



COURSE DESCRIPTION

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Calculus Fundamentals & Beyond

Calculus is far more abstract than other high school math classes, and many students struggle to develop a firm foundation. In fact, the simplest part of calculus is applying it. Most schools focus on simple applications rather than the more subtle and detailed ones, which allows for a more straightforward class but can result in an inflexible understanding of the mathematics. Mercer Education’s *Calculus Fundamentals & Beyond* fully embraces the foundational subtleties to give students the best opportunity to understand the entirety of single variable calculus. *Every idea is explained, and every theorem is related to practical applications and standardized test problems.* For many students this will be the first time they are exposed to complex mathematical ideas, and we take this into consideration in our in-class discussion and exercises.

The class runs throughout the school year. As with ME’s other group classes, it is invoiced in 2-month increments, and students may remain in the class as long as they wish. The curriculum will cover the topics of single variable calculus (e.g., AB, IB SL, IB HL, and some BC, including some topics not on the AP test), and the months of April and May will focus on review, AP/IB test prep as the AP and IB tests usually fall in early May. Subsequent classes will cover more advanced topics for those who are interested and spend more time addressing school subject based topics. In general, discussions of later concepts will incorporate the knowledge of previous ones, so, although students may enroll at any time, it is recommended that they start at the beginning.

Students will complete a weekly in-class handout designed to cement their understanding of the week’s work as well as prepare them for the following week’s concepts and assignments. They will also be assigned a standard array of calculus problems from a workbook, which may vary based on their respective needs along with a quiz to check on their current understanding, and they will have opportunities to address questions from their school classes, which will help determine the focus of this course.

This course is intended for students who wish to...

- Supplement their current first year calculus class by developing a more rigorous foundation and receiving more individual attention and opportunities to ask questions than most high school classes can provide.
- Review calculus topics they’ve already learned. It is very common for students to finish a calculus class with an understanding of how to use it but not why. Students who have already taken calculus can develop stronger fundamentals to prepare them for college courses as well as upcoming AP and IB tests.
- Prepare on one’s own. ME’s calculus course requires no outside knowledge of calculus, so motivated students who have completed a full year of pre-calculus can prepare for the AP/IB tests or further study.

COURSE HIGHLIGHTS

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| ▶ Meets weekly <u>via Zoom</u> on Saturdays or Sundays | ▶ Runs from September through June |
| ▶ Class Time: TBD based on student availability | ▶ Sign-up Deadline: “first come, first serve” |
| ▶ Approximately 2 hours (1’50”) per class | ▶ Limit 8 students per class |
| ▶ Rolling Admission, Invoiced in 2-month sessions | ▶ Cost: \$55 per class |

Enrollment in Mercer Education’s *Calculus Fundamentals & Beyond* class is limited to no more than 8 students. In order to facilitate scheduling, please complete ME’s *Application for Enrollment*, listing the time slots on Saturdays and Sundays when you/your child will be available to attend. We will determine the class schedule (weekends, details TBD) as quickly as possible at the start of September based on student availability and update students and their parents regarding the schedule as soon as we can.