MATH 340 – Elementary Matrix and Linear Algebra (section 004)

Course Book
Elementary Linear Algebra (9th Edition) by Kolman and Hill, Prentice Hall

Credits
3

Course Designations and Attributes
Breadth - Natural Science
Level - Advanced
L&S Credit - Counts as Liberal Arts and Science credit in L&S

Meeting Time and Location:
TR, 4:00-5:15PM, Van Vleck B102

Instructional Mode
Face-to-face

This class meets for two 75-minute class periods and one 50-minute discussion period each week over the fall/spring semester and carries the expectation that students will work on course learning activities (reading, writing, problem sets, studying, etc) for about 3 hours out of classroom for every class period. The syllabus includes additional information about meeting times and expectations for student work.

INSTRUCTORS AND TEACHING ASSISTANTS

Instructor
Brian Hepler, Van Vleck Visiting Assistant Professor
Office: 625 Van Vleck
Office Hours: 3PM-5PM Mondays or by appointment
Email: bhepler@math.wisc.edu

Teaching Assistants

Tejas Bhojraj
Office: 101-25 Van Vleck
Office Hours: 12:25PM-1PM Wednesday and 12PM-1PM Friday
Email: bhojraj@wisc.edu

Yu Fu
Office: 816 Van Vleck
Email: yfu68@wisc.edu

OFFICIAL COURSE DESCRIPTION

Matrix algebra, linear systems of equations, vector spaces, sub-spaces, linear dependence, rank of matrices, determinants, linear transformations, eigenvalues and eigenvectors, diagonalization, inner products and orthogonal vectors, symmetric matrices. Prospective math majors should instead consider MATH 341 for a proof based introductory linear algebra course.

Requisites

MATH 222. Not open to students with credit for MATH 341 or 375

LEARNING OUTCOMES

Course Learning Outcomes

1. Recall and state the formal definitions, properties, and theorems associated to elementary linear algebra (e.g., matrix, eigenvector, rank, linear independence, vector space, etc.).
2. Verify if a mathematical object has a given property used in elementary linear algebra (e.g., that a matrix is invertible, that a set is a vector subspace, that a vector is an eigenvector, etc.).
3. Check the premises of theorems used in elementary linear algebra in order to apply their conclusions (e.g., that a given matrix has zero determinant and therefore cannot be inverted).
4. Resolve algebraic statements related to elementary linear algebra through appropriate computations.
5. Express informal mathematical arguments in English using appropriate mathematical terminology and notation.

APPROXIMATE COURSE SCHEDULE:

Week **Material (in course book)**

1. Chapter 1.1-1.3
2. Chapter 1.4-1.6
3. Chapter 2.1-2.2
4. Chapter 2.3-2.4

5. Chapter 3.1-3.3
6. Chapter 3.4-3.5
7. Chapter 4.1-4.3
8. Chapter 4.4-4.6
9. Chapter 4.7-4.9
10. Chapter 5.1-5.3
11. Chapter 5.4-5.5
12. Chapter 6.1-6.3
13. Chapter 6.4-6.5
14. Chapter 7.1-7.3

GRADING

Exams: 25%
Quizzes: 20%
Final Exam: 30%

- **Quizzes:** during discussion sections.
- **Exam 1:** Thursday, Feb. 13th (2/13/20). In class.
- **Exam 2:** Thursday, Apr. 2nd (4/2/20). In class.
- **Final Exam:** Tuesday, May 5th (5/5/20), from 5:05-7:05PM.

DO NOT MAKE TRAVEL PLANS THAT CONFLICT WITH THE FINAL EXAM.

HOMEWORK

Homework will be assigned but not graded.

ACADEMIC INTEGRITY

By enrolling in this course, each student assumes the responsibilities of an active participant in UW-Madison's community of scholars in which everyone's academic work and behavior are held to the highest academic integrity standards. Academic misconduct compromises the integrity of the university. Cheating, fabrication, plagiarism, unauthorized collaboration, and helping others commit these acts are examples of academic misconduct, which can result in disciplinary action. This includes but is not limited to failure on the assignment/course, disciplinary probation, or suspension. Substantial or repeated cases of misconduct will be forwarded to the Office of Student Conduct & Community Standards for additional review. For more information, refer to studentconduct.wiscweb.wisc.edu/academic-integrity/.

ACCOMMODATIONS FOR STUDENTS WITH DISABILITIES

McBurney Disability Resource Center syllabus statement: "The University of Wisconsin-Madison supports the right of all enrolled students to a full and equal educational opportunity. The Americans with Disabilities Act (ADA), Wisconsin State Statute (36.12), and UW-Madison policy (Faculty Document 1071) require that students with disabilities be reasonably accommodated in instruction and campus life. Reasonable accommodations for students with

disabilities is a shared faculty and student responsibility. Students are expected to inform faculty [me] of their need for instructional accommodations by the end of the third week of the semester, or as soon as possible after a disability has been incurred or recognized. Faculty [I], will work either directly with the student [you] or in coordination with the McBurney Center to identify and provide reasonable instructional accommodations. Disability information, including instructional accommodations as part of a student's educational record, is confidential and protected under FERPA." http://mcburney.wisc.edu/facstaffother/faculty/syllabus.php

DIVERSITY & INCLUSION

Institutional statement on diversity: "Diversity is a source of strength, creativity, and innovation for UW-Madison. We value the contributions of each person and respect the profound ways their identity, culture, background, experience, status, abilities, and opinion enrich the university community. We commit ourselves to the pursuit of excellence in teaching, research, outreach, and diversity as inextricably linked goals.

The University of Wisconsin-Madison fulfills its public mission by creating a welcoming and inclusive community for people from every background – people who as students, faculty, and staff serve Wisconsin and the world." https://diversity.wisc.edu/