

**MAT 121-G81**

CRN: 40415

## Syllabus

College Algebra Online, Spring Semester, 2016

**INSTRUCTOR:** Dr. Harry S. (Steve) Mills, EDBH 134K, 970-339-6238, E-mail: Use mail tool on MyAims course website. (Click on Classlist from the main Navigation bar and then click on "Mills, Harry.") Emergency e-mail: [steve.mills@aims.edu](mailto:steve.mills@aims.edu)

**IMPORTANT:** The student is responsible for reading, understanding, and complying with all [Standard Syllabus Policies](http://www.aims.edu/inside/policies/standard-syllabus/) (<http://www.aims.edu/inside/policies/standard-syllabus/>), unless otherwise stated, below.

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**Catalog Description:** Includes equations and inequalities, functions and their graphs, exponential and logarithmic functions, linear and non-linear systems, graphing of the conic sections, introduction to sequences and series, permutations and combinations, the binomial theorem, theory of equations and an introduction to matrices and determinants. 4 credit hours

**Prerequisites: Prerequisite(s):** MAT 055 or higher (except MAT 090, MAT 103, MAT 107, MAT 108, MAT 109, MAT 112, and MAT 120), with grade of C or better, (except MAT 135 or BUS 226 - minimum grade of B or better) or assessment test. Registration in lab class MAT 093 may also be required depending on assessment score. Four credits.

### Required Materials:

**Textbook:** College Algebra, 6<sup>th</sup> Edition, Dugopolski.

**Scientific Calculator:** The TI 30X IIB or comparable product with a Previous Entry feature is preferred. When you can see what you entered, you'll make fewer mistakes, be able to fix any mistakes you make, and explore patterns, by changing one thing in a big formula, and seeing how the output changes, without having to re-enter the whole long expression. What you want is a calculator just one step below a graphing calculator, that lets you edit the entries like you do in a graphing calculator.

GRAPHING CALCULATORS ARE NOT PERMITTED ON TESTS, ALTHOUGH ELECTRONIC GRAPHING WITH ONLINE GRAPHERS OR GRAPHING CALCULATORS MAY COME UP ON THE HOMEWORK.

**Course Website:** Log in to [Aims Online](https://online.aims.edu/) ( <https://online.aims.edu/> ). Navigate to this class.

As this is an online course, the course website will be the focal point of our interactions, even though you will likely spend most of your time on the Pearson MyLab website, doing homework, and most other activities.

**Pearson MyLab and Mastering Website:** Online delivery of instruction will be performed by [Pearson MyLab and Mastering](#), a product of Pearson Learning. This learning tool offers video lectures, exercises, quizzes, and on-demand help. It's where you'll do your homework and do most of your learning, I expect.

**Grades:** Four Categories: Tests, Homework, Weekly Essays and Writing Projects.

**Grading Scale:** 90% - 100% A 80% - 89% B 70% - 79% C 60% - 69% D

**Test Average** will count 60% of the final grade. (Replace the lowest of these with your Final Exam grade.) You will go to an Aims Testing Center (Greeley, Loveland or Fort Lupton) to take each test. Special arrangements can be made with far-distant students for the taking of proctored tests at approved testing sites.

The Assessment Center - [assessment@aims.edu](mailto:assessment@aims.edu) – will make all the arrangements if you notify them *early* about your situation.

Scientific (NOT graphing) calculators are the only electronic devices permitted during testing (On the Hour Tests AND the Final).

**Homework** will count 20% of the final grade. Homework is assigned through [Pearson MyLab and Mastering](http://www.pearsonmylabandmastering.com/northamerica/) ( <http://www.pearsonmylabandmastering.com/northamerica/> ), and MyMathLab will deliver instruction, tutorials, and examples, on demand. This is a small fraction of the points, but the bread and butter of the course. It's where you *learn* this stuff.

In addition to whatever else you might find on Pearson, or elsewhere, there is also an archive of [Videos](http://harryzaims.com/121-all/videos/) ( <http://harryzaims.com/121-all/videos/> ) that cover every assigned exercise. This archive can really help, *especially* when you're stuck, and the Pearson site isn't helping, or won't accept your answers. But in general, they're basically everything I have to say on the kinds of problems

To get started, bring up the [Student Handout for Online Homework](#):

<http://www.harryzaims.com/121-online/121-online-spring-16/beginnings/121-online-do-homework-online.pdf>

**Writing Projects** will count 10% of the final grade. There are 3 of them, and each will be made available, starting with Writing Project #1, in Week 2 of the semester. These are essentially hand-written homework assignments that I want you to do a very nice job writing-up, with fairly strict formatting guidelines. Due dates and brief descriptions may be found in the Semester Schedule, and that's all you need to know, the first week of class.

**Weekly 5–minute Essays** will count 10% of the final grade. Each week, a discussion session for that week will open on the Discussions page. Sunday, 11:30 p.m., is when the Discussion Week ends and the next begins. Give us a little blog entry that answers one of the following.

1. What did I learn this week?
2. What did I struggle with and still not quite understand?
3. In general, how is the course going? What's working/not-working for you?

Students often turn up better resources than their teacher does. 20 or 30 sets of eyes, just looking around is much stronger than just 1 teacher's. Pasting a link into Week 3 Essay might do more to help everybody's learning than anything the teacher does.

But at least type a paragraph or two about how things are going, in general, i.e., choose to answer #3, when in doubt. Good things to share: questions, free/cheap graphing calculator apps, chat-room clients/apps, other tools that can leverage people's learning. **Warning:** I'm not big on reminding people. I want them to *own* this stuff, and everything else they do, after we're done.

**How to Operate:** My biggest thing, early, is to clear away the distractions, and keep you focused on the fast path to completion. There are *many* resources available, but only a minimum number of activities that I *require*.

1. Carve out 12 hours per week, to begin with. 3 hours a day, 4 days a week is typical face-to-face schedule, with 4 of those hours in class, and 8 hours out of class. Most students will find that some weeks, it takes more time, due to brushing-up on skills that may be rusty.
2. Focus on keeping up with the Chapter homework. You need to keep up with the test schedule

**General Education Competencies:** This course satisfies the following General Education competencies: Critical Thinking, Technology, and Mathematics. It also satisfies the Aims requirement for Writing. Refer to Aims Community College catalog for descriptions.

**Learning Outcomes:**

- A. Be familiar with set notations, subsets of the real numbers and properties of real numbers.
- B. Perform algebraic manipulations including working with exponents, radicals, polynomial operations, factoring and algebraic fractions.
- C. Solve the following types of equations: linear, quadratic, equations involving radicals, equations in quadratic form and equations involving absolute value.
- D. Work with formulas including formula evaluation and solving a formula for any of the variables.
- E. Read and analyze problems in the form of word problem applications and obtain solutions using equations.
- F. Solve first degree inequalities, higher degree inequalities and inequalities involving absolute value.
- G. Recognize and graph linear functions, rational functions, absolute value functions, and graph inequalities in two variables.
- H. Work with function notation and demonstrate knowledge of the meaning “function”.
- I. Demonstrate an understanding of function composition, one-to-one functions and inverse functions.
- J. Evaluate and graph exponential functions.
- K. Evaluate and graph logarithmic functions.
- L. Work problems and solve equations containing exponential and logarithmic functions.
- M. Use at least two of the following techniques to solve linear and non-linear systems of the equations: substitution, addition, Gaussian elimination, Cramer’s rule.
- N. Have some familiarity with matrices and operations involving matrices.
- O. Graph systems of inequalities.
- P. Graph conic sections including circles, parabolas, ellipses and hyperbolas.
- Q. Identify the conic section represented by a given second degree equation.
- R. Work with series notation and sequence formulas, and counting principles.
- S. Apply the Binomial Theorem.
- T. Demonstrate an understanding of proof by mathematical induction.
- U. Present topics in theory of equations.
- V. Perform synthetic division.
- W. Use the Remainder Theorem and the Factor Theorem to factor and evaluate polynomials.
- X. Solve polynomial equations using the Rational Root Theorem and/or approximation techniques.
- Y. Write and speak clearly and logically about topics related to algebra.
- Z. Demonstrate the ability to select and apply contemporary forms of technology to solve problems or compile information in the study of algebra.

**Standard Policies and Services:** To reduce the amount of boilerplate in this syllabus, I refer you to [Aims Standard Syllabus Policies](http://www.aims.edu/inside/policies/standard-syllabus/) ( <http://www.aims.edu/inside/policies/standard-syllabus/> ), which include materials on student conduct, students with disabilities (ADA), and provide current links to standard policies and services, such as tutoring.

**Makeup Tests, Deadlines and such:** Missed Test or Project deadlines generally require a college-excused absence to be permitted. I reserve the right to make exceptions, but it’s *very* difficult to get an exception, without a significant points discount (like 50%). Being lax on this is disrespectful to every student who shows up at the appointed time and place.