Trigonometry - MAC 1114

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Office Hours: MWF: 11:15AM-12:45PM, TR: 10:30-11:15AM, 1:15-2:00PM
Webpage of MAC 1114:
 https://mathstat.fiu.edu/useful-information/math-resources/trigonometry/

Prerequisites: a C or better in College Algebra, MAC 1105, or appropriate score on the ALEKS placement test (for students with no prior college coursework only)

Where and how do we use "Trigonometry"?

- How can you find the heights of buildings when you can't measure it directly?
- Which angle should a pilot use to take off from an airport and when to turn at a certain angle in the sky in order to reach to the desired destination?
- How much water do you need to fill a semi-circular aquarium?
- How can you find the trajectory of a ball or a bullet?
- How can you curve surfaces in building materials such as steel and glass?

Trigonometry helps us to answer these questions and understand complex processes such as

- Advanced scanning procedure, the practical application of medical techniques such as CAT and MRI scanning, in detecting tumors and even in laser treatments, etc. use the sine and cosine functions.
- In chemistry, the atoms in a molecule bond at particular angles and crystallize in particular forms (this is why, for example, snowflakes always have six sides). Trigonometry figures out the molecular forms and helps predict the effects up at our scale.
- In astronomy, trigonometry is used for calculating where in the sky particular stars are and how they are moving relative to us. Precise calculations help us to find earth-like planets around other stars that might be home to other forms of life.
- In navigation, GPS, radar, and even sky navigation, trigonometry is the mathematical foundation for calculating one's position.

Precisely, trigonometry is a branch of mathematics that deals with triangles, circles, weaves and oscillations. The techniques in trigonometry are used for finding relevance in navigation particularly satellite systems and astronomy, naval and aviation industries, oceanography, land surveying, in cartography (creation of maps) etc.

A Simple Example: Trigonometry is commonly used in finding the height of towers and mountains.
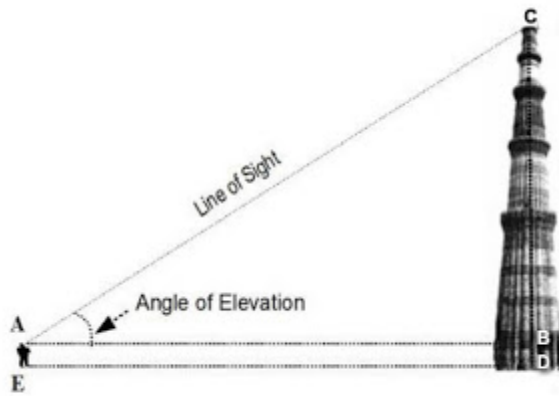
Fig 6

Course Goals:

1. Make meaningful connections between trigonometry and other disciplines (e.g. architecture, biology, engineering)
2. Apply the fundamental concepts of trigonometry to solve theoretical and application type problems
3. Recognize where and how trigonometry arises naturally in life
4. Integrate the knowledge of Algebra and the acquired trigonometric skills to be successful in calculus
5. Work with trigonometric identities/equations as an introduction to rigorous proofs in other courses

Keys to Success

1. Math is learned by **doing** math problems. Do math problems every day. Make it part of your routine. Work with a friend. Form a study group.
2. Be an **active** participant in the classroom. Get ahead in the book; try to work some of the problems before they are covered in class.
3. When studying math, you need to give it your undivided focused attention – study with your phone out of reach.
4. When you do your homework, **write out complete solutions**, as if you were taking a test. Don't just scratch out a few lines and check the answer in the back of the book. If your answer is not correct, do the problem again. If you can't get the answer, **get help** from me or from your classmates.
5. Start **studying early** for a test. At least 3-4 days before the test, do not leave it until the last night.
6. **Monitor your own progres**s. If you are having difficulty meeting deadlines, come see me! E-mail me. Stop by my office. **Go** to the Math Help Sessions or other tutoring sessions on campus. **All** students need help at some point, do not be shy about getting the help you need. **We want to help you**!

Textbook: Algebra & Trigonometry by R. Blitzer, Pearson, 6th edition
Textbook packaged with MyLabsPlus access code, ISBN 9781323656495
or MyLabsPlus Access Code alone, ISBN 9781323739778.

Material to be covered:

- Chapter 5 – sec 1-8
- Chapter 6– sec 1-5
- Chapter 7 – sec 1-6

Examinations: There will be four tests (see the schedule below), weekly in class quizzes/homeworks, online homework assignments and a final exam. All of the exams (including the final exam) will be comprehensive.

Tests Tentative Schedule:

Test # 1 3rd **week**
Test # 2 6th **week**
Test # 3 10th **week**
Test # 4 14th **week**

Final Exam   TBA

Online Assignments: Your online course assignments are available at http://fiu.mylabsplus.com. Your username is your panther ID. Use "Forgot your password?" link to obtain your password. You will be able to access the site, but to gain access to assignments you must purchase an access code for MyLabsPlus.

Access code to MyLabsPlus :

- If you took MAC 1105, MAC 1140, MAC 1114 or MAC 1147 after Fall 2017, you will receive a code in the first two weeks of the semester after it is verified that you purchased a code already. You will be asked to complete a quick survey and provide relevant information. Otherwise, you must purchase a code.
- You can purchase an access code at FIU bookstore together with the textbook or as standalone item.
- You can also purchase it online directly from Pearson while attempting to use the MyLabs Plus site (valid credit card required) - this is the cheapest option.
- Please be advised that you MUST purchase a code with a specific ISBN or it will not work for the course. Note: Pearson can only support access cards purchased from the bookstore and directly through the publisher. Any issues that arise from materials purchased from a third-party vendor (Amazon, Chegg, eBay, etc) must be handled by that particular company. Access cards purchased through third-party vendors will not be replaced by Pearson. This policy includes standalone access cards and access cards included within a packaged bundle.

  If you are not able to purchase an access code immediately, you can use a **temporary access code**. A temporary access code can be obtained directly from the MylabsPlus site. A temporary access code is valid for ONLY 14 calendar days and it allows you to get started with

your assignments on the first day of classes. After the code expires you will be prompted to enter the permanent code or purchase the code using a credit card. You will not be allowed to continue your course until a permanent code is entered. You cannot buy/enter a permanent code until the temporary code expires.

In Class Quizzes: There will be short weekly quizzes.

Online Homework and Quizzes
- Online problems are algorithmic iterations of the textbook exercises.
- All online assignments have a due date. We will not be able to accept **late submissions**, so please plan accordingly.
- Homework assignments can be attempted an infinite number of times but must be completed by 11:59pm on the assigned due date. It is your responsibility to track the due dates.
- Some homework assignments are extensive. Make sure to allocate enough time to complete them.
- To take a quiz you have to complete associated homework assignments with a score of 70% or more. If you do not score **at least 70% on homework assignments, you will not be able to take the associated quiz** and therefore you will receive a 0% on that quiz.
- You can take each quiz up to 3 times and only the highest score will be recorded.
- At the end of the semester, the homework with the **lowest grade** and the quiz with the lowest grade will be dropped.
- A grade of 0 on a homework/ quiz will be assigned whenever a student did not attempt that assignment before the deadline.
- There will also be **four Workspace assignments (WS).** You will have to type your answers on those assignments. **Those assignments can be attempted only once.**

We will not be able to extend the **deadlines.** All online assignments are due at midnight on the due day. You should not wait until the last moment to complete the assignments since you don't know what problems, technical or not, you might encounter along the way.
Please be advised that merely completing online assignments is not a guarantee of success in the class. If you can't correctly do a homework problem without any help, you may not be able to do a similar problem on a test.

Also, keep in mind that your grade in this class will be determined mainly by your performance on the tests.

Grading policy: To get a full credit for a problem on a test you **must show your work**.

Your grade will depend on your performance on tests, quizzes and online assignments.

- **All tests are worth 50%**
- **The final 20%,**
- **In class quizzes and/or offline homework 15%**
- **All online assignments 15% (online HW 7%; quizzes 8%).**

The lowest scores on (online) quizzes and homework assignments will be dropped at the end of the semester. The score on the final will replace the lowest test score, if it is to your advantage. The final will NOT replace a 0 that you get for missing a test.

Your final grade will be assigned according to the following scale**.** All grades will be available in Mylabsplus, so you can monitor your progress.

A: 93 – 100	B + : 86 – 88	C+: 75 – 78	D: 68 – 55
A- : 89 – 92	B: 83 – 85	C: 69 – 74	F: 0 – 54
	B-: 79 – 82		

Make-up Policy: We will not be able give make-up tests. If you miss a test due to illness or other emergency and provide supporting documentation, then your final exam will count in place of the missed test. In this case, the option of replacing the lowest test score **will not be able to applied**. **There are no make-ups for online assignments.**

Attendance Policy: You are really expected to attend all classes**. Attendance will be taken daily.** It is your responsibility to complete all assignments on time regardless of whether or not you were present in the class.

Calculator Policy: No calculator or electronic device will be allowed on exams.

Early Alert: In an effort to help you succeed in your academic courses, FIU utilizes an Early Alert system. Instructors are now able to notify students' academic advisors if there are concerns about class performance. If an alert is submitted, your academic advisor will send you a message via your Student Dashboard (accessed via your MYFIU page) to discuss ways to improve your performance. Please respond to any communication you receive from your academic advisor about an early alert. Our goal with this program is to help you to be successful by identifying any issues as early as possible and working to address them.

Incomplete Grade Policy: The incomplete grade is given to a student who has substantially and successfully completed most of the course work but is unable to finish an exam or other work because of circumstances beyond the student's control. An IN grade cannot be given if it is necessary for the student to repeat the course. An incomplete grade must be made up within two semesters. There is no extension of the two semester deadline. The student must not register again for the course to make up the incomplete. Every incomplete grade must be approved by the Mathematics Department.

Drop Date: The last day to drop a course with a refund is January 16th and with a **DR grade** is March 19th .

Academic Misconduct:

- Includes (but is not limited to) giving or receiving assistance on a test, quiz, or homework
- Falsifying a document to obtain an excuse from a test
- Using unauthorized notes on a test or quiz
- A more complete definition of Academic Misconduct is given in the Student Handbook.

- Penalties for Academic Misconduct range from an F in the course to expulsion from the University.

Tutoring and Support Services:

On Campus Tutoring:
The University Learning Center in GL 120 located in GL 120 at the Modesto Maidique Campus or in AC1 160 at the Biscayne Bay Campus. If you go and there are tutors available, you will get immediate help. Otherwise, you will have to make an appointment. The phone number is (305)348-2441 for MMC and (305) 919-5927 for BBC.

AAA Tutorial Program offered by the Office of Multicultural Programs and Services.Tutoring is free for all FIU students. The AAA Tutorial Office is located in GC 267 at the Modesto Maidique Campus or in WUC 253 on the Biscayne Bay Campus. Subjects include College Algebra, Trigonometry, Differential Equations, Finite Math, Statistics, Business Calculus, Pre-Calculus, Calculus I,II and III. If you want to make an appointment please call 305-348-6425 for MMC or 305-919-5817 for BBC or e-mail aaatutoringfiu@gmail.com

Disability Services: Students with disabilities should contact Disability Resource Center in Graham Center, Rm. 190. I am available to meet with you and discuss the necessary academic accommodations upon receiving documentation from DRC.

Classroom Etiquette: Appropriate behavior is expected of all students taking this course. Please be considerate of the instructor and those around you in order to keep a productive learning environment.

- You should refrain from talking to each other, reading newspapers and magazines, preparing for another class, or packing up early. Additionally, you should also refrain from using electronic devices such as cell phones, iPods, tablets or computer.

- Though classroom participation is always welcomed, questions and comments should be relevant to the topic at hand. If you have a question or comment, please raise your hand to be recognized.

- You are expected to come prepared to class, be on time and remain in the classroom for the duration of the lecture

- Student conduct which disrupts the learning process shall not be tolerated and may lead to disciplinary action and/or removal from class.

The above policies and procedure in this course and the below schedule are subject to change in the event of extenuating circumstances or based on the instructors discretion.

Good Luck!

Tentative Weekly Class Schedule

WEEK	DATES	SECTIONS	CONTENT	NEED TO KNOW BEFORE
1	1/8 – 1/12	5.1, 5.2	**Pre-class HW 1 due in class** Angles and Radian Measure Right Triangle Trigonometry	Simple Algebra, like multiplying fractions. And also simple Geometry for right triangles (Pythagorean Theorem).
2	1/15 – 1/19	5.2, 5.3	**Pre-class HW 2 due in class** Right Triangle Trigonometry Trigonometric Functions of Any Angle Note: Monday (01/15) is MLK Day (University Closed) Note: Tuesday (01/16) is Drop/Add Deadline	Same as above and basics of functions, even-odd functions.
3	1/22 – 1/26	5.3 and 5.4 **Exam 1**	**Pre-class HW 3 due in class** Trigonometric Functions of Any Angle Trigonometric Functions of Real Numbers	Basics of functions; evaluating functions
4	1/29 – 2/2	5.4, 5.5	**Pre-class HW 4 due in class** Trigonometric Functions of Real Numbers Graphs of Sine and Cosine Functions	Basics of functions, such as domain, range, and evaluating functions. Graphing functions by making a table
5	2/5 – 2/9	5.6, 5.7	**Pre-class HW 5 due in class** Graphs of Other Trigonometric Functions Inverse Trigonometric Functions Offline HW 1 for Section 5.5	Fundamental trigonometric identities and inverse of a function, horizontal line test. Values of trig functions at special angles.
6	2/12 – 2/16	5.8 and **Exam 2**	**Pre-class HW 6 due in class** Applications of Trigonometric Functions Offline HW 2 for Section 5.6 Note: Exam 2 focus on Sections 5.4, 5.5, 5.6, and 5.7 with prior materials	Definitions of trig functions

7	2/19 – 2/23	6.1, 6.2	**Pre-class HW 7 due in class** Verifying Trigonometric Identities Sum and Difference Formulas	Fundamental trigonometric identities, and basic algebra (factorization, adding fractions, simplification, common denominator, etc). Also, cofunctions, definitions of trig functions.
8	2/26 – 3/2	6.3, 6.4, and 6.5	**Pre-class HW 8 due in class** Double Angle, Power Reducing, and Half Angle Formulas Product-to-sum and Sum-to-product Formulas Offline HW 3 for Section 6.1 Trigonometric Equation	Sum and Difference Formulas from the previous section. Pythagorean Identity. Basic Algebra, like multiplying fractions, taking squares of fractions. Solving equations (includes quadratic ones) from Algebra. The identities which have been learned so far.
9	3/5 – 3/9	6.5 and **Exam 3**	**Pre-class HW 9 due in class** Trigonometric Equations Offline HW 4 for Section 6.5 Note: Exam 3 focus on Section 5.8 and Chapter 6 with prior materials	Solving equations (includes quadratic ones) from Algebra. The identities which have been learned so far.
10	3/12 – 3/16		Spring Break (No Classes)	
11	3/19 – 3/23	7.1, 7.2, and 7.3	**Pre-class HW 10 due in class** Monday (03/19) Deadline to drop the course with a DR/WI grade Law of Sines Law of Cosines Polar Coordinate	Basic Algebra, like taking squares. Basic Geometry, like sum of interior angles is 180 degrees. And also, inverse trig functions. Basic knowledge about rectangular coordinate system.
12	3/26 – 3/30	7.3, 7.4	**Pre-class HW 11 due in class** Polar Coordinates Graphs of Polar Equation	Basic knowledge about rectangular coordinate system Graphing by making tables.

13	4/2 – 4/6	7.5, 7.6 and **Exam 4**	**Pre-class HW 12 due in class** Offline HW 5 for Section 7.4 Complex Numbers Vector Note: Exam 4 focus on Chapter 7 with prior material	Values of trig functions at special angles. Distance between two points. Basics of rectangular coordinate system.
14	4/9 – 4/13	7.6	**Pre-class HW 13 due in class** Vectors	Distance between two points. Basics of rectangular coordinate system
15	4/16 - 4/20	Catch Up and Review		
16	4/23 – 4/27		**FINAL EXAM**	