Trigonometry and College Algebra - MTH 13, Sec. D02 – 52297

Professor: Dr. Luis Fernández

Class times and room: Tu, Th, 10:00–11:50, NI 205.

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Overview of the course.
This course will provide some basic tools that you will need in your studies in maths and sciences. **It is important that you master these tools as you will need them in your next courses.**

Some resources:
- **Classes:** One purpose of attending classes is to learn faster than if you study on your own with a book. In addition, classes have the advantage of being interactive: you can ask if you need a clarification. To take full advantage of classes you need to review the previous class and look work out the exercises after the class. Otherwise classes are quickly forgotten.
- **Computers:** During this course we will use computers to understand the material better. Using a computer one can see lots of examples and illustrate many of the concepts of the course. We will use them in many lectures, and students will need to use them to work in special homeworks.
- **Math Tutorial Lab:** The Math Tutorial Lab is a room where you will find permanent tutors for all maths courses. If you want to have the opportunity to ask questions as they arise while you do your homework, this is the place to go. It is at CP 303; opens 10am to 8pm Monday through Thursday, 10am to 5pm Friday, and 10am to 3pm Saturday and Sunday.
- **Meetings with the instructor:** If you have not understood something well and need help, or for any other matters concerning the course, you can also talk to the instructor. Please write an e-mail to the address above to arrange a time, or go to office hours.

Textbook:
- *Basic Technical Mathematics with Calculus, 10th edition* by Allyn J. Washington. Pearson/Prentice Hall.
- **A scientific calculator (with trigonometric functions sin, cos, etc), is also required.**

Student's responsibilities
- To use the **resources** available (some are above) to attain the main goal: <u>to learn</u>.
- To **prepare** each class by studying the material in the previous class, solving the recommended exercises and reading ahead in the text (or in internet) the material that will be presented.
- To work on many **exercises**, as it is impossible to learn mathematics without doing so. The main purpose of the exercises is not quite to find the answer, but to learn from them. Therefore, if you work in an exercise for a long time without finding a correct answer, do not feel frustrated, instead consider how much you have learned in the process.
- To **ask** questions during classs or tutorials about anything that has not been understood. EVEN IF YOU THINK THAT YOUR QUESTION IS TOO TRIVIAL, I GUARANTEE THAT MANY OTHER STUDENTS WILL BENEFIT FROM THE ANSWER. So when in doubt do your classmates a favor and ASK!
- To **be in class on time** and do all the in-class exams.

Instructor's responsibilities
- To act as *facilitator* of the learning process of the students, and to assist with any question that students may have about the material.
- To give tests and exams of appropriate difficulty. To grade tests and exams promptly and explain the students the meaning of their grades.

Classroom Rules
- Cell phones, music devices and laptops are not allowed during class time.
- Talking about matters not related with math is not allowed during class time. Students must be quiet except when discussing mathematics during class time. It is strongly encouraged, however, that students participate and discuss the subject that is being studied in each class.
- In-class tests and quizzes will not be repeated. The only exception, in some situations, is if the instructor receives notice of the absence (via e-mail, telephone, friend, etc) **on the day of the test or quiz**.

Exams and homeworks:
- There will be **three in-class tests** during the term, **each worth 20%** of the final grade.
- **Homeworks** will be assigned each week, and due Thursday of the week after. It is your obligation to do the homework. I will collect it some days. Also, if you hand it in every Thursday, it **will count as extra credit**.
- The **final exam** will count **40%** of the final grade.

Class plan and assigned exercises. MTH 13. Professor Luis Fernández

Use this to prepare each class in advance. Note that dates may change depending on how fast we advance.

DATE		SECTION	RECOMMENDED EXERCISES
Th	8/27	9.1 Introduction to Vectors	**p. 261:** 9,13,15,23,37,41,45
		9.2 Components of Vectors	**p. 264:** 5,7,13,17,21,23,27,29
Tu	9/1	9.3 Vector Addition by Components	**p. 270:** 3,7,11,13,15,21,25,29
Th	9/3	9.4 Applications of Vectors	**p. 273:** 3,5,7,13,17,19,22
Tu	9/8	12.1 Basic Definitions	**p. 340:** 5,9,11,21,23,27,31,37,49,53
		12.2 Basic Operations with Complex Numbers	**p. 343:** 7,11,17,19,25,31,35,41,45
Th	9/10	NO CLASS	MONDAY SCHEDULE
Tu	9/15	NO CLASS	
Th	9/17	12.3 Graphical Representation of Complex Numbers	**p. 345:** 5,13,17,29
		12.4 Polar Form of a Complex Number	**p. 348:** 3,7,15,19,21,25,29,33
		12.5 Exponential Form of a Complex Number	**p. 350:** 5,9,11,17,21,27,33,37
Tu	9/22	NO CLASS	
Th	9/24	12.6 Products, Quotients, Powers, and Roots Of Complex Numbers	**p. 356:** 5,7,9,11,17,25,29,35,37,39
Fr	9/25	REVIEW FOR TEST 1	Prepare questions for the review
Tu	9/29	**TEST 1**	Covers from 9.1 to 12.6
Th	10/1	3.1 Introduction to Functions	**p. 83:** 5-27 odd
		3.2 More about Functions	**p. 87:** 5,7,15,17,25,29,31,37
Tu	10/6	3.4 The Graph of a Function	**p. 94:** 7,11,19,29,33,37,41
Th	10/8	13.1 Exponential Functions	**p. 368:** 3,7,9,11,13,17,19,22,23,26,28
Tu	10/13	13.2 Logarithmic Functions	**p. 372:** 5,9,15,19,27,29,35,43,63,65
Th	10/15	13.3 Properties of Logarithms	**p. 377:** 9,17,19,25,27,31,35,41,43,47,49,53,55
		13.5 Natural Logarithms	**p. 383:** 9,11,13,19,23,43,45,49,51
Tu	10/20	13.6 Exponential and Logarithmic Equations. REVIEW FOR TEST 2.	**p. 386:** 5,11,17,21,27,29,39,43,47,49
Th	10/22	**TEST 2**	Covers from 3.1 to 13.6
Tu	10/27	10.1 Graphs of $y = a\sin x$ and $y = a\cos x$	**p. 294:** 3,5,13,19,27,29,33
		10.2 Graphs of $y = a\sin bx$ and $y = a\cos bx$	**p. 297:** 7,11,15,19,27,33,39,43,53,55,61,63
Th	10/29	10.3 Graphs of $y = a\sin(bx + c)$ and $y = a\cos(bx + c)$	**p. 301:** 3,9,13,19,23,25,27,35,37
Tu	11/3	10.4 Graphs of $y = \tan x$, $y = \cot x$, $y = \sec x$, $y = \csc x$	**p. 304:** 3,7,15,23
Th	11/5	10.5 Applications of the Trigonometric Graphs	**p. 306:** 1,3,5,7,9,11,13
Tu	11/10	20.1 Fundamental Trigonometric Identities	**p. 537:** 7,11,15,23,25,29,33,35,37,43,49,66
Th	11/12	20.2 The Sum and Difference Formulas	**p. 542:** 3,5,7,9,13,19,23,25,31
		20.3 Double-Angle Formulas	**p. 545:** 9,15,17,21,23,29,31,33,37,39
		20.4 Half-Angle Formulas	**p. 549:** 9,11,13,21,23,29,31,35,39,42
Tu	11/17	20.5 Solving Trigonometric Equations. REVIEW FOR TEST 3.	**p. 553:** 5,9,13,15,19,23,27,29,33
Th	11/19	20.6 The Inverse Trigonometric Functions	**p. 553:** 11,13,15,21,23,25,27,33,35,41,44,47
Tu	11/24	**TEST 3**	Covers from 10.1 to 20.6
Th	11/26	NO CLASS	THANKSGIVING
Tu	12/1	5.5 Solving Systems of Two Linear Equations by Determinants	**p. 158:** 5,9,15,17,19,21,27,39.
		5.6 Solving Systems of Three Linear Equations Algebraically	**p. 162:** 3,7,11,13,21
Th	12/3	5.7 Solving Systems of Three Linear Equations by Determinants	**p. 168:** 3,5,7,13,15,17,25,36
Tu	12/8	REVIEW FOR THE FINAL	Prepare questions for the review
Th	12/10	REVIEW FOR THE FINAL	Prepare questions for the review

REMEMBER: The exercises listed correspond to the material that will be covered on the date they are listed.

Before each class, read the section that corresponds to that class and attempt some of the exercises. This way when you hear the explanations in the class you will understand the material much better.