



Chaffey College

Calculus 1 with Support (Math 65A/565A)

Background: Beginning in the fall of 2023, Chaffey College began to offer students the option of registering for a math course with a linked support course, to help them build prerequisite skills that are often lacking post AB-705. We created support courses for Statistics, Precalculus, Quantitative Reasoning, Business Calculus, and Calculus 1. These courses are taught by the same instructor as the parent course and are scheduled for one-hour either immediately before or after the class session.

Units: Calculus 1 (Math 65A) is a 4 unit course. The Concurrent Support for Calculus 1 (Math 565A) is a 2 unit course, but is not Degree-Applicable.

Placement into Calculus: STEM students are able to self-place in either the stand-alone Math 65A or Math 65A with support (Math 565A). The placement tool in the registration portal will lift prerequisites if it applies. Based on how the student answers the questions, which include their last previous math course, their high school GPA, and their Academic Career Community, a support course may be recommended to the student. If their GPA is in the lower band, then students get a "highly recommended" advisory to take a support course. Students in the middle GPA band get "recommended" to take a support course, and students with higher GPAs do not have any recommendations to take a support class. Non-STEM majors cannot self-place above Precalculus.

Schedule: I teach a 14-week (short-term) Calculus class that meets two days a week for 2 hours and 30 minutes, immediately followed by the support class that meets for 1 hour. In the past, Chaffey tried "unlinked" support courses, which were often taught by a different professor than the parent class and would have students from numerous classes with different pacing and structure, in one support class, which lead to numerous difficulties in pedagogy. These new linked courses have allowed teachers the ability to seamlessly integrate prior skills throughout the course, when deemed necessary, as opposed to teaching this content in a separate one-hour time slot.

Community of Practice: Prior to the piloting of these linked courses, our dean, Michael Wangler, organized a Community of Practice last Spring and into the summer, for anyone teaching a class with concurrent support in the fall. It began with a 6-hour training and planning session lead by Terrie Nichols from Cuyamaca College, who has a wealth of knowledge and experience in teaching and building course shells for classes with concurrent support. We worked in a large group at first, to lay the foundation for teaching and learning using the concurrent support model. But just as we always do in our biweekly community of practice meetings, we broke out into our course specific Communities of Practice to begin planning for the fall semester. Our dean has also been able to compensate us through the AB-1705 funds, for the time we spend together at these meetings.

Embedded Tutors/Supplemental Instruction: Every course with linked support has an embedded tutor for one hour, at least through Fall 2024, but hopefully longer. I am also lucky enough to have an SI (Supplemental Instruction) leader in my class each day for the remainder of the class time, which is not guaranteed for all courses with support. They both walk around to help students either at the desks or at the board and facilitate collaboration. Students are encouraged each class to attend the twice weekly SI sessions, which occur before class, and/or the twice weekly sessions with the embedded tutor after class.

Textbook: I have converted my course completely into a ZTC for the students. My course uses a free textbook from OpenStax (Calculus Volume 1), but that is purely for reference. In the past, the students work through problems from MyOpenMath for homework. But this last semester (Spring '26), I was part of a program to pilot the Learnvia platform with my students. I used this program on it's own, so the students worked through the lessons instead of watching my curated videos and they did homework through that system as well instead of MyOpenMath.

Canvas: My course is designed as ZTC, so students do not need to purchase a textbook. All materials, resources, and assignments are provided in Canvas. I run a mostly flipped classroom model in which the students will watch my videos at home so that the majority of class time is spent working on problems. I recorded my videos then uploaded them into WeVideo (formerly PlayPosIt), primarily so I can see who watched the video and give them points for it. But this program is also great because I can add interactions/questions at various points throughout the video to check for understanding. When we work problems in class, the students are up at the boards in groups of 2-3 for the majority of the class time. The assignments are completed through the free online assessment system, MyOpenMath.

Growth Mindset: On the first day of class, I provide students with a couple handouts/activities about a growth vs fixed mindset, what it is, and how to use it to your advantage, which they then discuss and share out to the class. Growth mindset is a concept that is regularly interwoven into discussions and comments in and out of class.

Grading:

- Lesson Videos (5%) Students watch the topic video prior to coming to class through WeVideo so the class time can be better utilized for practice and productive struggle.
- Homework (5%) Students work through the assigned problems through MyOpenMath. They are encouraged to continue to work through each problem on the assignment until they earn 100%.
- Weekly Discussion (5%) Students post an initial response to a prompt that generally deals with the Affective domain (persistence, test-taking strategies, growth mindset, etc), then respond to two other classmates. These discussions are mainly to give them tips and tricks of how to be a successful college math student.
- Exams (60%) Students take 4 exams (limits, derivatives, applications, integrals) worth 15% each.
- Final Exam (25%) Students take a cumulative final exam

Grading in 65A/565A: Grading in Math 65A/565A is comprised of WeVideo (PlayPost) videos (10%), MyOpenMath assignments (10%), Canvas discussion posts (5%), in-person exams (50%), and a final exam (25%). Due to the integrated nature of Math 65A and Math 565A, a passing grade in Math 565A (P/NP) will be earned by demonstrating an understanding of the learning outcomes of Math 65A. A student cannot pass the corequisite course if that person does not pass the parent course.

Typical Class Day: A typical day in Calculus with Support begins with the students coming in prepared from watching the videos and they are then given an opportunity to discuss what they learned by working out a basic problem with their peers at their desks. I then give a brief 10 minute recap of what they learned in the videos, before they head to the boards with colored chalk (yes, chalk) and their own rags. During this time, they all work on the same problem at the same time, but often blend groups or share ideas between each other to maneuver and struggle through the problem. Periodically, I'll pause the work to have students analyze work in other groups to locate errors or comment on common errors that pop up. I will sometimes work out part of the problem for the class, to get them back on track. For some lessons, my colleagues and I have created some Amplify (formerly Desmos) activities that the students work on in class, to reinforce the content. Depending on the topic, students will need support with their algebra and trigonometry skills. So I will give a brief lesson on the support content, show a couple examples, then provide them with some calculus problems that utilize those skills (factoring, radicals, trig identities, etc).