**MAT 121-G13** **Syllabus**
**CRN:** 40207 **College Algebra Spring Semester, 2016**

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

**Standard Policies and Services:** Please see the Aims Standard Syllabus Policies ( http://www.aims.edu/inside/policies/standard-syllabus/ ). This is where you and I go, in special or extraordinary circumstances, when extra guidance is needed. This helps us to keep this MAT 121 Syllabus on MAT 121.

Students who are honest, and show common courtesy and common sense, will never have to go to the Standard Syllabus's Student Conduct section. If you have a documentable disability, you really want to check out that ADA link ("ADA" is a little cryptic, there.).

**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**, 6th 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/ ). Navigate to this class.

**Grades**: Four Categories: Tests (60%), Homework (20%), Writing Projects (10%), Weekly Essays (10%).

**Test** will count 70% of the final grade. I've done away with a heavy-weight, comprehensive final, for this semester. 5 tests. The Final Test will be lumped in with all the rest of your tests, for grading purposes, and it will concentrate on the material after Test 4. That said, *questions or problems from the previous tests are all fair game on any future test.* I especially like to include problems from test you took that many in this class struggled with.

**Final Test:** This is Test 5, at a special time: Wednesday, 5/11, 10:10 a.m. - 12:00 p.m. Covers Chapters 4, 5 and 8, plus anything off a previous exam that you've already taken.

**Makeup Tests, Deadlines and such**: Makeup tests generally require a college-excused absence. I reserve the right to make exceptions, but it's *very* difficult to get an exception, and they tend to receive only half-credit. Being lax on this is disrespectful to every student who shows up at the appointed time and place.

**Homework** will count 10% of the final grade. 10% is a small fraction of the total points, but the bread and butter of the course. It's where you *learn* this stuff.

**Homework Deadlines:** I'm generally fairly loose on homework deadlines. As I provide solutions, it's about your learning more than trying to stick it to you on the points. The deadline for a chapter is the class meeting immediately following the test. The deadline on everything for the Online Homework Option is the day you take the final.

**Doing Homework Online Is an Option:**
This learning tool offers video lectures, exercises, and on-demand help, through Pearson MyLab and Mastering Website ( **http://www.pearsonmylabandmastering.com/northamerica/ )**. It's one option for doing homework that I want to be available to you, but you can also just do homework the old, paper-and-pencil way, as well, which is actually *better, for graphing*. If you choose the online option, there is a Student Handout for Getting Started ( http://harryzaims.com/121-all/121-spring-16/syllabus-and-schedule/121-f2f-do-homework-online.pdf ). (This link was incorrect in the previous draft of this syllabus, for which I apologize! And thanks to the students who caught it!)

Many students find that just doing homework and watching all the homework videos and test-prep videos is all they need or want, and learning and using the MyLab is just an extra chore they can do without. I recommend using the 14-day free trial to go look at it, and see if you like it, before buying it.

**Writing Projects** will make up 10% of the final grade. We'll discuss them in more detail, Week 2, when I make them available. You have enough on your plate for Week 1. For now, just think of them as the equivalent of a regular homework assignment that I want you to write up, carefully, and I want to go over, more carefully. In the meantime, you have enough to worry about, to start the semester. Deadlines for the 3 projects, and where they fit in the semester may be found in the Semester Schedule

**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.

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

**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 a 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 or less time, due to brushing-up on skills that may be rusty, or because a new concept is more or less difficult for the student.
2. Focus on keeping up with the Chapter homework. You need to keep up with the test schedule.
3. There are optional assignments in Chapter P, for "prerequisite." I'm in the process of prepping videos for those problems. All the rest of the assignments have video sets from me, as well as whatever help you can find on Pearson site, or elsewhere. This material could be useful, if you need to brush up on a topic.

**Stop-Out:** Students who are inactive for 2 weeks will be reported as Stop-Out and dropped from the roster.

**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.