Chesapeake Bay Governor's School
For Marine and Environmental Science
Glenns Campus

College Algebra (MTH 158)
Fall 2016

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Course Description (RCC MTH 158):
College Algebra is taught to the students in the fall semester of their sophomore year. The course will provide students with the algebraic foundation for Pre-Calculus I and II. College Algebra will take many of the concepts students have been exposed to and give them a more thorough treatment. Students will study radicals and radical equations, polynomials, rational expressions and functions, solving quadratics, domain and range, transformations, and inverses.

Text:
Precalculus, 4th Ed.**;** Blitzer: Prentice Hall; 2010
*Please **cover** this text and keep it covered throughout the year!*

Course Credit: 3 dual enrollment credits/ ½ high school credit

Contact Information:
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Classrooms: For at least the first semester, Monday – Thursday I will be teaching in Room 118 (found in Workforce Development). On Friday I will be teaching in Room 172.

Office: My office is Room 151D. I am available at CBGS from 7:30 AM to 3:00 PM by phone or email and at the home or cell number after school.

Required Materials: Two 3-ring binders, one for each semester, pencils, a large block eraser, and a graphing calculator. (I will be using one of the TI-83 graphing calculators in class. Students are welcome to use a different model, but I will be able to provide only limited assistance.) A limited number of TI calculators are available from the instructor to be checked out if needed—feel free to ask. Graph paper and colored pencils may be useful.

Attendance: Student success has been shown to be linked to attendance; please attend all classes whenever possible. However, I understand that both emergencies illnesses occur. Therefore, at student requests I will be posting all lecture notes and worksheets to Schoology under this course and the materials tab for the given chapter. It will be the student's responsibility to access, print, and review the materials. If further assistance is needed, please feel free to ask.

Course Outline/Learning Sequence for College Algebra (Math 158)

Ch. P Prerequisites: Fundamental Concepts of Algebra

We will be starting the semester with P.6 (Rational Expressions) and skipping P.1 - P.5, all of which should be taken care of via the summer Math XL work or in Math Prep/New Student Orientation. Please take some time to look over this material. If anything looks unfamiliar, please bring it to my attention.

- Rational expressions (simplifying, multiplying/dividing, adding/subtracting, difference quotient, rationalizing)
- Solving rational equations
- Solving absolute value equations
- Solving quadratic equations (all methods), discriminant
- Solving radical equations
- Modeling with equations (word problems, literal equations)
- Solving linear inequalities and absolute value inequalities, interval notation

Ch. 1 Functions and Graphs

- Relations, domain and range, functions, functions as equations, function notation, graphs of functions, domain and range of a function from a graph
- Increasing/decreasing functions, relative extrema, even/odd functions, symmetry, evaluating and graphing a piecewise function, functions and difference quotients
- Graphs of common functions, vertical and horizontal translations, reflections of graphs, vertical stretching and shrinking, sequencing transformations
- Domain of a function, operations with functions, composition of functions, decomposing functions
- Definition of function inverses, finding the inverse of a function, horizontal line test and one-to-one functions, graphs of inverse functions

Ch. 2 Polynomial and Rational Functions

- Complex numbers, operations with complex numbers, quadratic equations with imaginary solutions
- Graphs of quadratic functions, graphs of quadratic functions from vertex form and standard form, applications of quadratic equations, solving quadratics to maximize and minimize
- Polynomial functions, end behavior, zeros of polynomial functions, intermediate value theorem, graphing polynomial functions
- Long division of polynomials, synthetic division, remainder theorem and factor theorem
- Zeros of polynomial functions, rational zero theorem, finding roots of polynomial equations, fundamental theorem of algebra, Descartes' rule of signs
- Rational functions, domain of rational functions, graphs of rational functions and vertical asymptotes, horizontal asymptotes, graphs of rational functions
- Using direct and inverse variation to model real world applications

Make-up work policy: Except for extreme circumstances, I will avoid having students complete makeup tests and quizzes during class time. The student will need to make prior arrangements with the instructor to take the assessment before CBGS, after CBGS, or at their home school. In an emergency, a home school faculty member can be requested to serve as proctor.

Quizzes and tests are expected to be made up in a timely manner. Any long term projects assigned will have information regarding late submission. For homework guidelines, please see the information below.

Honor Code: Students are expected to follow the rules and procedures as outlined in the Student Honor Code. Please refer to the Student Handbook if you need guidelines. Failure to do so may result in dismissal from the course. Tests, quizzes, and other work as requested will be pledged.

Course Expectations and Information:

1. **Technology in the classroom:** You may not use laptops in my class for any purpose other than directed assignments. It is disrespectful to the instructor to not give him your full and undivided attention. Again: please, no laptops. Additionally, all cell phones (and other electronic devices) must be silenced and out of sight (mine and yours) during class. If used in an unauthorized manner, electronics may be confiscated and returned at the end of the class period. Repeat offenders will be referred to the CBGS director. Please see the cell phone policy in the Student Handbook.

2. **Student responsibilities:** I will be posting assignments to MathXL and updates and materials to Schoology on a regular basis. It is your *obligation* to be aware of and adhere to all posted deadlines. Not knowing the deadlines for posted assignments will not excuse the assignment. See more on homework below.

3. **Homework:** Homework will be assigned daily to correspond to the classroom lecture. Assignments will be MathXL assignments and you will have at least a week to complete each assignment. On the class period following when the assignment was given, there will be an opportunity to ask questions about anything you are having difficulty with. Note even though I give you a week, waiting that long to complete an assignment means you will not be able to ask questions when you have the opportunity on that following class period. Because there is no limit to the number of times you can work a specific type of problem to get it correct, every student has the ability to earn 100% on their homework grades. Every problem completed will be worth ½ of a point on your homework grade which will be reported on Schoology twice a quarter. For example, if 48 problems were assigned during the first half of the nine weeks, it will show up as a 24 point homework interim grade. If you miss the deadline for an assignment, it will close. Upon student request, the assignment may be re-opened, but chronic abuse is not acceptable and may result on a loss of homework points due to late submission.

4. **Be Prepared:** Regardless of whether homework is graded or not, it will be essential to your ***survival***. Promise. No siestas, no holidays. If you fall behind, you will have to work at least twice as hard to catch up. <u>Always</u> do homework, <u>always</u> take notes, <u>always</u> ask questions, <u>always</u> be prepared.

5. **Class Participation:** You MUST ask questions about concepts that you feel need better clarification. Do not worry about anyone's reaction, ask. Be engaged from the beginning and stay that way. Remember, I do not start actually teaching until you start asking questions. Until that point, I might as well be working from a script.

6. **Notebook:** As mentioned earlier, you will want a 3-ring binder. All materials I give you (quizzes, tests, worksheets, handouts, …) will be three-hole punched and need to be kept in your binders. BE ORGANIZED. Very few sloppy students can be successful math students. Many of you find that if you are physically disorganized, you will also be mentally disorganized…not good for mathematics. Your notebook will also be an available resource for your end of course exam.

7. **Grading:** I use a "total points" system. Every assignment (quiz, test, classwork, homework) will be given a number of points it is worth (the sum of the points from all of the questions). Your grade will be the points you earned relative to the points the assignment was worth. To compute your average at any point in the semester, take the total points earned and divide by the total points available.

8. **Exams:** You will have an exam in December that will cover the semester's material. The exam will weigh 10% of your year grade. The exam will be open notebook. Every test, quiz, handout, worksheet, and homework assignment is permissible for use on the exam. However, no materials photocopied from the text or another student's notebook, nor any outside printed resource material, may be used on the exam,

9. **Tips on how to survive this and other college level courses:**
   - Do not fall behind.
   - Do all homework.
   - Ask questions.
   - Form a study group or just do homework with a partner.
   - Be organized!!
   - Schedule your time and use it effectively!
   - You need to be self-motivated in college!