

MATH 107 6381 College Algebra (2152) MATH-107

Spring 2015 Section 6381 3 Credits 01/12/2015 to 03/08/2015

Faculty Contact

James Howard JamesP.Howard@faculty.umuc.edu

Course Description

(The first course in the two-course series MATH 107-108. An alternative to MATH 115). Prerequisite: MATH 012 or an appropriate result on the placement test. An introduction to equations and inequalities and a study of functions and their properties, including the development of graphing skills with polynomial, rational, exponential, and logarithmic functions. The objective is to apply appropriate technology and demonstrate fluency in the language of algebra; communicate mathematical ideas; perform operations on real numbers, complex numbers, and functions; solve equations and inequalities; analyze and graph circles and functions; and use mathematical modeling to translate, solve, and interpret applied problems. Technology is used for data modeling. Discussion also covers applications. Students may receive credit for only one of the following courses: MATH 107 or MATH 115.

Course Introduction

"Algebra is the intellectual instrument which has been created for rendering clear the quantitative aspects of the world."—Alfred North Whitehead (1861–1947)

"Algebra is generous; she often gives more than is asked of her."—Jean D'Alembert (1717–1783)

Mathematicians have long extolled the power of algebra!

The purpose of this course is to foster the development of mathematical skills required in a wide range of disciplines. *College Algebra* emphasizes the application of these skills to fields ranging from astronomy and business to sports and transportation. This course continues the development of algebra skills that you gained in introductory and intermediate algebra courses, providing grounding in the function concept, and covering polynomial and rational functions as well as exponential and logarithmic functions.

College Algebra emphasizes problem-solving rather than theorem-proving. This course provides foundations for lifelong skills in quantitative reasoning.

Note: This course is identified as a prerequisite for another course at UMUC. Successful completion of this course is required to advance to the next course in a sequence. A grade of Withdrawal (W), Failure for non-attendance (FN), Failure (F) or Incomplete (I) will not meet a prerequisite requirement. You may be barred from enrolling in or may be removed from courses for which you do not have the necessary prerequisites. Keep track of your progress in this course. If you are uncertain about your standing, consult with your instructor. You should also work with an academic advisor to be sure you are aware of your options and are meeting all necessary program requirements when planning your schedule.

Course Outcomes

After completing this course, you should be able to

- demonstrate fluency in the language of college algebra and communicate mathematical ideas using appropriate terminology and technology
- perform operations on real numbers, complex numbers, and functions, including composition of functions
- solve linear, quadratic, rational, radical, exponential, logarithmic, and absolute value equations; and solve linear, polynomial, rational, and absolute value inequalities
- analyze and graph circles and functions, including linear, piecewise, quadratic, higher order polynomial, rational, exponential, logarithmic, and inverse functions, and transformations of these functions
- use mathematical modeling to translate, solve, and interpret applied problems related to linear and quadratic modeling, average rate of change, variation, and exponential growth and decay

Course Materials

[Click to access your course materials information \(http://webapps.umuc.edu/UgcmBook/BPage.cfm?C=MATH%20107&S=6381&Sem=2152\)](http://webapps.umuc.edu/UgcmBook/BPage.cfm?C=MATH%20107&S=6381&Sem=2152)

Class Guidelines

- Preparation
- Classroom Management
- Preferred Contact Method
- Supplemental Materials

Within the **Content** section of your classroom, view the **Start Here** section to learn more about contacting faculty and to access the Classroom Walkthrough.

To succeed in an 8-week mathematics course, it is important to complete all assignments on time. Print out a copy of the Course Schedule and keep it in a place where you can consult it daily. Late work will be accepted only in cases of documented emergency.

Log into our online classroom regularly to read news, participate in discussions, and post questions. After posting work in a discussion, check back into the discussion to read comments and make any necessary revisions.

Questions of general interest to the class should be posted in the "Have a Question?" discussion. For questions pertaining to your own work in the course, please send an e-mail with our course name in the subject line.

✓ Grading Information

You are responsible for the following graded items:

Component	Weighted Percentage
MyMathLab Homework	10%
LEO Participation	10%
Three Quizzes (12% each)	36%
Linear Model Project	10%
Nonlinear Model Project	10%
Final Examination	24%
Total	100%

The grading scale, based on 100 points, is as follows:

A =	90 - 100
B =	80 - 90
C =	70 - 80
D =	60 - 70
F =	0 - 60

The work you are required to do in this course consists of

- weekly reading assignments
- MyMathLab homework
- participation

- project
- quizzes
- a final examination

These course components are described below.

Weekly Reading Assignments

Even though there is no numerical score associated with the weekly reading assignments, how well you do in the course depends heavily on how conscientiously you follow the reading assignments.

When doing the reading for this course, you need to *slow down!*

Reading mathematics is not like reading anything else. You need to look carefully at the numbers and formulas and spend time making sure you understand them and that they make sense. Reading any mathematical text can take three to four times longer, per page, than reading a nonmathematical text.

MyMathLab Homework

There are homework assignments each week in MyMathLab, an interactive program that provides homework problems similar to the problems in our book. The homework assignments give you practice in solving problems associated with each week's topics. Your aim should be mastery of all concepts, and you will be given opportunities to succeed in solving all of the problems every week. As completing the homework problems on time will help you understand and master the topics, plan your weeks according to the schedule.

During each of the first seven weeks of class, there will be two problem sets assigned in MyMathLab, the first due midway through the week and the second due at the end of the week. (See the Course Schedule for due dates.)

Each MyMathLab assignment will receive a percentage score. The average of the scores on all 14 MyMathLab assignments will count 10 percent toward your final course grade.

Participation

By registering for a Web-based course, you have made a commitment to participate in course discussions and online activities. Plan to participate regularly. Participation for this course is defined as proactive discussion. This requires you to actively reflect on weekly readings and to develop original ideas in your responses. You are expected to demonstrate critical thinking and your understanding of the content in the assigned readings as they relate to the issues identified in the discussions. You are encouraged to respond to other students as well as to your instructor. You are expected to adhere to the general rules of online etiquette.

For individual participation on an ongoing basis, there is a collection of participation topics posted in weekly LEO discussions, drawn primarily from the even-numbered exercises in your textbook. For participation credit, over the eight weeks of the term, you are expected to solve eight topics (from different textbook sections). You are free to choose any topic, complying with the discussion instructions, provided someone else has not already attempted it or "reserved" it.

For each participation topic, you will earn up to 10 participation points for the accuracy of your solution. You may be given opportunities to attempt your solution more than one time. If you make an error, you may get feedback and a chance to edit your work and resubmit it. The goal of online participation and problem solving is to help you understand the concepts and to give you an opportunity to practice solving problems and get feedback from me.

Online participation work is to be posted in LEO discussions. Participation work submitted by other means will not be accepted.

You may earn a total of 80 online participation points (8 topics at 10 points each is the maximum for regular participation credit).

Extra credit participation: You may solve up to two additional participation topics over the course of the term, chosen according to discussion guidelines. Each extra-credit topic is worth a maximum of 10 points. Thus, it is possible to earn 20 extra-credit points. For both your required participation topics and your extra-credit participation topics, you may receive up to 100 participation points (80 points for required participation and 20 points for extra-credit participation). You are encouraged to pursue extra credit, but your point total will be capped at 100 points overall.

At the end of the term, your total number of participation points will be multiplied by $5/4$ to arrive at a percentage, and that score will count 10 percent toward your final grade. For instance, a total of 80 participation points corresponds to the participation percentage $80(5/4) = 100\%$, and a total of 100 participation points (the maximum with extra credit) corresponds to the participation percentage $100(5/4) = 125\%$.

Quizzes/Exams

Quizzes and exams are important milestones, as they provide valuable feedback for instructors and students. They are open book and will be given as indicated in the schedule. Quizzes and exams must represent your own work.

Makeup quizzes and exams are not available **except** in cases of documented emergency.

You will be given one week to work on each quiz, and the due dates of the quizzes and exams can be found in the schedule. Each quiz will be posted as an Assignment at the beginning of the designated academic week, and each will be due at the end of that academic week. Quizzes may be submitted in plain-text format, as attached files such as Microsoft Word documents, or as handwritten and scanned documents.

Quizzes must be individually completed and represent your own work. Neither collaboration nor consultation with others is allowed.

To keep up with the pace of this course, you should submit quizzes on or before the due date. After the due date, solutions will be posted. Quizzes submitted after the solutions are posted will not be accepted.

Project

You are required to complete a project in this course involving curve-fitting and interpretation. See the Project Descriptions for details.

Final Examination

All sections of this course have a required final examination, administered in a 72 hour period during Week 8, the last week of the course.

The final exam is open book and includes multiple-choice and short answer questions. **However, you are required to show your work and calculations, where requested, in order to receive full credit.** The chapters to be covered on the final exam are Chapters R, 1, 2, 3, 4, and 5.

The final exam must be individually completed and represent your own personal work. Neither collaboration nor consultation with others is allowed.

The solutions for the final examination will not be posted.

You are expected to take the exam as scheduled. In the event of illness or extraordinary circumstances, you must contact your faculty member and provide documentation to request an exception and approval to take a makeup exam. If the request is not approved, the exam grade will be recorded as a zero.

Additional Information

Late Policy

Meeting course deadlines is crucial for success in computer-mediated courses. You may read at your own pace, but homework in MyMathLab, LEO participation, quizzes, and projects must adhere to the timetable given in the schedule. Otherwise the grade will be zero. No late MyMathLab homework, LEO participation, quizzes, or exams will be accepted.

Pearson Tutor Services

Students may pursue online math tutoring in MyMathLab at no charge. Within the MyMathLab classroom, click Chapter Contents and then the Math Tutor Center link near the top of the page. Students have an option to purchase additional tutoring.

The trial free offer inside MyMathLab is one session of up to 30 minutes. Students can purchase additional time from their tutor "dashboard." When students purchase additional time, they can use as many or as few minutes as they need, up to the amount purchased (i.e., sessions could be 5 to 50 minutes long). Time is counted only when they are connected to a tutor. Session time ends when the students see "Ends session on the Tutoring page".

Guideline for Receiving Tutoring Services

We appreciate that many students may seek tutoring services to supplement our instructional program. However, tutors may not be used to complete any portion of assignments, projects, quizzes, and exams on behalf of students. Students are expected to submit their own work. Students who are suspected of submitting the work of their tutors will be reported to the dean's office for potential investigation.

If you are to receive tutoring services, inform your tutor of this expectation and clarify your tutor's role and responsibility to your academic endeavors at UMUC.

Project Descriptions

For this assignment, you will implement projects involving curve-fitting and interpretation. You will compile data, fit the data to linear, polynomial, exponential, or logarithmic models, assess the appropriateness of the models, and explore the predictive power of the models. You will use appropriate technology to perform the modeling tasks.

Linear Model Project

For this assignment, you will compile appropriate data, fit the data to a linear model, and apply the results. In our classroom, navigate Content > Projects > Linear Project for detailed instructions.

Nonlinear Model Project

For this assignment, you will be provided with two sets of data, one set for a quadratic model, and the other set for an exponential model. You will fit the data to models and apply the results. In our classroom, navigate Content > Projects > Nonlinear Project for more detailed instructions.

Academic Policies

Academic Policies and Guidelines

ACADEMIC INTEGRITY

As a member of the University of Maryland University College (UMUC) academic community that honors integrity and respect for others you are expected to maintain a high level of personal integrity in your academic work at all times. Your work should be original and must not be reused in other courses.

CLASSROOM CIVILITY

Students are expected to work together cooperatively, and treat fellow students and faculty with respect, showing professionalism and courtesy in all interactions. Please review the Code of Civility for more guidance on interacting in UMUC classrooms:

<http://www.umuc.edu/students/support/studentlife/conduct/code.cfm> (<http://www.umuc.edu/students/support/studentlife/conduct/code.cfm>).

POLICIES AND PROCEDURES

UMUC is committed to ensuring that all individuals are treated equally according to Policy 040.30 [Affirmative Action, Equal Opportunity, and Sexual Harassment](#).

Students with disabilities who need accommodations in a course are encouraged to contact the Office of Accessibility Services (OAS) at accessibilityservices@umuc.edu, or call 800-888-UMUC (8682) or [240-684-2287](tel:240-684-2287) (tel:240-684-2287).

The following academic policies and procedures apply to this course and your studies at UMUC.

150.25	<p>Academic Dishonesty and Plagiarism – UMUC defines academic dishonesty as the failure to maintain academic integrity. All charges of academic dishonesty will be brought in accordance with this Policy.</p> <p>Note: Your instructor may use Turnitin.com, an educational tool that helps identify and prevent plagiarism from Internet resources, by requiring you to submit assignments electronically. To learn more about the tool and options regarding the storage of your assignment in the Turnitin database go to: http://www.umuc.edu/library/libresources/turnitin.cfm.</p>
170.40 170.41 170.42	<p>The following policies describe the requirements for the award of each degree:</p> <p>Degree Completion Requirements for the Graduate School</p> <p>Degree Completion Requirements for a Bachelor's Degree</p> <p>Degree Completion Requirements for an Associate's Degree</p>
170.71	<p>Policy on Grade of Incomplete - The grade of I is exceptional and only considered for students who have completed 60% of their coursework with a grade of B or better for graduate courses or C or better for undergraduate courses and request an I before the end of the term.</p>
170.72	<p>Course Withdrawal Policy - Students must follow drop and withdrawal procedures and deadlines available at http://www.umuc.edu/ under Academic Calendar.</p>
130.80	<p>Procedures for Review of Alleged Arbitrary and Capricious Grading – appeals may be made on final course grades as described herein.</p>
205.06	<p>Calculation Of Grade-Point Average (GPA) for Inclusion on Transcripts and Transcript Requests – Note: Undergraduate and Graduate Schools have different Grading Policies (i.e. The Graduate School does not award the grade of D). See Course Syllabus for Grading Policies.</p>

COURSE EVALUATION SURVEY

UMUC values its students' feedback. You will be asked to complete an online evaluation toward the end of the term. The primary purpose of this evaluation process is to assess the effectiveness of classroom instruction in order to provide the best learning experience possible and make continuous improvements to every class. Responses are kept confidential. Please take full advantage of this opportunity to provide your feedback.

LIBRARY SUPPORT

Extensive library resources and services are available online, 24 hours a day, seven days a week at <http://www.umuc.edu/library/index.cfm> to support you in your studies. The UMUC Library provides research assistance in creating search strategies, selecting relevant databases, and evaluating and citing resources in a variety of formats via its Ask a Librarian service at <https://www.umuc.edu/library/libask/index.cfm>.

LEARNING MANAGEMENT SYSTEM SUPPORT

To successfully navigate the online classroom new students are encouraged to view the Classroom Walkthrough under Help in the upper right menu of the LEO classroom. Those requiring technical assistance can access Help@UMUC Support directly in LEO under the Help menu. Additional technical support is available 24 hours a day, seven days a week via self-help and live chat at <http://www.umuc.edu/help> or by phone toll-free at 888-360-UMUC (8682).

SYLLABUS CHANGES

All items on this syllabus are subject to change at the discretion of the Instructor and the Office of Academic Affairs.

Class & Assignment Schedule

Students can access their complete list of assignments and their corresponding due dates within the **Assignments** section of the classroom by navigating to the **Assignments** section of the class from the main navigation bar. Follow the link below, and then click **Assignments**, for a video demonstration on how to utilize this feature.

[Classroom Walkthrough Videos Link](#)

Students also have access to a calendar tool on the course homepage within the classroom. All assignments are due at the end of the day (11:59pm in the US Eastern time zone) on the specified dates. A world clock is found at: <http://www.timeanddate.com/worldclock/> (<http://www.timeanddate.com/worldclock/>).

Week	Activities
0	<p>Week 0: Preview Week</p> <p>Please get acquainted with our course and classroom during this preview week prior to the official starting date.</p> <p>Read: Syllabus</p> <p>Do:</p> <ul style="list-style-type: none">• Acquire Course Materials• Enroll in the MyMathLab classroom (See Course Resources > MyMathLab Registration and Information)• Introduce yourself and meet your classmates in the Introductions discussion (in this Preview Week or in Week 1)• Post any questions in the "Have a Question?" discussion (if desired)
1	<p>Week 1: Review of Basic Concepts of Algebra</p> <p>Read:</p> <ul style="list-style-type: none">• Textbook sections R.1 - R.7• Course Resources > UMUC Course Modules > Module 1, Topics 1, 2, 3, 4, 6, 7, 8• Course Resources > UMUC Course Modules > Module 2, Topic 1 <p>Do:</p> <ul style="list-style-type: none">• MyMathLab Homework Assignment 1a: due 01/15• MyMathLab Homework Assignment 1b: due 01/18• Introduction participation (if desired) and Week 1 Participation: due 01/18

2	<p>Week 2: Graphs, Functions, and Lines</p> <p>Read:</p> <ul style="list-style-type: none">• Textbook sections 1.1 - 1.6• Course Resources > UMUC Course Modules > Module 3, Topics 1, 2, 3• Course Resources > UMUC Course Modules > Module 2, Topics 1, 2, 5, 6 <p>Do:</p> <ul style="list-style-type: none">• Unit Quiz 1, covering Week 1 course material: due 01/25• MyMathLab Homework Assignment 2a: due 01/22• MyMathLab Homework Assignment 2b: due 01/25• Week 2 Participation: due 01/25• Work on Linear Model Project. See Projects module > Linear Project
3	<p>Week 3: More on Functions</p> <p>Read:</p> <ul style="list-style-type: none">• Textbook sections 2.1 - 2.5• Course Resources > UMUC Course Modules > Module 3, Topics 5, 6 <p>Do:</p> <ul style="list-style-type: none">• MyMathLab Homework Assignment 3a: due 01/29• MyMathLab Homework Assignment 3b: due 02/01• Week 3 Participation: due 02/01• Work on Linear Model Project. See Projects module > Linear Project
4	<p>Week 4: Quadratic Equations and Functions; Rational Equations and Radical Equations</p> <p>Read:</p> <ul style="list-style-type: none">• Textbook sections 3.1 - 3.4• Course Resources > UMUC Course Modules > Module 1, Topic 5• Course Resources > UMUC Course Modules > Module 2, Topics 1, 3, 4, 5, 6• Course Resources > UMUC Course Modules > Module 3, Topic 4 <p>Do:</p> <ul style="list-style-type: none">• Unit Quiz 2, covering Week 3 course material: due 02/08• MyMathLab Homework Assignment 4a: due 02/05• MyMathLab Homework Assignment 4b: due 02/08• Week 4 Participation: due 02/08• Work on Linear Model Project. See Projects module > Linear Project
5	<p>Week 5: Polynomial Functions, Rational Functions, and Inequalities</p> <p>Read:</p> <ul style="list-style-type: none">• Textbook sections 3.5, 4.1, 4.2, 4.5, 4.6• Course Resources > UMUC Course Modules > Module 4, Topics 1, 2 <p>Do:</p> <ul style="list-style-type: none">• MyMathLab Homework Assignment 5a: due 02/12• MyMathLab Homework Assignment 5b: due 02/15• Week 5 Participation: due 02/15• Linear Model Project and submit, due 02/15. See Projects module > Linear Project

6	<p>Week 6: Inverse, Exponential, and Logarithmic Functions</p> <p>Read:</p> <ul style="list-style-type: none"> • Textbook sections 5.1, 5.2, 5.3, 5.4 • Course Resources > UMUC Course Modules > Module 3, Topic 7 • Course Resources > UMUC Course Modules > Module 5, Topics 1, 2, 3 <p>Do:</p> <ul style="list-style-type: none"> • Unit Quiz 3, covering Week 5 course material: due 02/22 • MyMathLab Homework Assignment 6a: due 02/19 • MyMathLab Homework Assignment 6b: due 02/22 • Week 6 Participation: due 02/22 • Work on Nonlinear Model Project. See Projects module > NonLinear Project
7	<p>Week 7: Exponential and Logarithmic Equations and Applications</p> <p>Read:</p> <ul style="list-style-type: none"> • Textbook sections 5.5, 5.6 • Course Resources > UMUC Course Modules > Module 5, Topics 4, 5 <p>Do:</p> <ul style="list-style-type: none"> • MyMathLab Homework Assignment 7a: due 02/26 • MyMathLab Homework Assignment 7b: due 03/01 • Week 7 Participation: due 03/01 • Nonlinear Model Project and submit, due 03/01. See Projects module > NonLinear Project
8	<p>Week 8: Review and Final Exam</p> <p>Do:</p> <ul style="list-style-type: none"> • Week 8 Participation: due 03/08 • Final Exam (cumulative): due 03/08 <p>The Final Exam will be available in LEO at 12:01 a.m. on Friday, 03/06. The Final Exam is due 11:59 p.m. on Sunday, 03/08. It is open book and includes multiple-choice and short answer questions. However, you are required to show your work and calculations, where requested, in order to receive full credit. The chapters to be covered on the final exam are Chapters R, 1, 2, 3, 4, 5. The final exam must be individually completed and represent your own personal work. Neither collaboration nor consultation with others is allowed. The solutions for the final exam will not be posted.</p>