NCBS 411B: JUST-IN-TIME SUPPORT FOR MATH 1B

Foothill College Course Outline of Record

Heading	Value
Effective Term:	Summer 2025
Units:	0
Hours:	2.5 lecture per week (30 total per quarter)
Corequisite:	MATH 1B.
Degree & Credit Status:	Non-Degree-Applicable Non-Credit Course Basic Skills
Foothill GE:	Non-GE
Transferable:	None
Grade Type:	Pass/No Pass Only
Repeatability:	Unlimited Repeatability

Student Learning Outcomes

- Students will be able to solve problems involving applications of algebraic and transcendental functions in the context of single variable integral calculus
- Students will develop conceptual understanding of algebraic and transcendental functions in the context of single variable integral calculus
- Students will demonstrate an ability to find and apply integrals for algebraic and transcendental functions
- Students will assess their own learning process and performance in single variable integral calculus

Description

A just-in-time approach to the core prerequisite skills, competencies, and concepts needed in Calculus II. Intended for students who are concurrently enrolled in MATH 1B at Foothill College and who want extra support in calculus. Topics include: a review of skills developed in precalculus, including advanced algebra manipulations, polar curves and parametric equations, and advanced graphing skills.

Course Objectives

The student will be able to:

1. Explore topics related to developing effective learning skills.
2. Apply topics related to algebraic and transcendental functions.
3. Manipulate and evaluate expressions used to find and apply integrals.
4. Apply topics from Calculus I to Calculus II.

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. Apply topics related to algebraic and transcendental functions
    a. Graphs of base curves and their transformations
    b. Graphing x = f(y)
    c. Solving nonlinear systems in two variables
    d. Polar and parametric curves
3. Manipulate and evaluate expressions used to find and apply integrals
    a. Integration by substitution
    b. Integration by parts
    c. Partial fractions
    d. Trigonometric identities
4. Apply topics from Calculus I to Calculus II
    a. Relationship between a function and its derivative
    b. Techniques of differentiation

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/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 1B

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

Boelkins, Matthew. Active Calculus. 2023.

Strang, Gilbert, and Edwin Herman. Calculus Volume II (Openstax). 2023.

Briggs, William, and Lyle Cochran. Calculus: Early Trancedentials, 3rd ed.. 2018.

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