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Spring 2-1-2018

# M 121.01: College Algebra

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## Recommended Citation

Darnell, Richard A., "M 121.01: College Algebra" (2018). *Syllabi*. 7754.  
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Section	MWF	Room	Instructor (Click for more info)	Office	Phone
1	9 am	MATH 103	<a href="#">Rick Darnell</a> (flipped classroom pilot)	Math 002	243-6812

**Walk-in Tutoring Centers:** Math Learning Center (MLC) and Math@Mansfield ([click for location/hours](#)).

**Office Hours (for all instructors):** [TBA\(link to download the pdf document\)](#)

**Course Coordinator:** Dr. Souza: Room MA 104, 243-2166, [Email](mailto:Regina.Souza@umontana.edu): Regina.Souza@umontana.edu

**Office Hours for Dr. Souza:** Mo, Wed: 2-2:50pm; Tue: 4-4:50pm, Th: 10-10:50am, or by appointment.

### Text book:

*Precalculus: An investigation of functions* (Available as a pdf e-book, or printed for a small cost at [Open Textbook Store](#)).

[MyOpenMath](#): Register online free for a student account, and sign up for course 30199, course id *m121darnellspr18*

### Graphing Calculator

A graphing calculator is required. Class support is available for TI-83/84.

### Course Description

The central theme of College Algebra is functions as models of change. This course fulfills the prerequisites for M 122 (College Trigonometry) and for M 162 (Applied Calculus). Offered autumn and spring. Prereq., M 095 or ALEKS placement  $\geq 4$ . Intended to strengthen algebra skills. The study of functions and their inverses; polynomial, rational, exponential, and logarithmic functions. Credit not allowed for both M 121, and M 151.

### Learning Outcomes

Upon completion of this course students will be able to:

- Use factoring to solve equations and to find zeros of polynomial functions.
- Solve linear, quadratic, exponential and logarithmic equations and use them to solve applied problems.
- Use function notation; identify domain, range, and intervals of increasing/decreasing/constant values.
- Find zeros, asymptotes, and domain of rational functions.
- Evaluate and sketch graphs of piecewise functions and find their domain and range.
- Use algebra to combine functions and form composite functions.
- Identify one-to-one functions, find and verify inverse functions, and sketch their graphs.
- Identify and graph linear, polynomial, power, rational, exponential and logarithmic functions.
- Use linear, polynomial, rational, power, exponential, and logarithmic functions of a real variable to model real-world phenomena and solve applied problems.

**General Education Learning Outcome:** Upon completion of the mathematical literacy requirement, a student will be able to apply effectively mathematical or statistical reasoning to a variety of applied or theoretical problems.

### Course Content

1. *Graphs, Functions, Applications* (Function Notation, Linear Functions, Equations of Lines, Applications, Solving Linear Inequalities, Increasing, Decreasing, and Piecewise Functions, Algebra of Functions, Composition of Functions, Symmetry and Transformations; Quadratic Functions)
2. *Exponential and Logarithmic Functions* (Inverse Functions, Exponential and Logarithmic Functions and their Graphs, Exponential and Logarithmic Equations, Applications)
3. *Polynomial and Rational Functions* (Short-run Behavior, Graphs, Comparing Power, Exponential and Logarithmic Functions, Fitting Exponentials and Polynomials to Data, Applications.)

## Grading Policies

Your course grade will be based on 3 midterm exams, a common final exam and other activities. A current schedule is available on Moodle. The instructor/coordinator reserve the right to make changes as needed to meet the needs of the class. \*Exam dates are subject to change. Announcements will be given in class and on Moodle.

Assignments	Percentages
Three midterm exams* (100 points each; 2/14, 3/21 and 4/25)	60%
Other activities (paper and online homework), content and reading quizzes, in-class activities, etc.	10%
Cumulative Final Exam (all sections Tuesday, May 8, 5:30-7:30 pm)	30%

Grading scale:

≥ 93%	≥ 90%	≥ 87%	≥ 83%	≥ 80%	≥ 75%	≥ 70%	≥ 65%	≥ 62%	≥ 58%	≥ 55%	< 55%
A	A-	B+	B	B-	C+	C	C-	D+	D	D-	F

M121 must be completed **with a C- or better** to fulfill the math literacy requirement. Taking M121 with the Credit/NoCredit option will not fulfill prerequisite requirements either.

## Requirements to Complete This Course Successfully

- **This is a pilot class using “flipped classroom” techniques:** Reading and watching videos outside of class is mandatory (this is where you’ll get “lectures” and content). Reading quizzes on the readings and videos are given at the beginning of class using personal assigned “Plicker” cards, which also record attendance. Classroom activities will focus on small-group activities encouraging problem-solving, experimentation, mistake-making, etc. Content will be summarized weekly, and you will assess your progress. Online and paper homework will need to be completed and submitted periodically.
- **Check you have the prerequisites:** You need an Aleks placement level 4, M02 ≥ 12 or consent of instructor.
- **Regular attendance:** Give support to and get support from your classmates and instructor during class. Again, key learning activities will happen during class. *This is not a traditional lecture-based class.*
- **Moodle:** Check the [Moodle supplement](#) prior to each class day for more information and schedule updates.
- **Read the textbook both before and after the topics are covered in class:** Read the authors’ introductory remarks to get a feel for the material, take the reading assessment if your instructor provides one, or use the “Check Your Understanding” problems at the end of each chapter. Redo examples on your own and then compare your solution with the authors’ approach. Read the “Summary” or create your own summary before you start your homework. Reading quizzes will be given after each assigned set of sections and videos.
- **“Do the math”:** Part of the philosophy of a flipped classroom is to get students to do more math, especially under the guidance of an instructor, since one of the best ways to learn mathematics is to do mathematics. You will have in-class work, written homework, and online assignments on [MyOpenMath](#). Expect at least 2 hours of work outside class every day, and more at the beginning of the semester.
- **Get some one-to-one or small-group interaction:** Take advantage of your instructor’s regular office hours (also available by appointment), meet with tutors or with your classmates at the [Math Learning Center](#) (in the Math building, Room Math 011) or [Math@Mansfield](#), create a study group or find a study partner. For some of us this is the most effective (and most fun) way to learn math.

## Some General University Policies

- **Make-ups:** Exam make-ups will be given only under special circumstances (illness, UM-sponsored travel, family emergency, etc.) Please make arrangements as soon as you know you will miss an exam.

Early finals (Monday, May 7 or earlier on Tuesday, May 8) will be given only under exceptional circumstances; and need the approval of the course coordinator.

- **Disabilities:** Students with disabilities are welcome to discuss accommodations with me. More information can be found at the website of the [Disabilities Services for Students \(DSS\)](http://www.umt.edu/dss/) (<http://www.umt.edu/dss/>). Disability Services now requires one week's notice for scheduling exams.
- **Important Dates/Deadlines (click for links):** Petitions to drop between March 27 and May 4 must be approved by the Dean of the student's major. Incompletes may be given only if a student has been in attendance and doing passing work up to 3 weeks before the end of the semester. [See these and other policies in the student catalog.](#)
- **Misconduct:** All students must practice academic honesty. Academic misconduct is subject to an academic penalty by the course instructor and/or a disciplinary sanction by the University. [See Student Conduct Code.](#)