COMMUNITY COLLEGE

COURSE SYLLABUS

Course Details

Course Name	College Algebra Online.
Course CRN and Term	40251 and 40252 – Fall, 2021
GT Pathways Category	GT-MA1
Credits and Delivery Method	4 credits, online.
Time Expectation	12 hours per week
Location	Online
Meeting Dates and Time	TBA
Instructor	Harry S. Mills
Instructor E-mail	hmills1@online.aims.edu
Instructor Office Location Instructor Phone Number	EDBH 134K
Office Hours	MWF 6 pm – 7 pm (Some Fridays I'll be out of touch.) TR 10 am – 11 am or by appointment. Call 970-290-0550 or e-mail hmills1@online.aims.edu to make an appointment.
The drop deadline for this course is	Last Day to Drop: Monday, January 31st, 2022.
The course withdrawal date for this course is	Wednesday, April 6th, 2022 Remember, withdrawal does not come with any reductions or refunds in tuition. A withdrawal will also place a "W" grade on your transcript. Please contact your advisor to see if a withdrawal is appropriate given your specific situation.
Other Important Dates	https://www.aims.edu/student/schedule/calendars/ https://harryzaims.com/121-online/121-online-spring-22/syllabus-and-schedule/121-schedule-spring-22.pdf
Student Services	https://www.aims.edu/student/services.php

Course Requirements

Prerequisite(s)	College-level readiness as determined by review of high school transcripts, assessment, and/or meeting with an Aims Academic Advisor. Four credits.
Co-requisite(s)	None
Standards of Behavior & Policies – These statements apply to every course at Aims Community College and are hereby incorporated into this document.	Closely review these policies at: https://www.aims.edu/policies/standard-syllabus/ https://harryzaims.com/121-online/121-online-spring-22/orientation/Student_Registration_Handout_mills49863.pdf
Materials	Access Pearson MyLab and Mastering: https://harryzaims.com/121-online/121-online-spring-22/orientation/Student-Registration-Handout.pdf

	Textbook is optional, as access to MyLab includes eBook! **College Algebra 6th Edition** Author(s): Dugopolski, Mark Textbook ISBN-13: 9780321916600 Cheapest way to get a book is to buy used. A new textbook with access code included is pretty spendy, or was the last time I checked. A good scientific calculator (TI-30 of some sort) that you know how to use is required for tests. Graphing calculator or online grapher is handy for homework. Desmos is recommended by some.

Course Information

BEGIN BOILERPLATE. You may safely skip down to halfway down Page 4. This stuff is important for getting your credits accepted elsewhere, but you won't use any of this stuff. Just look in the book's table of contents (or eBook's) and compare to the course schedule, to see the topics and where they live.

Course Description:

Course Learning Outcomes – According to the Colorado Community College Common Course Database, upon completion of this course, the student/learner should be able to:

1. Identify properties of functions including domain, range, increasing and decreasing.
2. Apply function notation.
3. Determine the inverse of a function.
4. Examine functions algebraically.
5. Analyze behavior and roots of polynomial functions.
6. Solve polynomial, rational and absolute value equations and inequalities.
7. Analyze polynomial, exponential, logarithmic and rational functions.
8. Create graphs of polynomial, exponential, logarithmic and rational functions.
9. Solve exponential and logarithmic equations.
10. Analyze piecewise functions.
11. Graph parent functions and their transformations.
12. Utilize algebraic techniques to solve application problems.
13. Solve systems of equations.
14. Classify conic sections.

Topical Outline – These topics will be covered in class, but not necessarily in this order:

I) Functions including domain, range, increasing and decreasing
a) Definition of a function
b) Identifying functions given table, graph or equation form

c) Domain and range of algebraic functions
d) Even and odd functions
e) Introduction to where functions are increasing and decreasing using a graph
f) Introduction to maxima and minima using a graph
II) Function notation
a) Functions expressed using function notation
b) Evaluation of function notation from equations and graphs
III) Inverse of a function
a) Notation of an inverse function
b) Definition of one-to-one functions
c) Algebraic determination of the inverse of a function
d) Graphical properties of an inverse function
e) Domain and range of an inverse function
IV) Function composition algebraically
a) Sum difference, product, quotient of functions
b) Composition notation
c) Inverses using composition
d) Composition of two functions
V) Behavior and roots of polynomial functions
a) End behavior of polynomial functions
b) Division of polynomials
c) Polynomials as a product of linear factors
d) Multiplicity of zeros
e) Complex zeros
VI) Polynomial, rational and absolute value equations and inequalities
a) Completing the square to find the vertex form of a quadratic function
b) Absolute value inequalities
c) Polynomial and rational inequalities using test intervals (critical values, number lines)
VII) Analysis of polynomial, exponential, logarithmic and rational functions
a) Intercepts and End behavior
b) Zeros
c) Definition of exponential and logarithmic functions
d) Domain and range
e) Evaluation of exponential and logarithmic expressions
f) Introduction to the number e
g) Equations of asymptotes
VIII) Graphs of polynomial, exponential, logarithmic and rational functions
a) Intercepts and end behavior
b) Asymptotes of functions from the equation and from the graph
IX) Solutions of exponential and logarithmic equations
a) Conversion between exponential and logarithmic form
b) Properties of logarithms
c) Logarithmic equations
d) Extraneous solutions
e) Exponential equations
X) Piecewise functions
a) Notation for piecewise functions

b) Evaluation of piecewise functions
c) Graphs of piecewise functions
d) Domain of piecewise functions
XI) Parent functions and their transformations
a) Parent (also called base/toolbox) functions
b) Rigid transformations (horizontal/vertical translations and reflections)
c) Non-rigid transformations (horizontal/vertical scaling)
XII) Algebraic techniques to solve application problems
a) Quadratic models including optimization
b) Exponential/logarithmic models
XIII) Systems of equations
a) Methods for solving systems with three variables or more
b) Systems of non-linear equations with two variables
XIV) Conic sections
a) Circle
b) Parabola
c) Ellipse
d) Hyperbola

State General Education and Common Learning Outcomes: (for GT Pathways Courses)

Competency: Quantitative Literacy:
Students should be able to:

1. **Interpret Information**
    a. Explain information presented in mathematical forms (e.g., equations, graphs, diagrams, tables, words).
2. **Represent Information**
    a. Convert information into and between various mathematical forms (e.g., equations, graphs, diagrams, tables, words).
3. **Perform Calculations**
    a. Solve problems or equations at the appropriate course level.
    b. Use appropriate mathematical notation.
    c. Solve a variety of different problem types that involve a multi-step solution and address the validity of the results.
4. **Apply and Analyze Information**
    a. Make use of graphical objects (such as graphs of equations in two or three variables, histograms, scatterplots of bivariate data, geometrical figures, etc.) to supplement a solution to a typical problem at the appropriate level.
    b. Formulate, organize, and articulate solutions to theoretical and application problems at the appropriate course level.
    c. Make judgments based on mathematical analysis appropriate to the course level.
5. **Communicate Using Mathematical Forms**
    a. Express mathematical analysis symbolically, graphically, and in written language that clarifies/justifies/summarizes reasoning (may also include oral communication).

6. **Aims Common Learning Outcomes** – These outcomes define the expectations of an Aims Community College education and provide the benchmarks against which the college holds itself accountable. Find the outcomes at

https://www.aims.edu/prospective/common-learning-outcomes.php

END BOILERPLATE

Course Delivery Method

Online. When/if COVID-19 restrictions are lifted, testing at an approved testing center, for quality control purposes, will be implemented.

Schedules and delivery methods are subject to change as necessary due to inclement weather, health and safety issues, and other circumstances. For the latest information on College decisions related to course delivery, visit www.aims.edu

Code of Conduct

In an effort to keep our college community safe, students are expected to comply with health guidelines as directed by the College, public health officials, and/or ordinance of a municipality, county, Governor of the State of Colorado or any Executive Order of the President of the United States. A complete copy of the Student Code of Conduct can be found at www.aims.edu/student/conduct.

Face Coverings

To help mitigate the transmission of COVID-19, it is required that all students wear masks or other face coverings in classrooms, laboratories and other similar spaces where in-person instruction occurs. The masks/face coverings must cover both nose and mouth, be worn for the duration of class, inside all college buildings, and outside whenever you are or are likely to come within 6 feet of another person. Students who do not comply with face covering and social distancing expectations will be asked to leave class and referred to the Dean of Students. We are a community of care and together we will work to ensure we can all engage in learning in the safest way possible.

Reuse of Instructional Materials

Reuse or distribution of instructional materials (i.e. PowerPoints, videos, class recordings, assessments, etc) or student created content (i.e. online discussion posts, presentations, etc) without approval is prohibited.

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- **Attendance** – Attendance will be measured by student's progress on assigned activities. It will show up in student's timely performance on homework, writing projects and tests. If you're not putting in the necessary time (12 hours per week, recommended), it will be revealed by your performance, so there is no separate category for attendance, although we log, in detail, your work on the MyLab (Pearson) site.

- **Communication and Feedback**
  The primary means of communication is e-mail *through the Course Shell* on https://online.aims.edu. Use the **Classlist** link in the Main NavBar. Scroll down to "Mills, Steve." Student e-mails are always answered within 24 hours during the work week and most weekends. I clean out my inbox before end-of-work every day.

  To e-mail me from outside D2L (online.aims.edu), use the address hmills1@online.aims.edu. My other Aims e-mail may or may not be read or responded to on the same day.

  For HOMEWORK questions that the MyLab doesn't answer or my notes and video don't answer, use the "Ask My Instructor" link on the MyMathLab. This will provide me with a link that takes me straight to the exercise in question.

  IMPORTANT: Change your e-mail settings to "Include previous message in replies," else I will likely not know what you're talking about. When I encounter this, I will reply with "What are we talking about?" This is important enough to be worth 10% of your grade. Due Week 1.

  Feedback on student work will be through the MyMathLab, primarily. On-Time writing projects will be graded, in detail, by hand. Late writing projects may or may not be graded in detail (80% max percent).

- **Grading**
  Exams: 40% - Final Exam Counts for 2 Exams, and is comprehensive.
  Homework: 30%
  Writing Projects: 20%
  Include Previous Message in Replies E-Mail setting in D2L e-mail: 10%. Instructions.

Grading Scale

90% - 100%	A	(Superior and excellent)
80% - 89%	B	(Above average)
70% - 79%	C	(Average)
60% - 69%	D	(Below average level of achievement)
Below 60%	F	(Not acceptable)

- **Course Schedule**: https://harryzaims.com/121-online/121-online-spring-22/syllabus-and-schedule/121-schedule-spring-22.pdf