Fall 2015

MATH 3511

Joel Webb

University of New Orleans

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Syllabus

MATH 3511-001
Introduction to Linear Algebra

Fall 2015

Classroom: SC 2049
Instructor: Joel Webb
Office: MATH 239
e-mail: jawebb@uno.edu

Days & Time: MWF 1:00pm – 1:50pm
Office Phone: 280-6507
Office Hours: 9:00am - 9:30am, 11:00-12:00pm MW,
9:00am -10:00am Th,
11:00am – 12:00pm, 2:00pm-3:00pm F


Required Calculator: Scientific calculator only

Course Prerequisites: Grade C or better in Math 2109 or Math 2112 or Math 2134 or Physics 1061

<table>
<thead>
<tr>
<th>WEEK OF</th>
<th>Sections Covered</th>
</tr>
</thead>
<tbody>
<tr>
<td>August</td>
<td>17 Systems of Linear Equations, 1.2 Gaussian Elimination</td>
</tr>
<tr>
<td>24</td>
<td>1.2 Gaussian Elimination, 1.3 Matrices and Matrix Operations, 1.4 Inverses; Algebraic Properties of Matrices</td>
</tr>
<tr>
<td>31</td>
<td>1.5 Elementary Matrices, 1.6 More on Linear Systems and Invertible Matrices, 1.7 Diagonal, Triangular, and Symmetric Matrices</td>
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<tr>
<td>September</td>
<td>7 1.7 Diagonal, Triangular, and Symmetric Matrices, 2.1 Determinants by Cofactor Expansion</td>
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<tr>
<td>14</td>
<td>2.2 Evaluating Determinants by Row Reduction, 2.3 Properties of Determinants</td>
</tr>
<tr>
<td>21</td>
<td>Test 1, 2.3 Properties of Determinants, 4.1 Real Vector Spaces</td>
</tr>
<tr>
<td>28</td>
<td>4.2 Subspaces, 4.3 Linear Independence, 4.4 Coordinates and Basis</td>
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<tr>
<td>October</td>
<td>5 4.4 Coordinates and Basis, 4.5 Dimension, 4.7 Row Space, Column Space, and Null Space</td>
</tr>
<tr>
<td>12</td>
<td>4.8 Rank, Nullity, and the Fundamental Matrix Spaces, 5.1 Eigenvalues and Eigenvectors</td>
</tr>
<tr>
<td>19</td>
<td>5.1 Eigenvalues and Eigenvectors, 5.2 Diagonalization</td>
</tr>
<tr>
<td>26</td>
<td>Test 2, 5.3 Complex Vector Spaces, 6.1 Inner Products</td>
</tr>
<tr>
<td>November</td>
<td>2 6.1 Inner Products, 6.2 Angle and Orthogonality in Inner Product Spaces, 6.3 Gram-Schmidt Process; QR-Decomposition</td>
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<tr>
<td>9</td>
<td>6.4 Best Approximation; Least Squares, 6.5 Mathematical Modeling Using Least Squares, 6.6 Function Approximation; Fourier Series</td>
</tr>
<tr>
<td>16</td>
<td>6.6 Function Approximation; Fourier Series, 7.1 Orthogonal Matrices, 7.5 Hermitian, Unitary, and Normal Matrices</td>
</tr>
<tr>
<td>23</td>
<td>7.5 Hermitian, Unitary, and Normal Matrices, 8.5 Similarity</td>
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<tr>
<td>30</td>
<td>Test 3, Review for Final Exam</td>
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</table>

IMPORTANT DATES

<table>
<thead>
<tr>
<th>Event</th>
<th>Date</th>
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<tbody>
<tr>
<td>Labor Day Holiday</td>
<td>September 7</td>
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<tr>
<td>Last Day to Drop Courses</td>
<td>October 14</td>
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<tr>
<td>Mid Semester Holiday</td>
<td>October 15-16</td>
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<tr>
<td>Thanksgiving Holiday</td>
<td>November 26 - 27</td>
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<tr>
<td>Last Day of Classes</td>
<td>December 4</td>
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</tbody>
</table>
Grading:
- Final exam = 33%
- Tests = 52%
- Homework = 15%

- The final exam is comprehensive.
- Free tutoring is available in the Math Tutor Center (MTC), Room 105 of the Mathematics Building.

This syllabus is subject to change.

Student Learning Outcomes: After the completion of this course students should be able to solve systems of linear equations using row operations, calculate determinants, find the dimension of a set of vectors, diagonalize a small matrix and find QR factorizations. Students should understand vector spaces, dimension, eigenvalues and inner products. Students should be able to do direct proofs of simple linear algebra facts.

Final Exam
Friday, December 11, 2015, 12:30 PM – 2:30 PM, in the same classroom

Academic Dishonesty
Academic integrity is fundamental to the process of learning and evaluating academic performance. Academic dishonesty will not be tolerated. Academic dishonesty includes, but is not limited to, the following: cheating, plagiarism, tampering with academic records and examinations, falsifying identity, and being an accessory to acts of academic dishonesty. Refer to the Student Code of Conduct for further information. The Code is available online at http://www.studentaffairs.uno.edu.

Accommodations for Students with Disabilities
It is University policy to provide, on a flexible and individualized basis, reasonable accommodations to students who have disabilities that may affect their ability to participate in course activities or to meet course requirements. Students with disabilities should contact the Office of Disability Services as well as their instructors to discuss their individual needs for accommodations. For more information, please go to http://www.ods.uno.edu.

How Class Will Be Taught
This class will be taught in a lecture format, with questions from students being encouraged. Typically each class will begin with solicitation of questions about practice homework problems or material that has been presented in class, or from the textbook. Students are STRONGLY encouraged to ask questions as they arise rather than wait until just before a test to clear up any confusion. After any questions have been answered new material will be presented. There will be several written credit homework assignments over the course of the semester. Your homework average is worth 15% of your final grade.

Expectations of Students
Students should arrive on time to every class meeting and stay for the entire class period. Students are expected to refrain from disruptive behavior during the class meeting. This includes, but is not limited to: conversing with fellow students, texting, accepting phone calls, using laptops and working on assignments for other courses. Students are expected to arrive on time for any scheduled tests or exams. Arriving late for a test or exam will likely result in less time allowed for completion of the test or exam. Not showing up for an exam or test without prior notification will result in a zero for that exam or test.
**Attendance Policy**
Attendance will be taken. If you miss a class it is your responsibility to obtain the lecture notes from a classmate and/or your textbook before going to your instructor for help.

**Tentative Test Dates**
Test 1: Wednesday, September 23
Test 2: Monday, October 26
Test 3: Wednesday, November 25

**Grades**
There will be 3 semester tests as listed on the syllabus which will be worth a total of 52% of your final grade. *NO TEST GRADES WILL BE CURVED.* Your final exam grade will replace your lowest test grade if your final exam grade is higher than your lowest test grade. There is a cumulative final exam which will be worth 33% of your final grade. Homework will be worth 10% of your final grade. No late homework will be accepted.

The grading scale for this course is

<table>
<thead>
<tr>
<th>Percentage</th>
<th>Grade</th>
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<tbody>
<tr>
<td>90% - 100%</td>
<td>A</td>
</tr>
<tr>
<td>80% - 89%</td>
<td>B</td>
</tr>
<tr>
<td>65% - 79%</td>
<td>C</td>
</tr>
<tr>
<td>64% - 55%</td>
<td>D</td>
</tr>
<tr>
<td>54% or below</td>
<td>F</td>
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**Criteria for Graded Assignments**
Assignments, tests and exams that will be graded must adhere to the following guidelines: All answers MUST be supported by work. No work = No credit. The final answer must be clearly marked. All answers must be exact and simplified completely.

**Advice on How to Study for Tests and Exams**
The best way to study and prepare for tests and exams will be different for every student. Here are some recommended guidelines for successfully preparing for tests and exams:

- Work all homework problems out completely, showing all work, and keep this organized in a binder for easy reference.
- Before each test, time will be taken in class to review the test material. Use the in-class review time to ask questions about any problems that you may have had trouble with.
- For any problems that you may have struggled with, go back to the homework and find similar problems. Practice these problems until you are able to complete them without any outside help (i.e. book, notes, etc.).

**Student Conduct**
The University of New Orleans (UNO) is a multicultural community composed of diverse students, faculty and staff. UNO will not tolerate discrimination or harassment of any person or group of persons based on race, color, religion, sex, disability, national origin, age, sexual orientation, marital or veteran status or any other status protected by law. Each member of the university is held accountable to this standard, which is strongly reflected in this code.

**Make-up Test Policy**
In order to make up a missing test, you must present full documentation for the medical or family emergency that you have had during the regular test tim
Important Dates*
Last day to adjust schedule w/out fee...............................08/18/2015
Semester Classes Begin ..................................................08/19/2015
Last day to adjust schedule w/fee, or withdraw with 100% refund.................................08/25/2015
Last day to apply for December commencement ..........09/25/2015
Final day to drop a course or resign ..............................10/14/2015
Mid-semester examinations ...........................................10/05-10/09/2015
Final examinations .........................................................12/07-12/11/2015
Commencement ..............................................................12/18/2015

*Note: check Registrar’s website for Saturday and A/B sessions, and for items not listed here: http://www.registrar.uno.edu

Fall Semester Holidays
Labor Day .................................................................09/07/2015
Mid-semester break .....................................................10/15-10/16/2015
Thanksgiving ..............................................................11/26-11/27/2015

Withdrawal Policy – Undergraduate only
Students are responsible for initiating action to resign from the University (withdraw from all courses) or from a course on or before dates indicated in the current Important dates calendar. Students who fail to resign by the published final date for such action will be retained on the class rolls even though they may be absent for the remainder of the semester and be graded as if they were in attendance. Failure to attend classes does not constitute a resignation. Check the dates on the Registrar’s website, http://www.registrar.uno.edu. Please consult The Bulletin for charges associated with dropping and adding courses.

Incomplete Policy – Undergraduate only
The grade of I means incomplete and is given for work of passing quality but which, because of circumstances beyond the student’s control, is not complete. The issuance of the grade of I is at the discretion of the faculty member teaching the course. For all graduate and undergraduate students, a grade of I becomes a grade of F if it is not converted before the deadline for adding courses for credit (as printed in the Important Dates Calendar) of the next regular semester including summer semester.

Repeat Policy
When a student is permitted to repeat a course for credit, the last grade earned shall be the one which determines course acceptability for degree credit. A student who has earned a C or better in a course may not repeat that course unless, (1) the catalog description indicates that the course may be repeated for credit, or (2) the student's Dean gives prior approval for documented extenuating circumstances.

Graduate Policies
Graduate policies often vary from undergraduate policies. To view the applicable policies for graduate students, see the Graduate Student Handbook:

Academic Dishonesty Policy

Safety Awareness Facts and Education
Title IX makes it clear that violence and harassment based on sex and gender is a Civil Rights offense subject to the same kinds of accountability and the same kinds of support applied to offenses against other protected categories such as race, national origin, etc. If you or someone you know has been harassed or assaulted, you can find the appropriate resources here: http://www.uno.edu/student-affairs-enrollment-management/
UNO Counseling Services and UNO Cares
UNO offers care and support for students in any type of distress. Counseling Services assist students in addressing mental health concerns through assessment, short-term counseling, and career testing and counseling. Find out more at http://www.uno.edu/counseling-services/. First-year students often have unique concerns, and UNO Cares is designed to address those students succeed. Contact UNO Cares through http://www.uno.edu/fye/uno-cares.aspx.

Emergency Procedures
Sign up for emergency notifications via text and/or email at E2Campus Notification: http://www.uno.edu/ehso/emergency-communications/index.aspx. All emergency and safety procedures are explained at the Emergency Health and Safety Office: http://www.uno.edu/ehso/.

Diversity at UNO
As the most diverse public university in the state, UNO maintains a Diversity Affairs division to support the university’s efforts towards creating an environment of healthy respect, tolerance, and appreciation for the people from all walks of life, and the expression of intellectual point of view and personal lifestyle. The Office of Diversity Affairs promotes these values through a wide range of programming and activities. http://diversity.uno.edu/index.cfm

Learning and Support Services
Help is within reach in the form of learning support services, including tutoring in writing and math and other supplemental instruction. Visit the Learning Resource Center in LA 334, or learn more at http://www.uno.edu/trl/

Affirmative Action and Equal Opportunity
UNO is an equal opportunity employer. The Human Resource Management department has more information on UNO’s compliance with federal and state regulations regarding EEOC in its Policies and Resources website: http://www.uno.edu/human-resource-management/policies.aspx