

# AMS 10 – Mathematical Methods for Engineers 1 – FAQ

Instructor: Nic Brummell

brummell@soe.ucsc.edu

Office: BE 357A

Phone: (831) 459 2122

Teaching Assistant 1: Steven Reeves: sireeves@ucsc.edu

Teaching Assistant 2: Tenavi Nakamura-Zimmerer: tenakamu@ucsc.edu

Teaching Assistant 3: Skylar Trigueiro: striguei@ucsc.edu

Class web-site: <https://ams010-spring17-01.courses.soe.ucsc.edu/>

April 4, 2017

## When and where are the lectures?

Jack Baskin Auditorium 101 (check a campus map at <http://maps.ucsc.edu/> or see course webpage), Tuesdays and Thursdays from 09:50am to 11:25am.

## What is AMS10 all about?

Our main goal is to introduce the main concepts in linear algebra to engineering students. The course will cover complex numbers, systems of linear equations, their matrix form and the properties of matrices (including rank, inverse, determinant, eigenvalues), vector form and properties of vectors (linear independence, bases, orthogonality, vector spaces, etc) and transformations (maps, one-to-one etc). All of these ideas will be taught in a context of applied problems. Students will be introduced to the use of the software MATLAB®.

## PLACES THAT YOU CAN GET HELP

### Is there a course web page?

Yup. Address: <https://ams010-spring17-01.courses.soe.ucsc.edu/>

The web page will contain general information about the course, latest announcements about the course, the list of homework due etc.

### Is there a book?

**Main book:** Lay, David C, *Linear Algebra and it's Applications*. Addison-Wesley. ISBN 0-201-70970-8. This is the “official” book of the course. Homework will come out of this book. We recommend the 4th edition even though there is a 5th edition because it is just as good and there are cheaper, secondhand copies around. There will be (at least) 1 book on reserve at the Science Library.

**Alternative book:** There is also a great book by Hardy, Kenneth, *Linear Algebra for Engineers and Scientists using MATLAB*, Pearson-Prentice Hall, ISBN 0-13-906728-0. I actually prefer this book and my course is structured

more like this book. However, students in general do not like this book as it is perhaps a bit "dry".

## Are there sections?

**Yes, and they are compulsory!** These are times set up for you to get help **practicing** doing the work. These practice problems are **fundamental** to helping you understand the material and for you do the homework problems well. The sections are in labs so that you can learn MATLAB too!

**There will be a quiz during all sections.** This is mostly a way to reward the students who take the time to come to sections and, at the same time, to allow them to see how they are doing in class with very easy, quick tests.

**Discussion section 01F to be held at JBE 109 on Mondays, from 11:00am-1:00pm.**

**Discussion section 01G to be held at JBE 109 on Tuesdays, from 2:00pm-4:00pm.**

**Discussion section 01H to be held at JBE 109 on Wednesdays, from 10:00am-12:00pm.**

**Discussion section 01I to be held at JBE 109 on Thursdays, from 4:00-6:00pm.**

**Discussion section 01J to be held at JBE 109 on Fridays, from 10:00am-12:00pm.**

## When are office hours?

These times will be very important for your work, because these are the only places where students can discuss the homework problems that are to be graded later in the week. These are also a wonderful opportunity to discuss previous homework problems and find out if you missed some important ideas.

Nic Brummell: Mondays and Wednesdays 5-6pm in my office JBE 357A (or check the discussion rooms opposite my office if there are too many to fit in my office).

Teaching Assistants:

Steven will teach the Mon and Fri sections (F & J) and hold office hours in BE 312 C/D Mon 1pm-2pm, Wed 1pm-2pm

Tenavi will teach the Tues and Thurs sections (G & I) and hold office hours in BE 312 C/D Wed 12pm-1pm, Fri 1pm-2pm

Skylar will teach the Wed sections (H) and hold office hours in BE 312 C/D Mon 10am-11am

## Is there any other tutoring available?

Modified Supplemental Instruction (MSI) is our main tutoring support. MSI will provide class sessions with a class size of 10-12. This can be very very useful!

**You need to sign up to be able to access this extra tutoring!**

See their web site is at: <http://lss.ucsc.edu/programs/modified-supplemental-instruction/index.html>.

The schedule, once posted, will be at: <https://eop.sa.ucsc.edu/msi/msischedule.cfm>

The Learning Assistant supplied for the course is **Jiahao Xu** : [jxu43@ucsc.edu](mailto:jxu43@ucsc.edu)

## HOW TO GET THE BEST GRADE

### Are there any quizzes?

There will be one quiz per section, but they will be very easy and short.

The intention is to both reward the students for attending section and also to give everyone a very quick idea on how well they are doing on a very basic level.

**Quizzes will account for 10% of the final grade.** Everyone will be allowed to drop the lowest score (to account for possible incidents that might keep you from attending a particular section, therefore **there is no need to ask to re-take quizzes**)

Any questions regarding the quizzes or their grading should be addressed to the TA.

## What about homework?

**There will be one set of homework problems per week. The homework will always be due in on Friday 5pm at the drop boxes in Jacks Lounge. (There is a map on the Homework page of the course webpages)**

As young engineers-in-the-making you should already know how important it is to make deadlines. Therefore, we ask you to take the homework deadlines seriously and professionally. **We cannot accept late homework.**

Homework is **fundamental** to helping you prepare for the exams. It is therefore very important you find out the reason why you missed points in the homework problems because otherwise most likely the same difficulties will arise in the exams. You do this by asking questions in section and/or in office hours.

You are encouraged to work with one or two colleagues to understand the solutions. However, you must hand in a unique personal solution to the problems to be marked.

The homework scores will be posted using Canvas. You can access this through [canvas.ucsc.edu](https://canvas.ucsc.edu) or through [my.ucsc.edu](https://my.ucsc.edu). A link to the course should appear in your course list. Graded homework will be given back in section.

**The average of homework scores will account for 10% of the final grade.** Everyone will be allowed to drop the lowest homework score.

Any questions regarding homework's scores or grading should be addressed to your TA.

List of priorities when working on homework:

1. Understanding each problem. This includes checking the corrections and solutions when you get your homework back. If there is anything you do not understand, talk to us about it in office hours.
2. Try to complete as much of the homework list as early as possible. If you cannot do it before the deadline for grading, just give us whatever you were able to complete. Make sure, though, that you finish all the problems eventually, even if it is after the deadline.
3. If you have difficulties in a particular set of problems, choose extra problems and work on them together with the instructor, a TA or your favorite tutor.
4. **By the time you get to the exam, make sure you understand all the problems in the homework list.**

## Is there a midterm?

**YES! There is one midterm and it will take place on Thursday May 4<sup>th</sup> in class.** The midterm will cover all that was taught up until the last class before the date of the exam.

This test is mostly a midterm "reality-check", to confirm whether you are understanding the concepts correctly. It will contain questions similar in complexity to what you will find later on in the final exam. It is therefore important to understand all the mistakes you may have made in the midterm, so that you do not repeat them in the final.

**The midterm score will contribute 30% to the final grade.**

For the test, you are allowed only a **4-function calculator, a pencil and an eraser.**

**Important note.** We cannot set up midterm re-takes. If you cannot make it to the midterm for some real reason, we will calculate your final grade with 10% of your average homework score, 10% of your average quiz score and 80% of your final exam.

**Any questions about the scores on the midterm should be addressed to the instructor.**

## What about the final exam?

**This is the most important item in your final letter grade.**

**The exam's score will account for 50% of the final grade.**

**The final will take place on Tuesday June 13<sup>th</sup> from 4:00-7:00pm in the regular classroom.**

Since the final exam is the only chance we have of testing you (individually) on your knowledge of the full content of the course, we require a minimum of 60% in the final exam in order to pass the class (regardless of your total average score on other parts of the course).

The final will cover everything that was taught during the quarter. You should consider this as an opportunity to show how much you have learned about linear algebra in the quarter.

For the test, you are allowed only **a 4-function calculator, a pencil and an eraser.**

**Important note:** Before you enroll in this class, make sure you check the date of the final exam and that you can make it. We will only allow final exam make-ups in the case that a truly disastrous event keeps you from taking it. And we mean **truly** disastrous events only, not the fact that you want to take an earlier flight home, or that it is just not convenient.

**Any questions about the scores on the final should be addressed to the instructor.**

## What is a passing grade in this class?

Students have their final grade calculated with the following formula:

$$0.1 * (\text{average homework score}) + 0.1 * (\text{average quiz score}) + 0.3 * (\text{midterm score}) \\ + 0.5 * (\text{final exam score})$$

You will have a C (or a 'Pass') if you have at least 60% as your final score **and** 60% in the final exam.

## How do I maximise my chances to get a good result in this course?

We are well aware that each person is an individual and has different studying strategies. However, allow us to suggest a few ideas on how to maximise your efficiency in studying of mathematics:

- Be consistent. Start working from the first day of class and **stay** engaged in sections, office hours and tutoring sessions.
- Read the book. Many people get frustrated during a first read of the book and give up. **No one expects you to understand everything on a first read.** Most typically, people need to read the material 2-4 times before they start feeling comfortable with the new concepts.
- Study the examples and practice problems. These are the “keys” that lead to the solution of most of the exercises. If you have difficulties with a specific example, try re-reading the theory.
- Work out the problems given in the book. Feel free to do as many as you feel like. Start with the easy ones first. If you have problems, go back to the examples, maybe you just skipped something important.
- Do organized work. Be organized and write down your calculations in a clean and ordered way, problem solving is much simpler if one has organized, clear calculations. Usually “messy writing”  $\implies$  “messy thinking”.

- Make full use of lectures, sections, office hours and labs. Do not be afraid to ask questions. Be active, not passive! The more you interact with the instructors the more likely you will be able to absorb more knowledge. **But come prepared** with specific questions and problems. Keep a list.

## Are there any other “class rules”?

Yes! Some common sense rules!:

**Pledge to give the class your full attention, and therefore get yourself the best education and make the most out of the money you are paying for college.**

**Pledge to have respect for the instructors and your fellow students, so that they may in turn respect for you.**

**That means, please:**

*No cell phones, no texting in class*

*No music or headphones in class*

*Laptops can only be used for the learning purposes of the class*

**Other stuff:**

*No type of collaboration between students is allowed in quizzes, the midterm or the final exam.*

*You can work together on homework, but “carbon copies” are not acceptable. Submit individual work.*

*Always substantiate any answer you give to any question in this class, even if you are not explicitly asked to justify your answer. “True” or “false”, “yes” or “no” answers have to be justified, either with words or calculations. We put a strong emphasis on actual understanding and this requires more than one word answers. If you find it difficult to justify a particular course of action in a particular exercise, most likely you need to do some more work on that area (a quick conversation during section or office hours might be all that you need).*

**Late homework is never accepted.** We have an efficient system set up for grading homework that begins at the deadline. Remember that the main goal of homework is to get it done and understood, not necessarily getting it graded (even though obviously getting both is the ideal).

## What do I do if I am a student with a Disability Resource Center (DRC) accommodation?

UC Santa Cruz is committed to creating an academic environment that supports its diverse student body. If you are a student with a disability who requires accommodations to achieve equal access in this course, please submit your Accommodation Authorization Letter from the Disability Resource Center (DRC) to me privately during my office hours or by appointment, preferably within the first two weeks of the quarter. At this time, I would also like us to discuss ways we can ensure your full participation in the course. I encourage all students who may benefit from learning more about DRC services to contact DRC by phone at 831-459-2089 or by email at [drc@ucsc.edu](mailto:drc@ucsc.edu).

## FINAL COMMENTS

I look at this course as a team effort with the main goal for all of us (the instructors, the TAs, you, your colleagues) being to help you to learn some important mathematics. This should be a collaborative effort, not a competition between you and the instructors. We want you to get a good grade and will do our best to get you there, but it requires some co-operation from you too!

Welcome to the course!