

# Syllabus

Math 230

Spring '24

Text: **Linear Algebra and it's Applications**, 5th edition by Lay, Lay and McDonald

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Office Hours: MWTh 3:00-3:50, Th 12:00 – 12:50

Office Hours will be available in person and can be made available via zoom on request

Class times & room: MWThF 2:00 – 2:50 pm in SCI D230

## Mathematics-specific Learning Objectives

This course is about *linear transformations* – functions (operators) that have two main properties:  $T(x + y) = T(x) + T(y)$  and  $T(\#x) = \#T(x)$  for any number  $\#$ . You have already seen some linear operators: the linear functions  $f(x) = mx$  and  $D(f) = f'$  (the derivative) for example. Study of these operators leads very naturally into “matrix math” and vector spaces and the study of dimensions (for example, how many different dimensions are in the output of the matrix  $\begin{bmatrix} 1 & 4 & 2 \\ 3 & -1 & 6 \\ 5 & 7 & 10 \end{bmatrix}$ ?) and other topics. This material is more abstract than calculus, but it is still fairly computational. And it's pretty cool.

## Mathematics-specific Learning Objectives

- Perform common vector and matrix operations such as addition, scalar multiplication, multiplication and transposition
- Recognize and use equivalent forms to identify matrices and solve linear systems
- Recognize and use equivalent statements regarding invertible matrices and solutions of homogeneous systems
- Understand the definition and properties of an abstract vector space
- Present and communicate mathematical ideas effectively to others
- Work in small groups to answer mathematical problems

## Calculators

You should have a calculator capable of matrix calculations. If you are going to purchase a calculator for this course, a good one might be one from the **TI-8x** series (for example, TI-83 or TI-84). All calculators are slightly different. Be sure that you have a manual (many manuals are available online).

## Grading

Grading will be based on an overall percentage score, using the following scale:

90%+ A- or better	80%-89.9% B-, B or B+
70%-79.9% C-, C or C+	60%-69.9% D-, D or D+
<60% F	

I reserve the right to adjust the final percentage +/- up to about 2%, based on my assessment of your effort and/or participation in the class and course in general.

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## Grading (continued)

To get your overall score, you will be graded on the following:

Participation	60*
Weekly Homework	80*
Class Presentations	60*
4 in-class exams	100 each*
Final	*
Total	<hr/> 600 points

\* Note: the final can be used to replace another grade component (it replaces based on percentage, so a 90% on the final counts as a 90 if replacing an exam but a 54 if replacing participation or presentations and a 72 if replacing homework, for example). This means  
1) you can bomb one test and still do fine in the class (assuming your other scores are good), or  
2) if you are happy with your grade on the last day of class, you can skip the final (as a reward for consistently good work).

## Weekly Homework

Homework will be due most weeks, typically on Monday. Working in class is important, but it is also important to reflect on the material and also practice the techniques we learn. Homework assignments are designed mostly with these ideas in mind. Homework has an oversized impact on your grade, so make sure to do the assignments!

Weekly assignments are broken into two parts: problems that are due (required) and problems that are recommended (not required). The recommended problems are exactly what their name suggests – you should consider looking at them and spending some time on them, but you do not have to finish them or turn in your work. Some recommended problems give additional practice; others explore interesting ideas we are not able to focus on.

You will turn your homework in on Canvas – scan or take pictures of your work and upload it to the appropriate place. Please try to write clearly and in an organized manner – basically, *write it as if you wanted someone to read it!* For some people, that might mean doing the work on a scratch copy and then writing it out again; for others, that might mean typing it out. Don't ignore these assignments – they are a significant part of your grade!

Canvas discussion boards are also set up for each week, for students to post questions and/or answers to questions about the problems. One last bit: your work is your work. Working with others is good, but simply copying their work is not.

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### Canvas Grading:

Canvas provides a useful location to submit assignments and record grades. It even has an automatic feature to “total” the assignments stored on it, producing some sort of “Grade” which students sometimes think is related to their course grade. It does not: it ignores assignments until they have a score, so it gives false results before the end of the semester! Additionally, it does not have any feature to allow the replacement of another grade component (this is done manually by your professor). When we get towards the end of the semester I will add scores to the Canvas grades which show where you stand.

### Class Participation

Your instructor believes in *active learning* – students learn more from *doing* than from *watching*. To that end, most days will have class work – typically a group worksheet or class discussions on the topics of the day. You are expected to be in class and participate in the day’s activities. *This is part of your grade!*

If you are in class and trying, you will get credit for that day’s worksheet. If you have to miss class, you will need to submit the worksheet on Canvas (see Homework for more on how to submit assignments on Canvas). If you came to class and worked on the worksheet you *may* submit it on Canvas, but it’s not necessary.

These worksheets are always graded on effort rather than accuracy. Learning is messy, and being occasionally wrong on a worksheet is very normal. Being wrong all the time is less desirable, but mistakes on your worksheet won’t hurt your grade.

### Presentations

Another *active* way to learn is to *present solutions* to problems. You will be expected to do this a few times during the semester. The list of problems is on the homework handout.

You are expected to present from several different. Specifically: you must present at least **FOUR TIMES** in the semester. These presentations can come from the material for the first exam (Chapter 1, marked A on schedule), second exam (Chapters 2 and 3, marked B), third exam (Chapter 4, marked C), or the fourth exam (Chapters 5 and 6, marked D). YOUR PRESENTATIONS MUST COME FROM AT LEAST THREE DIFFERENT EXAMS.

You may do extra presentations; if you do so, the best will be scored normally and the rest will give a little extra credit.

There is a fifth time period for presentations: the last week of classes. You are allowed to present one additional time during this period (maybe two times, depending on demand – but don’t count on it!). These can come from any exam period and count accordingly.

Presentations (continued)

These rules may seem confusing, so here's a summary:

- 4+ presentations
- At least one from three different exam periods (A, B, C, D)
- (\*) presentations can be from any exam period and count towards that period; you may present once during this week (maybe twice).
- extras beyond 4 presentations: your best presentations will be scored; others will offer a little extra credit

- **YOU MAY PRESENT BY YOURSELF OR WITH UP TO TWO PARTNERS.**

Regardless of whether you present solo or in a group, all in the group will get the same grade. Make sure it is correct and ready – check each others' work for accuracy and clarity!

You will need to reserve your problem and day on Canvas – be sure to check whether someone else has taken your problem! Except in very rare cases, duplication of a previously presented problem is not allowed.

Exams

There will be five exams and a cumulative final. The exams are scheduled for the following days: February 14, March 8, April 10, and May 3; the final is on Thursday, May 16 **at 8:00 am to 10:00 sm**. Note that the actual dates of in class exams may vary slightly.

Discussion Boards

There will be three kinds of discussion boards set up for this course on Canvas:

1) Boards for reserving presentation problems and presentation days. *Remember to check that nobody else already reserved/did the problem!* (If you are presenting with someone else, make sure to note that in your post)

2) Boards for homework problems are optional and can earn you extra credit. See section on Extra Credit (below)

*Make sure to post the problem number and state or summarize the problem statement when you post a question!*

3) General discussion boards are optional and offer no grade benefit. They are set up to allow you to ask your professor questions, or to offer a place for discussions not about the material (e.g., organizing study sessions, complaints about the book, etc.)

All boards will be monitored after the fact. That is, you will post directly to the board, and I will monitor periodically throughout the week. Certain standards apply to postings:

- Postings are never anonymous
- Postings must not contain inappropriate (foul, rude, hostile) language

Violation of these rules may constitute academic misconduct (see below).

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### Extra Credit

There will be a Canvas discussion board topic listed for weekly homework. If you post a question or an answer to a question on this board, you will receive extra credit (max +1 point per week). Your SUBJECT LINE should include the problem number, and your MESSAGE should include a restatement (full or partial) of the problem. This way, other students will be able to read and learn from the postings. *To be eligible for the extra credit, your posting must have content – a posting such as “I agree” or “That doesn’t seem right” does not earn any extra credit on homework.*

### Attendance:

You are expected to regularly attend class. When circumstances arise to prevent you from coming to class, you should let your instructor know (email is best, but in an emergency you can contact the Dean of Students office, 715-346-2611).

Note: missing an exam or scheduled presentation day will only be allowed in exceptional circumstances and will require ACCEPTABLE DOCUMENTATION as to the reason for the absence.

### Academic Misconduct Policy

I expect you to complete the coursework for this course. Failure to complete an assignment will result in zero points awarded for that assignment. Late assignments may lose points, at the discretion of the instructor. See the following link: <http://www.uwsp.edu/admin/stuaffairs/rights/rightsChap14.pdf>

### Student Rights and Responsibilities

All students are expected to know the UWSP student responsibilities found on the Dean of Students webpage. Information on Academic Concerns is available at <https://www.uwsp.edu/dos/Pages/stu-academic.aspx>. Information on Conduct Concerns and on Personal Concerns are also available on the Dean of Students site.

### Inclusivity and Accommodations

It is my intent that all students from diverse backgrounds and perspectives be served by this course, that students’ learning needs be addressed both in and out of class, and that the diversity brought by everyone in this class be viewed as a resource, strength, and benefit. It is my intent to present materials and activities that are respectful of diversity. I encourage you to make suggestions to this end. Please let me know ways to improve the effectiveness of the course for you personally, or for other students or student groups.

If you have experienced a bias incident (an act of conduct, speech, or expression to which a bias motive is evident as a contributing factor regardless of whether the act is criminal) at UWSP, you have the right to report it using this [link](#). You may also contact the Dean of Students office directly at [dos@uwsp.edu](mailto:dos@uwsp.edu).

UWSP is committed to providing reasonable and appropriate **accommodations** to students with disabilities and temporary impairments. If you have a disability or acquire an impairment or injury during the semester and you need assistance, please contact the \* Disability Resource Center as soon as possible, in room 108 of the Collins Classroom Center (CCC), at 715-346-3365, or at [DATC@uwsp.edu](mailto:DATC@uwsp.edu). You may also want to visit their website, [Disability Resource Center \(DRC\) - University of Wisconsin-Stevens Point \(uwsp.edu\)](#).