

# Syllabus

## College Algebra Math 1050-008, Spring 2020

Instructor: Qixian Zhao

Office location: JWB 327

Contact: [zhao@math.utah.edu](mailto:zhao@math.utah.edu); or by Canvas message.

Office Hours: MF 4:30 – 5:30; TuTh 11:45 - 12:45; or by appointment.

Lectures: MTWF 10:45 – 11:35, WEB 1250.

**Textbook:** Available on Canvas – Modules – Textbook. Solutions to exercises on the textbook are also on Canvas. We will cover Chapters 1 – 4, 6 and 7.

**Attendance:** Attendance is not mandatory.

**Homework (15% of semester grade):** All homework is to be completed online through Canvas – Assignments (it may not be available until the second week). Due dates for homework assignments can also be found there. Assignments will be automatically closed after the due dates, although exception can be made for special circumstances. 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.

**Quizzes (7% of semester grade):** There will be 10 weekly quizzes, usually on Fridays, at the beginning of class. The planned schedule for the quizzes are on Canvas. **You must be in attendance to take the quiz.** Quizzes will usually focus on materials from the same week (sometimes from Friday of the previous week).

**Midterms (54% of semester grade):** There are three midterms, each contributing **18%** of semester grade.

**Final (24% of semester grade):** Final exam will cover materials learned in the semester, not just

**Grades: 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-point 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

$83 > N \geq 80$ : B–

$70 > N \geq 68$ : D+

$93 > N \geq 90$ : A–

$80 > N \geq 78$ : C+

$68 > N \geq 63$ : D

$90 > N \geq 88$ : B+

$78 > N \geq 73$ : C

$63 > N \geq 60$ : D–

$88 > N \geq 83$ : B

$73 > N \geq 70$ : C–

$60 > N$  :E

**Important dates:**

Classes will meet MTWF 10:45 – 11:35 in WEB 1250, with the exceptions of holidays.

**MIDTERMS:**

*Friday, February 7*

*Friday, March 6*

*Friday, April 10.*

**FINAL:**

**TBD.**

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

**Exam Preparation:** There are several practice materials available:

- Problems in the Textbook: there are practice problems after each section of the textbook. Solutions can be found in Canvas – Modules (or Home).
- Homework assignments: before the due date, you have unlimited number of attempts for each homework assignment. After the due date, you can generate new sets of problems in each assignment for practice.

Midterms and the Final will take similar form to homework problems, except on the exams problems are more integrated. So homework problems are helpful.

On weeks where we have exams, lectures will focus on review rather than on new materials.

There will be no practice exams.

**Other things:**

**NOTE about Math 1050:** Very few majors on campus require Math 1050. Math 1050 is a technical mathematics course designed primarily to prepare students for calculus. The general education QA requirement is also fulfilled by Math 1030 or Math 2000 for students not needing 1050 for their degree program. These courses are a better fit for those majors that do not require 1050.

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

**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 Outcome:**

1. 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.

2. For rational functions, identify x and y intercepts, vertical, horizontal and oblique asymptotes (end behavior), and domain. Use information to sketch graphs of functions.
3. 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.
4. Understand the relationships between graphic, algebraic, and verbal descriptions of functions.
5. 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.
6. Define  $i$  as the square root of  $-1$  and know the complex arithmetic necessary for solving quadratic equations with complex roots.
7. Solve absolute value, linear, polynomial, rational, radical, exponential and logarithmic equations and inequalities.
8. Find the inverse of a function algebraically and graphically.
9. Perform composition of functions and operations on functions.
10. 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.
11. Understand series notation and know how to compute sums of finite arithmetic and finite and infinite geometric series.
12. Solve systems of equations ( $3 \times 3$  linear) and non-linear equations in two variables.
13. Make sense of algebraic expressions and explain relationship among algebraic quantities including quadratic, exponential, logarithmic, rational, radical, and polynomial expressions, equations and functions.
14. Represent and interpret “real world” situations using quadratic, exponential, logarithmic, rational, radical, and polynomial expressions, equations, and functions.

## **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.

**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 sometime on the first a few weeks of class.

### **ADA Statement:**

The University of Utah seeks to provide equal access to its programs, services, and activities for people with disabilities. If you will need accommodations in this class, reasonable prior notice needs to be given to the Center for Disability and Access, 162 Olpin Union Building, 801-581-5020. CDA will work with you and the instructor to make arrangements for accommodations. All written information in this course can be made available in an alternative format with prior notification to the Center for Disability and Access.

### **Addressing Sexual Misconduct:**

Title IX makes it clear that violence and harassment based on sex and gender (which includes sexual orientation and gender identity/expression) is a civil rights offense subject to the same kinds of accountability and the same kinds of support applied to offenses against other protected categories such as race, national origin, color, religion, age, status as a person with a disability, veteran's status or genetic information. If you or someone you know has been harassed or assaulted, you are encouraged to report it to the Title IX Coordinator in the Office of Equal Opportunity and Affirmative Action, 135 Park Building, 801-581-8365, or the Office of the Dean of Students, 270 Union Building, 801-581-7066. For support and confidential consultation, contact the Center for Student Wellness, 426 SSB, 801-581-7776. To report to the police, contact the Department of Public Safety, 801-585-2677(COPS).

### **Official Dates:**

The last day to drop classes is Friday, January 17; the last day to withdraw from this class is Friday, March 6. Please check the academic calendar for more information pertaining to dropping and withdrawing from a course. Withdrawing from a course and other matters of registration are the student's responsibility.

**Wellness Statement:**

Personal concerns such as stress, anxiety, relationship difficulties, depression, cross-cultural differences, etc., can interfere with a student's ability to succeed and thrive at the University of Utah. For helpful resources contact the Center for Student Wellness at [www.wellness.utah.edu](http://www.wellness.utah.edu) or 801-581-7776.

**Safety Statement:**

The University of Utah values the safety of all campus community members. To report suspicious activity or to request a courtesy escort, call campus police at 801-585-COPS (801-585-2677). You will receive important emergency alerts and safety messages regarding campus safety via text message. For more information regarding safety and to view available training resources, including helpful videos, visit [safeu.utah.edu](http://safeu.utah.edu).