

# Math 1010 - Intermediate Algebra (4 cr)

## Spring 2020 Syllabus

**Instructor:** Tom Brennan

**Class meetings:** T, Th 5:15-7:15 pm

**E-mail address:**

tombrennan@waterfordschool.org

**Website:** Canvas

### Required Materials:

- Math 1010 Course Packet, *Spring 2020, A Workbook for Math 1010, A Functional Approach to Intermediate Algebra*. Purchasing information will be sent out to students when the purchasing link is available and will be available on Canvas once the semester starts.
- Consult with your instructor on a topic-by-topic basis for additional online resources.

### Dates:

Mon 1/6 First Day of Class

Fri 1/17 Last Day to Add/Drop

Fri 1/17 Last Day to Elect CR/NC or Audit

Mon 1/20 Martin Luther King, Jr. Day Holiday

Mon 2/17 Presidents' Day Holiday

Fri 3/6 Last Day to Withdraw

Sun-Sun Mar 8-15 Spring Break

Wed 4/17 Last Day to Reverse CR/NC option

Tues 4/21 Last Day of Class

Tue 2/11 Midterm Exam 1

Tue 3/17 Midterm Exam 2

Tue 4/14 Midterm Exam 3

Fri 4/24, 3:30-5:30 pm, Final Exam

**Course Description:** Mathematics is a sense making activity to understand the world we live in. Scientists, social scientists, engineers, business leaders, health care providers, and politicians require a high degree of quantitative literacy to accomplish their goals. In this course, students will become adept at working with linear, exponential, basic logarithmic, quadratic, square root, and power functions, and see how these functions can be used to describe and analyze some of the most difficult problems our society faces. Along the way, functions are used to motivate important topics including evaluating expressions, solving equations and inequalities, graphing, and analyzing graphs.

**PREREQUISITES:** "C" or better in (MATH 980 OR Math 990) OR Accuplacer EA score of 54 or better OR ACT Math score of 18 or better OR SAT Math score of 470 or better.

*Important Note:* The mathematics department DOES enforce prerequisites for all our undergraduate courses. If you were able to register for this class based on your enrollment in the prerequisite course last semester, and you did not receive the minimum grade in that course to continue on with your math classes, then you will be dropped from this class on Friday of the first week of classes. If that is the case for you, then it is in your best interest to drop yourself from this class before you are forcibly dropped and get into a class for which you have the prerequisites.

**AFTER MATH 1010:** Math 1010 is designed to prepare students who are entering STEM, business, and education fields for their future math classes. Math 1010 is also a prerequisite for such courses. The following grades in Math 1010 are needed to proceed:

- C in Math 1010 for Math 1050 (College Algebra) or Math 1090 (Business Algebra)
- B- in Math 1010 for Math 4010 (Mathematics for Elementary School Teachers I)
- B in Math 1010 for Math 1080 (Precalculus which is an accelerated College Algebra-Trig course)

Note, Math 1010 is not the ONLY prerequisite. You can also enter the above courses with certain ACT or Accuplacer scores or other class scores. Use this link for information about prerequisites: [http://catalog.utah.edu/preview\\_entity.php?catoid=14&ent\\_oid=1782&returnto=1554](http://catalog.utah.edu/preview_entity.php?catoid=14&ent_oid=1782&returnto=1554).

If you are in a major with no math requirement other than the university's QA requirement, then MATH 1030 (Introduction to Quantitative Reasoning), is likely the best math class for you. Note, the prerequisite cut-offs for Math 1010 and Math 1030 are close to each other: an ACT score of 18 gets you into Math 1010; an ACT score of 19 gets you into Math 1030. If you were able to register for Math 1010 based on your ACT score but want to be in Math 1030, consider taking the Accuplacer placement exam, and trying to test into Math 1030 using your Accuplacer score (the Accuplacer placement exam is used by and given at the University of Utah.) You can find information about it here: <http://testingcenter.utah.edu/students/placement-tests/newstudents.php>. Also, to do your best on the Accuplacer, do use the review material (also available from the link).

If you are intending to take Math 1030 (Intro to Quantitative Reasoning) or Math 1040 (Intro to Statistics and Probability), and would like to use a course as your prerequisite, it is suggested that you take Math 980 instead of Math 1010. While Math 1010 is a prerequisite for these classes, it also covers many topics that will not be used in Math 1030 or Math 1040. Either Math 980 or Math 1010 can be used to meet the prerequisite for Math 1070 (Introduction to Statistical Inference) and Math 1090 (Business Algebra).

If you have any questions about which math class to take, you should check with your advisor or meet with a math department advisor. The math department advisors are there for all students at the university who have questions about math classes, not just math majors. You can find information about them at <http://www.math.utah.edu/ugrad/advising.php>.

### **Expected Learning Outcomes:**

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

1. Work with functions presented in tables, graphs, with algebraic expressions, or in words. Determine if relations presented in any of these formats are functions. The functions covered in this course are linear, exponential, logarithmic, quadratic, square root, power, and  $n$ th-root.
2. Find the domain,  $x$ -intercepts,  $y$ -intercepts, output given input, and input given output for all functions presented with tables, graphs, or algebra. Find the range of functions presented graphically.
3. Know the shapes of the graphs of all the above functions. Be able to recognize when a sufficient portion of the graph is sketched in order to indicate the graph shape.
4. Decide if a given function is linear, quadratic, exponential, or none of the above for functions presented algebraically, graphically, or in tables.

5. Graphing Techniques Vary by Function
  - a. Graph linear functions using either two points or one point and a slope.
  - b. Graph quadratic functions using either of these approaches:
    - i. the  $x$ -intercepts and the vertex (or line of symmetry);
    - ii. the vertex and an efficient table (be able to use symmetry and possibly the  $y$ -intercept).
  - c. Graph logarithmic functions with no transformations using the meaning of the logarithm.
  - d. Graph exponential and square root functions, when given in transformation form, using efficient tables.
  - e. Graph power functions and  $n$ th-root functions with no transformations using tables.
6. Solve linear, quadratic, exponential, logarithmic and square root equations.
  - a. Solve quadratic equations using factoring and the zero-product property, completing the square, and the quadratic formula.
7. Solve linear inequalities and give answers in inequality, interval, and graphical (number line) format.
8. Determine the slope of a line; find the equations of lines given information about them. Decide if lines are parallel, perpendicular, or neither.
9. Solve 2x2 systems of linear equations and functions using graphical and substitution methods.
10. Be able to factor quadratic expressions or decide if they cannot be factored; complete the square.
11. Perform composition of functions presented with tables, graphs, or algebra.
12. Decide if a function presented with a table or graph is invertible and give the inverse in the same format.
13. Find the algebraic inverse of a linear function presented algebraically.
14. Make sense of exponent rules, negative exponents, and rational exponents. Use exponent rules to simplify exponential expressions.
15. Understand  $n$ th-roots, rational exponents and the connection between the two. Simplify  $n$ th roots and exponential expressions with rational exponents.
16. Construct algebraic models to describe real life situations. Be able to decide what type of model fits a situation best:
  - a. Use linear functions to model constant rates of growth.
  - b. Use exponential functions to model constant percent change.
  - c. Use quadratic functions to model constant acceleration.
17. Analyze linear, exponential, and quadratic models to answer questions about the situations they represent. In particular, relate graphical features (like the  $x$ - and  $y$ -intercepts of all functions or the vertex of a parabola) to specific aspects of the situation being modeled. For quadratics, be able to rewrite the function appropriately in order to find the information desired.

## Teaching and Learning Methods:

- In class: We will be working through the course packet in class. You can expect to:
  - Work with your partner(s) on the problems in class,
  - Have whole class discussions and short lectures on pertinent material,
  - Engage in problem solving during class. During these sessions you will work together in groups of two or three. The instructor and learning assistants will be available during each session to help you as necessary. On occasion you may be asked to turn in your work.
- Lab worksheets are sets of problems written to help you practice course concepts, engage with the material more deeply, and make connections between different topics. Some are intentionally written as reviews for exams. To get the most out of a lab, it is recommended that you work on the lab with guidance from a Learning Assistant and in a small group. Your teacher will give you your lab worksheet every week and collect it the following week. You then have two options to complete it:
  1. Attend an on-campus Math 1010 lab. You may attend any lab that is on campus. When you go, please introduce yourself to the Learning Assistant leading the lab and be prepared to work in groups with other students. At the end, all other students will turn their labs in to the Learning Assistant, but you will keep yours to give to your teacher. To find out which labs have availability, please go to [https://student.apps.utah.edu/uofu/stu/ClassSchedules/main/1204/class\\_list.html?subject=MATH](https://student.apps.utah.edu/uofu/stu/ClassSchedules/main/1204/class_list.html?subject=MATH) And select "1010" of a lab to check if it has seats available.
  2. Not attend an on-campus lab and complete the worksheet on your own. Attending a lab is recommended, but not required. You may choose different options every week, though you will likely be most helped by trying to have as much continuity as possible.
- Homework: Working through problems and getting feedback on whether your process and calculations are correct is an important part of understanding material. WeBWork is an online homework website that gives you instant feedback on your work. It will allow you as many tries as you need to complete most problems, with the exception of multiple choice questions that typically only allow you one attempt. We will answer questions you have about the homework in class if time permits. There will be several sections due each month with due dates announced in class. You will be able to access WeBWork using links in Canvas.

There are certain topics where there are not sufficient WeBWork problems to practice the material. Paper-based supplements may be assigned and collected in class. Grades on these will go to your WeBWork grade. There may be occasional graded surveys and quizzes in Canvas that will also count towards your WeBWork grade. Due dates for these will be available on Canvas and announced in class.

- In-Class Quizzes: Short quizzes will be given weekly. These quizzes will be based on the course packet content, WeBWork, and labs. If you have questions about concepts/problems in any of these, ask about them! The quizzes provide feedback on your understanding of the course material and ability to explain this understanding. Use this feedback to prepare for exams.

**Course Grade Components:** Semester grades will be calculated as follows:

HERE IS A SUGGESTED ALTERNATIVE:

Quizzes	12.5%	Weekly
Labs	12.5 %	Weekly
Homework (WeBWork)	10%	Monthly
Midterms	35%	Three total
Final Exam	30%	You have to take the final to pass the course!.

**Scoring Information for the Above Activities:**

- Lab Worksheets: Scoring is as follows: 5 points for making a reasonable effort and being mostly correct, 3 points for a reasonable effort, 1 point for making a really weak effort, and zero points for not turning in the worksheet. The lowest lab score will be dropped at the end of the semester.
- WeBWork: You will receive credit for each problem you submit. There is no submit button at the end of each assignment...all you do is answer problem by problem.
- Quizzes: The lowest two quiz scores will be dropped.
- Midterm Exams: There are three in-class midterms.
- Final Exam: The final exam for this class is comprehensive. The date is above and the location will be announced.

This is a departmental final, which means all students in all Math 1010 classes both on and off campus take the final exam on the same day and at the same time, instead of during the slot that is assigned based on class meeting time. You are required to take it at this time, unless you have multiple finals scheduled for the same time slot. If this applies to you, inform your instructor by the deadline given in class. (Tardy notification of your instructor may result in a penalty on your exam). For all other students, make school/work/family arrangements at the start of the semester to be able to take the common final.

**Grading Scale:** The grading scale is: A (93,100), A- [90,93), B+ [87,90), B [83,87), B- [80,83), C+ [77,80), C[72,77), C- [69,72), D+ [66,69), D [60,66), D- [50,60), E [0,50).

**Additional support:** This course is designed to challenge students. You may require additional support:

- Come to my office hours. This time is scheduled for you to come and ask questions on any of the material covered in class/homework/exams or any mathematical inquiry you may have.
- The math department offers free drop-in tutoring for students enrolled in this class. The center is located underneath the walkway between LCB and JWB and can be accessed by entering either building. They are open Monday - Thursday 8 AM - 8 PM and Friday 8 AM - 6 PM.
- A list of private tutors is available from the Math Department office.

**Accommodations:** 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, 581-5020 (V/TDD). CDA will work with you and the instructor to make arrangements for accommodations. All information in this course can be made available in alternative format with prior notification to the Center for Disability & Access.

**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. You 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, collusion, fraud, theft, etc. Students should read the Code carefully and know you are responsible for the content. According to Faculty Rules and Regulations, it is the faculty responsibility to enforce responsible classroom behaviors, beginning with verbal warnings and progressing to dismissal from 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>.

**Student Names & Personal Pronouns:** Class rosters are provided to the instructor with the student's 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 UID card, please visit the LGBT Resource Center Room 409 in the Olpin Union Building, or email [bpeacock@sa.utah.edu](mailto: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.

**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).

**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.

**Veterans Center:** If you are a student veteran, the U of Utah has a Veterans Support Center located in Room 161 in the Olpin Union Building. Hours: M-F 8-5pm. Please visit their website for more information about what support they offer, a list of ongoing events and links to outside resources: <http://veteranscenter.utah.edu/>. Please also let me know if you need any additional support in this class for any reason.

**Learners of English as an Additional Language:** If you are an English language learner, please be aware of several resources on campus that will support you with your language and writing development. These resources include: the Writing Center (<http://writingcenter.utah.edu/>); the Writing Program (<http://writing-program.utah.edu/>); the English Language Institute (<http://continue.utah.edu/eli/>). Please let me know if there is any additional support you would like to discuss for this class.

**University 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).

**Faculty and Student Responsibilities:**

1. You will receive regular communication from me in Canvas about the assignments and other information. I expect you will read those in a timely manner. (If you do not check Canvas mail regularly, forward it to an address you do check often). I am happy to respond to any questions you have, but check my previous communication to make sure they were not answered already. All correspondence should be considered a formal means of communication. Please be thoughtful of your tone, grammar, and sentence structure. You may expect me to respond to emails between 9 and 4 Monday through Friday. I am happy to use email to respond to questions that have short answers. Please see me in office hours or make an appointment for more involved discussions.
2. In an effort to create a vibrant learning community, extraneous use of cell phones and other electronic devices is not allowed. Turn them off and put them away. Use of electronic devices distracts you, those around you, and me. If you are using a computer to take notes, it must lie flat on the desk. (No computers with open screens). If you need to use your phone during class, please leave the classroom. You will be asked to leave if your phone is visible, or if you are using a computer to do anything other than take notes.
3. You will be allowed to use a scientific calculator on all exams and most quizzes. A graphing calculator will not be allowed on quizzes or exams. You are not allowed to use a cell phone for its calculator in class or on exams.
4. If you have questions about any exam/quiz/homework grade, or you want to appeal the grading of the exam/quiz/homework, you must bring it to me within one week of the first day the exam/quiz/homework was available to be picked up. I am happy to look over your appeal and/or questions and give my feedback in order to benefit your learning.
5. If you do not write both your first and last name on an assignment, you may not receive credit for it.
6. If you cheat on any lab, quiz, exam, or day of clicker questions, you will automatically get a zero for that grade and the incident will be reported to the Dean of Students. Depending on the severity of the cheating, the consequences may be more severe, and I may decide to fail you from the class. Also, if you exhibit any other behavior that are unethical, like offering me a bribe to give you a better grade (even if you later claim you were joking), I will report your behavior to the Dean of Students. Please note that the use (or even just pulling it out of your pocket) of a cell phone, smart watch, or any other electronic device during any in-class exam or quiz is considered cheating and cause for receiving an automatic zero.

7. If your cell phone or another electronic device belonging to you makes noise (including vibrate) during an in-class exam or quiz, you will lose points on that assignment. Make sure that your devices are on silent during class.
8. If a student registers for this section of Math 1010 after the first day of the semester, the assignments that were missed due to adding the class late do not qualify to be made up or excused. For this reason, students considering adding the class after the first day of the semester should talk to their instructor BEFORE registering for this class to learn how many assignments they have missed so that they can make an informed decision about whether or not to register for the class.
9. The syllabus is not a legally binding contract. As the instructor, I reserve the right to change any portion of the syllabus provided you are given enough notice.

## MATH 1010 MAKE-UP POLICY

### EXAMS

There are three types of absences for which midterm exams can be made up:

- university-excused absences that are known ahead of time (e.g. officially sanctioned University activities (e.g., band, debate, student government, intercollegiate athletics), or government obligations (e.g., military duty), or religious obligations);
- personal absences due to reasons beyond the control of the student that are known in advance (like required surgery, but not vacation or work schedules);
- absences that arise suddenly due to extreme reasons beyond the control of the student (for example, illnesses, deaths in the family, or last-minute university-related sports activities.)

For absences known in advance, a student must submit third-party documentation to their instructor early in the semester. For absences that arise suddenly, the student should notify their instructor of the situation as soon as possible. Documentation is preferred, but students should contact their instructor to describe the circumstances even if documentation is not available.

If possible, please send the documentation by e-mail (scanning and attaching documents works well). This creates a record that both the student and instructor can refer back to.

Students with planned absences when exams are given must take an alternate exam BEFORE they go. Usually these will be taken at the Exam Services at the Marriott Library. This center is typically open from 9am-5pm Monday-Friday, from 9am-8pm on Thursday and from 9:30am-1:30pm on Saturday. Students must register for a time-slot to take their exam. If it is convenient for both the student and instructor, other times and locations can also be used for make-up exams.

For planned absences, students must send their instructor notification of the absence by e-mail between 5 and 10 business days before their last day on campus. For the purposes of this class, business days do not include weekends, university holidays, or university breaks. This gives the instructor 3 days to prepare alternate materials, 1 day for Exam Services to set up the online registration, and 1 day for the student to register for the exam. If a student does not send the notification to their instructor 5 days in advance, they can still contact their instructor and explain the circumstances, but they may get a 0 for the exam.

For unplanned absences, students should notify their instructor as soon as they are able. The student and instructor will discuss options.

### QUIZZES

Since several quizzes are dropped during the semester, quizzes can only be made up for university-excused absences. For planned absences, students must provide documentation and send their instructor notification of the absence by e-mail between 5 and 10 business days before their last day on campus. For the purposes of this class, business days do not include weekends, university holidays, or university breaks. This gives the instructor 3 days to prepare alternate materials, 1 day for Exam Services to set up the online registration, and 1 day for the student to register for the exam. If a student does not send the notification to their instructor 5 days in advance, they can still contact their instructor and explain the circumstances, but they may get a 0 for the quiz.

If a student misses more than the number of dropped quizzes for compelling reasons that are not university-excused absences, they should contact their instructor to discuss options.

## ONLINE HOMEWORK

Most homework assignments are open for windows of more than a week. Students with planned absences (which interfere with completing online homework), should try to turn assignments in early, within the given time window. If they need access to it earlier, they should contact their instructor to have assignments opened early. Work should be completed prior to their absence.

Students with unplanned absences (or life events preventing them from meeting homework deadlines) should contact their instructor. Extensions can be considered on a case-by-case basis. Since extensions cannot be guaranteed in advance, it is recommended that students finish the homework early.