Cuyamaca College
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COURSE NAME: MATH-C2210 + MATH-021 (nicknamed *Calculus I with support*)

UNITS: Calc I Early Transcendentals (5 units) + Foundations in Calculus I (2 units)

REGISTRATION: Students register for a learning community. Both courses are integrated, focusing on providing just-in-time support as necessary.

PLACEMENT: Students are placed into Calculus I (MATH-C2210) through a self-guided online placement questionnaire that evaluates self-reported high school GPA, coursework, and intended major. Depending on their academic history, students are placed directly into Calculus I with or without a two-unit support course. Cuyamaca College offers only one section of Precalculus per semester, and enrollment in that section is steadily declining. Moreover, through the placement process, students are strongly discouraged from enrolling in Precalculus.

SCHEDULE: Calculus I with Support is offered in a synchronous 7 hours per week format.

TEXTBOOK: *Interactive Calculus I on Canvas* with embedded MyOpenMath assignments (created and developed by Cuyamaca Math faculty using LibreTexts Calculus and the Stewart textbook as references). The following design principles guided the development of this textbook and the other textbooks in our calculus series. 1) Students learn a small chunk of material, practice what they just learned, and receive immediate feedback. 2) Students receive embedded just-in-time review. 3) Before encountering a problem in a summative assessment, students practice a similar problem and receive feedback in a formative assessment or example. 4) Learning materials include culturally relevant curriculum and practices that support equity-minded teaching and learning. Moreover, all three textbooks in our calculus series use *Prep* modules to provide just-in-time review. These short Prep modules prepare students for the subsequent calculus module. (Not all calculus modules have a preceding prep module.) Finally, our *Interactive Calculus on Canvas* textbooks are used in all learning modalities.

COURSE MANAGEMENT SYSTEM: Cuyamaca's interactive Calculus I, II, and III textbooks are wholly contained within Canvas (no embedded PDFs, etc.) with a table of contents and a glossary. These textbooks are organized into units (think *chapters* in a traditional textbook), and the units are organized into modules (think *chapter sections* in a traditional textbook). Each learning module includes learning pages with text and embedded videos, examples, quizzes, various assignments, a wrap-up page, and a module checkpoint. Each unit includes learning modules and a web-based checkpoint as well as short paper-and-pencil checkpoint.
GRADING:

- **Prep & Review** (10%) – These are formative assignments that review prerequisite skills and concepts. The single lowest score is dropped.
- **Web-based Homework** (10%) – Typically these are short automatically graded formative MyOpenMath assignments. Each of these assignments covers the concepts included on the previous learning page (typically one or two key concepts). Students are allowed to work through up to 20 versions of each problem, with three attempts per version. A video or written example and automated feedback are included with each problem. Each MyOpenMath assignment is wholly embedded in a Canvas assignment, so students do not leave the Canvas course to complete these assignments, and instructors do not leave Canvas to set due dates and otherwise interact with these assignments. Currently, in Calc I, there are very few of these assignments and too many paper-and-pencil assignments. In June 2026, the Calc I textbook will be edited to replace paper-and-pencil assignments with embedded MyOpenMath assignments. The single lowest score is dropped.
- **Peer-reviewed Homework** (15%) - In the Calc III textbook, these are formative paper-and-pencil discussion assignments. Students embed pictures of their hand-written work in a discussion post and reply to two of their classmates' posts with a review. Like the web-based homework, each of these assignments covers one or two concepts from the previous learning page. After submitting their first attempt, students review the solutions page, correct any mistakes if they choose to, and resubmit an optional final draft. Instructors grade the final draft if and only if the first draft is a good-faith effort. Currently, in the Calc I and II textbooks, these are Canvas assignments using the peer-review feature. However, across all learning modalities, students and teachers alike prefer the discussion format. So, in June 2026, the Calc I and Calc II textbooks will be edited to convert the peer-reviewed Canvas assignments to the discussion format. An embedded rubric is used to provide grading consistency within and across classes. The rubrics are discussed and often modified in our Community of Practice groups. The two lowest scores are dropped.
- **Module Checkpoints** (10%) – These are automatically graded formative MyOpenMath assignments. Each module checkpoint covers one module. Students are allowed to work through two versions of each problem, with three attempts per version. A video or written example and automated feedback are included with each problem. Each MyOpenMath assignment is wholly embedded in a Canvas assignment, so students do not leave the Canvas course to complete these assignments, and instructors do not leave Canvas to set due dates and otherwise interact with these assignments. The two lowest scores are dropped.

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- **Web-based Unit Checkpoints** (10%) - These are automatically graded summative MyOpenMath assignments covering an entire unit. Video examples and automated feedback are not included. Each problem is similar to a previous problem in a formative web-based homework or module checkpoint assignment. Students are allowed to work through up to 2 versions of each problem, with three attempts per version. Each MyOpenMath assignment is wholly embedded in a Canvas assignment, so students do not leave the Canvas course to complete these assignments, and instructors do not leave Canvas to set due dates and otherwise interact with these assignments. The single lowest score is dropped.
- **Peer-reviewed Unit Checkpoints** (21%) In the Calc III textbook, these are summative paper-and-pencil discussion assignments (students embed pictures of their hand-written work in a discussion post and reply to two of their classmates with a review). Typically, these assignments include one to three problems covering a small subset of skills and concepts from a subset of modules within the unit. Currently, in the Calc I and II textbooks, these are Canvas assignments using the peer-review feature. However, across all learning modalities, students and teachers alike prefer the discussion format. So in June 2026, the Calc I and Calc II textbooks will be edited to convert the peer-reviewed Canvas assignments to the discussion format. An embedded rubric is used to provide grading consistency within and across classes. The rubrics are discussed and often modified in our Community of Practice groups. The single lowest score is dropped.
- **Final Exam Part 1** (8%) This is an automatically graded summative MyOpenMath assignments covering an entire course. Video examples and automated feedback are not included. Each problem is similar to a previous problem in a formative web-based homework or module checkpoint assignment. Each MyOpenMath assignment is wholly embedded in a Canvas assignment, so students do not leave the Canvas course to complete this part of the final exam, and instructors do not leave Canvas to set due dates and otherwise interact with this exam.
- **Final Exam Part 2** (16%) This is a summative paper-and-pencil assignment with two to four problems that are similar to those presented in Part 1 of the final. This part of the final is not comprehensive. Students embed pictures of their work in a Canvas assignment or complete these problems in class in a traditional exam setting.

ACTIVE LEARNING: For Calculus I and II, all math instructors in all learning modalities use the *Interactive Calculus on Canvas* textbooks. The interactive Canvas textbook for Calculus III will be finished in May 2026 and adopted for fall 2026. In our *Interactive Calculus on Canvas* textbook series, students learn a small chunk of material, practice what they just learned, and receive immediate feedback. Students receive embedded just-in-time review in the form of Prep modules that prepare them for the subsequent calculus module. However, not all calculus modules need a preceding prep module. Before encountering a problem in a summative assessment, students practice a similar problem and receive feedback in a formative assessment or example. Some learning materials include culturally relevant curriculum and

practices that support equity-minded teaching and learning. In each module, learning pages include texts, videos, graphs, diagrams, and worked examples. In the web-based formative homework assignments, students are allowed to work through up to 20 versions of each problem, with three attempts per version. The web-based module checkpoints are formative assessments in which students are allowed to work through two versions of each problem, with three attempts per version. A video example and automatic feedback are included with each web-based formative assessment. Students also encounter formative paper-and-pencil peer-reviewed assignments. After submitting a good-faith effort in the first attempt at a paper-and-pencil homework assignment, students can review the solutions page, correct their mistakes, and resubmit a final draft if they choose to do so. There are two types of summative assignments: web-based unit checkpoints (with immediate feedback, multiple attempts, but no hints, and no video examples) and peer-reviewed paper-and-pencil unit checkpoints (where they can correct their work and submit a final draft after reviewing their classmates' work and their peers' suggestions – as long as they engaged in productive struggle and submitted a good-faith effort on their first attempt). Since students have encountered similar problems in the formative assessments, there are no surprises in either of these summative assessments. Moreover, all three textbooks in our calculus series include *Prep* modules. The *Prep* modules are short and include just-in-time review for the subsequent calculus module (but not all calculus modules need a *Prep* module). In each module, links to the module's dedicated *Questions, Answers, & Tips* discussion board are included at the point of student need (e.g., at the bottom of each assignment). Likewise, links to Canvas tutorials are included at the point of student need throughout each Canvas textbook. Instructors monitor the Questions, Answers, and Tips discussion boards as well as students' difficulties with any assignments, and then prepare their lessons accordingly. In the synchronous classroom, time is spent on discussion, collaborative work, and engagement with brains-on activities. Teaching and learning are tailored to fit the needs of small groups of students as they work through the activities and review prerequisite skills in a just-in-time approach. Often, the classroom activities focus on items in *the Interactive Calculus on Canvas* textbook. Furthermore, this learning model employs a teacher-guided-discovery process that allows instructors to identify gaps in student understanding and use class time to remediate those gaps. The student-centered classroom can be taught in a flipped format, where modules are assigned as homework, and the teacher tailors the lesson plan to the students' learning needs based on their work in the Canvas module.

GROWTH MINDSET: Throughout the *Interactive Calculus on Canvas* textbook series, assignments are designed and formatted to encourage productive struggle, help students learn from their own and their classmates' mistakes, and allow them to correct and resubmit their work if they choose to do so. Moreover, in the Calculus III Canvas textbook, the assignment titled "12.1 Writing Constructive & Instructive Feedback (11 of 13)," teaches students how to provide constructive and instructive feedback to their peers. In June 2026, this assignment will be added to the Calculus I and Calculus II Canvas textbooks. In all learning modalities, students

are praised for their “interesting” mistakes and for sharing those mistakes so that the class can learn from them.

EXAMPLE ASSIGNMENT: A few features and images were lost in translation from Canvas to the linked PDFs below. For example, the links and the accordion drop-down “Solutions” are not active in the PDF documents.

Learning page (prepares students for the assignment)
Example assignment