

**MATH 101: Precalculus: Algebra with Functions and Graphs**  
(2 credits, Gen Ed: will satisfy R1 only if followed by Math 102)

**Lectures:** fully remote and asynchronous with recorded lectures posted through the “Echo360 Recorded Lectures” link on our Moodle page (see more after “Letter Grades”)

**Instructor:** Jeff Beaulieu (please call me Jeff)

Office: on Zoom (please see the syllabus on Moodle for the link)

Office Hours: MWF 10:00am-12:00pm or by appointment

Phone: 413-545-6032 (email is best)

Email: [beaulieu@math.umass.edu](mailto:beaulieu@math.umass.edu) (please include “Math 101” in your subject line)

**Teaching Assistants:** More information on how to connect with the TAs will be posted on Moodle once it is finalized. We’re trying to set up a virtual Help Center. More on this later.

**Course Description:** Math 101 is the first half of a two-semester, Precalculus course sequence. The topics in this course include the set of real numbers, absolute value, solving equations and inequalities in two variables, factoring polynomials, solving rational and radical equations, exponents, functions, slope of a line, and solving linear and quadratic equations.

**Moodle Course Webpage:** The Moodle course webpage contains the syllabus, the lecture schedule of topics (includes exam dates), a more detailed course topics list, and information on where you can go for help with course material. Also, see the note below about the news forum.

To access our Moodle course page, follow the link: <https://moodle.umass.edu/>

Sign in using your Net ID and password. This brings you to your main Moodle page. Each course you are taking this semester that has a Moodle course page will have a link. Click on the Math 101 link.

**Note:** Messages will be sent to students from the instructor through Moodle. All messages sent throughout the semester will also be saved in the “news forum.” A link to the news forum should be visible near the top of our Moodle course webpage.

**General Education:** This course is the first course of a two-semester, Precalculus course sequence (Math 101 followed by Math 102). Each course is two credits. Both are needed to satisfy the R1 (Basic Math Skills) general education requirement for graduation. The General Education Program at the University of Massachusetts Amherst offers students a unique opportunity to develop critical thinking, communication, and learning skills that will benefit them for a lifetime. For more information about the General Education Program, please visit the web page: <http://www.umass.edu/gened>.

**Learning Outcomes for General Education:** Content and Critical Thinking are addressed in Math 101.

1) *Content: Know fundamental questions, ideas, and methods of inquiry/analysis used in the discipline.* This course presents students with the necessary vocabulary and rules of Algebra to be able to manipulate expressions and solve equations in various forms.

2) *Critical Thinking: Creative, analytical, quantitative, & critical thinking through inquiry, problem solving, & synthesis.* As well as advancing a student's grasp of Algebra, this course encourages students to explore and understand the origins of the rules and solution methods presented. For example, students will learn *why* we multiply the exponents when simplifying  $(x^2)^3$  and, instead, add them when simplifying  $x^2x^3$ . Similarly, students will see *why* we need a common denominator when adding or subtracting fractions. Students will value *why* understanding absolute value is crucial for understanding how to solve absolute value equations and inequalities.

**Learning Outcome for the R1 Designation:** Math 101 satisfies the objective of the Basic Math Skills requirement (R1):

*Offers Instruction of Basic Math Skills:* This course explores different sets of numbers, operations on those sets, and extends those operations to algebraic expressions. Exponents and Order of Operations are treated. Methods for solving linear equations and inequalities, as well as for solving absolute value, radical, rational, and quadratic equations are discussed. Systems of equations are also covered. Functions are defined, and piecewise-defined functions are introduced.

**Satisfaction of the R1 and R2 General Education Requirements:** The following is information on how to satisfy the R1 and R2 General Education requirements for graduation, along with a discussion of the difference between the Math Placement Test and the R1 Exemption Exam.

1) Basic Mathematics Skills (R1) and Analytic Reasoning (R2) Designated Courses

The following courses offered by the Department of Mathematics & Statistics satisfy **only the R1 requirement** for graduation: Math 011, 012, 100, 101-102 (must have both), 104, 114, 245, 246, 300, 331.

The following courses offered by the Department of Mathematics & Statistics satisfy **both the R1 and R2 requirements** for graduation: Math 113, 121, 127, 128, 131, 132, 135, 136, 233, 235, 456, and Stat 111, 240, 501, 515, 516.

**Note:** A continuously updated list of University courses (including courses outside the Department of Mathematics and Statistics) that satisfy the R1 and R2 requirements can be viewed here:

<http://www.umass.edu/registrar/students/general-educationacademic-requirements/r1r2-gen-ed-requirements>

2) The R1 (Basic Mathematics Skills) Exemption Exam vs. The Math Placement Test

*The R1 (Basic Mathematics Skills) Exemption Exam*

The R1 Exemption Exam is not the same as the Math Placement Test. The R1 Exemption Exam is a test of basic math skills only, nothing else. Passing this test will satisfy the R1 requirement for graduation, but will not result in the awarding of any credits. This test is not offered online. It is administered a couple of times each semester through the Department of Mathematics and Statistics. More information about this test (including dates, topics, results) can be found here:

[http://www.math.umass.edu/Undergrad/r1\\_exempt.html](http://www.math.umass.edu/Undergrad/r1_exempt.html)

*The Math Placement Test*

The Math Placement Test is not the same as the R1 Exemption Exam, and your score on it does not have anything to do with satisfying the R1 or R2 requirement for graduation. The Math Placement Test is taken by students online before orientation. Your score on the Math Placement Test is used only as a guide as to where you currently are in your math ability (whether it be arithmetic or on the doorstep of calculus). The Math Placement Test is administered through the New Students Program on OWL. More information about this test can be found here:

<http://www.umass.edu/newstudent/placement-and-exemption-exams#Placement>  
and here: <http://www.umass.edu/newstudent/placement-exam-directions>

**Course Topics:**

1. Sets of Numbers
2. Linear Equations and Inequalities
3. Absolute Value Equations and Inequalities
4. Graphs and Functions
5. Systems of Equations
6. Factoring Polynomials
7. Polynomial Functions
8. Rational Expressions and Equations
9. Roots and Rational Exponents
10. Radical Expressions and Equations
11. Imaginary and Complex Numbers
12. Quadratic Equations and Functions

**Course Objectives:**

Upon successful completion of the course, students will be able to:

1. solve equations of various types (linear, absolute value, containing rational expressions, containing radical expressions, and quadratic)
2. solve and graph absolute value inequalities in one variable using interval notation
3. identify and understand relations, functions, function notation, and piecewise functions, and transformations of functions
4. solve and graph a system of two linear equations in two variables
5. add, subtract, multiply, and factor polynomial expressions
6. simplify, add, subtract, multiply and divide rational expressions
7. apply the rules of exponents to numerical and algebraic expressions containing integer and rational exponents
8. evaluate, simplify, add, subtract, and multiply radical expressions
9. translate between expressions containing rational exponents and expressions containing radical notation
10. simplify, add, subtract, and multiply expressions containing complex numbers
11. rationalize the denominator for a rational expression containing a radical or imaginary expression in the denominator
12. apply the square root property, the process of completing the square, and the quadratic formula

**Course Materials:** This course uses an online homework system. Students are required to purchase access to the online homework system. An electronic version of the textbook is accessible through the online system, so **it is not necessary to purchase a hard copy of the textbook**. If you prefer to have your own hard copy, it is possible to find and purchase one online. Also, access to a scientific calculator will be helpful.

- 1) **My Math Lab (required)**: This is the online homework system. We refer to it, affectionately, as “MML.” The registration process for MML is outlined below.
- 2) **Calculator**: A calculator will be useful while working through some homework problems. A graphing calculator is not necessary. A scientific calculator will be best if you plan to go on to Math 102 (has buttons for sin, cos, tan, log, ln). However, calculators will not be allowed for use on any exam in either Math 101 or Math 102. Online calculator display access is free on many websites.
- 3) **Textbook (not required)**: *Algebra and Trigonometry* by Robert Blitzer, sixth edition. Pearson. 2018. [The cover has a yellow chili pepper and the New York City skyline.]

**Registering for My Math Lab:** To register for MML, you will need your UMass email address and the MML course ID (please see the syllabus on Moodle).

**Purchasing MML Access:** You may pay while registering, or you can choose the two-week, free, temporary access option (please see below for more information on this free temporary access option). To register, and to get the negotiated \$75 UMass student price, please go to **mymathlab.com** and register as a student.

*[Note: If you already have an MML account for which you previously purchased long-term access for a UMass Amherst Precalculus course (i.e. if you've taken Math 101, 102 or 104 before), then you will most likely not need to purchase access again. Please contact me for help with this.]*

**Free, Temporary MML Access:** It's important to register on the website and begin your assignments as soon as possible. If you cannot presently afford the long-term access, or if you are unsure if you will be staying in this course, there is an option to register, initially, for **free temporary access on the mymathlab.com website**. If you choose to register using this temporary access, you'll need to purchase long-term access and update your registration within two weeks to retain/regain access to the assignments (see instructions on the mymathlab.com website). Any work you do on the assignments up to that point will be saved automatically.

**Note:** While registering on mymathlab.com, you'll reach the payment page where you would purchase access. The free temporary access option should be visible on this page. Sometimes, it can be hard to find, as it may be in small print.

**Working on Problems in MML:** One of the benefits of using MyMathLab is that you will have the opportunity to try homework problems multiple times. Occasionally, a syntax issue may arise while working on these problems (the system isn't perfect), but multiple attempts on a problem and a reading of the specific directions for the problem should help. MML automatically saves all work that has been done on a problem, so you don't have to. No need to "submit" after completing an assignment. The system saves all work automatically.

When you first encounter a problem to do in MML, you work out the answer (perhaps on paper) and then enter your answer in the space provided. Click on "check answer." If it's correct, you'll get a green check mark, and you can attempt the next problem on the assignment. Be mindful that you can click on the "similar problem" button to get a fresh problem if you'd like more practice on that type of problem. If you get the similar problem wrong, you'll be asked if you want to keep the best attempt. You won't lose your green check mark if you choose to keep the best attempt. [Note: if you use the "similar problem" button *after the due date has passed*, then you will be assessed a ten percent penalty on that question for each day that you are past the due date, even if you previously earned a green checkmark on that question. Please do not use the similar problem button in an assignment *after the due date* for the purpose of practicing. Before the due date is safe; after the due date, not so much. Since the final exam is not cumulative, this will likely not be an issue.]

If, however, you answer the original problem incorrectly, then you'll see a red X and possibly a hint. You can then try that same problem again. If you get it wrong a second time, then, again, a hint (often the same hint) is displayed. You can then try it a third time. If you get it wrong on the third attempt, then it shows you the correct answer. You may then click on "similar problem" for a fresh problem of the same type with three new attempts. Including the original problem, you have five fresh problems per question. That means fifteen attempts for each question. If you're not having success after a couple of fresh problems, and before you exhaust all of your attempts, please seek help from the TAs (information about TA availability will be posted on Moodle when it's ready) or from me during my office hours (on the syllabus).

**Trouble-Shooting:** My Math Lab will operate on a PC or a Macintosh computer. If you ever experience trouble accessing MML or the assignments, try the following:

- 1) If you initially registered using the free access, is the temporary period over? If so, follow the directions in your MML account to upgrade to purchased long-term access.
- 2) You may need to "enable cookies" in your web browser. If you're not sure how, please contact Umass IT for help with this.

- 3) If you are using Safari as your web browser, try a different browser.
- 4) If you are still having problems accessing MML, try a different device if one is available.
- 5) Perhaps you have multiple Pearson accounts? Go to the MML login page, click on “forgot my password,” and follow the instructions. You’ll receive an email reporting your login information for all of your accounts with Pearson. This may be helpful to see.
- 6) If none of the above resolves your access issues, please contact UMass IT (413-545-9400) or the My Math Lab student help line (1-800-677-6337).

**Homework:** Homework will be assigned and completed through My Math Lab (see above). Due dates are visible next to each open assignment on MML. An assignment will open on the day the material in it is first discussed in class. It will be due at the time of the exam which covers the material in that assignment. It's your responsibility to be aware of the due date for each assignment, and it's strongly recommended that you keep up with the assignments as the material is introduced.

Extensions will be allowed for students who have extenuating circumstances or who have extended time on assignments as part of their accommodations, but this will be done on an assignment-by-assignment basis and only after the student notifies me by email before the assignment in question is due, so we can agree on an acceptable extension.

**Note:** Again, I highly recommend that you do the assignments as the material is introduced. It is easy to get overwhelmed by assignments that pile up for whatever reason. Assignments are expected to be done BEFORE the exam that covers that material. Assignments are intended to help you practice the concepts that will be tested, so you have time to ask us questions to clear up any confusion before the exam. Extensions will not be granted for assignments just because they pile up and become overwhelming. Please plan accordingly. Assignments that are not completed by their respective due dates may still be worked on after their due dates with a ten percent penalty on the work done after the due date for each day that you are past the due date. Again, be mindful not to practice on assignments that are past the due date.

**Exams:** There will be three semester exams and a final exam. All exams will be taken through My Math Lab. The dates of the first three exams are on the Semester Schedule (posted on our Moodle page). The final exam will be scheduled by the Registrar's Office and will be visible in your Spire account (possibly under your course schedule). If you find you have another final exam scheduled for the same time as ours, or if you have three or more final exams scheduled for the same day, please contact me to resolve these issues. Calculators will not be allowed on any exam.

More specific information about exam times on these posted exam days will be communicated when the details are finalized. I will be reasonably flexible on these times. I will also expect students to take these exams in a distraction-reduced setting and adhere to all norms of academic honesty (please see the Academic Honesty section toward the end of this syllabus).

**Exam Make-up Policy:** Please contact me if you know you will need to miss a scheduled exam time or if you do miss an exam time due to unforeseen circumstances. Again, I'm willing to be reasonably flexible on exam times.

**Course Grade:** There are five graded parts to this course (20% each): the three semester exams, the final exam, and the homework. During the semester, exam and homework scores will be posted on MML. At the end of the semester, exam scores and homework averages will be posted on the Moodle course webpage.

**Letter Grades:** Course grades will be assigned based on the following scheme:

Percentage	Letter Grade
89.5-100	A
86.5-89.49	A-
82.5-86.49	B+
78.5-82.49	B
74.5-78.49	B-
70.5-74.49	C+
66.5-70.49	C
62.5-66.49	C-
58.5-62.49	D+
54.5-58.49	D
54.49 and below	F



**Recorded Lectures:** These recordings will be accessible through the “Echo360 Recorded Lectures” link just below the “news forum” near the top of our Moodle page. These will serve as the lectures for the course. Please let me know if you ever have trouble accessing these recordings. These recordings are from previous semesters. Please ignore any references in them to exam times and other irrelevant scheduling information. Skip over the handing back of exams in the beginning of some lectures. Focus on the presentation of material. Feel free to stop the recording to work on a given problem before I work through it.

**Student Success Early Alert Program:** After the first exam, you may receive a message from the Early Alert Program. This program was initiated to help students who are not on a path to successfully complete the course to get in touch with resources that can help them get back on track. The alert is just that. It’s not punitive. So if you receive an early alert message from your academic dean’s office, please email me to set up a meeting in which we can discuss a plan that helps you to do better in the course.

**Student-Athletes:** Student-athletes are required to provide a schedule of competition to the instructor within the first week of class.

**Students Needing Accommodations:** If you have a documented disability, and you are in need of accommodations, please talk to me as soon as the semester begins. You will be asked to provide documentation through the Office of Disability Services. Please do not schedule your exams with Disability Services unless we discuss this together and determine it’s best to do so. Extra time on exams can be provided for those who need it. Extra time for assignments will be on an assignment-by-assignment basis, and students with this accommodation will need to discuss this with me when they realize an extension is necessary for a particular assignment, so we can determine an appropriate extended due date.

**Academic Honesty:** Cheating will not be tolerated, and violators will be prosecuted through the Provost’s Office. Cheating is when you submit work that is not your own or when you help others to do so. Penalties can be failure of the course, academic probation, suspension, and expulsion. There’s plenty of help available in this course. Please seek it out early and as often as needed.

**Note:** Exams will be accessed through My Math Lab. It is expected that students will not use a calculator, class notes, recorded lectures, a textbook, a “cheat sheet,” the internet (other than the MML exam window), email, texting, a video meeting, a phone (rotary dial or other), a smart watch, a dumb watch, talking with others, a secret handshake, a time machine, a decoder ring, mental telepathy, or any other communication device or method, no matter how meticulously clever or industrious. Working with others on homework is fine (in fact it’s encouraged). Working with others on exams is not. Exams are a way for an individual student to demonstrate their knowledge of the

material without help from any other source. Please let me know if you ever have a question on what constitutes cheating on an exam. I'll be happy to help.

**Drops, Withdrawals, Pass/Fail Option, Incompletes:** Consult the lecture schedule for the last day to drop the course with no record (end of add/drop) and the last day to withdraw from the course (only a "W" will appear on your transcript).

Please refer to the information you received from the Registrar's Office regarding how to take the course using the Pass/Fail option. More information about the Fall 2020 Pass/Fail Option Policy can be found here:

<https://www.umass.edu/uww/news/passfail-policies-change-fall-2020>

A grade of "Incomplete" can be given only for a compelling reason (e.g. serious illness). To receive an incomplete, you must be passing the course.