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MAT 121 is a Guaranteed Transfer (GT-MA1) Course:

The Colorado Commission on Higher Education has approved MAT 121 for inclusion in the Guaranteed Transfer (GT) Pathways program in the GT-MA1 category. For transferring students, successful completion a minimum C– grade guarantees transfer and application of credit in this GT Pathways category. For more information on the GT Pathways program, go to http://highered.colorado.gov/academics/transfers/gtpathways/curriculum.html.

Course Criteria for GT-MA1:

Students should be able to:

• 	Demonstrate good problem-solving habits, including:

o 	Estimating solutions and recognizing unreasonable results.

o 	Considering a variety of approaches to a given problem, and selecting one that is appropriate.

o 	Interpreting solutions correctly.

• 	Generate and interpret symbolic, graphical, numerical, and verbal (written or oral) representations of mathematical ideas.

• 	Communicate mathematical ideas in written and/or oral form using appropriate mathematical language, notation, and style.

• 	Apply mathematical concepts, procedures, and techniques appropriate to the course.

• 	Recognize and apply patterns or mathematical structure.

• 	Utilize and integrate appropriate technology.

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 on college policy. 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 what our Disability Services has to offer.

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.

Course Websites: Log in to Aims Online (https://online.aims.edu/). Navigate to this class's course shell. Use the course shell to send me e-mail and check for announcements.

I don't plan on more than one or two announcements most weeks. If you check once or twice per week, you should be plenty caught up. Announcements are Last-in-first-out, which means the latest announcement is at the top.

Archive server: http://harryzaims.com/, a private server on which I house most of the content.

Required Materials:

Textbook: College Algebra, 6th Edition, Dugopolski. There are options for the book.
- You can buy it bundled with MyMathLab access code (New Books Only)
- You can buy it used.
- You can just buy access to the eBook, by purchasing MyMathLab access, direct from the Pearson Website.
- There's a looseleaf version of the textbook that's cheaper than the hard-back book.

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.

MyMathLab: Signing up for MyMathLab is OPTIONAL. Last semester, almost *all* students preferred submitting written homework.

Home-made Video: Virtually every problem I've assigned, for the semester, is worked, by me, on a video. I keep all those videos in my Videos Directory (http://www.harryzaims.com/121-all/videos/). Sometimes the **numbers** are different, but yeah, I pretty much have worked every exercise, if you get stuck, and want to ask about it. BOOM! There's my 5-minute spiel on the problem. Please note the Test-Prep and Writing Projects directories that live in Videos.

Electronic Graphing Capability: While we're denying their use on tests, a graphing calculator, or graphing app on your smartphone, or one of the many free online graphers, available online, *must* be used, to do some of the explorations that come up in the homework. You might want to check out WolframAlpha for an all-purpose tool. You just kind of type in what you want, and it does it! You'll want to use whatever works for you, but you will need some standard graphing calculator capabilities for some of the assigned exercises. Some students love Desmos.

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

Tests: Tests will count 60% of the final grade. There are 5 tests. I will drop the lowest test score.

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: Homework will comprise 20% of your grade. I have compiled a list of all the assigned problems for this semester. (http://www.harryzaims.com/121-all/homework-assignments/). You should write up your homework, for future reference and to just master the concepts, better. But you will be DOING all the homework on Pearson's MyLab for this online section of the course. To get started, follow the instructions in the Get Started with MyLab Handout.

The videos I made for the homework are here: http://harryzaims.com/121-all/videos/ . I used the assigned exercises as a vehicle for explaining everything to you. It comes to slightly more than I could squeeze into our face time, in the old-fashioned way, but it provides far more detail, and it's on-demand, 24/7. This resource is great for when you get stuck. Some students just take the time to watch the videos and then do the homework, later. Some watch the video and do the problem. *All* students should compare their work with my solutions. If you're not doing it at all like I am in the notes (that are found in the Videos directories), you probably want to watch the corresponding videos, to make *sure* you're getting it.

20% 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: Are listed in the Course Schedule. Basically, work is due the Monday after the week in which the sections appear. Late work will be half credit.

Writing Projects: Writing Projects comprise 10% of your grade. There are FOUR (4) Writing Projects.
(Instructional videos for these are here: http://www.harryzaims.com/121-all/videos/03-Writing-Projects/)
I wouldn't worry too much about them, the first week, but Writing Project #1 is posted in the Writing Projects Assignments directory. At this writing, only Writing Project #1 appears.   Think of Writing Projects as a homework assignment that's extra long and you need to write up, extra nicely.

Writing Project Deadlines: Writing Projects are due when you come take your test over the material the project covered. See the Course Schedule for details. There's a 5-point (approximately 10%) bonus for Early Bird submissions, the Friday before the corresponding test.

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, in the Course Schedule . The Course Schedule tells you what's next and when it should be completed.

3. There are optional assignments in Chapter P, for "prerequisite." I'm in the process of prepping videos for those problems. (5 sections down, 2 to go). 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. If you feel like I'm talking over your head, take the time to go through the Chapter P material, a little bit at a time, and I bet I start making more and more sense...

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.