**Pasadena City College**
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**COURSE NAMES:**
Single Variable Calculus I (Math 005A) + Support for Single Variable Calculus I (Math 105A)
Single Variable Calculus II (Math 005B) + Support for Single Variable Calculus I (Math 105B)

**UNITS:** Single Variable Calculus (5 units) + Support for Single Variable Calculus (0.5 units)

**REGISTRATION:** CRNs are linked so students must enroll in both to be allowed in. However, beginning Fall 2026 we plan to offer students three options for Calculus:

- Calculus I or II (for our Calculus students who do not require support)
- Calculus I or II with **embedded** support (for students wanting some support while taking Calculus: 90 lecture hours + 27 lab hours)
- Calculus I or II with support through the CAS (Calculus Achievement for Success) program (for students wanting program-level support while taking Calculus: 90 lecture hours + 54 lab hours)

**PLACEMENT:**

- Our CAS program is currently in their fourth year. Students have mainly had to enroll by application, as there are "perks" to the program.
- When we began to offer Math 105A and Math 105B in Fall 2024, and we offered a few sections of the courses and made it available to anyone who wanted to enroll, while trying to market the course to those students who may need it the most.
- In the second year, beginning Fall 2025, we only offered the Calculus I or II course with support through our CAS program. Half the students (15) could enroll at will, the other half had to apply and be accepted.
- In Fall 2026, the plan is to reduce the number of sections for the CAS program, but also offer the new embedded support course for mid-level students.

**SCHEDULE:** Right now all of our Calculus with support sections meet two times a week, with a typical course being scheduled from about 8:15am – 12:15pm or from 1:15pm – 5:15pm. Sometimes the support is scheduled before the parent course, sometimes after.

**TEXTBOOK:** Stewart Calculus, 9th Edition. (Late Transcendentals)

**COURSE MANAGEMENT SYSTEM:** We use the LMS Canvas, but every instructor creates their own Canvas course. Many instructors use Cengage's WebAssign for the practicing of material.

**GRADING:**

- Homework and Classwork (~10% - 15%) Instructors often use WebAssign (Cengage) for student practice. This section also includes things like exam reflections and class participation credit.

- Checkpoint Quizzes (~15%) These quizzes are short and are given almost every class day.
- Exams (50%) Four exams are given. Each exam is about four to five pages and 100 points. Students are given a couple of options to choose from for topics like Related Rates and Optimization.
- Final Exam (25%) The final exam is cumulative.

**ACTIVE LEARNING:** Everyday cards are places in holders around the room, and in every spot is a marker and an eraser. Students are randomly placed in groups of three around the room. During groupwork students may:

- Work on questions from their notes on the current course material.
- Work through an intro of some sort before a Calculus topic is covered. This is often in the form of a slide presentation (Google Slides/PowerPoint).
- Move around the room to different "stations" to prepare for exams, or even a cumulative review at the midsemester point.
- Work on manipulatives like card sorts or circuit loop activities.

**GROWTH MINDSET:** The Mathematics Division has facilitated multiple book clubs, and presentations (Google Slides) have been created where students receive information in a few slides a day.
The most recent books are: A Mind for Numbers by Barbara Oakley, Uncommon Sense Teaching by Barbara Oakley, and How to Be A Successful Student by Richard E. Mayer.

Instructors also do activities on topics like motivation, multitasking, and growth mindset.

**EXAMPLE ASSIGNMENT:** Multiple station activities have been created as a review for students, typically done before exams. These contain the material but in more "fun" ways, like Two Truths and a Lie, Match the Function to the Derivative, True or False Derivative Statements. Questions printed on paper are posted around on the whiteboards. Students walk around the room choosing different questions and answering them. This helps them "mix up" their brains a bit and study different topics in one sitting without knowing exactly what it will be.

**OTHER COURSE ELEMENTS**:

- Although the course includes two separately listed pieces (lecture + lab), the course is most often taught seamlessly, with students up and down on the whiteboards throughout the full class time, and the instructor using the lab time whenever they need based on the material being taught or reviewed that day.

**Grading in MATH 105A and 105B (Support for Single Variable Calculus I and II):**

- Our support course is a pass/no pass course, and instructors most often base their grading on participation and classwork.

**Typical Class Day:**

- Before every class:
  - Students have **optional** videos and/or notes in Canvas to help them prepare for the topics taught.
- Class begins with a few slides on A Mind for Numbers or Uncommon Sense Teaching or How to Be A Successful Student.
- Board Work: Students are put in groups, ask each other's name and answer a short ice-breaker question. Then for board work, a topic is introduced, like "The Algebra of Related Rates" or "Review of Limits and Intro to L'Hospital's Rule"
- Lecture: Short lecture on a topic as well as a couple of examples. Possible showing of short JoVE video(s) to help with understanding.
- Back on board for groupwork on the topic just covered.