

Department of Basic Sciences—Philadelphia University

Course Syllabus

Course Title	Linear Algebra 2
Course Code	250341
Semester	First/2021–2022
Lecturer	Amin Witno
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Office Hours	Sun/Tue/Thu: 10–11; Mon/Wed: 10–11
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Short Description

This module is a second course in theoretical Linear Algebra for upper-level undergraduate students. Topics include vector spaces, linear dependence, matrix transformations, diagonalization, inner product spaces, general linear transformations, and selected applications.

Topics by the Week

1. Vector spaces, subspaces
2. Linear combinations, vector span
3. Linear dependence and independence
4. Bases and dimension, coordinate vectors
5. Change of basis, matrix of transition
6. Matrix transformations in R^2 and R^3
7. Properties of matrix transformations
8. Null space and nullity
9. Column space and row space
10. Eigenvalues and eigenvectors, eigenspace
11. Diagonalization, system of differential equations
12. Inner product space, angle and orthogonality
13. Orthogonal and orthonormal bases
14. Gram-Schmidt process
15. Best approximation, least squares
16. General linear transformations

Recommended Textbook

The following texts and other similar titles can be checked out from the University's main library:

1. Gilbert Strang, *Introduction to Linear Algebra*, 5th edition (2016) Wellesley–Cambridge Press
2. Friedberg, Insel, and Spence, *Linear Algebra*, 5th edition (2018) Pearson
3. Howard Anton, *Elementary Linear Algebra*, 12th edition (2019) Wiley

Supporting Material

There are no lecture notes. Future hand-outs and supporting materials will be posted online using the chosen e-learning platform.

Online Resources

The following shortcut will take you to my web homepage at the University, where you find the course syllabus, exam dates, copies of old exams, links to the above materials, and any important announcement related to the current semester.

<http://phi.witno.com>

Grade Distribution

The following guideline may be modified as necessary according to the developments of Covid-19 situation this semester.

Homeworks	
Quizzes	20%
Class participation	
First Exam	20%
Second Exam	20%
Final Exam	40%

Exam Dates

Exam dates, once determined, will be posted online at the homepage as well as at the University student-portal page.

Homework Sets

Homework problem sets with check answers can be downloaded also from the above homepage.