College of San Mateo
Official Course Outline

1. **COURSE ID:** MATH 841 **TITLE:** Just-In-Time Support for Applied Calculus I
   Units: 1.0 units **Hours/Semester:** 16.0-18.0 Lecture hours; and 32.0-36.0 Homework hours
   Method of Grading: Pass/No Pass Only
   Corequisite: MATH 241

2. **COURSE DESIGNATION:**
   Non-Degree Credit
   Transfer credit: none

3. **COURSE DESCRIPTIONS:**
   Catalog Description:
   A review of the core prerequisite skills, competencies, and concepts needed in algebra. Intended for students who are concurrently enrolled in MATH 241, Applied Calculus I, at College of San Mateo. Topics include: a review of computational skills developed in intermediate algebra, factoring, operations on rational and radical expressions, absolute value equations and inequalities, exponential and logarithmic expressions and equations, functions including composition and inverses, and an in-depth focus on quadratic functions.

4. **STUDENT LEARNING OUTCOME(S) (SLO'S):**
   Upon successful completion of this course, a student will meet the following outcomes:
   1. Simplify or reorganize expressions.
   2. Solve equations and inequalities.
   3. Solve systems of two equations.
   4. Graph a function and identify its defining elements (including domain and range).

5. **SPECIFIC INSTRUCTIONAL OBJECTIVES:**
   Upon successful completion of this course, a student will be able to:
   1. Graph linear and quadratic functions
   2. Use graphic, numeric and analytic methods to solve linear, quadratic, and exponential equations
   3. Perform fundamental operations with exponents and solving equations with the same
   4. Solve and interpret the solutions of application problems
   5. Solve linear systems of equations
   6. Apply elementary matrices to solving systems
   7. Apply exponential and logarithmic functions to real-life situations.

6. **COURSE CONTENT:**
   Lecture Content:
   A. Simplify or reorganize expressions
   B. Solve each of the following:
      a. Quadratic equations
         - By extracting roots
         - By completing the square
         - Using the quadratic formula
      b. Exponential equations
      c. Logarithmic equations
   C. Solve systems of equations
      a. Algebraically
      b. Using the algebra of matrices
      c. Using a graphing calculator
   D. Solve application problems
   E. Simplify or reorganize functions given a
      a. Sum
      b. Difference
      c. Product
      d. Quotient and/or
      e. Composition of two functions

F. Inspect and analyze a graph in order to:
    a. Determine whether the graph represents a function or is a 1-to-1 function
    b. Evaluate the function
    c. Determine the domain and range of a function
    d. Determine the max or min of a quadratic function
    e. Find the domain and range of given function.

Topics related to Developing Effective Learning Skills

- Study skills: for example, organization and time management, test preparation and test-taking skills
- Self-assessment: for example, using performance criteria to judge and improve one's own work, analyzing and correcting errors on one's test
- Use of resources: for example, strategies for identifying, utilizing, and evaluating the effectiveness of resources in improving one's own learning, e.g. peer study groups, computer resources, lab services

7. **REPRESENTATIVE METHODS OF INSTRUCTION:**

Typical methods of instruction may include:

A. Lecture
B. Activity
C. Discussion

8. **REPRESENTATIVE ASSIGNMENTS**

Representative assignments in this course may include, but are not limited to the following:

Writing Assignments:

Students will write out solutions for 1-3 problem sets per week.

Reading Assignments:

Students will read 1-2 sections of the textbook per week.

9. **REPRESENTATIVE METHODS OF EVALUATION**

Representative methods of evaluation may include:

A. Class Participation
B. Class Work
C. Exams/Tests
D. Group Projects
E. Homework
F. Quizzes

10. **REPRESENTATIVE TEXT(S):**

Possible textbooks include:

A. Goldstein, Lay, and Schneider. *Calculus and its Applications*, 14th ed. Prentice-Hall, 2017

Other:

A. A. Supplemental: Exploratory projects and classroom activities created by College of San Mateo faculty.

Origination Date: October 2018
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Effective Term: Fall 2019
Course Originator: Christopher Walker