Gateway STEM High School/University of Missouri - St. Louis
Course Syllabus

INSTRUCTOR: Mr. Ethan Lightfoot
ROOM: 419 North
E-MAIL: Email Me
CLASS WEBSITE: College Algebra

COURSE NAME AND NUMBER: AC College Algebra/Math 1030 College Algebra (3 credit hours)

COURSE DESCRIPTION: Topics in this course include factoring, complex numbers, rational exponents, simplifying rational functions, functions and their graphs, transformations, inverse functions, solving linear and nonlinear equations and inequalities, polynomial functions, inverse functions, logarithms, exponentials, solutions to systems of linear and nonlinear equations, systems of inequalities, matrices, and rates of change.

ACP ENROLLMENT: In order to receive Math 1030 credit through UMSL, each student will need to enroll through the ACP website found at `http://umsl.edu/acp`. We do this as a class before the due date of **September 1**st.

To obtain 3 hours of credit through UMSL, each student must pass this course with a "C" or above and can only receive those credits **IF** they enroll online.

This course is TOUGH. By signing up for this course, the student acknowledges that in order to obtain college credit, they will have to perform at college level. This includes having appropriate classroom behavior, completion of ALL homework assignments, and having a positive attitude about their classmates and their own learning.

This course is a **NO CALCULATOR** course. In order for a student to receive full college credit through UMSL, this rule will be strictly enforced.

PREREQUISITES: The course prerequisites are:

- 11^{th} or 12^{th} grade standing at Gateway STEM High School with an overall 3.0 or higher GPA. 11^{th} or 12^{th} graders with an overall GPA of 2.5-2.99 must provide a recommendation letter from their principal OR school counselor.
- The following academic requirements must also be met:
  - A Math ACT/ACT score of 22 **OR**
  - Math ACT/ACT score of 21 with a 3.0 GPA and completion of Algebra I and Algebra II with at least a B
  - Math ACT/ACT score of 20 with a 3.0 GPA and completion of Algebra I and Algebra II with at least a B

TEXT: The textbook Algebra and Trigonometry by Blitzer 6^{th} edition, is being used as of Fall 2018. We now align our course to the state standards for precalculus algebra: `https://dhe.mo.gov/documents/PrecalculusAlgebraFINALOctober2017.pdf`.

For this class you do not have to buy a book. The book is online and comes with your MathLabPlus registration. If you really want a physical copy of the book, I would recommend getting an old copy from Amazon.

TECHNOLOGY: This course uses a variety of technologies including many of the assignments being online only. It is imperative that if you are taking this course, that you have access to some sort of computer system which will allow you to gain online access. Throughout the course, we will make trips to the computer labs to give you time to work on assignments, but this will not be enough time for you to necessarily complete all of your assignments.

TOPICS:

Topics in Sequence of Discussions:	**Timeline**
Linear, quadratic, and other types of equations. Linear inequalities and inequalities involving absolute values. Complex numbers. Models and Applications. Using rational exponents to simplify expressions and solve equations.	5 weeks
Functions and graphs. Definition and basic notations of a function. Equations and graphs of linear functions. Transformation, combination, and composite functions. Finding the domain and range of a function. Decomposing functions into basic functions. One-to-one functions. Inverse functions.	5 weeks
Polynomial and rational functions. The quadratic function and its graph. Graph of a circle. Dividing polynomials, remainder and factor theorems. Zeros of polynomials. Graphing polynomials including vertical, horizontal, and oblique asymptotes. Polynomial and rational inequalities.	6 weeks
Exponential and logarithm functions and their properties (including growth, decay, half-life, and doubling) Exponential and Logarithm equations. Comparing/contrasting exponential, logarithmic, linear and power functions	4 weeks
Systems of linear equations with two and three variables. Inconsistent and Dependent systems of equations. Systems of nonlinear equations with two variables. Applications of systems of equations. Graph systems of inequalities.	2 weeks
Perform matrix operations. Using matrices to solve systems with two and three variables.	2 weeks
Constant, Average, and Instantaneous rates of change.	2 weeks

OBJECTIVES:
Upon completion of Math 1030, the student should be able to:

- Use multiple representations of functions to interpret and describe how two quantities change together.
- Measure, compute, describe, and interpret rates of change of quantities embedded in multiple representations.
- Use appropriate tools and representations to investigate patterns and relationships present in multiple function types.
- Create, use, and interpret linear equations and convert between forms as appropriate.
- Create, use, and interpret exponential and logarithmic equations and convert between forms as appropriate.
- Create, use, and interpret polynomial, power, and rational functions.
- Construct, use, and describe transformations, operations, compositions, and inverses of functions.
- Use algebraic techniques to simplify expressions and locate roots.
- Use algebraic reasoning to simplify a variety of expressions and find roots of equations involving multiple function types.
- Use rational exponents to express and simplify a variety of expressions and solve equations.
- Solve and apply systems of equations and inequalities.

CLASSROOM EXPECTATIONS:

The students in room 419 North are expected to:

1. *Respect the materials around you.* Show respect for the material we are learning, the materials available in class, and any material that comes into room 419 North. To show respect, use thoughtful and academic language, and contribute to discussions in a meaningful manner. Any disrespectful language or behavior will NOT be tolerated.
2. *Be ready to start when the bell rings.* This means being in your seat when the bell rings and remain in your seat unless excused by the teacher. All materials are to be gathered and ready to be used when the bell rings at the start of class. The restroom and water fountain are to be used during breaks.
3. *Remain on task throughout the entire class time.* Class time is from bell to bell. Students are expected to begin working when the initial class bell rings and will end work when the dismissal bell rings. Each class will be dismissed by the teacher.

4. *Food and Drinks are to be enjoyed during passing period and at lunch.* Food and drink are not to be consumed in the classroom during class time.

HOMEWORKS: Most of the homeworks in this section will be submitted through MyLabPlus, which you should have access to as a student for this course.

WARNING: You must pay close attention to the due dates of your assignments. It is YOUR responsibility to get your work done on time.

LATE WORK POLICY: Late work will be accepted throughout this course. However, late work will only be accepted up to the unit test for each unit and at a maximum of 50% of the value of the assignment. Do your homework completely and on time and you won't even have to think about this.

ACADEMIC DISHONESTY: Plagiarism is defined as presenting as one's own the words, the work, or the opinions of someone else without proper acknowledgment. Students at Gateway STEM High School are expected to complete their own work, just as they would have to in the post-secondary and professional environment. Plagiarism will result in a zero on the assignment and a referral.

DATES TO REMEMBER:

Last day to drop (Semester 1): November 1, 2019
Last day to drop (Semester 2): February 14, 2020

GRADE ASSIGNMENT: Grades will be determined on the following scale: 100-90 A, 89.9-80 B, 79.9-70 C, 69.9-60 D, Below 60 F

Final grades will be determined by averaging out the semester 1 and semester 2 grades.

AC COLLEGE ALGEBRA/MATH 1030

Course Syllabus Acknowledgement Form

Student and Parent/Legal Guardian Acknowledgement:

I have been provided with access to the course syllabus, understand what is expected of me, fully understand the course expectations and grading outline, and agree with the provision set forth in the syllabus.

This course is offered for dual credit through UMSL if your student registers online.

Student Printed Name	Date
Student Signature	Email Address
Parent Printed Name	Date
Parent Signature	Email Address

☐Check this box if you have read and understand that this course is offered for college credit and that your student must register online to receive that credit.