Phase IIB CCN TEMPLATE

Background

- This CCN Course Template was developed by Mathematics discipline faculty representatives from the California Community Colleges, California State University, University of California and independent colleges and universities during October-December 2024, using C-ID MATH 220 as a starting point.
- Development of the CCN Course Template was facilitated by ASCCC with advisory input from segment articulation officers and transfer experts.
- Approved and Submitted to the Chancellor's Office: June 2025

Subject: Mathematics	**Subject Code:** MATH
Proposed Course Number (Identical): C2220	
Course Title (Identical): Calculus II: Early Transcendentals	
Catalog/Course Description (Identical): **Part 1 (Identical and Required):** A second course in differential and integral calculus of a single variable. Topics include applications of integration, techniques of integration, infinite sequences and series, and the calculus of parametric and polar equations. This course is primarily intended for Science, Technology, Engineering, and Mathematics (STEM) majors. **Part 2 (Optional Expanded Description, Local College Discretion):**	

Minimum Unit Threshold | 4.0 Semester Units Unit amounts must adhere to the established minimum.
Prerequisites (Identical): Calculus I: Early Transcendentals (MATH C2210), or equivalent, or placement as determined by the college's multiple measures assessment process.
Co-Requisites (Identical): None
Other Limitations on Enrollment (determined locally)
Advisories/Recommended Preparation (determined locally)

Course Content

Part 1: Required Topics (Identical):

1. Applications of integration to areas between curves and volumes, including volumes of solids of revolution
2. Techniques of integration, including integration by parts, trigonometric substitution, and partial fraction decomposition
3. Numerical integration, including trapezoidal and Simpson's rules
4. Improper integrals
5. Additional applications of integration, such as work, arc length, area of a surface of revolution, moments and centers of mass, separable differential equations, growth and decay
6. Introduction to sequences and series
7. Multiple tests for convergence of sequences and series
8. Power series, radius of convergence, interval of convergence
9. Differentiation and integration of power series
10. Taylor series expansion of functions
11. Parametric equations and calculus with parametric curves
12. Polar curves and calculus in polar coordinates

Part 2: Optional Expanded or Additional Topics (optional):

Laboratory Content (if applicable) N/A

Course Objectives/Outcomes

Part 1 (Identical and Required):
At the conclusion of this course, the student should be able to (Identical and Required):

1. Apply integration to find areas and volumes.
2. Evaluate definite and indefinite integrals using a variety of integration formulas and techniques.
3. Use integration to solve applications such as work or length of a curve.
4. Evaluate improper integrals.
5. Determine convergence of sequences and series.
6. Represent functions as power series.
7. Graph, differentiate, and integrate functions in polar and parametric form.

Part 2 Optional objectives/outcomes (optional):
At the conclusion of this course, the student should be able to:

Methods of Evaluation

Part 1 (Identical and Required):
Students should demonstrate their mastery of the learning objectives and their ability to devise, organize, and present complete solutions to problems.

Examples of potential methods of evaluation include, but are not limited to, exams, quizzes, homework, classwork, technology-based activities, laboratory work, projects, and research demonstrations.

Methods of evaluation are at the discretion of local faculty.

Part 2 List Additional Methods of Evaluation (Optional):

Representative Texts, Manuals, OER, and Other Support Materials

Part 1 (Identical and Required):

A college level textbook designed for science, technology, engineering and math majors, and supporting the learning objectives of this course.

Representative texts:

- Strang, G., Herman, E., et al. (2016 & Web 2025). Calculus Volume 2. OER: OpenStax. https://openstax.org/details/books/calculus-volume-2/

- Stewart, J., et al. (2021). Calculus: Single Variable Calculus Early Transcendentals. 9th ed.: Cengage.
- Briggs, W., et al. (2019). Calculus: Early Transcendentals. 3rd ed.: Pearson.
- Hass, J., et al. (2023). Thomas' Calculus: Early Transcendentals. 15th ed.: Pearson.

Texts used by individual institutions and even individual sections will vary.

Part 2 List Sample Textbooks, Manuals, or Other Support Materials (optional):

Date Approved:

June 16, 2025, following ASCCC facilitation of template development process, including engagement of faculty discipline representatives from California Community Colleges, California State University, University of California, and independent colleges and universities and advisory input from segment articulation officers and transfer experts.