MATH C2220: CALCULUS 2

Proposer:

Name:	Email:
Chris Keen	chriske@cos.edu

Effective Term:

Fall 2027

Does this course use a CA Common Course Number

Yes

Credit Status:

Credit - Degree Applicable

Subject:

MATH - Mathematics

Course Number:

C2220

CA Common Course Number

MATH C2220

Discipline:

And/Or	(	Discipline	)
		Mathematics	

Catalog Title

Calculus II: Early Transcendentals

Common Course Description

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.

COS Course Description

This is the second course of a three-semester calculus sequence. Supplemental learning assistance is available for students to strengthen skills and to reinforce student mastery of concepts. Students enrolled in MATH 66 may access the supplemental learning assistance by enrolling in MATH 400, an open entry/open exit non-credit course. (MATH C2220 was formerly MATH 066.)

Prerequisites

Calculus I: Early Transcendentals (MATH C2210), or equivalent, or placement as determined by the college's multiple measures assessment process.

Validation

Validation Type

Required by 4 Year Institution

Course

MATH C2210

List two (2) transfer courses from UC/CSU with an equivalent prerequisite/corequisite required:

MATH C2210 required by CCN template

Method of Instruction:

Distance Education

Lecture and/or Discussion

Course Units/Hours:

Course Units Minimum:
4

Lecture Hours Minimum (week)
4

Total Contact Hours Minimum (semester)
70

Total Outside Hours Minimum (semester)
140

Total Student Learning Minimum Hours (semester)
210

Repeatability:
No

Open Entry/Exit:
No

Field Trips:
Not Required

Grade Mode:
Standard Letter

TOP Code:
170100 - Mathematics, General

SAM Code:
E - Non-Occupational

Course Content

Common Method of Evaluation:
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.

COS Methods of Evaluation:
Problem solving assignments or activities
Problem solving quizzes or exams
Short answer quizzes or exams

Common Course Topics:

	Course Topics
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

COS Course Topics:

	COS Course Topics
1	COS additional topics: - Average value of a function - Linear differential equations involving integrating factors - Fluid pressure
2	Tests for series convergence covered in this course: - Integral Test - Comparison Test - Ratio Test - Root Test - Alternating Series - Limit Comparison Test - Tests for Absolute Convergence - Divergence Test

Common Course Objectives:

	Course Objectives
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.

Course Outcomes:

	Course Outcomes
1	Convergence: Students will be able to analyze sequences and series and apply appropriate convergence tests.
2	Integral Applications: Students will be able to apply the integral to solve applications.
3	Integration Techniques: Students will be able to analyze integrals and apply the appropriate technique of integration.
4	Parametric Equations: Students will be able to utilize parametric equations in graphing and analyzing polar coordinates, conic sections, and applications.

Assignments:

Assignment Type:	Details
Reading	Students will read sections from the assigned textbook in preparation for the next lecture. Example: Read section 7.8 on Improper Integrals from the Anton text in preparation for tomorrow's lecture.
Writing	Students will write step-by-step solutions to a variety of problems as well as give short answers to questions about the course material. Example: Describe the relationship between a Power Series' interval and radius of convergence.

Homework	Students will complete a set of assigned problems nightly or weekly.
	Example: Complete exercises 3-31 odd from section 7.8 of the Anton text.
	Assignments may also be done using online course management systems, such as MyMathLab.

Representative Texts, Manuals, and/or OER that is equivalent, Other Support Materials:

Common Textbooks or other support materials

Resource Type	Details
Web/Other	A college level textbook designed for science, technology, engineering and math majors, and supporting the learning objectives of this course.
	Representative texts:
Zero Textbook Cost	Strang, G., Herman, E., et al. (2016 & Web 2025). Calculus Volume 2. OER: OpenStax. https://openstax.org/details/books/calculus-volume-2/
Books	Stewart, J., et al. (2021). Calculus: Single Variable Calculus Early Transcendentals. 9th ed.: Cengage.
Books	Briggs, W., et al. (2019). Calculus: Early Transcendentals. 3rd ed.: Pearson.
Books	Hass, J., et al. (2023). Thomas' Calculus: Early Transcendentals. 15th ed.: Pearson.

Texts used by individual institutions and even individual sections will vary. The list of representative texts must include at least one text with a publication date within five (5) years of the course outline approval date.

COS Textbooks or other support materials

Resource Type:	Details
Books	Calculus: Early Transcendentals, by Anton, Bivens, and Davis. 12th edition (2022). Wiley. ISBN-13: 978-1119778189

Transferable to CSU

Yes - Approved

Transferable to UC

Yes - Approved

Cal-GETC General Education

Cal-GETC GE Area 2: Math Concepts & Quantitative Reasoning
Transferable to UC
IGETC 2: Math Concepts & Quantitative Reasoning

COS General Education

COS GE Area 2: Mathematical Concepts & Quantitative Reasoning

Other Degree Attributes

Degree Applicable
Not a Basic Skills Course

Distance Learning Addendum

Math C2220 DLA.pdf

Additional Attachment

Math 066 DLA.pdf
ccn-course-template-math-c2220-calculus-ii-early-transcendentals-a11y.pdf

Banner Title:

Calculus 2

Course Control Number:

CCC000543349

C-ID:

MATH220

Equity Review

Select elements of the COR that were reviewed for equity. Must select at least one:

Other
Textbooks / Other Support Materials
Topics