

MA2072 Syllabus

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or by appointment, or just stop by ...

MA 2072, Sections CD01 & CD02, C Term 2022
Acc. Matrices & Linear Algebra I
Text: "Linear Algebra and its Applications"
by Lay, Lay, McDonald (6th ed.)
Meetings: 2-2:50 MTRF, SL305

The goal of this course is to develop the basic language and techniques of matrix algebra and to introduce vector spaces and eigenvalues. Linear algebra is an essential part of mathematics and an indispensable tool in many areas of science and engineering. We will illustrate this fact by touching on some of the many applications of linear algebra throughout the course.

TERM SCHEDULE

Here is a rough outline of what I hope for us to cover in our class meetings. It is a bit ambitious.

Jan. 12 to Jan. 14	<i>Solving Linear/Vector/Matrix Equations</i>	Secs. 1.1–1.4
Jan. 18 to Jan. 21	<i>Independence, Transformations</i>	Secs. 1.5–1.9
Jan. 24 to Jan. 28	<i>Matrix Algebra, Invertibility</i>	Secs. 2.1–2.3
Jan. 31 to Feb. 4	<i>Invertibility and Geometry</i>	Secs. 3.1–3.2, 4.1–4.2
Feb. 7 to Feb. 11	<i>Determinants, Vector Spaces</i>	Secs. 4.3–4.5
Feb. 14 to Feb. 18	<i>Vector Spaces look like n-space</i>	Secs. 4.6, 5.1–5.3
Feb. 21 to Feb. 23	<i>Choosing Better Coordinates</i>	Secs. 5.4–5.5
Feb. 28 to Mar. 4	<i>Eigenvalues and Eigenvectors</i>	Chs. 6,7 as time permits

There are many important topics and exciting applications that we will be forced to skip. The serious student is encouraged to read the text independently. A small selection of the following sections may also be covered if time permits:

Secs. 1.6, 1.10, 2.4–2.7, 3.3, 4.8–4.9, 5.5, 5.8, 6.1–6.5, 7.1–7.4, 8.1–8.3, 10.1–10.2.

GRADING SCHEME

Tests (Jan. 28, Feb. 11, Mar. 4):	60 %
Written Homework (best 5 assignments):	25 %
WebWork Homework:	15 %

There will be three tests. These will be given in class on the following dates: Friday, January 28; Friday, February 11; Friday, March 4.

Please note that no calculators, cellphones or other electronic devices are permitted to be out in the open during any test. While students are free to use calculators in completing homework, all are encouraged to develop the ability to perform matrix calculations by hand when the examples and entries are small.

GRADES

A: 100 % – 90 %; **B:** 89.99 % – 75 %; **C:** 74.99 % – 60 %

HOMEWORK

In order to encourage students to keep up with the course and to prepare for the tests, a large number of problems from the text will be recommended. More skill-based exercises will be completed using WebWork. Your WebWork grades will be automatically entered into CANVAS.

A small number of more conceptual problems will be collected each week and graded for credit. It is my expectation that these written homework assignments will be completed with great care and will be presented professionally.

These **seven written homework assignments** will be distributed via the course CANVAS page and are due on Tuesdays:

Jan. 18, Jan. 25, Feb. 1, Feb. 8, Feb. 15, Feb. 22, Mar. 1.

Assignments are due at **the beginning of class**. Late assignments will, in general, not be accepted for credit.

The best five of these seven grades will be averaged to obtain your “Written Homework” grade for the course.

QUIZZES

Each Friday, a non-credit quiz will be distributed upon exit from the lecture. Solutions will be distributed in the following discussion section. The questions on the quizzes should be viewed as sample test questions.

DISCUSSION SECTIONS

Section	Meeting Time	Location	GLA
CD01	Wed. 9:00 – 9:50	SH304	Nikolaos Kalampalikis
CD02	Wed. 11:00 – 11:50	SH304	Nikolaos Kalampalikis

These sessions provide one-on-one contact with an experienced graduate student. Students may work in groups, solve sample problems at the blackboard, or go over test solutions, among other activities. This is an important and integral part of the course. **All students are expected to attend** their respective discussion sections.

IMPORTANT NOTES

- There will be no make-up tests. If a student happens to miss a test for valid reasons, then the weight of the remaining tests may be increased to compensate for the missing grade.
- Late assignments without prior consent of the professor will not be accepted and will receive a grade of zero. Extensions will be granted only in the event of unforeseen emergencies or extenuating situations that you discuss with the professor in advance. But don't worry; I drop your lowest two assignment grades, in part for this reason.

- Please do not let the above items prevent you from reaching out to me if you are in need. The current pandemic is adding complexities that we could not prepare for and all our plans and rules must be flexible in this respect.

ACADEMIC INTEGRITY

As a student in this course, you are expected to familiarize yourself with WPI's Academic Integrity policies which can be found at

<https://www.wpi.edu/about/policies/academic-integrity>

All acts of fabrication, plagiarism, cheating, and facilitation will be prosecuted according to the university's policy. If you are ever unsure as to whether your intended actions are considered academically honest or not, please see Professor Martin (or check here).

STUDENTS WITH DISABILITIES

If you need course adaptations or accommodations because of a disability, or if you have medical information to share with me that may impact your performance or participation in this course, please make an appointment with me as soon as possible. If you have approved accommodations, please request your accommodation letters online through the Office of Accessibility Services.

<https://www.wpi.edu/student-experience/resources/accessibility-services>

If they have not already done so, students with disabilities who need to utilize accommodations in this class are encouraged to contact the Office of Accessibility Services (OAS) as soon as possible to ensure that such accommodations are implemented in a timely fashion. This office can be contacted via email: accessibilityservices@wpi.edu, via phone: (508) 831-4908, or in person at their new location on the 5th floor of Unity Hall.

This syllabus is subject to change at the professor's discretion.