NCBS 448A: JUST-IN-TIME SUPPORT FOR MATH 48A

Foothill College Course Outline of Record

Heading	Value
Effective Term:	Summer 2022
Units:	0
Hours:	2.5 lecture per week (30 total per quarter)
Corequisite:	MATH 48A.
Advisory:	Demonstrated proficiency in English by placement via multiple measures OR through an equivalent placement process OR completion of ESLL 125 & ESLL 249.
Degree & Credit Status:	Non-Degree-Applicable Non-Credit Course Basic Skills
Foothill GE:	Non-GE
Transferable:	None
Grade Type:	Non-Credit Course (Receives no Grade)
Repeatability:	Unlimited Repeatability

Student Learning Outcomes

- Students will assess their own learning process and performance in an entry college level math for STEM support class.
- Students will demonstrate the ability to solve linear equations and linear systems, and graph linear equations of two variables.
- Students will develop conceptual understanding of the relationship between a linear function and its graph.
- Students will solve problems involving applications of linear growth

Description

A just-in-time approach to the core prerequisite skills, competencies, and concepts needed in Precalculus I. Intended for students majoring in science, technology, engineering, and mathematics who are concurrently enrolled in MATH 48A at Foothill College. Topics include: a review of computational skills developed in beginning and intermediate algebra, including factoring, graphing linear equations, solving absolute value equations and inequalities, analyzing functions, including quadratic functions.

Course Objectives

The student will be able to:

1. Explore topics related to developing effective learning skills
2. Explore linear and quadratic relationships in 1 and 2 variables
3. Solve problems involving proportional reasoning
4. Simplify algebraic expressions, including those with exponents, radicals, and absolute values
5. Evaluate, graph, and find the domain and range of functions
6. Apply formulas of geometric objects

Course Content

1. Explore topics related to developing effective learning skills
   a. Learn study skills
      i. Organizational skills
      ii. Time management
      iii. Test preparation
      iv. Test-taking skills
   b. Self-assess using performance criteria to judge and improve one's own work
      i. Analyze and correct errors on one's exam
   c. Identify, utilize, and evaluate the effectiveness of resources in improving one's own learning, such as study groups, computer resources, lab resources, and tutoring resources
2. Explore linear and quadratic relationships in 1 and 2 variables
   a. Solve linear equations with rational coefficients
   b. Solve literal equations and formulas for a specific value
   c. Solve linear inequalities and compound inequalities symbolically or graphically
   d. Represent linear functions using equations, tables, and graphs
   e. Interpret the meaning of intercepts and slopes from a problem's situation
   f. Describe magnitude and direction of slope
   g. Identify slopes and y-intercepts from equations
   h. Write an equation of a line using two points and using a point and slope
   i. Interpret the solution of a linear system in the context of a problem's situation
   j. Graph linear and quadratic equations
   k. Identify the vertex of a parabola
   l. Solve quadratic equations algebraically using factoring and the quadratic formula
3. Solve problems involving proportional reasoning
   a. Use rates to convert units
   b. Perform unit analysis
   c. Set up a proportion
4. Simplify algebraic expressions, including those with exponents, radicals, and absolute values
   a. Evaluate powers with positive, negative, and zero exponents
   b. Use properties of exponents
   c. Find square roots
   d. Simplify expressions that involve absolute values, rational exponents, and/or radicals
   e. Understand the meaning of an absolute value expression
5. Evaluate, graph, and find the domain and range of functions
   a. Use function notation
   b. Evaluate functions
   c. Graphs of functions
      i. Linear
      ii. Quadratic
      iii. Absolute value
   d. Domain and range
      i. From tables
      ii. From graphs
      iii. From the formula

   e. Graph solution sets to inequalities on a number line and write the solution sets using interval and/or set-builder notation
6. Apply formulas of geometric objects
   a. Perimeter
   b. Area and surface area
   c. Volumes
   d. Solve geometric formulas for a specific value

Lab Content

Not applicable.

Special Facilities and/or Equipment

1. Access to graphing technology, such as a graphing calculator or graphing software.
2. When taught online or hybrid: internet access, course management system, specific software related to the course.

Method(s) of Evaluation

Methods of Evaluation may include but are not limited to the following:

Group and independent exploratory activities
Homework
Performance in MATH 48A

Method(s) of Instruction

Methods of Instruction may include but are not limited to the following:

Group work
Discussion
Mini-lectures
Instructor-guided discovery
Formative assessment

Representative Text(s) and Other Materials

Stewart, Redlin, and Watson. Precalculus: Mathematics for Calculus with Corequisite Support, 7th ed.. 2020.

Types and/or Examples of Required Reading, Writing, and Outside of Class Assignments

1. Problem sets
2. Exploratory activities and/or projects
3. Reading and/or writing assignments

Discipline(s)

Mathematics