

Course Home - Syllabus

Syllabus

MATH-501: Linear Algebra

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Course Description

This course offers an intermediate treatment of the theory and application of linear algebra. The goal of this course is to provide a framework for applying linear algebra to a variety of mathematical problems. Topics include vector spaces, linear transformations, diagonalization, inner product spaces, Markov Chains, and the Jordan canonical form. There is an emphasis on understanding and writing proofs.

Credit Hours: 3

Prerequisite: A bachelor's degree with a Mathematics major or must be state certified (in any state) to teach Mathematics at a secondary school level.

Course Outcomes

1. Construct determinants and linear transformations to solve linear equations.
2. Evaluate matrix algebra and its inverse where possible.
3. Formulate orthogonal sets and projections.
4. Construct eigenvalues, eigenvectors, vector spaces, and inner product spaces.
5. Develop rational decisions in a simplified but competitive environment using optimization.
6. Interpret important theories and techniques in linear algebra (Markov chain model, Jordanian Canonical Forms, etc).
7. Construct clear and correct proofs connected to the class material.

Course Textbook

Friedberg, S. H., Insel, A. J., & Spence, L. E. (2003). *Linear Algebra*, 4/E. Boston, MA: Pearson Education.

IWU Diversity Statement

IWU, in covenant with God's reconciling work and in accordance with the Biblical principles of our historic Wesleyan tradition, commits to build a community that reflects Kingdom diversity. We will foster an intentional environment for living, teaching and learning, which exhibits honor, respect, and dignity. Acknowledging visible or invisible differences, our community authentically values each member's earthly and eternal worth. We refute ignorance and isolation and embrace deliberate and courageous engagement that exhibits Christ's commandment to love all humankind.

Grading Scale

Grade	Quality Points Per Credit	Percentage	Score
A	4.0	95%–100%	950–1000
A-	3.7	92%–94.9%	920–949
B+	3.3	89%–91.9%	890–919
B	3.0	85%–88.9%	850–889
B-	2.7	82%–84.9%	820–849
C+	2.3	79%–81.9%	790–819
C	2.0	75%–78.9%	750–789
C-	1.7	72%–74.9%	720–749
D+	1.3	69%–71.9%	690–719
D	1.0	65%–68.9%	650–689
F	0.0	0%–64.9%	0–649

Grading Policies

Your grading policy for your course is dependent on your school and program. Your grading policies can be found in the IWU Catalog.

Letter Grade Equivalencies

Grade	Description of Work
A	Clearly stands out as excellent performance. Has unusually sharp insights into material and initiates thoughtful questions. Sees many sides of an issue. Articulates well and writes logically and clearly. Integrates ideas previously learned from this and other disciplines. Anticipates next steps in progression of ideas. Example "A" work should be of such nature that it could be put on reserve for all cohort members to review and emulate. The "A" cohort member is, in fact, an example for others to follow.
B	Demonstrates a solid comprehension of the subject matter and always accomplishes all course requirements. Serves as an active participant and listener. Communicates orally and in writing at an acceptable level for the

	degree program. Work shows intuition and creativity. Example "B" work indicates good quality of performance and is given in recognition for solid work; a "B" should be considered a good grade and awarded to those who submit assignments of quality less than the exemplary work described above.
C	Quality and quantity of work in and out of class is average. Has marginal comprehension, communication skills, or initiative. Requirements of the assignments are addressed at least minimally.
D	Quality and quantity of work is below average. Has minimal comprehension, communication skills, or initiative. Requirements of the assignments are addressed at below acceptable levels.
F	Quality and quantity of work is unacceptable and does not qualify the student to progress to a more advanced level of work.

Course Summary

Module	Discussion	Assignment	Test/Quiz	Total Points
Module One	2/35	1/70		105
Module Two	1/30	1/70		100
Module Three	2/35	1/70		105
Module Four	1/30	1/70	1/80	180
Module Five	2/35	1/70		105
Module Six	1/30	1/70		100
Module Seven	2/35	1/70		105
Module Eight	1/30	1/70	1/100	200
Course Totals	12/260	8/560	2/180	1000

* Number of Activities/Sum Point Totals

Course Development Resources

Friedberg, S. H., Insel, A. J., & Spence, L. E. (2003). *Linear Algebra*, 4/E. Boston, MA: Pearson Education.

Lay, D.C., Lay, S.R., & McDonald, J.J. (2016). *Linear Algebra and Its Applications*, 5/E. Boston, MA:

Pearson Education.

Pacing Guides

Eight Week Guide

	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8
Module 1	MOD 1							
Module 2		MOD 2						
Module 3			MOD 3					
Module 4				MOD 4				
Module 5					MOD 5			
Module 6						MOD 6		
Module 7							MOD 7	
Module 8								MOD 8

Expectations, Policies, and Important Student Information

Expectations

Instructor Expectations of Students

- Submit assignments on time. If there are circumstances beyond your control, discuss possible options for completion with your instructor.
- Accomplish work on your own unless otherwise instructed (i.e., do not cheat or plagiarize).
- Contribute substantively to discussions according to assignment guidelines provided.
- Contribute to discussions throughout each workshop rather than waiting until the end of the workshop.
- Contribute substantively to group assignments (if required in course).
- After spending a reasonable amount of time on it, ask your instructor if you do not understand content or instructions. Ask for help early while there is time to fix problems.
- Treat other students courteously and respectfully.
- Every time you enter your course, read and abide by postings made in the Announcements and Faculty Forum. These postings are critical.

Students' Expectations of Instructor

- Set a friendly, open, and encouraging learning environment.
- Guide discussions as needed.
- Set clear rules, standards, and expectations.
- Provide workshop grades and feedback within seven days of assignment due date.
- Provide final grades and feedback within seven days after the last day of class.
- Ensure students treat each other respectfully.
- Respond to student inquiries within 48 hours.

Policies

Late Policy

- No credit is available for postings of any kind made in the discussion forums after a given workshop ends.
- If your instructor approves your submission of late assignments, each assignment score will be penalized 10% per day up to five days late. After the end of the fifth day, late assignments will not be accepted. An assignment is a paper, a project, a team presentation, etc., but not a discussion or quiz/test.
- No late assignments will be accepted after the close of the final workshop.
- **Unless otherwise stated by the course instructor, all assignments are due by 11:59pm EST.**