MTH 215: Introduction to Linear Algebra
Section 2

Instructor: Elliott Bertrand
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Term: Spring 2018
Meeting Dates: 1/22/18 - 4/30/18
Time: MWF 12:00 - 12:50 p.m.
Classroom: Rodman Hall 109

Description: (3 crs.) Detailed study of finite-dimensional vector spaces, linear transformations, matrices, determinants, and systems of linear equations. (Lec. 3) Pre: C- or better in MTH 131, 141, or equivalent.

Text: Linear Algebra and Its Applications (5th edition, Pearson) by Lay et al. with MyMathLab Access Code

Classwork / Quizzes: We will have several short quizzes and classwork assignments throughout the term that encourage good study habits between exams. Quizzes will primarily be based on lecture notes and assigned homework problems. Quizzes may be subject to different formats. Students will be notified of any upcoming formal quiz at least one class period before the day of the quiz. No quiz grades will be dropped unless otherwise stated by the instructor.

Exams and Final: We will have two exams (during our regularly scheduled lecture) and a cumulative final on the following dates:
Exam 1: Wednesday, February 28
Exam 2: Wednesday, April 4
Final Exam: Friday, May 4 (3:00 - 6:00 p.m.)
Exam dates are subject to change with advance notice.

Online Homework: We will use the online homework system MyMathLab. Register and log in to your account at http://www.pearsonmylabandmastering.com. Our Course ID is bertrand33634. Homework problems will be assigned weekly for each section and will generally be due on Wednesday evenings. Late submissions will be accepted with a 10% penalty applied to the assignment's final score for each additional day past the due date the assignment is considered late.

Make-Up Policies: Make-up assessments will only be given for documented, extenuating circumstances at the instructor's discretion. The instructor must be notified before the day of any quiz or exam if you will be participating in a University-sanctioned event or if you have some other reasonable conflict. If you are sick or are experiencing some other emergency, you must notify the instructor by email within two hours of the end of the class period for which any assessment is scheduled. Make-up assessments must be scheduled before the class meeting directly following the quiz or exam unless specific arrangements have otherwise been made. Documentation must be provided to prove that any excuse is legitimate.

Attendance: Students are expected to attend all class meetings. Each student is responsible for all announcements made, material covered, and work assigned in every class (even classes from which the student is absent).

Evaluation: Your final course grade will be calculated according to the following scheme:

Exam 1	17.5%
Exam 2	17.5%
Final Exam	30%
Homework	20%
Classwork / Quizzes	15%

Final letter grades will be determined by the following scheme:

A	A-	B+	B	B-	C+	C	C-	D+	D	F
≥93%	90%-92%	87%-89%	83%-86%	80%-82%	77%-79%	73%-76%	70%-72%	67%-69%	60%-66%	<60%

Extra credit opportunities will not be made available for any individual student for any reason.

Classroom Decorum: Students are expected to be courteous and respectful to their peers and the instructor at all times. Students should refrain from using electronic devices in the classroom. Inappropriate or distracting behavior will not be tolerated.

Calculators: The use of calculators or electronic devices during exams or quizzes is prohibited. However, you are encouraged to utilize calculators or computer algebra systems such as *Mathematica* when you are studying or checking homework solutions.

Sakai: This course has an online Sakai page. You should check this site and your URI email regularly for announcements.

Disability Accommodations: Any student with a disability should obtain documentation from the Office of Disability Services for Students at 302 Memorial Union (401-874-2098) and contact me as early in the semester as possible so that we may arrange suitable accommodations.

Tutoring: Tutoring services are available for this course through the Academic Enhancement Center. Visit the AEC website at www.uri.edu/aec for more information.

Health Notice: The nation may be experiencing widespread influenza-like or otherwise contagious illnesses. If any of us develop flu-like symptoms, we are being advised to stay home until the fever has subsided for 24 hours. If you exhibit such symptoms, please do not come to class. Notify me at ebertrand@uri.edu of your status, and we will work together to ensure that course instruction and work is completed for the semester.

Course Policies: Additional information about the University's policies, including those on disability accommodations, academic honesty, and grading, can be found in the syllabus, the University Student Handbook, or the University Manual. If you have any questions, please consult your instructor.

MTH 215 Learning Outcomes: At the end of the course, the student should be able to:

1. solve a linear system of equations by using row operations,

2. represent linear systems in different formats,

3. compute basis vectors and determine linear independence of vectors,

4. write general solutions to linear systems,

5. perform matrix and vector operations (addition, subtraction, multiplication, scalar multiplication, and dot products),

6. compute the inverse of a matrix,

7. compute the rank and null space of a matrix,

8. work with linear transformations,

9. work within vector spaces and subspaces,

10. compute determinants,

11. compute eigenvalues and eigenvectors,

12. use technology to analyze methods and perform calculations, and

13. communicate, in written form, mathematical ideas and conclusions by stating calculations, solution strategies, and interpretations of results.

MTH 215 Topics List: The following textbook sections are those we tentatively expect to cover in lecture this semester. This list is subject to change. The exact material that will be covered on any exam will be explicitly announced well in advance of the exam date. Students are strongly recommended to read each listed section in the textbook and complete some additional practice problems from the list of exercises offered at the end of each section.

1.1: Systems of Linear Equations
1.2: Row Reduction and Echelon Forms
1.3: Vector Equations
1.4: The Matrix Equation $A\vec{x} = \vec{b}$
1.5: Solution Sets of Linear Systems
1.7: Linear Independence
1.8: Introduction to Linear Transformations
1.9: The Matrix of a Linear Transformation
2.1: Matrix Operations
2.2: The Inverse of a Matrix
2.3: Characterizations of Invertible Matrices
3.1: Introduction to Determinants
3.2: Properties of Determinants
3.3: Cramer's Rule, Volume, and Linear Transformations
4.1: Vector Spaces and Subspaces
4.2: Null Spaces, Column Spaces, and Linear Transformations
4.3: Linearly Independent Sets; Bases
4.5: The Dimension of a Vector Space
4.6: Rank
5.1: Eigenvectors and Eigenvalues
5.2: The Characteristic Equation
5.3: Diagonalization
6.1: Inner Product, Length, and Orthogonality †
6.2: Orthogonal Sets †
4.8: Applications to Difference Equations †
5.6: Discrete Dynamical Systems †

† Time permitting.

Important Semester Dates:

Date	Note
February 4	Last day to add a course
February 12	Last day to drop without transcript designation of "W"
February 19	Presidents' Day: Classes do not meet
March 5	Last day to drop a course
March 12-18	Spring Break
April 30	Last day of classes
May 1-2	Reading days for final exams