CALCULUS I (MATH110005)

Instructor
Ian Banfield, ian.banfield@bc.edu. Office: Maloney 538. Office hours: TBA.

Meeting Times
Lecture MWF 9am @ Gasson 209 and Discussion Th 11am @ Gasson 301.

About the Course
The textbook is Stewart’s Single Variable Calculus, 8e, Early Transcendentals, Custom Edition for Boston College, which is available bundled with a WebAssign subscription at the Boston College Bookstore. Students also need access to the course’s WebAssign page to complete online homework. To sign up for WebAssign, go to https://www.webassign.net/login.html, click the “I have a class key” option on the right hand side and follow the instructions. The class key for this course is “bc 4134 3081”.

Alternatively, you can purchase a subscription for WebAssign and use the included eBook (if you intend to take Calculus II, consider the multi-term subscription), or purchase Stewart’s Calculus 8e (ISBN 978-1285741550).

This course is an introduction to differential calculus. This discipline was developed by Leibniz and Newton in the 17th century and introduces fundamental concepts to define and quantify the “rate of change of a quantity”. We will cover chapters 1-4 of our textbook.

**Chapter 1:** Pre-calculus review. (1 week).

**Chapter 2:** Limits and an Introduction to derivatives. Concept of a limit, properties of limits, formal definition, Continuous functions, Intermediate Value Theorem, Rates of Change, Definition of derivatives (4 weeks).

**Chapter 3:** Properties of derivatives. Derivatives of Common Functions, Basic Properties, Chain Rule, Implicit Differentiation, Related Rates, Linear Approximation. (4 weeks).

**Chapter 4:** Applications of differential calculus. Extreme Values, Mean Value Theorem, L’Hospital’s Rule, Optimisation, Newton’s Method. (3 weeks)

Grades, written homework, a lecture-by-lecture log and auxiliary material will be published on Canvas.

Assessment
There are three midterms, scheduled for 25th Sep, 30th Oct and 20th Nov. The final exam will be on Monday, 14th Dec, 4pm. Use of a calculator or notes is not permitted during the exams.

Each midterm counts 12% towards your final grade, the final exam 44% and class participation and homework assignments 20%. Written homework assignments will be assigned and updated during the week – check Canvas regularly or set up reminders to receive a notification when assignments are posted/edited - and are due every Friday at the start of the lecture. You may submit one written assignment up to 5 days late, but further late assignments will receive no credit. Online homework assignments will be available after the lecture – MWF, except for exam and review days - and are due midnight the same day.
You are expected to show and explain your work on homework assignments and exams. Clear reasoning is paramount in mathematics and you are expected to carefully write down all the steps your reasoning. A correct answer without explanations, or critical steps missing, may receive very little or no credit.

If you miss an exam or homework assignments due to illness or other extenuating circumstances, please inform your Dean or me as soon as is feasible, and provide a doctor’s note or other appropriate documentation.

In addition to the lecture and discussion, you are expected to spend at least 8 hours per week on this course.

**Academic Integrity**

Please refer to [http://www.bc.edu/offices/stserv/academic/integrity.html](http://www.bc.edu/offices/stserv/academic/integrity.html).

I encourage students to work together on homework assignments, but what you hand in must be based on your understanding and I reserve the right to verify this, e.g. through asking you to explain your answer to me. If you work in groups, mention this on your assignment.

**Students with Disabilities**

If you are a student with a documented disability seeking reasonable accommodations in this course, please contact Kathy Duggan, (617) 552-8093, dugganka@bc.edu, at the Connors Family Learning Center regarding learning disabilities and ADHD, or Paulette Durrett, (617) 552-3470, paulette.durrett@bc.edu, in the Disability Services Office regarding all other types of disabilities, including temporary disabilities. Advance notice and appropriate documentation are required for accommodations.

**Resources & Support**

If you need help or have questions, see me after class or during my office hours. No appointment is needed for office hours. The mathematics department offers a walk-in tutoring service run by undergraduates in TBA, usually between 10am and 3pm.

Tutoring (typically one-on-one) is also available at the Connors Family Learning Center ([http://www.bc.edu/content/bc/libraries/help/tutoring/tutoringinfo.html](http://www.bc.edu/content/bc/libraries/help/tutoring/tutoringinfo.html)). Appointments can be made by calling 617-552-0611. The center is located on the 2nd floor of the O’Neil library.

Cramming is typically a very bad idea in mathematics, and I strongly encourage you to spend some time thinking about the material on a daily basis. Remember that typically, the majority of credit is awarded for knowing how to arrive at the correct answer, not the answer itself.

In particular, stay up to date with the material we cover in the lectures – falling behind can be very dangerous, and the #1 reason why students fail this class. Staying current with the material will also make completing the online assignments (due MWF) much easier.