JINAN UNIVERSITY
Linear Algebra

Lecturer: Cymra (pronounced ‘Kimra’) Haskell
Time: 15:30—17:30, Monday through Friday (June 20, 2016—July 22, 2016)
Teaching hour: 50 hours
Credit: 4
Location: Management School
Office: Management School 518
Office hours: By Appointment
E-mail: chaskell@usc.edu

Course Content
Systems of linear equations, vector spaces and subspaces, linear transformations, determinants, diagonalization of symmetric matrices, inner product spaces and quadratic forms. This is an introductory linear algebra course and it is assumed that students have a higher level of mathematical maturity. Although some proofs will be necessary for understanding, the course will stress sound mathematical reasoning over formal proofs. Linear algebra is one of the most applied topics in mathematics. We will try to spend a little time exploring applications of the subject but this will only be if time permits.

Required Text
‘Linear Algebra and Its Applications, 4th edition,’ by Lay. This is required.
We will cover most of chapters 1 through 5.

Course Hours
Class will meet for two hours every day Monday through Friday for a total of 50 hours over the five-week period.

Calculators: You may use a scientific calculator on all homework and tests but not a graphing
calculator. Cell phones must be turned off and put away during tests.

**Assignments and Graded Work:**

**Homework:** There will be regular homework assignments posted on the course website. It is totally fine and, indeed, encouraged, to help each other solve homework problems, but it is not okay to turn in essentially identical solutions; once you have discussed the problems you should *write the solutions up on your own*. Not all homework problems will be graded.

**Attendance and in-class work:** Students are expected to be in class every day for the full class period. We will be covering a lot of material very quickly, so if you get behind it will be very difficult to catch up. We will spend some time in class working on problems in groups. Some of this work may be presented or turned in. We will also have occasional quizzes possibly including ‘pop’ quizzes.

**Exams:** There will be two midterms and a final exam.

**Grading Policy**

| Homework, Attendance and In-class Work | 20% |
| Midterm Exams | 40% (20% each) |
| Final Exam | 40% |
| **Total** | **100%** |

**Make-Ups:**

This class will go by *very* quickly. I strongly recommend that you *never* miss class, since it will be very hard to make up the material you missed and, since mathematics is cumulative, you will run the risk of getting hopelessly behind. However, I understand that life happens, so up to two missed classes will not count against you. If you miss a midterm you must have an excellent documented reason and the standard procedure will be to put extra weight on your final exam.

**Grading Scale**

The instructor will use the grading system as applied by JNU:

<table>
<thead>
<tr>
<th>Definition</th>
<th>Letter Grade</th>
<th>Score</th>
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</thead>
<tbody>
<tr>
<td>Excellent</td>
<td>A</td>
<td>90-100</td>
</tr>
<tr>
<td>Grade</td>
<td>Letter</td>
<td>Score</td>
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<td>--------</td>
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<tr>
<td>Good</td>
<td>B</td>
<td>80-89</td>
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<tr>
<td>Satisfactory</td>
<td>C</td>
<td>70-79</td>
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<tr>
<td>Poor</td>
<td>D</td>
<td>60-69</td>
</tr>
<tr>
<td>Failed</td>
<td>E</td>
<td>Below 60</td>
</tr>
</tbody>
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Approximate Day-to-Day Schedule:

**Week 1:**
Monday: Introduction and systems of linear equations (Section 1.1)
Tuesday: Row reduction and echelon forms (Section 1.2)
Wednesday: Vector equations and the matrix equation $Ax = b$ (Sections 1.3 and 1.4)
Thursday: Solutions sets of linear equations (Section 1.5)
Friday: Linear independence (Section 1.7)

**Week 2:**
Monday: Introduction to Linear Transformations (Section 1.8)
Tuesday: The matrix of a linear transformation (Section 1.9)
Wednesday: Matrix operations (Section 2.1)
Thursday: The inverse of a matrix and characterizations of invertible matrices (Sections 2.2 and 2.3)
Friday: Test 1

**Week 3:**
Monday: Subspaces of $\mathbb{R}^n$ (Sections 2.8, 4.2 and 4.3)
Tuesday: Dimension and rank (Sections 2.9 and 4.6)
Wednesday: Introduction to determinants (Section 3.1)
Thursday: Properties of determinants (Section 3.2)
Friday: Cramer's rule, volume and linear transformations (Section 3.3)

**Week 4:**
Monday: Vector spaces and subspaces (Section 4.1)
Tuesday: Linearly independent sets and bases in a vector space (Section 4.3 and 4.4)
Wednesday: Change of basis (Section 4.7)
Thursday: Linear transformations and similarity (Section 5.4)
Friday: Test 2

**Week 5:**
Monday: Eigenvalues and eigenvectors and the characteristic equation (Sections 5.1 and 5.2)
Tuesday: Diagonalization (Section 5.3)
Wednesday: Complex Eigenvalues (Section 5.4)
Thursday: Review
Friday: Final Exam

**Caveat:** This syllabus is subject to change in the event of extenuating circumstances.

**Academic Honesty**
Jinan University defines academic misconduct as any act by a student that misrepresents the students’ own academic work or that compromises the academic work of another scholastic misconduct includes (but is not limited to) cheating on assignments or examinations; plagiarizing, i.e. misrepresenting as one’s own work any work done by another; submitting the same paper, or substantially similar papers, to meet the requirements of more than one course without the approval and consent of the instructors concerned; sabotaging another’s work within these general definitions, however, Instructors determine what constitutes academic misconduct in the courses they teach. Students found guilty of academic misconduct in any portion of the academic work face penalties ranging from lowering of their course grade to awarding a grade of F for the entire course.