

## Math 1010-019- Intermediate Algebra (4 cr) Fall 2017 Syllabus

Instructor: Aris Papadopoulos

Class meetings: MTWHF, 8:35am-9:25am, Annex Room 2056

Office Hours: Daily 12:00-1:00pm (or by appointment)

Office Location: Annex 2075

E-mail address: apapadopoulos@sa.utah.edu

Website: Canvas

Required Materials:

- Math 1010 Course Packet, Fall 2017, *A Workbook for Math 1010, A Functional Approach to Intermediate Algebra*  
TRIO will provide a free hardcopy of the Workbook to TRIO students. An electronic copy will be also available on Canvas.
- The Workbook is also available for purchase at Fed-Ex (corner of 200 South and University Street)
- Consult with your instructor on a topic-by-topic basis for additional online resources.

### Dates:

Mon 8/21 First Day of Class

Fri 8/25 Last Day to Add without Permission

Fri 9/1 Last Day to Drop/Add

Mon 9/4 Labor Day

10/9 - 10/13 Fall Break

Fri 10/20 Last Day to Audit/Withdraw

11/23 - 11/24 Thanksgiving Break

Thur 12/7 Last Day of Semester

**Fri 9/15 Midterm Exam 1**

**Fri 10/20 Midterm Exam 2**

**Fri 11/17 Midterm Exam 3**

**Tues 12/12, 3:30-5:30 pm Common 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 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.

### 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 expression, 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, and power.
2. Find the domain,  $x$ -intercepts,  $y$ -intercepts, output given the input, and input given the output for all functions presented with tables, graphs, or algebra. Find the range of functions presented graphically.
3. Decide if a given function is linear, quadratic, exponential, or none of the above for functions presented algebraically, graphically, or in tables.
4. 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.
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 both 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 by switching the  $x$ - and  $y$ -values of the corresponding exponential graph.
  - d. Graph exponential and square root functions, when given in transformation form, using efficient tables.
  - e. Graph power functions with no transformations using tables.
6. Solve linear, quadratic, exponential, logarithmic and square root equations.
  - a. Solve quadratic equations using 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  $2 \times 2$  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. 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.
16. Analyze and use linear, exponential, and quadratic models to answer questions about the situations they represent. In particular, relate graphical features (like the  $x$ - and  $y$ -intercepts and the vertex or 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 will help you as necessary. I will also distribute **Practice Sheets**, which will be collected and graded.

These activities are organized for your benefit. Work in class is meant to train you to become better problem solvers, inform you of how well you are understanding the material, and to inform me what we need to focus on. You are required to be in class and engage actively to maximize the benefits of class work. If you prefer to work in your own time, we recommend taking an on-line class that allows this flexibility.

### Grade Components

- **Online 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, and allows you as many tries as you need to complete the problems. We will also answer question you have about the homework in class. There will be two to five assignments every week with due dates announced in class. An invitation to WeBWork will be sent to your Umail address on the first day of class or within two business days if you add the class after that. Make sure to check your Umail regularly or have it forwarded.
- **In class work:** While in class, I will be distributing worksheets with a few problems to work on. I will then collect them and grade them. You have to be in class to do those. I will not accept them in any other way

- **In-Class Quizzes:** Short quizzes will be given weekly. These quizzes will be based on the course packet content and WeBWork. 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. The lowest quiz score will be dropped.
- **Midterm Exams:** There will be **three** midterms. See the **dates** above.
- **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 on-campus Math 1010 classes take it at the same, 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.

#### **Additional Scoring Information for the Above Activities:**

**Absences:** Make-ups for documented absences that are required as part of a University of Utah obligation (e.g. athletes participating in an event, participating in a debate contest, etc.) will be granted. For all make-ups of this type, timely notification prior to the event is required.

For other absences, documentation of a reason beyond your control must be provided and make-ups will be granted only in the most extreme cases and at the sole discretion of the instructor.

**TRIO Math Examination Policy:** Students are strongly discouraged from missing any exams. In the event a student is unable to take an exam for unforeseen reasons, students have ONE WEEK, after the exam to complete it. The make up exam will be taken at the **Testing Center**, and it is the student's responsibility to make appropriate arrangements with the Testing Center to schedule a date and a time. **Note:** The Testing Center charges a small fee to administer an exam. Students will be responsible for this expense.

A student is allowed to make up **only ONE midterm**.

If a student misses the exam and does not make it up in the allotted time the student will receive **zero** points for that exam.

There is **NO make up** for missing the **Final Exam**.

The use of **cell-phones is strictly prohibited** during exams. Students will be asked to store their phone away in the beginning of the exam and keep them stored until the end.

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

In-class work	10%	Daily
Quizzes	15%	Weekly
Homework (WeBWork)	10%	Weekly
Midterms	35%	Three total
Final Exam	30%	You have to take the final to pass the course!

**Grading Scale:** The grading scale is:

A	[90 to 100]
A-	[86 to 89]
B+	[83 to 85]
B	[79 to 82]
B-	[76 to 78]
C+	[73 to 75]
C	[68 to 72]
C-	[65 to 67]
D+	[50 to 54]
D	[45 to 49]
D-	[40 to 44]
E	less than 40

If I do need to curve the grades, I will do so on individual assignments or exams, not on the course grade at the end of the semester.

**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.
- TRIO offers free tutoring which is available in the TRIO common room. In addition TRIO offers vouchers that will allow you to work with an individual tutor from the University Tutoring Center. You need to contact your TRIO academic Advisor to obtain the vouchers.
- 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>.

### Faculty and Student Responsibilities:

1. It is your responsibility to be ready for class. This means you will have the **course packet** and a **calculator** with you at all times.
2. I will post handwritten notes, review problems, the Workbook, and the Syllabus on the Canvas site for the class.
3. If you need to contact me through email, please email me from **your Umail** account to **my Umail** address, **NOT through Canvas, or the WebWork site**. The best way to explain Math is person to person, so try to contact me right before or after class so we can Address your individual question.
4. 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.
5. You will be allowed to use a **scientific calculator** on all exams. A **graphing calculator** will **not be allowed on exams**. You are not allowed to use a cell phone for its calculator in class or on exams.
6. 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 return of the exam/quiz/homework. I a, happy to look over your appeal and/or questions and give my feedback in order to benefit your learning.
7. If you cheat on any lab, quiz or exam, you will automatically get a zero for that grade. Depending on the severity of the cheating, 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.
8. 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.

