Trigonometry - MAC 1114

Summer B 2017

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Office Hours: TBD
Learning Assistant: GL 263 Mastery Math Lab (http://masterymath.fiu.edu)

Prerequisites: a C or better in College Algebra, MAC 1105, or appropriate score on the ALEKS placement test (for students with no prior record of MAT 1033 and/or MAC 1105 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, waves 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.
Learning Outcomes:

1. Make meaningful connections between trigonometry and other disciplines
2. Learn the definition of the six trigonometric functions and be able to graph them
3. Find the inverse of trigonometric functions
4. Prove trigonometric identities and solve trigonometric equations
5. Apply the law of sines and cosines to solve triangles
6. Graph some equations in polar coordinates
7. Write a complex number in polar form

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 LAs 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 progress. 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, FIU custom edition, packaged with MyLabsPlus access code or MyLabsPlus Access Code alone (MyLabsPlus program contains an electronic version of the textbook). You will also need to have an iClicker (available in the FIU bookstore)
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 (or offline hw), online assignments and a final exam. All of the exams (including the final exam) will be comprehensive.

Tests Tentative Schedule:

<table>
<thead>
<tr>
<th>Test #</th>
<th>Week</th>
</tr>
</thead>
<tbody>
<tr>
<td>Test #1</td>
<td>2nd</td>
</tr>
<tr>
<td>Test #2</td>
<td>3rd</td>
</tr>
<tr>
<td>Test #3</td>
<td>4th</td>
</tr>
<tr>
<td>Test #4</td>
<td>5th</td>
</tr>
<tr>
<td>Final</td>
<td>6th</td>
</tr>
</tbody>
</table>

Online Assignments: Your online course assignments are available at [http://fiu.mylabsplus.com](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:

- Purchase an access code at FIU bookstore with (or without) the textbook.
- 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.
- Make sure it is a code for Mylabsplus, not Mymathlab. The latter will not work for our site and Pearson will not be able to help you.
- 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.
- If you took MAC 1105, MAC 1140, MAC 1114 or MAC 1147 in the last year, you’ll have an automatic access to the course, hence you do not have to buy an access code.

iClicker

Web Registration:
• Register your iClicker2 remote online by Friday, January 13th.
• To register online go to http://www.iclicker.com/registration.
• Complete the fields with your first name, last name, student ID, and remote ID. Your student ID should be your FIU Panther ID e.g. 5556666. The remote ID is the series of numbers and sometimes letters found on the bottom of the back of your iClicker2 remote. It can also be found on the LCD screen upon powering on your iClicker2 remote. You must come to class at least once and vote on at least one question in order to complete the registration.
• If you have lost or broken your iClicker remote, you will have to purchase another one. Please email me with your new Remote ID so that I can manually register your new remote.

iClicker Technical support: Contact (866) 209-5698 or via email support@iclicker.com from 9AM-11PM EST, M-F. The iClicker website (www.iclicker.com) also has support documentation, video tutorials, and FAQs for students.

In Class Quizzes: There will be weekly quizzes and/or offline hw assignments.

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.

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 60%
- The final 20%,
- In class quizzes and offline assignments 10%
- All online assignments 10% (online HW 5%; quizzes 5%).

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.

<table>
<thead>
<tr>
<th>Grade</th>
<th>Score Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>93 – 100</td>
</tr>
<tr>
<td>B+</td>
<td>86 – 88</td>
</tr>
<tr>
<td>C+</td>
<td>75 – 78</td>
</tr>
<tr>
<td>D</td>
<td>68 – 55</td>
</tr>
<tr>
<td>A-</td>
<td>89 – 92</td>
</tr>
<tr>
<td>B</td>
<td>83 – 85</td>
</tr>
<tr>
<td>C</td>
<td>69 – 74</td>
</tr>
<tr>
<td>F</td>
<td>0 – 54</td>
</tr>
<tr>
<td>B-</td>
<td>79 – 82</td>
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</tbody>
</table>

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: Use of graphing calculators is prohibited in this course. The scientific calculator, TI-30XA will be used occasionally but not on the tests.

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 June 26th and with a **DR grade** is July 17th.

**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

<table>
<thead>
<tr>
<th>Week 1</th>
<th>Course Introduction</th>
</tr>
</thead>
<tbody>
<tr>
<td>Section 5.1</td>
<td>Angles and Radian Measure</td>
</tr>
<tr>
<td>Section 5.2</td>
<td>Right Triangle Trigonometry</td>
</tr>
<tr>
<td>Section 5.3</td>
<td>Trigonometric Functions of Any Angle</td>
</tr>
<tr>
<td>Section 5.4</td>
<td>Trigonometric Functions of Real Numbers</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Week 2</th>
<th>Important Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wednesday, June 28 -&gt; No Classroom Meeting</td>
<td></td>
</tr>
<tr>
<td>Friday, June 30 -&gt; Class will start at 12:15</td>
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</tr>
<tr>
<td>Section 5.5</td>
<td>Graphs of Sine and Cosine Functions</td>
</tr>
<tr>
<td>Section 5.6</td>
<td>Graphs of other Trigonometric Functions</td>
</tr>
<tr>
<td>Section 5.7</td>
<td>Inverse Trigonometric Functions</td>
</tr>
<tr>
<td>Exam Review</td>
<td></td>
</tr>
<tr>
<td>Exam 1 (Focus on Chapter 5)</td>
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</tbody>
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<table>
<thead>
<tr>
<th>Week 3</th>
<th>Section 5.7</th>
<th>Inverse Trigonometric Functions</th>
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</thead>
<tbody>
<tr>
<td>Section 5.8</td>
<td>Applications of Trigonometric Functions</td>
<td></td>
</tr>
<tr>
<td>Section 6.1</td>
<td>Verifying Trigonometric Identities</td>
<td></td>
</tr>
<tr>
<td>Exam Review</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Exam 2 (Focus on Sections 5.7, 5.8, and 6.1 with prior materials)</td>
<td></td>
<td></td>
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</tbody>
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<table>
<thead>
<tr>
<th>Week 4</th>
<th>Section 6.2</th>
<th>Sum and Difference Formulas</th>
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</thead>
<tbody>
<tr>
<td>Section 6.3</td>
<td>Double Angle, Power Reducing and Half Angle Formulas</td>
<td></td>
</tr>
<tr>
<td>Section 6.5</td>
<td>Trigonometric Equations</td>
<td></td>
</tr>
<tr>
<td>Exam Review</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Exam 3 (Focus on Sections 6.1, 6.2, 6.3, and 6.5 with prior materials)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
| Week 5  | Section 7.1  Law of Sines  
| Section 7.2  Law of Cosines  
| Section 7.3  Polar Coordinates  
| Deadline to drop a course with a DR grade is July 17th  
| **Exam Review**  
| **Exam 4 (Focus on Sections  7.1, 7.2,  and 7.3 with prior materials)** |
| Week 6  | Section 7.4  Graphs of Polar Equations  
| Section 7.5  Complex Numbers  
| Section 7.6  Vectors  
| **Exam Review**  
| **FINAL (Cumulative)** |