

## COLLEGE ALGEBRA – MAC 1105

Spring 2012

**Instructor:** Dr. Arturo Presa

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**Phone Number:** 305 237 7542

**Days, Time and Room:** TuTh, 6:25 PM-7:40PM, Room Charles Perry Bldg 212

**Office hours:** TR 7:40PM-8:40PM (in the room of the class)

**Section:** U20 (14892)

**Textbook:** : Algebra & Trigonometry by M. Sullivan 9<sup>th</sup> edition packaged with MyMathLab access code or MyMathlab Access Code alone ( Mymathlab program contains an electronic version of the textbook). Keep in mind though that if you plan to take Trigonometry, you will most likely need the textbook.

**Prerequisites:** C or better in Intermediate Algebra or an adequate score on the placement test

**Course Description:** The focus of this course is on functions and their properties. In particular, properties and graphs of linear, quadratic, polynomial, rational, exponential and logarithmic functions are discussed. Ways of solving systems of equations are introduced at the end of the semester.

**Course Objectives:** After finishing the course students should have a good understanding of the concept of a function, its domain and range. They should be able to graph basic functions and be familiar with their properties. They should be able to perform operations on functions, form composition and find the inverse of some one-to-one functions. They should know and be able to apply properties of logarithms. They should be able to solve exponential and logarithmic equations and systems of equations.

### Material to be covered:

- Chapter R - review: Sections: 2, 4, 5, 7, 8
- Chapter 1- review: Sections: 1, 2, 4, 5
- Chapter 2: Sections: 1, 2, 3, 4
- Chapter 3: Sections: 1, 2, 3, 4, 5, 6 and departmental handout More on Functions
- Chapter 4: Sections: 3, 4, 5
- Chapter 5: Sections: 2, 3, 4
- Chapter 6: Sections: 1, 2, 3, 4, 5, 6, 7, 8
- Chapter 12: Sections: 1, 6

**Examinations:** There will be three in-class paper and pencil exams and a comprehensive departmental final exam (see the schedule). Moreover, you will have weekly online homework and quizzes assigned in MyMathLab.

**Online Assignments:** To access online assignments you must purchase an access code for MyMathLab. You can purchase it together with the textbook at FIU bookstore, or as standalone item either at the bookstore or at <http://pearsonmylabandmastering.com/>. If you are repeating the course, you do not have to purchase a new access code. Just login to your account and choose the new course. You need the course ID. For this course is **presa50393**. If you are not able to purchase an access code immediately, you can use a temporary access code. Ask the instructor for the information.

- First assignment is **due on January 18, at midnight**, so buy the access code as soon as possible.
- All online assignments have a due date. They will generally be available till 11:59pm on a due day. At that time, program will not allow you to continue, therefore you have to plan accordingly. You will not be able to finish 60 problems in two hours. Late submissions will not be accepted under any circumstances.
- Online problems are algorithmic iterations of textbook exercises.
- Homework assignments can be attempted an infinite number of times, but must be completed within assigned period of time.
- There is one quiz per week. Quiz is associated with the homework assigned for that week. A quiz can be taken three times and the highest score is registered.
- To take a quiz, you must score at least 80% on the associated homework. If you don't receive required 80% on the prerequisite homework, you will not be able to take the associated quiz and consequently, you will receive 0 on that quiz.
- At the end of the semester, the homework assignment with lowest grade and the quiz with the lowest grade will be dropped.

The **deadlines will not be extended** under any circumstances. All assignments are due at midnight on the due day. Do not wait till the last moment to complete the assignments since you don't know what problems, technical or not, you might encounter along the way. The excuse "I had a problem with my internet connection" will not be accepted.

Please be advised that merely completing online assignments is not a guarantee of success in the class. You need to understand what you do. A test question will not come with the "help me solve it" button. So, if you can't correctly do a homework problem without any help, you will not be able to do a similar problem on a test.

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. An answer alone, even correct, will get no credit. Please note that **if you decide to skip online assignments, you will have to score at least 88% on each test to receive a passing grade (C).**

Your grade will be calculated as follows:

|           | % of Grade |
|-----------|------------|
| Tests 1-2 | 18% each   |
| Test 3    | 19%        |

|                           |      |
|---------------------------|------|
| Final exam                | 25%  |
| MyMathLab online homework | 8%   |
| MyMathlab online quizzes  | 12%  |
| <b>Total</b>              | 100% |

Your final grade will be assigned according to the following scale.

**A: 93 – 100      B + : 86 – 88      C+: 75 – 78      D +: 60 - 64**  
**A- : 89 – 92      B: 83 – 85      C: 70 – 74      D : 55 - 59**  
**B-: 79 – 82      C-: 65 – 69      F: 0 - 54**

**Make-up Policy: There will be no make-up tests.** If you miss a test due to illness or other emergency and provide documentation supporting your claim, your final exam will count in place of the missed test. There will be no make-ups for online assignments, but the lowest score on homework assignments and quizzes will be dropped.

**Attendance Policy:** You are expected to attend all classes. It is your responsibility to complete all assignments on time regardless of whether or not you were present in the class. Excessive absence will be taken into consideration when assigning the grade. **Up to 5 points can be deducted** from your total at the end of the semester for missing more than 5 lectures.

**Calculator Policy:** Use of graphing calculators is prohibited in this course. The scientific calculator TI- 30XA will be used occasionally. **No other calculator can be used on a test. The instructor has a right to prohibit the use of calculators on a test.**

**Incomplete Grade Policy:** The incomplete grade is given to a student who has substantially 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 is March 19

**Academic Misconduct:** Includes (but is not limited to) giving or receiving assistance on a test, quiz, or homework assignment for which such assistance is not permitted, falsifying a document to obtain an excusal from a test, and 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 Services:** The Mathematics Department and the University offers a variety of services, ranging from online videos to free tutoring, designed to help students with their courses. Please visit <http://casgroup.fiu.edu/MathStatistics/pages.php?id=1168> for more details.

**Classroom Etiquette:** To create and preserve a classroom atmosphere that optimizes teaching and learning, students are expected to conduct themselves at all times in a manner that does not disrupt teaching or learning. You are expected to come prepared to the class, be on time and remain in the classroom for the duration of the lecture. Talking, eating, sleeping, checking e-mail, using a phone, reading a newspaper, preparing for another class, packing up early is disruptive to others around you and to the instructor. Though classroom participation is always welcomed, questions and comments must be relevant to the topic at hand. If you have a question or comment, raise your hand to be recognized. Electronic devices such as cell phones, iPods, and computers must be turned off during class. Student conduct which disrupts the learning process shall not be tolerated and may lead to disciplinary action and/or removal from class.

### Daily Class Schedule

| Spring 2012 | Date | Topics   | Online assignments- due dates   |
|-------------|------|--|---|
| Week - 1    | 1/10 | Chapter R -review  | HW 1 (93 problems) due 1/18<br>Quiz 1 (10 problems) due 1/18 (80% on HW 1 required)   |
|             | 1/12 | Chapter R- review  |   |
| Week – 2    | 1/17 | Chapter 1- review  | HW 2 (54 problems) due 1/23<br>Quiz 2 (10 problems) due 1/24 (80% on HW 2 required)   |
|             | 1/19 | Sec 5.4  |   |
| Week – 3    | 1/24 | 2.1, 2.2   | HW 3 (50 problems) due 1/30<br>Quiz 3 (10 problems) due 1/31 (80% on HW 3 required)   |
|             | 1/26 | 2.2, 2.3(# 1-58)   |   |
| Week – 4    | 1/31 | 2.3(#59-105), 2.4  | HW 4( 55 problems) due 2/6<br>Review for test 1(69 problems) due 2/6<br>Quiz 4 (10 problems) due 2/7 (80% on HW 4 required) |
|             | 2/2  | 3.1+ departmental handout<br>More on Functions(omit operations on functions) |   |
| Week – 5    | 2/7  | <b>Test # 1 (Chapter R, 1, 2, 5.4)</b>                                       | HW 5 (28 problems) due 2/13<br>Quiz 5 (6 problems) due 2/14 (80% on HW 5 required)  |
|             | 2/9  | 3.2, 3.3   |   |
| Week - 6    | 2/14 | 3.4, 3.5   | HW 6 (40 problems) due 2/20<br>Quiz 6 (9 problems) due 2/21 (80% on HW 6 required)  |
|             | 2/16 | 3.5  |   |
| Week – 7    | 2/21 | 3.6  | HW 7 ( 25 problems) due 2/27  |

|           |      |  |  |
|-----------|------|--|--|
|           | 2/23 | 4.3  | Quiz 7 (6 problems) due 2/28 (80% on HW 7 required)  |
| Week – 8  | 2/28 | 4.4, 4.5   | HW 8 (25 problems) due 3/5<br>Quiz 8 (8 problems) due 3/6 (80% on HW 8 required)   |
|           | 3/1  | 5.2  |  |
| Week – 9  | 3/6  | 5.3  | HW 9 (5 problems) due 3/7<br>Review for test 2 (41 problems) due 3/7<br>Quiz 9 (2 problems) due 3/13 (80% on HW 9 required)        |
|           | 3/8  | <b>Test # 2 ( Chapter 3, 4, 5)</b>   |  |
| Week – 10 | 3/13 | <b>Spring Break</b>  | NO HW 10/ Quiz 10  |
|           | 3/15 | <b>Spring Break drop date- 3/19</b>  |  |
| Week – 11 | 3/20 | 6.1+3.1(operations on functions)   | HW 11 ( 42 problems) due 3/26<br>Quiz 11 (10 problems) due 3/27 (80% on HW 11 required)  |
|           | 3/22 | 6.2  |  |
| Week -12  | 3/27 | 6.3  | HW 12 (53 problems) due 4/2<br>Quiz 12 (10 problems) due 4/3 (80% on HW 12 required)   |
|           | 3/29 | 6.4 (# 1-65)   |  |
| Week -13  | 4/3  | 6.4 (# 71-123)   | HW 13 (52 problems) due 4/9<br>Quiz 13 (9 problems) due 4/10 (80% on HW 13 required)   |
|           | 4/5  | 6.5  |  |
| Week -14  | 4/10 | 6.6  | HW 14 (47 problems) due 4/16<br>Quiz 14 (10 problems) due 4/17 (80% on HW 14 required)<br>Review for test 3 (40 problems) due 4/16 |
|           | 4/12 | 6.7, 6.8   |  |
| Week -15  | 4/17 | <b>Test # 3 ( Chapter 6)</b>   | HW 15 (21 problems) due 4/23<br>Quiz 15 (5 problems) due 4/24 (80% on HW 15 required)  |
|           | 4/19 | 12.1, 12.6   |  |
| Week-16   |      | <b>Final week of the semester – no classes</b>                                     | Review for Final (91 problems) due 4/26 (noon)   |
|           | 4/26 | <b>Final Exam:</b> April 26, Thursday, 5:00PM-7:00PM, Room: The same of the class. |  |

**Final Exam:** The final exam will be on Thursday, April 26, 5:00PM-7:00PM,( Room: the same of the class), so students should not be making plans on traveling on or before that day. The Mathematics Department will not accommodate such students anymore.

**DEPARTMENTAL HANDOUT  
MORE ON FUNCTIONS**

Find the domain of the given function

$$1) f(x) = \frac{1}{2-3x}$$

$$2) f(x) = \frac{x-2}{x^2+5x+6}$$

$$3) f(x) = \frac{2x}{3-x^2}$$

$$4) f(x) = \frac{x-1}{x^2-7x+2}$$

$$5) f(x) = \frac{-3}{x^2+1}$$

$$6) f(x) = \frac{2x+1}{x(x+1)(x-3)}$$

$$7) f(x) = \frac{4x^2}{3x^2+6x}$$

$$8) f(x) = \frac{-2}{|3x+2|-1}$$

$$9) f(x) = \frac{1-x-x^2}{4|2x-3|+1}$$

$$10) f(x) = \sqrt{\frac{1}{3}x+2}$$

$$11) f(x) = \frac{-1}{\sqrt{3-2x}}$$

$$12) f(x) = \sqrt{6+x-x^2}$$

$$13) f(x) = \sqrt{\frac{x}{1-x}}$$

$$14) f(x) = \sqrt{x^2-4}$$

$$15) f(x) = \sqrt[3]{x+2}$$

$$16) f(x) = \sqrt{3x^2-x-2}$$

$$17) f(x) = \sqrt{\frac{x}{x^2-4x-5}}$$

$$18) f(x) = \frac{5}{\sqrt{4x+1}-2}$$

$$19) f(x) = \frac{3x-1}{\sqrt{x+5}+1}$$

**ANSWERS**

$$1) \{x \mid x \neq \frac{2}{3}\} = (-\infty, \frac{2}{3}) \cup (\frac{2}{3}, +\infty) \quad 2) \{x \mid x \neq -3, -2\} = (-\infty, -3) \cup (-3, -2) \cup (-2, +\infty),$$

$$3) \{x \mid x \neq -\sqrt{3}, \sqrt{3}\} = (-\infty, -\sqrt{3}) \cup (-\sqrt{3}, \sqrt{3}) \cup (\sqrt{3}, +\infty)$$

$$4) \{x \mid x \neq \frac{7-\sqrt{41}}{2}, \frac{7+\sqrt{41}}{2}\} = (-\infty, \frac{7-\sqrt{41}}{2}) \cup (\frac{7-\sqrt{41}}{2}, \frac{7+\sqrt{41}}{2}) \cup (\frac{7+\sqrt{41}}{2}, +\infty)$$

$$5) (-\infty, +\infty) \quad 6) \{x \mid x \neq -1, 0, 3\} = (-\infty, -1) \cup (-1, 0) \cup (0, 3) \cup (3, +\infty)$$

$$7) \{x \mid x \neq -2, 0\} = (-\infty, -2) \cup (-2, 0) \cup (0, +\infty) \quad 8) \{x \mid x \neq -\frac{1}{3}, -1\} = (-\infty, -1) \cup (-1, -\frac{1}{3}) \cup (-\frac{1}{3}, +\infty)$$

$$9) (-\infty, +\infty) \quad 10) \{x \mid x \geq -6\} = [-6, +\infty) \quad 11) \{x \mid x < \frac{3}{2}\} = (-\infty, \frac{3}{2})$$

$$12) \{x \mid -2 \leq x \leq 3\} = [-2, 3] \quad 13) \{x \mid 0 \leq x < 1\} = [0, 1)$$

$$14) \{x \mid x \leq -2 \text{ or } x \geq 2\} = (-\infty, -2] \cup [2, +\infty) \quad 15) (-\infty, +\infty)$$

$$16) \{x \mid x \leq -\frac{2}{3} \text{ or } x \geq 1\} = (-\infty, -\frac{2}{3}] \cup [1, +\infty)$$

$$17) \{x \mid -1 < x \leq 0 \text{ or } x > 5\} = (-1, 0] \cup (5, +\infty)$$

$$18) \{x \mid x \geq -\frac{1}{4}, x \neq \frac{3}{4}\} = [-\frac{1}{4}, \frac{3}{4}) \cup (\frac{3}{4}, +\infty)$$

$$19) \{x \mid x \geq -5\} = [-5, +\infty)$$