

**MIAMI DADE COLLEGE**  
**InterAmerican Campus**  
**Mathematics Department**  
**MAC 1147**  
**Pre-Calculus and Trigonometry**  
**Course Syllabus**

**Instructor:** Dr. Jose Serpa  
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**Office:** 1369

**Meeting Days:** M,F 11:00 am – 12:30 pm    W 11:00 am – 12:00 pm

**Reference Number:** 642714

**Room:** 1388

**Textbook:**

Title: Algebra & Trigonometry  
Edition: 9th Edition  
Author: Sullivan  
Publisher: Prentice Hall  
ISBN: 0321772172

**Course Description:**

This course includes all the topics covered in PreCalculus Algebra (MAC 1140) and in trigonometry (MAC 1114). The course is designed for students with a strong high school background in algebra and trigonometry, or for students who performed very well in college algebra.

**Attendance:**

Attendance is highly encouraged. Roll will be taken at every class session. Students are responsible for all material covered in class. Students who attend and do not appear on the class roll will be asked to report to the Registrar's Office to obtain a paid/validated schedule.

**Math Lab:**

The math lab is located in room 1375. It is highly recommended.

**Incompletes:**

Incompletes will be given in very limited situations. In order to qualify for an "I" grade, the student must be passing the course at the time the "I" grade is negotiated; be so near the end of the course that he/she requires no further instruction; and have a justifiable and documented reason for not being able to finish the course on schedule.

**Evaluation Policy:**

There will be six tests worth 100 points each and a comprehensive mandatory Final Exam. HW will be posted online and will count as extra credits, 10 points each. The lowest grade among all six tests will be dropped. **There will be no makeups.** The Final Exam may **NOT** be dropped. Your final grade will be based on the average of your five best test scores and the Final Exam. I may assign the seating during any of the tests or Final Exam.

**Grading Formula:** (sum of five best test scores with extra credits included+ final exam) / 6

**Withdrawal Policy:**

If you decide to withdraw from this course it is our responsibility to do so in order to receive a grade of “W”.

**Calculators:**

You will need a scientific calculator. If you have a graphing calculator, you are encouraged to use it; however, you will not be allowed to use it on exams.

**Cell phones and beepers:**

Cell phones and beepers must be on silent or be turned off before class. Under no circumstances will a student be allowed to use a cell phone inside the classroom.

**Grading Scale:**

100 – 90 = A

89 – 80 = B

79 – 70 = C

69 – 60 = D

59 – 0 = F

**Course Outline** (*Subject to change*):

*I reserve the right to make changes in the test dates as needed. Any changes will be announced in class as early as possible*

<b>MAC 1105</b>		<b>Fall 2011-1</b>
<b>Tentative Schedule</b>	<b>Date</b>	
<b>Week 1</b>		Introduction, 3.1
		3.2, 3.3
		3.4, 3.5
<b>Week 2</b>		3.6
		Review
		<b>Exam 1 (Ch. 3)</b>
<b>Week 3</b>		
		5.1
		5.2, 5.3
<b>Week 4</b>		5.4, 5.5
		5.6
		Review
<b>Week 5</b>		<b>Exam 2 (Ch. 5)</b>
		6.1
		6.2, 6.3
<b>Week 6</b>		6.4, 6.5
		6.6
		6.7, 6.8
<b>Week 7</b>		12.2, 12.6
		Review
		<b>Exam 3 (Ch. 6, 12.2, 12.6)</b>
<b>Week 8</b>		11.2, 11.3
		11.4
		13.1, 13.2
<b>Week 9</b>		13.3, 13.4, 13.5
		12.5
		Review
<b>Week 10</b>		<b>Exam 4 (Ch. 11, Ch. 13, 12.5)</b>
		7.1
		7.2, 7.3
<b>Week 11</b>		7.4, 7.5
		7.6
		7.7, 7.8
<b>Week 12</b>		Review
		<b>Exam 5 (Ch. 7)</b>
<b>Week 13</b>		8.1
		8.2
		8.3, 8.4
<b>Week 14</b>		8.5
		8.6, 8.7

<b>Week 15</b>		9.1, 9.2
		9.3
		Review
<b>Week 16</b>		<b>Exam 6 (Ch. 8, Ch. 9)</b>
		Review
		Review
<b>Week 17</b>		<b>Final Exam</b>

## Course Competencies:

*Competency 1:* The student will demonstrate knowledge of the polynomial, rational and other algebraic functions, their properties and their graphs by:

- a. Defining the functions
- b. Identifying the domains and ranges of the functions
- c. Graphing the functions and their transformations
- d. Defining inverse functions

*Competency 2:* The student will demonstrate knowledge of polynomial and rational inequalities by:

- a. Solving linear and nonlinear inequalities.
- b. Graphing linear and nonlinear inequalities

*Competency 3:* The student will demonstrate knowledge of exponential and logarithmic functions, their properties and their graphs by:

- a. Defining the exponential and logarithmic functions.
- b. Identifying the domains and ranges of the exponential and logarithmic functions.
- c. Graphing the exponential and logarithmic functions, and their transformations.
- d. Evaluating logarithmic expressions.
- e. Solving exponential and logarithmic equations.

*Competency 4:* The student will demonstrate knowledge of piecewise defined functions by:

- a. Defining piecewise defined functions.
- b. Identifying the different conic sections.
- c. Graphing piecewise defined functions.

*Competency 5:* The student will demonstrate knowledge of conic sections by:

- a. Identifying the different conic sections.
- b. Graphing the different conic sections.

*Competency 6:* The student will demonstrate knowledge of matrices and determinants by:

- a. Defining matrices and dimensions of matrices.
- b. Performing algebraic operations on matrices.
- c. Evaluating determinants.
- d. Solving linear systems using Cramer's Rule.

*Competency 7:* The student will demonstrate knowledge of sequences and series by:

- a. Defining sequences and series (including arithmetic and geometric).
- b. Writing the  $a_n$  term of sequences.
- c. Finding the sums of series (including arithmetic and geometric).

*Competency 8:* The student will demonstrate knowledge of mathematical induction by:

- a. Proving that a given formula is true through the Principle of Mathematical Induction.

*Competency 9:* The student will demonstrate knowledge of the Binomial Theorem by:

- a. Expanding a Binomial using the Binomial Theorem.

*Competency 10:* The student will demonstrate knowledge of applications of PreCalculus by solving problems involving, but not limited to, the following:

- a. Exponential and Logarithmic Growth and Decay Models.

*Competency 11:* The student will demonstrate knowledge of the trigonometric functions, their properties and their graphs by:

- a. Defining the functions in three different ways.
- b. Graphing the trigonometric functions and their transformations
- c. Finding approximate values of the trigonometric functions using a calculator.
- d. Finding exact values of trigonometric functions with reference angles of measures 0, 30, 45, 60, 90 degrees and their radian equivalent.

*Competency 12:* The student will demonstrate knowledge of inverse trigonometric functions, their properties and their graphs by:

- a. Defining the inverse trigonometric functions including domains and ranges.
- b. Graphing inverse trigonometric functions.

*Competency 13:* The student will demonstrate knowledge of trigonometric identities by:

- a. Simplifying trigonometric expressions.
- b. Finding exact values of sums and differences of angles and half angles.
- c. Proving trigonometric identities.

*Competency 14:* The student will demonstrate knowledge of solving trigonometric equations by:

- a. Finding all solutions on the domain  $0 \leq x \leq 2\pi$
- b. Finding all solutions on the real numbers.
- c. Using identities to solve equations.

*Competency 15:* The student will demonstrate knowledge of solving triangles by:

- a. Solving right triangles.
- b. Solving triangles using the law of sines and the law of cosines

### **Miami Dade College/InterAmerican Campus Mathematics Department**

#### **How do the course objectives relate to the Miami Dade College Learning Outcomes?**

What follows below is a list of the ten learning outcomes that have recently been agreed upon by Miami Dade College faculty and administrators.

As graduates of Miami Dade College, students will be able to:

1. Communicate effectively using listening, speaking, reading, and writing skills.
2. Use quantitative analytical skills to evaluate and process numerical data.
3. Solve problems using critical and creative thinking and scientific reasoning.
4. Formulate strategies to locate, evaluate, and apply information.
5. Demonstrate knowledge of diverse cultures, including global and historical perspectives.
6. Create strategies that can be used to fulfill personal, civic, and social responsibilities.
7. Demonstrate knowledge of ethical thinking and its application to issues in society.
8. Use computer and emerging technologies effectively.
9. Demonstrate an appreciation for aesthetics and creative activities.
10. Describe how natural systems function and recognize the impact of humans on the environment.

Each course taken at the college addresses some of these learning outcomes. MAC1147, addresses outcomes 1, 2, 3, 4, 8.