skills*
- *Critical Thinking Skills*
- *Personal Responsibility*
- *Information Literacy*
- *Global Awareness*

**Course Goals:**
Linear Algebra is a fundamental course for advanced mathematics, engineering and physics. A primary goal of this course is for students to develop a deep conceptual understanding of the fundamental concepts of linear algebra. A second goal of the course is for students to advance in mathematical sophistication through the creation of personally meaningful solutions to problems and by expanding their ways of communicating mathematical thinking and activity to others, both verbally and in writing. Finally, and most important, have fun!

**Course Description:**
A first course in linear algebra intended for students majoring in mathematics, the physical science, engineering or business. Topics included are: systems of linear equations, matrices and determinants, vector spaces, linear transformations, eigenvalues and eigenvectors, and selected applications.

**Required Textbooks and Electronic Resources:**
1. *Linear Algebra and Its Applications, David Lay, 4th edition*
2. *Scientific Calculator recommended*

Disclaimer: I reserve the right to alter this syllabus at any time during the semester.

**Course Layout**
- ❑ 3 Exams  (20% each)…………………………………………………………………60%
- ❑ Homework …………………………………………………………………………..5%
- ❑ Projects …………………………………………………………………………….10%
- ❑ Final Exam …………………………………………………………………………25%


**Grades will be assigned as follows**:

| A | B | C | D | F |
|---|---|---|---|---|
| 90% and above | 80% - 89% | 70%-79% | 60% - 69% | 59% and below |

**Course Objectives:**
1. The student will solve systems of linear equations and inequalities using elimination methods.
2. The student will apply the techniques of matrix algebra to the solution of systems of linear equations and inequalities.
3. The student will compute the determinant of a square matrix and apply determinants to matrix operations.
4. The student will perform vector operations in two or more dimensions and determine vector linear relationships, matrix dimension and rank.
5. The student will find the projection of vectors on planes in space using matrices and the Gram-Schmidt process.
6. The student will demonstrate the transformations of linear systems and find the kernel and range of such transformations.
7. The student will compute the scalar eigenvalue and eigenvector of a square matrix and diagonalize square matrices.
8. The student will choose appropriate techniques of linear algebra to solve application problems from different fields.

**Student Learning Outcomes**
1. Understand and apply the definitions of vector space, subspace, linear independence, span, basis, dimension and linear transformation.
2. Perform matrix operations, and compute determinants, eigenvalues / vectors, and inverses.
3. Understand and apply the relationship between linear transformations, matrices and systems of equations
4. Analyze, synthesize, and evaluate theorems in Linear Algebra


**Class participation and attendance**:
By signing up for this class, you are entering an agreement with me and everybody else here that you will be here on time every day. Attendance for this class is MANDATORY. You can miss 2 days in the semester without penalty. This does not mean you choose a "ditch day". If you miss 3 days, you will be dropped from the class.

**Tardiness and leaving class early:**
Tardies count as half of an absence. It is your responsibility to notify me after class that you were tardy to remove your absence. Leaving class early unannounced is extremely disrespectful. Leaving class early without letting me know ahead of time also counts as an absence.

**Homework:**
The homework is the single most important thing you must do to succeed in this course. You cannot do well on the exams if you do not do well on the homework.

**Extra Credit:** *Making baskets! Personally, I don't want to drive on a bridge based on you passing a course with extra credit!*

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**DSP&S**
Student Disability Services is the campus office responsible for determining and providing appropriate academic accommodations for students with disabilities. Any student with a documented disability who many need educational accommodations should notify the instructor or Disabled Student Programs and Services (DSP&S) office as soon as possible. Students needing these services should visit the DSP & S office as soon as possible.

Health Science Building Room 2117
(760) 355-6312

**How to Be Successful in This Course:**

❑ Take an interest in your grade from **DAY 1.** Waiting until the end of the semester to improve your grade will not work.
❑ Spend 2 – 3 hours outside of class for every hour in class.
❑ Please get help in a timely manner! When you do not understanding the material, please make an effort to get help IMMEDIATELY! Please come to my office hours prepared with specific questions.
❑ Study effectively: Within 24 hours, review the material presented in lecture
❑ Do a little bit of work every night. Not only will this assure you will most likely get the work done, it also helps you internalize the material. If you follow this practice, I almost guarantee you, studying for exams will be "Oh yeah, I remember this" *as opposed to* "I never saw this before in my life".

**General Guidelines:**
- Late assignments will not be accepted
- No make-up test are given. If you miss an exam with a documented absence, the final exam will be counted twice.
- Bring your book, binder, pen, pencil and calculator to class everyday.
- It is your responsibility to drop before the W deadline.
- **School policy:** No food or drink in the classroom.
- **School policy:** No children in the classroom.
- It is your responsibility to take notes and make copies of the notes from the days you have been absent.
- **Maximum number of absences allowed**: **2** - being tardy or leaving class early will count as half absence. The instructor can drop you from the class if the number of absences exceeds the number allowed!

**Academic Dishonesty:**
Academic misconduct will not be tolerated. The following steps are usually taken with a student caught cheating: The instructor will normally record a zero or an "F" for that exam, quiz, homework or project; although the instructor may decide to give an "F" grade for the course.
All cases of academic dishonesty will be reported to the appropriate administration.

## ☺ Good manners are very important! ☺

- **Cell phones – please turn them off (not on vibrate) – you will simply be kicked out of class and marked absent!**
- Please no text messaging! – you will be dismissed from class and marked absent
- If you are waiting for an emergency call – just let me know ahead of time!
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# Fall 2013 Tentative Course Outline Math 230

|  | Date | Topics |
|---|---|---|
| 1 | Aug 19 - 23 | Welcome, Chapter 1.1 – 1.3 |
| 2 | Aug 26 - 30 | Chapter 1.3 – 1.5 |
| 3 | Sept 2 – 6<br>Holiday Sept 2 | Chapter 1.7 – 1.8 |
| 4 | Sept 9 - 13 | Chapter 1.8, 2.1, 2.2 |
| 5 | Sept 16 - 20 | Chapter 2.3, 3.1, 3.2/ Review |
| 6 | Sept 23 - 27 | **Exam I: Chapters 1 and 2, 3.1, 3.2**<br>Chapter 4.1 |
| 7 | Sept 30 – Oct 4 | Chapters 4.2, 4.3, 4.3, 4.4 |
| 8 | Oct 7 - 11 | Chapter 4.4 – 4.6 |
| 9 | Oct 14 - 18 | Chapter 4.6, 5.1, 5.2, 5.3 |
| 10 | Oct 21 - 25 | Chapter 5.3 – 5.4<br>Chapter 5.5, 6.1 |
| 11 | Oct 28 – Nov 1 | Chapter 6.2/Review<br>**Exam 2: Chapters 4 and 5, 6.1** |
| 12 | Nov 4 – 8 | Chapter 6.3, 6.4 6.5 |
| 13 | Nov 11 – 15<br>No Class Nov 11 | Chapters 6.5, 6.7 |
| 14 | Nov 18 - 22 | Chapters 7.1, 7.2, 7.4/Review |
| 15 | Nov 25 – 29 | Exam 3: Chapters 6 and 7<br>Review |
| 16 | Dec 2 - 6 | Final Exam |

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