MAT 121 COLLEGE ALGEBRA Fall, 2014
Revised: Sunday, August 17, 2014

This Syllabus may not be finalized until the end of Week 1 or 2, as we learn more about how we want things to go. Written online, not etched in stone!

College Algebra Section: G11
Class 7:45 am - 9:00 am MWF Ed Beaty Hall BH131 Aug 18, 2014 - Dec 03, 2015

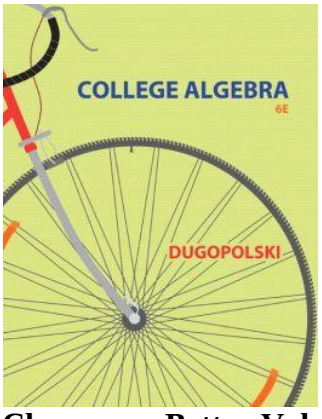
INSTRUCTOR: Dr. Harry S. (Steve) Mills, EDBH 134K, 970-339-6238,

E-mail: Use mail tool on Aims Online course website. (Go to http://online.aims.edu, navigate to our class, then click on Classlist from the main Navigation bar and finally click on "Mills, Harry.")
Emergency e-mail: steve.mills@aims.edu

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

Prerequisites:
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.

TEXT:



Just the book, from the Bookstore.
Ranging in price from around $120 used to $206 new. Not sure that this is very good value.

COLLEGE ALGEBRA
REQUIRED | *By DUGOPOLSKI*

- **EDITION:** 6TH 15
- **PUBLISHER:** PEARSON
- **ISBN:** 9780321916600

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General Ed Competencies:
This course satisfies the following State GE categories: Critical Thinking, Technology, and Mathematics.
This course satisfies the following Aims GE categories: Critical Thinking, Problem Solving, and Communication (Oral and Written).

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.

GRADES: Four Categories:

1. Homework – 10%
2. Quizzes – 10%
3. Hour Tests – 60% .
4. Final Test – 20%

1. **Homework** will be assigned on a daily basis, and collected the next day. This is where most of the learning will take place, I reckon, although it can also be treated as busy work, since I write up the homework, myself, and give it away, before it's due.

   Homework solutions will be posted on the website, either publisher-provided or by my hand. Nobody's trying to trick anybody or rob points. One extra homework requirement I have is that you write out the directions for a given stretch of type problems.

   I want your finished homework to be a 1-stop study guide, built by you, written *for* you (or somebody a little dumber than you). You will *know* my expectations from the way I write it. Homework may be more or less carefully examined, but often will just be checked off as done, half done or not done (10 pts, 5 pts, 0 pts).

2. **Quizzes:** Approximately one per week, based on questions related to that week's homework.
3. **Tests** will be administered at the end of each chapter. I will give a minimum of 50 minutes to complete each Test.

   I will always include a bonus question from the last section of homework, preferably one that requires synthesis of the chapter content. Show you're smarter than the average bear.
4. **Final Test**: **TENTATIVELY WEDNESDAY, DECEMBER 3rd, 7:10 A.M. – 9:00 A.M. THIS MEANS COMING IN 35 MINUTES EARLIER THAN REGULAR CLASS TIME!!! (If there is any way we can grab that 7:45 – 9:35 slot on Tuesday, December 2nd, I'm takin' it! Stay tuned!)**

   The Final Test is comprehensive, covering everything from the whole semester.

How I Expect Class to Operate:

I warn you that I am going to experiment with class format, quite a bit. I'm REALLY hoping we can evolve towards watching video at home or otherwise outside of class, and work TOGETHER on the homework, during classtime. I think you can get more out of lecture if you can hit PAUSE or REWIND, and have that lecture permanently at your fingertips, than hope that I have a good day, and talk, talk, talk for 75 minutes!

I'm still not to the point where I'll record every face-to-face lecture on video. It's just a wee bit over the top for me. But I may migrate in that direction, over time.

We may have to go digging around, some, maybe, to FIND good video lectures. Any time we DO, though, there's a decent chance you can get most of your homework done in class, with your classmates and me there to answer questions. That just seems more efficient, to me. A better use of your time.

The lazy way is for me to talk for an hour and 15 minutes. Let us not be lazy – or at least be lazy in a SMART way, since reading ahead and watching assigned videos ahead is actually more efficient, because you kind of know what we're doing, before you sit down. Ultimately, I think you learn faster and deeper if you can watch/read ahead.

Standard Syllabus Policies and Students with Disabilities:
Info for students with disabilities is found under the ADA link (for *some* reason, I'm sure) on the Standard Syllabus Policies Page:

http://www.aims.edu/inside/policies/standard-syllabus/

Statements on standard procedures and student conduct are also found on the Standard Syllabus Policies page. You should familiarize yourself with the materials, there, especially as it relates to CIVILITY.

My "rule" is exercise common courtesy and common sense. Then we won't have to go looking up policies and what-not, and booting people out of class, because they're ridin' roughshod over others.

Makeup Tests, Deadlines and such: Late tests will not be given. If you miss one test, that test score will be replaced by your Final Test score. I reserve the right to make exceptions, but it's *very* difficult to get an exception, with lots of documentation and/or *unanimous* consent of *all* your classmates!

So you can miss one, and just average the final with it, or you can miss 2 and probably fail the course. Most students will miss *none*.

Homework deadline is: Get it to me before I grade it! Otherwise, 5 points and I won't grade it other than to see it's complete. Late and not complete: ZERO.

Required Materials:

Scientific Calculator: The TI 30X IIB or comparable product with a Previous Entry feature. 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.

Blank 8 ½ x 11 Paper: This is standard copier paper. Anything letter-sized that's blank on one side will do just fine, by me. But I *require* you learn to write math on paper without lines. You'll hate it, at first, but you'll think better, and write better, by the end.

Preferred Materials:
Looseleaf binder, 3-ring hole punch, lots of blank paper *without lines on it*. I think spiral notebooks are not good for math classes. How do you insert pages? *sigh*

First Week Special: We will be working on an old Intermediate Algebra Final. We will have assistance from Solutions from that old Intermediate Algebra Final.