UMass Global in partnership with Westcott Courses

Course content approved by University of Massachusetts Global.

Course Title:	College Algebra
Course Code:	MATU 101
Credits:	3
Credit Provider:	UMass Global
Proctored Final:	Yes

Textbook Requirement

No outside textbook is needed. Our Omega Math(TM) courses contain all the lessons, homework, solution manuals, quizzes, tests and the final. Our lessons start out with the easiest examples, and then move slowly to the more advanced problems. Between examples, there are interactive problems which make sure the student understands the concepts, as well as enables the student to store the information into long term memory.

Course Description

Presents a study of College Algebra and Analytic Geometry with an emphasis on mathematical modeling. The student will analyze functions in depth including transformations, inverses and compositions, while paying particular attention to quadratic, polynomial, rational, exponential and logarithmic functions and their graphs. Other topics include complex numbers, the binomial theorem, arithmetic and geometric sequences, series, systems of equations and inequalities, matrices and determinants, partial fractions, algebraic equations and inequalities, conic sections and probability. The student will solve applications and modeling problems related to the above topics. Upon completion, students should be able to solve practical problems and use appropriate models for analysis. This course is designed to prepare students for Calculus.

College Algebra is an Omega MathTM Course.

Prerequisite:

Intermediate Algebra (or a higher level Algebra based course) with a grade of C or better. The course must come from a U.S. regionally accredited college/university and be within the last ten years.

Approvals for this Course

none

Learning Outcomes

At the conclusion of this course, students should be able to:

1. Represent functions verbally, numerically, graphically and algebraically. Demonstrate a fundamental concept of the mathematical function and its properties such as inverse, domain, range, addition, subtraction, product, division, and composition.
2. Sketch graphs, appropriate transformations and inverses for polynomial functions, rational functions, trigonometric functions, exponential and logarithmic functions, rational functions, piece-wise functions, and conic sections.
3. Analyze the graph of a function and determine the intervals where the graph is increasing, decreasing and constant. Find the minimum and maximum values of the function and apply these concepts to applications in the physical world.
4. Solve a variety of equations, including linear, polynomial, rational, radical, exponential and logarithmic.
5. Solve a variety of systems including linear, nonlinear and inequalities using graphical and algebraic techniques. Solve real-world applications modeled by these systems.
6. Use the Rational Root Theorem, Fundamental Theorem of Algebra and other techniques to find the zeros of a polynomial function. Be able to factor a polynomial into linear factors over the complex numbers.
7. Perform operations with matrices, such as addition, subtraction, scalar multiplication and matrix multiplication, including applications with matrices. Use matrices to solve systems of linear equations including the Gauss-Jordan elimination method, and the inverse of a matrix.
8. Identify and express conic sections in standard rectangular form, graph the conic, and solve applied problems.
9. Express general terms of an arithmetic and geometric sequence. Write series in summation notation, find the sum of an arithmetic and geometric series, and use the Binomial Theorem to expand powers of binomials.
10. Determine the sample space of an event and calculate the probability of an experiment.
11. Recognize a language description, geometric and algebraic representation, and be able to transfer from one form to the other.
12. Identify and express conic sections in standard rectangular form, graph the conics, and solve applied problems.
13. Model situations from a variety of settings using functions. Apply a variety of problem-solving strategies, including algebraic, numerical and graphical techniques to solve these real world applications.
14. Understand equations and inequalities, functions and graphs, polynomial and rational functions, coordinates and graphical representations, exponential and Logarithmic functions, systems of equations and inequalities, matrices and determinants, sequences, series, probability and conic sections.

15. Understand each concept realizing the correspondences between its language description, algebraic representation, and geometric representation.

16. Be able to apply problem solving skills: analyzing the problem into simple parts; recognizing the concepts applicable to the parts; recognizing the relations between the parts; deciding on which concepts to apply; writing those concepts into proper algebraic representations, solving the problem in symbols, interpreting the final results.

Methods Of Evaluation

Homework quizzes 15%

Chapter tests 60%

Final Exam 25%

(You must get at least 60% on this final in order to pass the class with a C or better.)

Homework Quizzes: 15%

Homework assignments are essential in a mathematics course. It is not possible to master the course without a considerable amount of time being devoted to studying the concepts and solving problems. Each lesson contains a set of homework problems, and you are required to do all the odd problems for each section. Work out each problem, and then check the solution manual for a detailed solution. Do not continue to the next problem until you understand your mistake. Once you feel comfortable with the homework set, take the homework quiz for that section. The homework quizzes are revised problems from the homework sets. You may take each quiz twice, and the higher of the two scores is used to calculate your quiz grade. Once you take a quiz, figure out what you did wrong on the problems that you missed and then try the quiz again. It is important to figure what you did wrong before you push forward. If you figure out your errors at this step, you will be less likely to make the same error on the test or the final. The struggle to figure out what you did wrong stores the mathematics into your long-term memory, and aids in building abstract thinking.

Chapter Tests: 60%

After you have completed a chapter, and understand everything in the lessons, homework sets and quizzes, take the chapter test. The chapter tests are revised problems from the quizzes. You may take each chapter test twice, and the higher of the two scores is used to calculate your chapter test grade. Once you take a chapter test, figure out what you did wrong on the problems that you missed and then try the chapter test again. It is important to figure what you did wrong before you push forward. If you figure out your errors at this step, you will be less likely to make the same error on the final.

Proctored Final: 25%

This course goes towards a 4-year degree; thus, it requires a proctored final.

Students are responsible for proctoring fees.

We have an approved online proctor service that students can use if they have a web camera with their computer. This can be a laptop with a built in camera or a desktop with a web cam. This service charges $60 for group sessions and double for private sessions. A student can also be proctored at college testing center, Sylvan Learning Center, Prometric Testing center, or Pearson Vue Testing Center. No other options are available.

A valid driver's license or State ID must be shown at the testing center. An expired license or State ID will not be accepted. Use this link to help you find a college testing center or Sylvan Learning center near your home:

Proctored Final

The final exam is a comprehensive final covering all of the chapters of the course. Other than scratch paper, you may view the "Authorized Materials" list for the final exam for each class.

*Students must obtain a 60%

or better on the final exam in order to get a C or better in the class.

The 60% rule was set in place to protect the integrity of online education by requiring a display of competency in exchange for a grade. All schools which are regionally accredited adhere to online standards. Your college is accepting this course because it goes through a regionally accredited university, which tells your college that standards have been met. Your college will not accept a class from a school that is not regionally accredited, because they know the standards won't be met.

Assessment

A 90-100 A Clearly stands out as excellent performance and, exhibits mastery of learning outcomes.

B 80-89 B Grasps subject matter at a level considered to be good to very good, and exhibits partial mastery of learning outcomes.

C 70-79 C Demonstrates a satisfactory comprehension of the subject matter, and exhibits sufficient understanding and skills to progress in continued sequential learning.

D 60-69 D Quality and quantity of work is below average and exhibits only partial understanding and skills to progress in continued sequential learning.

F 0-59 F Quality and quantity of work is below average and not sufficient to progress.

Instructional Process

In this course we will explore mathematical concepts, methods and applications from life issues, business and finance, social and environmental issues. Civic and social issues will be used as problems to apply the subject principles. Using the civic, social, and life related examples will help students understand the subject at a deeper level. After an introduction in each section, problems will be solved that start with the easiest examples and move slowly to the more advanced problems with Student Interactive Problems (SIP) in between. The SIPs are important! They give you a chance to slow down and make sure you understand the material. If you get the problem correct, continue on with the next example. If you get the problem wrong, you will be taken to a page that works out the problem in detail. The SIPs play a large part in storing the topics along with their procedures into your long-term memory. Each homework set contains applications for that lesson. These real life applications create a better understanding of math in our world and how it applies to every day life.

Course Content Menu

Chapter 1 - Review

Lessons	Homework	Quiz
1.1 - Properties of Real & Complex Numbers	1.1	1.1
1.2 - Polynomials	1.2	1.2
1.3 - Factoring	1.3	1.3
1.4 - Linear Equations	1.4	1.4
1.5 - Linear Inequalities	1.5	1.5
1.6 - Quadratic Equations	1.6	1.6
1.7 - Rational & Other Non-linear Equations	1.7	1.7
1.8 - Non-linear Inequalities	1.8	1.8
Chapter 1 Test (28 questions)		

Chapter 2 - Functions and their Graphs

Lessons	Homework	Quiz
2.1 - Relations & Functions	2.1	2.1
2.2 - Domain and Range of a Function	2.2	2.2
2.3 - Linear Equations and Functions	2.3	2.3
2.4 - Combinations of Functions	2.4	2.4
2.5 - Graphs of Functions	2.5	2.5
2.6 - Transformation of Functions	2.6	2.6
2.7 - Inverse Function	2.7	2.7

Chapter 2 Test (37 questions)

Chapter 3 - Polynomial and Rational Functions

Lessons	Homework	Quiz
3.1 - Quadratic Functions	3.1	3.1
3.2 - Graphs of Polynomial Functions	3.2	3.2
3.3 - Division of Polynomials	3.3	3.3
3.4 - Zeros of Polynomial Functions	3.4	3.4
3.5 - More on Zeros of Polynomial Functions	3.5	3.5
3.6 - Graphs of Rational Functions	3.6	3.6
Chapter 3 Test (29 questions)		

Chapter 4 - Exponential and Logarithmic Functions

Lessons	Homework	Quiz
4.1 - Exponential Functions	4.1	4.1
4.2 - Logarithmic Functions	4.2	4.2
4.3 - Properties of Logarithmic Functions	4.3	4.3
4.4 - Exponential and Logarithmic Equations	4.4	4.4
4.5 - Applications of Exponential & Logarithmic Functions	4.5	4.5
Chapter 4 Test (28 questions)		

Chapter 5 - Linear and Nonlinear Systems

Lessons	Homework	Quiz
5.1 - Linear Systems in Two Variables	5.1	5.1
5.2 - Linear Systems in Three Variables	5.2	5.2
5.3 - Partial Fractions	5.3	5.3
5.4 - Nonlinear Systems in Two Variables	5.4	5.4
Chapter 5 Test (22 questions)		

Chapter 6 - Matrices and Determinants

Lessons	Homework	Quiz
6.1 - Introduction to Matrices	6.1	6.1

6.2 - Matrix Multiplication	6.2	6.2
6.3 - Solving Systems using Matrices	6.3	6.3
6.4 - Systems without a Unique Solution	6.4	6.4
6.5 - Applications of Linear Systems using Matrices	6.5	6.5
6.6 - Determinants	6.6	6.6
6.7 - The Inverse of a Matrix	6.7	6.7
Chapter 6 Test (27 questions)		

Chapter 7 - Sequences and Series

Lessons	Homework	Quiz
7.1 - Sequences and Series	7.1	7.1
7.2 - Arithmetic Sequences	7.2	7.2
7.3 - Geometric Sequences	7.3	7.3
7.4 - Binomial Theorem	7.4	7.4
Chapter 7 Test (23 questions)		

Chapter 8 - Conic Sections

Lessons	Homework	Quiz
8.1 - The Circle	8.1	8.1
8.2 - The Parbola	8.2	8.2
8.3 - The Ellipse	8.3	8.3
8.4 - The Hyperbola	8.4	8.4
8.5 - Systems of Inequalities	8.5	8.5
Chapter 8 Test (28 questions)		

Chapter 9 - Probability

Lessons	Homework	Quiz
9.1 - Counting	9.1	9.1
9.2 - Permutations and Combinations	9.2	9.2
9.3 - Finite Basic Probabilities	9.3	9.3
9.4 - Basic Laws of Probability	9.4	9.4
9.5 - Conditional Probability	9.5	9.5

9.6 - Independent Events	9.6	9.6
Chapter 9 Test (22 questions)		
College Algebra Final Exam		

Course Content Menu

This course is online and your participation at home is imperative. A minimum of 8 - 10 hours per week of study time is required for covering all of the online material to achieve a passing grade. You must set up a regular study schedule. You have five months of access to your online account with a thirty-day extension at the end if needed. If you do not complete the course within this time line, you will need to enroll in a second term.

Schedule

Below is the suggested time table to follow to stay on a 17 week schedule for the course. The following schedule is the minimum number of sections that need to be completed each week if you would like to finish in a regular semester time frame. You do not have to adhere to this schedule. You have five months of access plus a 30 day extension at the end if needed. You can finish the course as soon as you are able, with a minimum coursework time of at least four weeks.

Week	**Complete Sections**
1	1.1 - 1.3
2	1.4 - 1.7
3	2.1 - 2.3
4	2.4 - 2.6
5	2.7 - 3.2
6	3.3 - 3.5
7	3.6 - 4.2
8	4.3 - 4.5
9	5.1 - 5.3
10	5.4 - 6.2
11	6.3 - 6.5
12	6.6 - 6.8
13	7.1 - 7.3
14	7.4 - 8.2
15	8.3 - 8.5

16	9.1 - 9.3
17	9.4 - 9.6
Final Exam	

Code of Conduct:

It is the student's responsibility and duty to read the information below and become acquainted with all provisions of what constitutes academic misconduct involving cheating and plagiarism. Students are required to read each statement below, and the given repercussion. There are no exceptions to these policies, and the pretext of not reading each part will not be deemed as a reasonable excuse to contest the policies.

Code of Ethics:

Regulations and rules are necessary to implement for classroom as well as online course behavior. Students are expected to practice honesty, integrity and respect at all times. It is the student's responsibility and duty to become acquainted with all provisions of the code below and what constitutes misconduct.

Respectful communications:

When contacting Westcott Courses, you agree to be considerate and respectful. Communications from a student which are considered by our staff to be rude, insulting, disrespectful, harassing, or bullying via telephone, email, or otherwise will be considered a disrespectful communication and will result in a formal warning.

We reserve the right to refuse service. If we receive multiple disrespectful communications from person(s) representing the student, or the student themselves, the student will be excluded from taking future courses at Westcott Courses.

Grading information and proctored final policies:

The grading rules are put in place to protect the integrity of online education by stopping grade inflation, which is done by demanding a display of competency in exchange for a grade. By agreeing to the terms of service agreement, you agree to read the 'Grading' Policy from within your account, and the 'Proctored Final Information' page, if applicable. You have 24 hours after your first log-in to notify us if you do not agree to the grading policy and proctored final policy (if applicable) outlined in the pages inside of your account, otherwise it is assumed that you agree with the policies. There are no exceptions to these policies, and the pretext of not reading the pages will not be deemed as a reasonable excuse to contest the policies.

The definition of academic cheating is an act of dishonesty in order to obtain a higher grade in the course, and to gain an advantage over other students in the course.

To maintain academic standards, students are expected to practice honesty, integrity and respect at all times. Students who violate the policies of cheating, plagiarizing, or other academic misconduct will result in following actions.

1) Cheating in any way on the final exam results in an F on the final and an F in the class.

This includes, but is not limited to any form of collaboration, use of unauthorized materials, receiving or providing unpermitted assistance on the exam, using outside digital assistance such as a cell phone, tablet, ETC. to communicate with others or access outside websites, having someone else take the exam for you, taking an exam for another student, failing to stop working on the exam when the time is up.

Final exams are secure tests and the intellectual property of Westcott Courses. Taking screen shots of a digital final or copying a paper test is stealing our intellectual property and cheating. It is equivalent to stealing a copy of the final exam off an instructor's desk. When one student obtains the questions on a final, it means that other students who don't have the questions on the final are at a disadvantage. Once a final exam has been compromised it is no longer secure, and the exam is unfair for those who have not performed an act of dishonesty to gain the advantage.

Each of the infractions above represents a result of performing an act of dishonesty in order to obtain a higher grade in the course, and to gain an advantage over other students in the course. The result of any of the above offenses is an F in the course. Students who violate the above policy may retake the course after a first offense; however, a second offense will result in expulsion and students will no longer be able to take other courses at Westcott Courses.

Students are responsible for clicking on the "Proctored Final Information" link (which is on student's Main Menu), and reviewing the list of Authorized Materials for each course's final exam. Since each course is different, the "Authorized Materials" for each final is different. For example, some courses permit notes, while others do not.

2) Plagiarism: All of the following are considered plagiarism, and will result in a zero on the plagiarized assignment, and there are no opportunities to redo the assignment.

Merriam-Webster defines plagiarism as "the act of using another person's words or ideas without giving credit to that person"

Plagiarism includes, but is not limited to:

* having somebody else write your assignment for you

* turning in an assignment that contains work that is not your own

* changing words in phrases, sentences and/or blocks of text without giving credit to the source (paraphrase)

* copying ideas, phrases, sentences or entire blocks of text without giving credit to the source

* not crediting the correct source by providing incorrect information

Plagiarism is an act of fraud, and can usually be avoided by using quotation marks and citing the source of the material. Instructors apply plagiarism software to find assignments that contain plagiarized material. Again, assignments that contain one of the above infractions will receive a zero on the assignment and the student will not have the opportunity to redo the assignment.

It is important to note that saving all your assignments to the end of the course, and then turning in multiple assignments that have been plagiarized will result in zeros on all of those assignments. This may mean that you no long have enough points in the course to pass the class. Thus, turning in assignments one at a time and waiting for instructor feedback in-between is important for learning and making sure that you maximize your possible points.

If you have questions, please read more information about plagiarism at plagiarism.org, or ask your instructor.

Other Examples of Academic Misconduct:

1) Other forms of cheating include altering an exam and submitting it for regarding, providing false excuses to postpone due dates, fabricating data or references, claiming that Westcott Courses lost your test and/or quiz scores, sending emails to Westcott claiming you did not know what you were doing was cheating.

2) Unauthorized collaboration - working with others on graded course work without specific permission of the instructor, including homework assignments, programs, quizzes and tests.

3) Copying Westcott Courses content and posting it on the internet. This includes assignments, quizzes, and tests.

By signing up for a course, you are legally signing a contract that states that the person who is named taking this course is the actual individual doing the course work and all examinations. You also agree that for courses that require proctored testing, that your final will be taken at a college testing center, a Sylvan Learning center, or at home using the online proctor. Also, the individual signed up for this course will be the one taking the test. Failure to do so will be considered a breach of Westcott Courses policies.

Important Notes:

This syllabus is subject to change and / or revision during the academic year. Students with documented learning disabilities should notify our office upon enrollment, as well as make sure we let the testing center know extended time is permitted. Valid documentation involves educational testing and a diagnosis from a college, licensed clinical psychologist or psychiatrist.