

Concurrent Enrollment Course Outline

High School Name: McGraw High School

Instructor: Alexandra Perry

Instructor e-mail and/or phone #: aperry@mcgrawschools.org, 836-3601 ext 4789

TC3 Course #: MATH 120

TC3 Course Title: College Algebra

Credit Hours: 4

Student Audience – Grade Level(s): Juniors and Seniors

Semester(s) Offered: Full year

Course Description: This course covers college algebra between beginning algebra and pre-calculus. Topics include linear, quadratic, absolute value, polynomial, rational, exponential, and logarithmic expressions/equations/functions, function notation, graphing functions, transformations of functions, inverses, complex numbers, and linear, absolute value, and quadratic inequalities. A graphing calculator will be used. MATH 120 fulfills the SUNY General Education Mathematics requirement.

Unit 1 Algebraic Essentials Review: Variables, terms and expressions, Solving linear equations, common algebraic expressions, basic exponent properties, multiplying polynomials, using tables on your calculator

Unit 2 Functions as the Cornerstone of Algebra II: Introduction to functions, function notation, function composition, domain and range, one to one functions, inverse functions, key features of functions

Unit 3 Linear Functions, Equations, and their Algebra: Direct variation, average rate of change, forms of a line, linear modeling, inverses of linear functions, piecewise functions, systems of linear equations (3x3)

Unit 4 Exponential and Logarithmic Functions: Integer exponents, rational exponents, exponential function basics, finding equations of exponentials, the method of common bases, exponential modeling, mindful percent manipulation, introduction to logarithms, graphs of logarithms, logarithm laws, solving exponential equations, the number e and the natural log, compound interest

Unit 5 Sequences and Series: Arithmetic and geometric sequences, summation notation, arithmetic series, geometric series

Unit 6 Quadratic Functions and their Algebra: Quadratic function review, factoring, zero product law, quadratic inequalities in one variable, completing the square and shifting parabolas, modeling with quadratic functions, equations of circles, equations of parabolas

Unit 7 Transformations of Functions: Shifting functions, reflecting parabolas, vertically and horizontally stretching functions, even and odd functions

Unit 8 Radicals and the Quadratic Formula: Square root functions, solving square root equations, basic exponent properties, fractional exponents revisited, the quadratic formula

Unit 9 Complex Numbers: Imaginary numbers, complex numbers, solving quadratic equations with complex solutions, the discriminant

Unit 10 Polynomial and Rational Functions: Power functions, zeroes of a polynomial, creating polynomial equations, polynomial identities, simplifying rational expressions, multiplying and dividing rational expressions, adding and subtracting rational expressions, complex fractions, polynomial long division, the remainder theorem, solving rational equations and inequalities

Unit 11 The Circular Functions: Rotations and angle terminology, radian angle measurement, the unit circle, sine and cosine functions and their graphs, the tangent function, the reciprocal functions

Unit 12 Probability: Sets and probability, adding probabilities, conditional probability, independent events, multiplying probabilities

Unit 13 Statistics: Variability and sampling, population parameters, the normal distribution, z-scores, sample means, sample proportions, differences in sample means, distribution of sample means and proportions, margin of error, linear regression and lines of best fit, other types of regression

Course Prerequisites: Completion of Algebra I

Class Modalities/Learning Strategies:

Teaching methods will include lecture, discussion, and group work on various problems. Students will also be engaging with the material independently with instructor assistance as needed. Homework will be given frequently. There will be one quiz and one test per unit.

Course Goals and Objectives:

1. Students will master algebra skills to prepare them for Pre-Calculus and higher level mathematics.
2. Students will develop an organized, formal approach to problem solving.
3. Students will connect algebraic functions with the graphs of their functions.
4. Students will acquire study and test-taking techniques appropriate to a technical discipline.
5. Students will be able to formulate an equation and a procedure to solve the problem.
6. Students will be able to manage information; this involves synthesizing facts, understanding concepts and principles.

Texts and Materials: Emathinstruction will be used for a majority of course materials. No textbook will be used.

Evaluation/Grading System: Grading Scale:

93-100 A	90-92 A-	
87-89 B+	83-86 B	80-82 B-
77-79 C+	73-76 C	70-72 C-
67-69 D+	63-66 D	60-62 D-
	0-59 F	

Final Grade Determined by (include percentages): Final Average is the average of the 4 Marking Periods and the Algebra II Regents Exam. Each marking period consists of approximately **50% tests, 25% quizzes, 25% homework**.

Students will be given assignments several times a week related to the lesson of the day. Homework will be gone over and graded the day it is due. Students are encouraged to ask the instructor for help when needed **BEFORE** homework is due. Late homework will be accepted, but for half credit for **three** school days after the due date. There will be approximately 13 tests and 13 quizzes throughout the year.

Statement of Academic Integrity: Every student at McGraw High School is expected to act in an academically honest fashion in all aspects of his or her academic work: in writing papers and reports, in taking examinations, in performing laboratory experiments and reporting the results, in clinical and cooperative learning experiences, and in attending to paperwork such as registration forms.

Any written work submitted by a student must be his or her own. If the student uses the words or ideas of someone else, he or she must cite the source by such means as a footnote. Our guiding principle is that any honest evaluation of a student's performance must be based on that student's work. Any action taken by a student that would result in misrepresentation of someone else's work or actions as the student's own — such as cheating on a test, submitting for credit a paper written by another person, or forging an advisor's signature — is intellectually dishonest and deserving of censure.

Tompkins Cortland Community College's Statement of Academic Integrity

Every student at Tompkins Cortland Community College is expected to act in an academically honest fashion in all aspects of his or her academic work: in writing papers and reports, in taking examinations, in performing laboratory experiments and reporting the results, in clinical and cooperative learning experiences, and in attending to paperwork such as registration forms.

Any written work submitted by a student must be his or her own. If the student uses the words or ideas of someone else, he or she must cite the source by such means as a footnote. Our guiding principle is that any honest evaluation of a student's performance must be based on that student's work. Any action taken by a student that would result in misrepresentation of someone else's work or actions as the student's own — such as cheating on a test, submitting for credit a paper written by another person, or forging an advisor's signature — is intellectually dishonest and deserving of censure.

Make-Up Policy/Late Work: If the student has missed a day due to sickness or other valid reasons, he/she has the same number of school days to complete missed work as the number of days he/she were absent. Students have three days after the due date to turn in missing work for half credit. After three days, late work will not be accepted.

Attendance Policy: To maintain good grades, regular attendance in class is necessary. Absence from class is considered a serious matter and absence never excuses a student from class work. Unless otherwise provided for by the instructor, all students are expected to promptly attend, on time, every class session for which they are registered. If absence is anticipated, it is the student's responsibility to inform the instructor as far in advance as possible. In all cases, it is the student's responsibility to find out what happened in class.

Student Responsibilities: Students are expected to take responsibility for their own work and seek help from Mrs. Perry when needed.

Student Expectations:

1. Come to class on time and prepared with materials (calculator, notebook, etc.)
2. Be respectful of him/herself and of others
3. Cellphone and other devices are to be silenced and not used during class unless otherwise instructed
4. Be ready to participate and learn each day with a positive attitude

Additional Assistance: Mrs. Perry is available during **2nd period on B days, 8th period, 9th period** and after school. Please come see her if you need assistance.

Concurrent Enrollment Student Handbook:

Students should review the guidelines provided on CollegeNow's website for information on college expectations, College library services, and transferring credits. Student Resource links appear on the right side of the CollegeNow homepage at www.tompkinscortland.edu/collegenow