MAC 1105    COLLEGE ALGEBRA


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Course Description: A survey of college algebra from an operational rather than theoretical viewpoint.

Prerequisite: MAT 1033 with a grade of “C” or better.

Credit: 3 semester hours.

Instructional Method: Lecture

Assistance: Please feel free to contact me if you have questions. I am always available to help you during my office hours. If I am at the campus I may help you during my campus hours too. Use e-mail or call me if you cannot come to my office in person. I will respond to you during my office hours and in a timely basis. The tutorial services of the Mathematics Lab, room 2222, are also available to students registered in any math course taught on campus. There, you will find course-related videotapes, computer software, and tutors that can help you successfully complete this course. Make full use of many resources available to you: The textbook, the Math Lab, your peers, your professor, and the media services REMEMBER: My office hours may not coincide with time right after/before class. I may have other commitments during these times, including teaching another class, at another room or building. Therefore, do not expect the professor to address individual concerns during the 10-minute break in between classes. Plan to contact me during my office hours.

Reading and Writing Components: It is the policy of M-DCC to emphasize reading and writing as part of any course whenever possible. We will focus on reading and writing mathematically as these two elements apply to the learning outcomes of this course.

Classroom Etiquette: Please refrain from bringing food or drinks into classroom. Please turn off any cellular phones and pagers. If your cell phone rings during any tests or pop quizzes you will be asked to leave the room, turn in your test/quiz and will receive an F in the assessment. You are expected to arrive on time to class, depart when the class has concluded and treat others respectfully. You are encouraged to ask questions.

Homework: I expect you to spend at least 4 hours a week doing homework for this course. Homework for each unit is assigned and I strongly recommend that you do all
your homework because this is the best way to prepare for the quizzes and for the unit tests. Use the math lab for assistance with your homework. Often, I will use a homework question in a quiz. Remember, students need practice to retain a concept learned in class. By doing your homework you will probably contribute to this knowledge retention and set yourself for success in this course.

**Grading:** You will be graded on a total of 100 points. You will have 3 tests, 1 group project, 1 Final Exam, several pop quizzes, and class participation assessments.

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**TOTAL** 100 points

The additional assessments contribute to the 100 points in the following way: The unannounced pop quizzes and class participation grades will be averaged into one **additional** grade. This additional grade is also worth 20 points. This grade will replace the **single lowest test, BUT NOT THE FINAL EXAM**, if the additional grade is higher than the test. If you miss one of the 3 tests, then your grade on the missed test is a zero and **the additional grade will replace the one grade of the missed test**. There are NO make-ups on any of the 3 tests, final exam, project or quizzes. I will not accept projects after the due date. The group project has a due date which is the beginning of the class when the project will be presented. On this day, the vast majority of your project group needs to be in class for the presentation, otherwise your group receives a zero for the project. See below the conversion between numerical points earned and letter grade.

- 90-100 points A
- 80 - 89 points B
- 70 - 79 points C
- 50 - 69 points D
- below 50 points F

**Notes:**
1) All test dates will be confirmed during the class prior to the test.
2) A scientific or a graphic calculator is required.
3) The use of calculators is permitted on all quizzes, tests and final exam, but no sharing of calculators between students is allowed during these times.
4) A student who has earned A’s in all 3 tests and an A for the group project is exempt from the final exam. This student will receive an A for the course.
5) The professor reserves the right to add, rearrange, or change material to fit the available time. All changes will be announced during class.
Withdrawal: The last date to withdraw with grade of W is July 14. If you decide to drop, it is your responsibility to notify the registrar’s office by this date.

Attendance: Attendance is a contributing factor for the successful learning of academic material. Attendance is required and will be recorded daily. In case of absence, a student is responsible for the material covered, and will not be allowed to make-up quizzes or tests given that day. If a student is absent for a period of two weeks or longer, the instructor can purge the student from the class.

Learning Outcomes:

1) Solve linear equations and inequalities involving absolute value.
2) Solve equations involving rational expressions.
3) Solve word problems involving rational expressions.
4) Solve radical expressions.
5) Solve quadratic and cubic inequalities in one variable.
6) Solve inequalities involving rational expressions.
7) Find the distance between two points on a number line.
8) Use the distance formula to find the distance between two points in the plane.
9) Determine the standard form of a circle, and graph the circle.
10) Determine the standard form of a line given certain conditions pertaining to the line.
11) Determine the standard form for the equation of a vertical parabola.
12) Graph a vertical parabola.
13) Determine the terms ‘relation’ and ‘function.’
14) Define the terms ‘domain’ and ‘range.’
15) Find the domain and range of certain functions.
16) Use function notation and simplify the difference quotient for certain functions.
17) Graph linear, quadratic, radical, absolute value, and root functions.
18) Graph piecewise-defined functions.
19) Solve certain maximum and minimum problems by finding the vertex of a parabola.

20) Find the sum, difference, product, quotient, and composition of two functions.

21) Show that a function is one-to-one by using the definition of the horizontal line test.

22) Find the inverse of a one-to-one function.

23) For a simple function $f$, graph both $f$ and $f^{-1}$ on the same coordinate system.

24) Graph a polynomial function.

25) Graph a rational function.

26) Solve certain exponential equations using the property: If $a^x = a^y$, then $x = y$, $a > 0$ and $a \neq 1$.

27) Graph both increasing and decreasing exponential functions.

28) Define the statement ‘$Y = \log_a x$.’

29) Know the properties of logarithms and solve certain problems which require their use.

30) Graph a logarithmic and its inverse exponential function on the same coordinate system.

31) Solve exponential equations using logarithms.

32) Use the change-of-base formula to evaluate logarithms with base other than 10 or $e$.

33) Graph linear systems and solve these systems by substitution and elimination.

34) Evaluate 2 x 2 determinants.

35) Evaluate 3 x 3 determinants using expansion by minors.

36) Use Cramer’s Rule to solve 2 x 2 and 3 x 3 linear systems.