

Math 313 MATLAB from UCSD

Welcome to the Math 313 MATLAB website! **Please read this entire page** before attempting any of the MATLAB assignments.

So what is MATLAB?

MATLAB is a powerful piece of computational software. It is used heavily by people in all kinds of disciplines and businesses, not just mathematics. For our purposes, we will use MATLAB to explore a number of applications of linear algebra to economics, computer science, data management, and other topics. With MATLAB at our disposal, we can focus less on lengthy computations and instead see some really impressive real world applications which are too in-depth for a classroom setting.

Where can you get MATLAB?

MATLAB is freely available to students at the University of Arizona in two different ways. You can download the software through the University by visiting [Software Licencing](#). Click the link for "Download and Activation Key" and follow the on screen instructions. You will need to log in with your NetID. Please be aware that this is a large download.

Alternately, MATLAB is already loaded on many computers (both Mac and PC) in the campus libraries. Please check [library math software listings](#) for a list of available locations. You can find MATLAB in the "Math, Science & Engr Software" folder. It may be in a subfolder dedicated to MathWorks (the publisher).

How does MATLAB fit into Math 313?

Over the course of the semester, you will complete five assignments/tutorials using MATLAB. These assignments are linked below. Each tutorial is designed to be relatively self-guided; explanations on how to use MATLAB are provided along the way. No prior knowledge of the program is assumed.

These tutorials are used with permission from the math department at the University of California, San Diego, where they have been an integral part of the linear algebra

curriculum for a number of years. We are grateful for their permission to use the material.

WARNING!

Because we are using the completely unedited tutorials from UCSD, there will be a number of references about the mechanics of MATLAB in the course which will not make sense. In particular:

- At UCSD, linear algebra is Math 20F. Here, it is Math 313.
- UCSD has quarters. We have semesters. Due dates for the assignments will be solely determined by your instructor, not anything posted on the various UCSD sites.
- UCSD has teaching assistants and graders. Unless otherwise noted by your instructor, we do not.
- Our directions for obtaining MATLAB are completely different (see above).
- At UCSD they have a MATLAB quiz/exam. **We will not have any such exam**; please disregard any references to such an exam.
- Locations of computers and printing locations are naturally different as well.

You may notice other strange references along the way. Please use common sense and do your best to ignore any obvious items which are specific to UCSD.

What will you actually turn in?

As you proceed through each tutorial, you will complete a number of Exercises. Your responses and work on these exercises should be written up in Microsoft Word (or a similar high level word processing program). When you are done, you will print out your Word document and hand that in to your instructor. Due to grading constraints, **no electronic submissions can be accepted**. The first assignment explains what is expected in terms of responses (whether it be MATLAB input and output, written explanations by you, plots and graphs, or work by hand).

Feedback

The final exercise in each tutorial is a request for feedback. Your comments and suggestions are greatly appreciated regarding any aspect of the MATLAB component of Math 313. Please include any such feedback on a page all by itself at the end of your assignment. This comment page will be removed from the rest of your assignment and will not be returned to you.

The Tutorials

Your instructor will provide further information about due dates.

1. [Introduction to MATLAB](#)
2. [Systems of Linear Equations](#)
3. [Matrix Algebra](#)
4. [Eigenvalues, Determinants, and Diagonalization](#)
5. [Orthogonality and Least Squares](#)