

**STATE UNIVERSITY OF NEW YORK
COLLEGE OF TECHNOLOGY
CANTON, NEW YORK**



MASTER SYLLABUS

**COURSE NUMBER – COURSE NAME
MATH 121 – College Algebra**

Created by: Jesse Clark-Stone and Jonathan Thompson

Updated by: Linda Law

Canino School of Engineering

Technology Department: Mathematics

Semester/Year: Fall 2018

- A. **TITLE:** College Algebra
- B. **COURSE NUMBER:** Math 121
- C. **CREDIT HOURS:** (Hours of Lecture, Laboratory, Recitation, Tutorial, Activity)

Credit Hours: 4
Lecture Hours: 4 per week
Lab Hours: 0 per week
Other: 0 per week

Course Length: 15 Weeks

- D. **WRITING INTENSIVE COURSE:** Yes No
- E. **GER CATEGORY:** None: Yes: GER 1 Mathematics
If course satisfies more than one: GER
- F. **SEMESTER(S) OFFERED:** Fall Spring Fall & Spring

G. **COURSE DESCRIPTION:**

This course provides basic algebraic concepts and an introduction to trigonometric and logarithmic functions. Emphasis is placed on equations and inequalities; polynomials, rational, exponential and logarithmic functions; and graphing and data analysis including modeling and linear regression. Additional topics include complex numbers; radical functions; right triangle trigonometry; systems of equations; and elementary transcendental functions.

- H. **PRE-REQUISITES:** None Yes If yes, list below:

Intermediate Algebra (MATH 106) with a grade of C or better, or 2 high school regents math courses with a grade of 75 or above on the second New York State Regents mathematics examinations, or permission of instructor. Cannot be taken for credit by students with credit in Precalculus Algebra and Trigonometry (MATH 123).

CO-REQUISITES: None Yes If yes, list below:

I. STUDENT LEARNING OUTCOMES: (see key below)

By the end of this course, the student will be able to:

<u>Course Student Learning Outcome</u> <u>[SLO]</u>	<u>Program Student Learning Outcome</u> <u>[PSLO]</u>	<u>GER</u> <u>[If Applicable]</u>	<u>ISLO & SUBSETS</u>	
Solve linear, polynomial, and rational equations/inequalities as well as absolute value, radical, exponential, and logarithmic equations	N/A	1	ISLO 3-Found Skills ISLO	Subsets QTR Subsets Subsets
Graph functions and find zeros, domains, ranges, inverses. Perform algebraic operations and composition of functions	N/A	1	ISLO 3-Found Skills ISLO	Subsets QTR Subsets Subsets
Find trigonometric function values and convert between angle measures	N/A	1	ISLO 3-Found Skills ISLO	Subsets IM Subsets Subsets
Solve right and oblique triangles	N/A	1	ISLO 3-Found Skills ISLO	Subsets QTR Subsets Subsets
Solve systems of linear and non-linear equations using the methods of graphing, substitution, and addition/elimination	N/A	1	ISLO 3-Found Skills ISLO	Subsets QTR Subsets Subsets
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KEY	<u>Institutional Student Learning Outcomes [ISLO 1 – 5]</u>
ISLO #	ISLO & Subsets
1	Communication Skills Oral [O], Written [W]
2	Critical Thinking <i>Critical Analysis [CA] , Inquiry & Analysis [IA] , Problem Solving [PS]</i>
3	Foundational Skills <i>Information Management [IM], Quantitative Lit./Reasoning [QTR]</i>
4	Social Responsibility <i>Ethical Reasoning [ER], Global Learning [GL], Intercultural Knowledge [IK], Teamwork [T]</i>
5	Industry, Professional, Discipline Specific Knowledge and Skills

*Include program objectives if applicable. Please consult with Program Coordinator

J. **APPLIED LEARNING COMPONENT:** Yes No

If YES, select one or more of the following categories:

- | | |
|---|--|
| <input type="checkbox"/> Classroom/Lab | <input type="checkbox"/> Civic Engagement |
| <input type="checkbox"/> Internship | <input type="checkbox"/> Creative Works/Senior Project |
| <input type="checkbox"/> Clinical Placement | <input type="checkbox"/> Research |
| <input type="checkbox"/> Practicum | <input type="checkbox"/> Entrepreneurship |
| <input type="checkbox"/> Service Learning | (program, class, project) |
| <input type="checkbox"/> Community Service | |

K. **TEXTS:**

Algebra and Trigonometry (Third Edition) by Beecher, Penna, and Bittenger, Pearson/Addison Wesley 2008, ISBN 13: 978-0-321-46620

L. **REFERENCES:**

Many materials in the Math Lab and online will aid the students with mastery of this subject.

M. **EQUIPMENT:** None Needed: The type of technology and its mode of implementation is left to the discretion of the instructor.

N. **GRADING METHOD:** A - F

O. **SUGGESTED MEASUREMENT CRITERIA/METHODS:**

Homework, quizzes, exams and projects.

P. **DETAILED COURSE OUTLINE:**

I. Graphs Functions and Models

1. Functions and graphs
2. Slope of a line segment and equations of lines
3. Linear Regression
4. Piecewise defined functions
5. The algebra of functions
6. Symmetry and transformations of functions

II. Functions, Equations, and Inequalities

1. Linear equations
2. Complex numbers
3. Quadratic functions and equations
4. Analyzing graphs of quadratic functions
5. Rational equations and equations involving absolute value
6. Linear inequalities
7. Linear systems in two variables
8. Nonlinear systems in two variables

III. Polynomial Functions and their Graphs

- 1. Introduction to polynomial functions**
- 2. Graphs of polynomials**
- 3. Polynomial division**
- 4. Fundamental Theorem of Algebra and Rational Root Theorem**
- 5. Polynomial Inequalities**
- 6. Rational Inequalities**

IV. Exponential and Logarithmic Functions

- 1. Inverse functions**
- 2. Introduction to exponential functions and the number e**
- 3. Logarithmic functions**
- 4. Properties of logarithmic functions.**
- 5. Exponential and logarithmic equations**
- 6. Transcendental Applications**

V. Introduction to Trigonometry

- 1. Angle measure**
- 2. Evaluation of trigonometric functions (of any angle)**
- 3. Solve right triangles**
- 4. Solve oblique triangles**
- 5. Applications of trigonometry**

Q. LABORATORY OUTLINE: None Yes