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

COURSE OUTLINE

MATH 101 – Applied College Mathematics

Prepared By: Mathematics Department
A. **TITLE:** APPLIED COLLEGE MATHEMATICS

B. **COURSE NUMBER:** MATH 101

C. **CREDIT HOURS:** 3

D. **WRITING INTENSIVE COURSE:** No

E. **COURSE LENGTH:** 15 weeks

F. **SEMESTER(S) OFFERED:** Fall/Spring

G. **HOURS OF LECTURE, LABORATORY, RECITATION, TUTORIAL, ACTIVITY:**
   3 hours of lecture weekly.

H. **CATALOG DESCRIPTION:** This course is designed to prepare students for success in technical and pre-engineering technology programs. It assumes an algebraic background at an introductory level. The course connects mathematical concepts and procedures to real-life applications relevant to a variety of technical trade fields. Topics include: an introduction to algebra, practical plane geometry, solid figures, angle measurement in degrees and radians, trigonometric ratios, solving systems of equations graphically and algebraically, and solving quadratic equations. Applications using algebra concepts are stressed in this course.

I. **PRE-REQUISITES/CO-COURSES:** Fundamentals of Applied Mathematics (MATH 099) with a grade of C or better, or New York State Math A or Integrated Math Regents or equivalent examination with a grade of 75 or above, or permission of instructor.

J. **GOALS (STUDENT LEARNING OUTCOMES):**
   By the end of this course, the student will be able to:

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<tr>
<th>1. Perform calculations with whole numbers, fractions, decimals, and signed numbers with the aid of a calculator.</th>
<th>2. Critical Thinking</th>
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<tbody>
<tr>
<td>a. Use estimation to determine the reasonableness of the answer</td>
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<td>3. Round the answer to a calculation using the “Rules of Accuracy and Precision”.</td>
<td>2. Critical Thinking</td>
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<td>4. Use Unity Fractions to:</td>
<td>1. Communication 2. Critical Thinking</td>
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<td>a. Perform basic conversions for length, weight and liquid capacity in both the English and Metric systems of units.</td>
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<td>b. Determine the correct unit in the answer of a trade word problem.</td>
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<td>5. Able to perform basic algebraic techniques by demonstrating the ability to:</td>
<td>2. Critical Thinking</td>
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<td>b. Manipulate formulas to solve for different variables within the formula.</td>
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<td>c. Solve a system of linear equations in two-variables.</td>
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6. Solve trade word problems by:
   a. Choosing the correct method to solve the problem, such as:
      i. Ratio and proportion
      ii. Area, Perimeter, Surface Area and Volume
      iii. Pythagorean Theorem
      iv. Trigonometric Ratios
      v. Formulas such as Ohm’s Law
      vi. Diagram
   b. Organizing the solution to the problem by:
      i. Displaying work in a neat manner
      ii. Showing formulas used
      iii. Drawing a diagram (if appropriate)
      iv. Showing all necessary steps
      v. Rounding the answer using accuracy and precision.
      vi. Affixing the unit
   c. Using estimation to determine the reasonableness of the answer


L. **REFERENCES:** NA

M. **EQUIPMENT:** A technology enhanced classroom.

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

O. **MEASUREMENT CRITERIA/METHODS:**
   - Homework
   - Quizzes
   - Exams
   - Participation
   - Projects

P. **DETAILED COURSE OUTLINE:**

I. Ratio, Proportion, and Percent
   A. Review of ratio and proportion
   B. Review of percent
   C. Applications of percent calculations
   D. Applications of ratio and proportion

II. Measurement
   A. Working with measurement numbers
   B. Precision and accuracy
   C. English units and unit conversion
   D. Metric units
   E. English-Metric conversions and Metric-English conversions
   F. Technical applications with measurement

III. Pre-Algebra Topics
   A. Exponents and square roots
   B. Order of operations with exponents
C. Scientific notation and powers of 10
D. Technical applications using exponents and scientific notation

IV. Basic Algebra
A. Algebraic language and formulas
B. Algebraic expressions
C. Evaluating formulas
D. Evaluate literal expressions
E. Solve simple equations

V. Review of Fundamental Algebraic Concepts
A. Algebraic language and formulas
B. Evaluating algebraic expressions and formulas
C. Combining like terms
D. Solve simple equations involving one variable
E. Solve equations involving two operations
F. Solving equations with variables on two sides
G. Manipulating formulas
H. Multiplying and dividing simple factors
I. Negative exponents
J. Applications

VI. Practical Plane Geometry
A. Labeling, measuring, classifying, and drawing angles
B. Area and perimeter of polygons
C. Pythagorean theorem
D. Circumference and area of circles
E. Applications

VII. Solid Figures – Volume and Surface Area
A. Prisms
B. Pyramids and frustums of pyramids
C. Cylinders and spheres
D. Cones and frustums of cones
E. Applications

VIII. Trigonometry
A. Angles and triangles
B. Trigonometric ratios
C. Solving right triangles
D. Applications

IX. Algebra
A. Systems of equations
B. Solving systems of equations by graphing
C. Solving systems of equations by substitution
D. Solving systems of equations by elimination
E. Applications

Q. LABORATORY OUTLINE: NA