

# Math 1050: College Algebra, Fall 2018

Instructor: Sean McAfee

Office: JWB 115

Office Hours: Monday, Wednesday 10:30-11:30 (or by appointment)

SI: Thomas Waddlington

**Course Goal:** Improve quantitative reasoning and prepare for future math learning in calculus, linear algebra, and discrete mathematics.

**Instructor Goal:** Provide a well-structured course in which each student a) is successful, b) enjoys the learning experience, and c) gains skill and confidence in logical reasoning.

**Topics to be covered:** Numbers, functions, sequences, series, counting problems, graphs of functions, inverse functions, polynomials, rational functions,  $n$ -th roots, exponential functions, logarithms, piecewise defined functions, matrices, and matrix equations.

## Expected Learning Outcomes:

- Sketch the graph of basic polynomials (second and third order), rational, radical, exponential, logarithmic, and piecewise functions with or without transformations. Be able to identify important points such as  $x$  and  $y$  intercepts, maximum or minimum values; domain and range; and any symmetry.
- For rational functions, identify  $x$  and  $y$  intercepts, vertical, horizontal and oblique asymptotes (end behavior), and domain. Use information to sketch graphs of functions.
- For polynomial functions identify all zeros (real and complex), factors,  $x$  and  $y$  intercepts, end behavior and where the function is positive or negative. Use information to sketch graphs.
- Understand the relationships between graphic, algebraic, and verbal descriptions of functions.
- Given the graph of a function, be able to identify the domain, range, any asymptotes and/or symmetry,  $x$  and  $y$  intercepts, as well as find a rule for the function if it is obtained from a standard function through transformations.
- Define  $i$  as the square root of  $-1$  and know the complex arithmetic necessary for solving quadratic equations with complex roots.
- Solve absolute value, linear, polynomial, rational, radical, exponential and logarithmic equations and inequalities.
- Find the inverse of a function algebraically and graphically.
- Perform composition of functions and operations on functions.

- Understand sequences and be able to differentiate between geometric, arithmetic and others such as Fibonacci-type sequences, giving direct formulas where available or a numeric representation.
- Understand series notation and know how to compute sums of finite arithmetic and finite and infinite geometric series.
- Solve systems of equations (3 x 3 linear) and non-linear equations in two variables.
- Make sense of algebraic expressions and explain relationship among algebraic quantities including quadratic, exponential, logarithmic, rational, radical, and polynomial expressions, equations and functions.
- Represent and interpret “real world” situations using quadratic, exponential, logarithmic, rational, radical, and polynomial expressions, equations, and functions.

**Text:** The text is available on the course canvas page. You may print or download any portion you would like, or may view it entirely online. Homework is also entirely available on the course Canvas page.

**Calculators:** Calculators will be useful for homework, but will not be permitted on exams.

**Homework:** All homework is to be completed on MyOpenMath, which you will access on the course Canvas page. Due dates for homework assignments can also be found there. *Late homework will not be accepted.* The SI, TA, or I will answer any questions you may have about your homework. Additionally, you may work with others on assignments and you may submit unlimited answers for each prompt. *Please note, homework is a substantial part of your grade for the course (15%), it is to your benefit to do all your homework—partial credit is better than no credit.*

**Quizzes:** There will be 8-10 weekly quizzes (Fridays when there is no midterm.) **You must be in attendance to take the quiz**, however the three lowest quiz scores will be dropped.

**Attendance:** Like any college course, attendance is not “mandatory.” However, concepts will be thoroughly explained and reviewed in class, thus it is to your absolute benefit to attend all classes. Students who regularly attend score on average 30% higher on exams than those who do not.

**Important dates:**

Classes will meet every Monday, Wednesday, and Friday with the exception of Labor Day (Sept. 3) and Fall Break.

*There will be no class:*

Monday, September 3 (Labor Day. Day)

Monday – Friday, October 8 – 12 (Fall Break)

Thursday - Friday, November 22 - 23 (Thanksgiving Break)

**MIDTERMS:**

**Friday, September 21**

**Friday, October 26**

**Friday, November 30**

**FINAL:**

**FRIDAY, December 14, 1:00 – 3:00** (see <https://registrar.utah.edu/academic-calendars/final-exams-fall.php>). The location will be announced in class.

**There are no “make-up” exams or quizzes.** Students who miss an exam or quiz will receive a “0” on the missed exam.

**Grades:** Numerical semester scores will be determined using the following formula: 15% homework, 7% quizzes, 18% *each* midterm exam, 24% final exam. The three lowest quiz scores will be dropped. Your score on the final exam will replace your lowest midterm score or you will receive a 2% bonus to your final **exam** grade, whichever results in the highest grade. You may NOT drop the final.

Semester letter grades will be converted from numerical semester scores (N) as follows:

$100 \geq N \geq 93$ : A

$93 > N \geq 90$ : A-

$90 > N \geq 88$ : B+

$88 > N \geq 83$ : B

$83 > N \geq 80$ : B-

$80 > N \geq 78$ : C+

$78 > N \geq 73$ : C

$73 > N \geq 70$ : C-

$70 > N \geq 68$ : D+

$68 > N \geq 63$ : D

$63 > N \geq 60$ : D-

$60 > N$  :E

## **ADDITIONAL RESOURCES:**

**Mathematics Tutoring Center:** Drop in, sit down, and if you have a question, someone will come by who can help you. There are also study areas free of tutors, a computer lab, group study rooms available through reservations, and group tutoring sessions that can be arranged to meet at a regular time. Located on 1st Floor of JWB or LCB. Open 8am-8pm MTWH; 8am-6pm F.

**CANVAS Page for the course:** The course has a Canvas page where all information will be kept including the link to your textbook, MyOpenMath, information about lecture videos, and reviews for exams.

**Math Department Video Lectures:** Video lectures are available at:  
<http://www.math.utah.edu/lectures/math1050.html>

**Supplementary Instruction:** Schedule and location will be discussed the first week of class. Postings for weekly sessions can also be found on the course Canvas page.

**TA:** The TA is available to meet with students individually.