

**\*\*This syllabus is a required reading\*\***

**Linear Algebra & Introduction to Matlab**

Summer 2018, 1:00PM-2:30PM, July 3rd - July 30th (inclusive) Room L361 & C135

Instructor: Yan-Ran Wang ("Joyce")

Teaching Fellow: Michael Cuevas (MichaelCuevas2021@u.northwestern.edu)

Email (best way to contact me): **joycewang1026@u.northwestern.edu**

Phone (cell-phone; emergencies only, please): [REDACTED]

Office hours: Tuesdays 6-9 PM July 3rd - July 27th

Office: M480 Tech building

Course Website: "**Slack**": [amatlab.slack.com](https://amatlab.slack.com) (all assignments, textbook, submission will be on slack)

**Course Description:** This course will focus on linear algebra and introduction to Matlab. Linear algebra is a branch of mathematics that studies systems of **linear equations** and **the properties of matrices**. The concepts of linear algebra are extremely useful in economics, natural sciences, and engineering. **Matlab** is the easiest and most productive software environment for engineers and scientists. The primary goals of this class are to (a) get an overview of linear algebra (b) gain basic knowledge needed to program in Matlab (c) prepare students for the classes that they'll be taking in the fall. The first 11 courses will focus on linear algebra (**L 361**), and the last 7 courses will target at Matlab (**C 135**).

**Learning Objectives:**

By the end of this course, students will be able to:

- gain both geometric and numerical understanding of linear algebra
- get to know key concepts of linear algebra and be able to compute simple matrix operations
- apply Matlab in solving real world problems

**Materials:** Textbooks

- Linear Algebra and Its Applications: David C. Lay
- Essentials of Matlab Programming: Stephen J Chapman

**Assessment:** This course is graded on score basis:

Assessment scale:

Attendance and participation: 20%

Mid-term in class exam: 40%

Final team project: 30%

Final cheat sheet: 10%

### Assignments and Exam:

1. **Attendance and Participation (20%)**: Besides class, students' participation to office hour will also be considered. Michael will teach basic Matlab skills at the first/second week during his office hour. Please attend. He would be responsible for part of the grading as well.
2. **Homework assignments**: Students will be given homework, along with the solutions after each class. The assignments won't be graded. But please read and try to do the homework without referring to solutions. It would help students' understanding of the course.
3. **In class mid-term exam (40%)**: the questions would refer to the homework assignments.
  - Due: 2:30 PM on 7/17
4. **Final team project (30%)**: students will finish the Matlab project as a team (2 students/team). Instructor will assign the team members. **The responsibilities and roles** of the team members should be clearly clarified in the final project report. Note the **comments** of students' code would also be graded, in order to help students develop good programming habits.
  - Assign: 7/20
  - Due: 9AM on 7/30 to Slack (direct message to instructor)
5. **Final Cheat Sheet (10%)**: it is a concise set of notes used for quick reference and **students' own summarization of what they learnt**. It is hand-written, A4 size, one page, two sided (or two pages, one sided). The cheat sheet will be returned to students after grading. Please keep the cheat sheet, it would work as a quick reminder about what we learnt as time goes by.
  - Assign: 7/20
  - Due: 9AM on 7/30 (hand over the sheet on class)

**Class Environment:** This is meant to be a collaborative class and a fun, comfortable setting for all. Don't be scared to ask questions and make mistakes! Also, please be respectful of your classmates, and offer help to one another.

If you ever have any questions / concerns, please let me know. Any feedback, positive or negative, on the instructional methods or class content is greatly appreciated