MATH 1050-008 College Algebra, Spring 2023

Class Meetings: Lecture: MTWF at 10:45am-11:35am FASB 295
Instructor: Keshav Patel (he/him/his) (pronounced like KAY-shove)
Email: patel@math.utah.edu
Office Hours: Tuesday 2:00pm-3:00pm, Friday 11:40am-1:00pm

Textbook: The department has written their own text for the course. an e-version of the textbook is provided in Canvas for free.
Course Information: MATH 1050 is a 4 credit course.
Course Description: Functions, inverses and graphs; polynomial, rational, radical, exponential and logarithmic functions; systems of equations and matrices; applications; arithmetic and geometric sequences and series. Recommended prerequisite is MATH 1010 with a C or better, an Accuplacer AAF score of at least 245, an ACT math score of at least 23, or an SAT math score of at least 570. This is a 4 credit hour course that satisfies a quantitative reasoning requirement.

REQUIRED TECHNOLOGY: An internet-connected device to complete homework and quizzes.

Canvas: Canvas will be used for posting course announcements, accessing homework assignments, grades, textbook, lecture notes, in-class assignments and any relevant supplementary material. Quizzes will also be assigned through Canvas. Students can access the Canvas page through CIS or by logging in at https://utah.instructure.com. Students should check the Canvas page regularly for course information and resources. Email notifications and correspondence will be sent to the student's UMail address ([u-number]@utah.edu); this email account must be checked regularly. From their Canvas page, students can directly enter IMathAS to complete homework assignments and Gradescope to view feedback on their midterms and final.

IMathAS: Internet Mathematics Assessment System (IMathAS) will be used to administer, submit, and grade homeworks.

Grading: The following are the grade components and the percentage each contributes to a student's final grade:

- **Homework Assignments (20%)-** There will be one homework assignment for each section of the textbook we cover. A set of two or three assignments will typically be due on Fridays by 11:59 pm via IMathAS. The homework will typically cover material covered up to and including the preceding Monday. The system automatically grades your questions and gives you feedback on your answer. For each question, students have up to five tries to answer the question. A few homework assignments will be dropped at the end of the semester at the discretion of the instructor. Late homework will, in general, not be accepted.

- **Quizzes (15%):** Quizzes will be given most Fridays to see where students are at with the material. The quizzes will be composed of 1-2 questions covering the material since the previous Friday's class. The quizzes should be available from Friday through Sunday. The quizzes will be open book and note and have no time limit. The quizzes will be administered via Canvas. They are multiple choice. Some number of quizzes will be dropped at the end of the semester at the discretion of the instructor.

- **Midterm Exams (40%, 20% each)-** Two 50-minute midterm exams will be given in-class. The exams will cover approximately two and a half chapters worth of material. A practice exam will be posted a week prior to the midterm that will cover the same material. **Dates of the midterm exams are tentatively scheduled for Friday, February 17th and Friday, April 7th.** Midterms will be closed note and closed book. An alternate exam can be requested in the case of serious emergencies or university excused absenses, but they can only be given BEFORE the original exam date, not after. Therefore, it is up to the student to notify me immediately so that we can plan accordingly. Regrade

requests must be made via Gradescope within one week of when the exam's grade was posted. After the midterm has been graded, student will have the opportunity to submit reflections on what they got wrong for partial credit back on the question. These reflections are due one week after midterm grades are posted.

- **Final Exam (25%)**- A two-hour comprehensive exam will be given. This exam is a common exam that every MATH 1050 student will take at the same time. As with the midterms, a practice final will be posted a week prior. Our final exam is scheduled for **Friday, April 28th, from 1:00-3:00 PM**. The final can not be rescheduled. The final will be closed note and closed book. If a student's final exam grade is higher than a midterm grade, I will replace ONE midterm grade with their final exam grade.

Students with university excused absences (band, debate, student government, intercollegiate athletics) should make alternate arrangements with me as soon as possible if the absence interferes with any course components.

Final course letter grades will be determined according to this table:

Greater Than Or Equal To (%)	Lesser Than (%)	Grade
93	∞	A
90	93	A-
87	90	B+
83	87	B
80	83	B-
77	80	C+
73	77	C
70	73	C-
67	70	D+
63	67	D
60	63	D-
0	60	E

I retain the right to modify this grading scheme during the course of the semester; students will, of course, be well notified of any adjustments.

Calculators: Calculators will not be allowed on exams. They may be used on homework, but students should still write out the details of the computation. It is in the student's best interest not to become too dependent on a calculator since they will not be allowed on exams.

Tips for success:

- Math is collaborative! Discussing example problems will be an important aspect of lectures, and students are encouraged to work on homework together. However, every student should submit their own assignments, and assignments should contain the individual's own work, not a copy of someone else's work. Exams will be individual assessments, so make sure everyone in the group understands the solutions to homework problems so everyone is prepared for the exams.

- A large component of lectures will be focused on practice problems. This is another place where collaboration is encouraged. While attendance and participation are not mandatory for this course, it.is a good idea to come to lecture and work with others to answer problems.

- For each credit hour a student is registered for, a student is expected to spend no more than three hours per week on that course's material. Because MATH 1050-008 is worth four credits, this equates to no more than 12 hours per week. Four hours are taken up by lecture, four hours should be devoted

to homework (either by yourself or in small groups), and the last four hours should be spent studying the material, going to office hours, using the Tutoring Center (see Additional Resources), etc.

Additional Resources:

- **Video Recordings**- The following url is a link to old resources for this course, including lecture videos: https://www.math.utah.edu/lectures/math1050.php

- **Tutoring Center & Computer Lab**- There is free tutoring in the T. Benny Rushing Mathematics Student Center (room 155, the lower level between JWB and LCB), as well as a computer lab. For more information see http://www.math.utah.edu/undergrad/mathcenter.php

- **Private Tutoring**- ASUU Tutoring Center, 330 SSB. There is also a list of tutors at the math department office JWB 233.

Expected Learning Outcomes: Upon successful completion of this course, a student should be able to:

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 (3×3 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.

COVID Recommendations: University leadership urges all faculty, students, and staff to model the vaccination, testing, and masking behaviors we want to see in our campus community. These include:

- Get a COVID-19 vaccination if students have not already done so. Vaccination is proving highly effective in preventing severe COVID-19 symptoms, hospitalization and death from coronavirus. Vaccination is the single best way to stop this COVID resurgence in its tracks. Visit http://mychart.med.utah.edu/, http://alert.utah.edu/covid/vaccine, or http://vaccines.gov/ to schedule a vaccination.

- If the student is not yet vaccinated, get weekly asymptomatic coronavirus tests. This is a helpful way to protect oneself and others because asymptomatic individuals can unknowingly spread the coronavirus to others. Saliva based testing is available at https://alert.utah.edu/covid/testing

- All of us, including faculty, students, and staff, must self-report if we test positive for COVID-19 via this website: https://coronavirus.utah.edu/.

Student Responsibilities: All students are expected to maintain professional behavior in the classroom setting, according to the Student Code, spelled out in the Student Handbook. Students have specific rights in the classroom as detailed in Article III of the Code. The Code also specifies proscribed conduct (Article XI) that involves cheating on tests, plagiarism, and/or collusion, as well as fraud, theft, etc. Students should read the Code carefully and know they are responsible for the content. According to Faculty Rules and Regulations, it is the faculty responsibility to enforce responsible classroom behaviors, and I will do so, beginning with verbal warnings and progressing to dismissal from and class and a failing grade. Students have the right to appeal such action to the Student Behavior Committee. http://regulations.utah.edu/academics/6-400.php

Office of the Dean of Students: The Office of the Dean of Students is dedicated to being a resource to students through support, advocacy, involvement, and accountability. It serves as a support for students facing challenges to their success as students, and assists with the interpretation of University policy and regulations. To contact the Office of the Dean of Students, please email deanofstudents@utah.edu or call 801-581-7066. There is more information at https://deanofstudents.utah.edu/.

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 the class, reasonable prior notice needs to be given to the Center for Disability & Access, 162 Olpin Union Building, 801-581-5020. CDA will work with us to make arrangements for accommodations. All written information in this course can be made available in alternative format with prior notification to the Center for Disability & Access.

University Counseling Center: The UCC staff is committed to supporting the mental health needs of our campus community. Their phone number is 801-581-6826. Their hours are Monday-Friday, 8:00am-5:00pm. For after-hours emergencies, contact the 24/7 Crisis Line: 801-587-3000. More information is at https://counselingcenter.utah.edu/.

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, veterans 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).

Student Names and Personal Pronouns: Class rosters are provided to the me with the students legal name as well as Preferred first name (if previously entered by you in the Student Profile section of your CIS account). While CIS refers to this as merely a preference, I will honor you by referring to you with the name and pronoun that feels best for you in class, on papers, exams, group projects, etc. Please advise me of any name or pronoun changes (and update CIS) so I can help create a learning environment in which

you, your name, and your pronoun will be respected. If you need assistance getting your preferred name on your UIDcard, please visit the LGBT Resource Center Room 409 in the Olpin Union Building, or email bpeacock@sa.utah.edu to schedule a time to drop by. The LGBT Resource Center hours are M-F 8am-5pm, and 8am-6pm on Tuesdays.

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 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 https://safeu.utah.edu.

Course Roadmap Week-by-Week: Below is an outline of the sections and topic covered in this course. Schedule subject to change

Week	Topics	Sections	Assignments Due
Week 1	Introduction, Functions	1.1, 1.2	Quiz 1, HW 0
Week 2	Function Transformations and Inverses	1.2, 1.3, 1.4	Quiz 2, HW 1.1, 1.2
Week 3	Polynomial Functions	1.4, 1.5, 2.1	Quiz 3, HW 1.3, 1.4
Week 4	Zeros of Polynomials	2.1, 2.2	Quiz 4, HW 1.5, 2.1
Week 5	Polynomials and Rational Functions	2.3, 2.4, 2.5	Quiz 5, HW 2.2, 2.3, 2.4
Week 6	Midterm Review	3.1	Midterm 1 (1.1-2.5)
Week 7	Rational Functions	3.2, 3.3	Quiz 6, HW 2.5, 3.1, 3.2
Week 8	Exponential and Logarithmic Functions	3.3, 3.4	HW 3.3
	SPRING BREAK		
Week 9	Exponential and Logarithmic Functions	4.1, 4.2	Quiz 7, HW 3.4, 4.1
Week 10	Systems of Equations	4.3, 4.4	Quiz 8, HW 4.2, 4.3
Week 11	Matrices	4.5, 6.1, 6.2	Quiz 9, HW 4.4, 4.5
Week 12	Midterm Review		Midterm 2 (3.1-6.2)
Week 13	Matrices, Sequences	6.3, 6.4	Quiz 10, HW 6.2, 6.3, 6.4
Week 14	Series, Final Review	7.1, 7.2	Quiz 11, HW 6.5, 7.1, 7.2
Week 15	Final Review		Final Exam