Math 223: Linear Algebra

Section 2: Monday, Wednesday, Friday, 9:00 – 9:50am, Exley 137
Spring 2016

Instructor: Vince Guingona
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      Office: 649 Exley Science Center
      Office Hours: Wednesday 1-3pm, Thursday 3-4pm, and by appointment

Teaching Assistant: TBA
      Email: TBA
      Office Hours: TBA
      Recitation Sections: TBA

Textbook: *Linear Algebra Done Right*, Third Edition by Axler.

Moodle: All course material for Math 223 will be online on Moodle.

Introduction: Welcome to Math 223, *Linear Algebra*! In this class, we will learn the basics of linear algebra, which is the study of vector spaces and linear maps between vector spaces. To quote the description on the catalog:

> *An alternative to MATH221, this course will cover vector spaces, inner-product spaces, dimension theory, linear transformations and matrices, determinants, eigenvalues and eigenvectors, Hermitian and unitary transformations, and elementary spectral theory. It will present applications to analytic geometry, quadratic forms, and differential equations as time permits. The approach here is more abstract than that in MATH221, though many topics appear in both.*

Homework: Homework will be assigned weekly and will typically consist of a list of problems from the textbook. Homework will be due on Fridays by 5pm, to be turned into the box outside my office. Assignments may also be given to me in class on the day that they are due. Late homework will not be accepted. You are permitted to work on the homework in groups, but each person must write up and turn in her or his own solutions. Please show all of your work on each problem. Homework will be worth 20% of your total grade.

Exams: There will be two midterms and one final exam. The midterms will take place during class and will last for 50 minutes. The first midterm is on **Friday, February 26th** and the second midterm is on **Friday, April 15th**. The night before each midterm, I will hold a review session, whose time and location will be determined during class. Each midterm will be worth 20% of your total grade. The final will cover all the material from the entire course, though it will focus on the material covered after the second midterm. The final exam will be on **Thursday, May 12th from 2pm to 5pm in Exley 137**. The final will be worth 40% of your total grade. All exams are closed-book exams; please show all of your work.

Grading: Your grade will be calculated with the following breakdown:

Homework : 20% – Midterm 1 : 20% – Midterm 2 : 20% – Final : 40%.

Your letter grade will be given by the following chart:

Grade	Letter
97 – 100%	A+
93 – 96.99%	A
90 – 92.99%	A-
87 – 89.99%	B+
83 – 86.99%	B
80 – 82.99%	B-
77 – 79.99%	C+
73 – 76.99%	C
70 – 72.99%	C-
67 – 69.99%	D+
63 – 66.99%	D
60 – 62.99%	D-
57 – 59.99%	E+
53 – 56.99%	E
50 – 52.99%	E-
0 – 49.99%	F

Tentative Class Schedule:

Week	Dates	Sections	Topics
1	1/22	1.A	Fields
2	1/25, 1/27, 1/29	1.A, 1.B	Fields and Vector Spaces
3	2/1, 2/3, 2/5	1.C, 2.A	Subspaces, Spans, and Linear Independence
4	2/8, 2/10, 2/12	2.B, 2.C	Bases and Dimension
5	2/15, 2/17, 2/19	3.A, 3.B	Linear Maps, Null Spaces, and Ranges
6	2/22, 2/24	3.C, 3.D	Matrices, Invertibility, and Isomorphisms
	2/26		Midterm 1
7	2/29, 3/2, 3/4	3.E, 3.F	Products, Quotients, and Duality
			Spring Break
8	3/21, 3/23, 3/25	5.A, 5.B	Invariant Subspaces and Eigenvectors
9	3/28, 3/30, 4/1	5.C, 6.A	Eigenspaces, Inner Products, and Norms
10	4/4, 4/6, 4/8	6.B, 6.C	Orthonormal Bases
11	4/11, 4/13	7.A	Self-Adjoint and Normal Operators
	4/15		Midterm 2
12	4/18, 4/20, 4/22	7.B, 7.C	The Spectral Theorem, Positive Operators, and Isometries
13	4/25, 4/27, 4/29	7.D, 10.A	Traces
14	5/2, 5/4	10.B	Determinants
15	5/12		Final Exam

Getting Help: This is a fast-paced course, so you may occasionally need assistance with the material covered. There are several resources outside of the classroom to help you with this:

- **Office Hours:** I will hold office hours on Wednesdays from 1 to 3pm and on Thursdays from 3 to 4pm. I am also available at other times, but you will need to make an appointment via email. Feel free to ask me any questions you have relating to the course during office hours.
- **Recitations:** The teaching assistant will have recitations, whose time and place will be determined.
- **Math Workshop:** The Math Workshop is located in the Science Library in the main floor conference room (Room 133A). It is staffed with undergraduate and graduate assistants who can help you with questions relating to homework and lectures.
- **Review Sessions:** Before each midterm and final, I will hold a review session to answer questions about the material. These will be scheduled in class about a week before the exam.

Special Accommodations Policy: According to official policy:

> *Wesleyan University is committed to ensuring that all qualified students with disabilities are afforded an equal opportunity to participate in and benefit from its programs and services. To receive accommodations, a student must have a documented disability as defined by Section 504 of the Rehabilitation Act of 1973 and the ADA Amendments Act of 2008, and provide documentation of the disability. Since accommodations may require early planning and generally are not provided retroactively, please contact Disability Resources as soon as possible. If you believe that you need accommodations for a disability, please contact Dean Patey in Disability Resources, located in North College, Room 021, or call 860-685-5581 for an appointment to discuss your needs and the process for requesting accommodations.*

If you require accommodations, please make an appointment with me during the first two weeks of class so that we can make the appropriate arrangements.

Wesleyan Honor Code: Please follow the Wesleyan Honor Code (*id est*, don't cheat!). For each homework and exam, the pledge states:

> *In accordance with the Honor Code, I affirm that this work has been completed without improper assistance.*

See the Student Handbook for more information.

Conclusion: Thanks for signing up for my course. I hope we have an enjoyable semester together!

Last Updated: December 9, 2015