INSTRUCTOR
name: Robert Mena
office: FO3-107
office hours: 8:00-9:00, 11:00-12:00 & 2:00-3:30 TTH. E-mail available.
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COURSE
name: Linear Algebra (section 1-1797)
meeting time: TTH at 12:30-1:45 p.m.
meeting place: LA5-171
text: Notes
materials: Reasonable calculator or tablet

prerequisites: The official prerequisites are Math 233 and Math 247. We will need these prerequisites, especially the latter. More specifically, I will assume that your mathematical toolkit contains the following: induction (233), properties of functions (233), polynomial arithmetic (high school), matrix arithmetic (247), modular or clock arithmetic (233), relations (233). Auxiliary notes on each of these topics are available upon request.
description: The course is a second course in linear algebra. The course will discuss finite-dimensional vector spaces and matrices over arbitrary fields. We will prove rigorously many of the claims touched upon on the first course on linear algebra, but we will also finish with a discussion of canonical forms under equivalence, similarity, and congruence.
tentative syllabus: Fields, Basic Concepts, Operations: Linear, Block, Multiplication,
Cyclic Algebras, Inverses, Equivalence & Rank, Determinants, Similarity and Congruence.
bibliography: There are many books written on linear algebra. Unfortunately, there are not many written for this level. Gilbert Strang is an excellent author, but his book is at a lower level than where we will be, but a great read never the less. On a higher level (and with way too much information) is Horn & Johnson. We will be walking somewhere between these two at all times.
goals & objectives: We have a two-fold purpose—of course one of them is to learn much more about the greatest mathematical subject on Earth—**matrices**!!! The other is to considerably increase your ability to give mathematical proofs and arguments as well as to appreciate mathematical rigor.

**Mathematical Practices**

1. **Make sense of problems and persevere in solving them.**
2. **Reason abstractly and quantitatively.**
3. **Construct viable arguments and critique the reasoning of others.**
4. **Model with mathematics**
5. **Use appropriate tools strategically.**
6. **Attend to precision.**
7. **Look for and make use of structure.**
8. **Look for and express regularity in repeated reasoning.**

**ADMINISTRATIVE**

**timeliness** Everything should be on time when assigned unless compelling reasons exist.

**make-up policies:** A make-up exam will be considered when you inform me ahead of time and have a reasonable excuse, or other very special circumstances.

**last day to drop:** **Friday, April 15, 2016** is the last day to drop the course without the Dean's signature. If you intend to drop, please secure my signature in plenty of time.

**Disability** Please inform me as soon as possible, but certainly within two weeks from the start of the course, of any assistance you may need to deal with any university-verified disability/special need.

**ASSESSMENT** The main method of assessment will be three tests:

<table>
<thead>
<tr>
<th>Tests</th>
<th>Due Date</th>
<th>Percentage</th>
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</thead>
<tbody>
<tr>
<td>First Midterm Exam</td>
<td>Tuesday February 23</td>
<td>20%</td>
</tr>
<tr>
<td>Second Midterm</td>
<td>Tuesday April 5</td>
<td>20%</td>
</tr>
<tr>
<td>Final Exam</td>
<td>Tuesday May 10, 12:30-2:30</td>
<td>25%</td>
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**Homework** Every week, homework will be posted on the web with its due date. Homework should not be late. It will be picked up at the beginning of the class. Team work for the homework is acceptable (if not preferred). Usually, as in most of the courses I teach, a student who has done her/his homework performs adequately in the exams.

**Quizzes** Every Monday the class will start with a short quiz. No preparation is needed. There will be no make-ups for the quizzes, but the three lowest scores (including 0’s) will be dropped.

**Research Project** You will be a member of a team (of 2-3 students) and will choose to do research on a topic approved by me. Due First week in May.

**Class Participation** Class participation is mainly up to my discretion. The final grades will be assigned (approximately) traditionally.