

MATH 10a: METHODS AND TECHNIQUES OF CALCULUS
Spring 2006

Section 1 Instructor: Mario Bourgoïn, Goldsmith 303, x63072, mob@brandeis.edu

Course coordinator: Mario Bourgoïn, Goldsmith 303, x63072, mob@brandeis.edu

TEXT: *Single Variable Calculus: Concepts and Contexts*, James Stewart, 3rd edition.

SYLLABUS: The course will cover the following sections of the text (as time allows):

Sections 1.1–1.3, 1.5, 1.6. **Precalculus material that you will review on your own. Only Section 1.6 will be taught in class.**

- Section 2.1 The Tangent and Velocity Problems
- Section 2.2 The Limit of a Function
- Section 2.3 Calculating Limits Using the Limit Laws
- Section 2.4 Continuity
- Section 2.5 Limits Involving Infinity
- Section 2.6 Tangents, Velocity and Other Rates of Change
- Section 2.7 The Derivatives
- Section 2.8 The Derivative as a Function
- Section 2.9 What Does f' Say about f ?

- Section 3.1 Derivatives of Polynomials and Exponential Functions
- Section 3.2 The Product and Quotient Rules
- Section 3.3 Rates of Change in the Natural and Social Sciences
- Section 3.4 Derivatives of Trigonometric Functions
- Section 3.5 The Chain Rule
- Section 3.6 Implicit Differentiation
- Section 3.7 Derivatives of Logarithmic Functions
- Section 3.8 Linear Approximation and Differentials

- Section 4.1 Related Rates
- Section 4.2 Maximum and Minimum Values
- Section 4.3 Derivatives and Shapes of Curves
- Section 4.5 Indeterminate Forms and L'Hôpital's Rule
- Section 4.6 Optimization Problems
- Section 4.9 Antiderivatives

EXAMS: There will be two midterm exams and a final exam:

Midterm 1, Monday, February 13th, 7:00–9:00 p.m.

Midterm 2, Monday, March 27th, 7:00–9:00 p.m.

Final Exam, Tuesday, May 9th, 9:15 a.m.–12:15 p.m.

Please note that midterm exams are in the evening. If you have a genuine and irremovable schedule conflict (such as a class, lab, or another exam) with a Math 10a midterm exam, inform your instructor at least two weeks before the exam. If the conflict can't be resolved, we will offer you a make-up exam. **You must obtain permission to miss an exam from your instructor BEFORE the exam is held.** Rescheduling final exams can only be done in exceptional circumstances, and **under no circumstances will final exams be given early.**

GRADES: Your grade in the course will be based on the following:

1. **Homework (10% of your grade).** Homework assignments will be collected once or twice a week. **No late homeworks will be accepted**, but your three lowest homework grades will be dropped. We encourage you to discuss homework problems with your classmates, but you should write the solutions up on your own. We will usually not have time to discuss homework questions in class. If you have questions about homework problems, you should go to your instructor's office hours or to evening tutoring (see below).
2. **Quizzes (10% of your grade).** Short quizzes will be given often. **No make-up quizzes will be given.** Missed quizzes count as zeroes. However, the lowest 25% of your quiz grades will be dropped.
3. **Two midterm exams (each 25% of your grade).**
4. **Final exam (30% of your grade).**

CALCULATORS: You should have access to a scientific calculator. You do not need a graphing calculator. Calculators are **not** allowed during exams or quizzes, nor will they be used in class.

WEBCT: All course materials for Math 10a will be available online on WebCT. Log in to WebCT at <https://webct.brandeis.edu> using your Unet username and password.

OFFICE HOURS: You are encouraged to use your instructor's office hours whenever you have questions about the course material. If you can't attend your instructor's office hours, make an appointment with him/her to meet at another time.

EVENING TUTORING: You are welcome attend the Math Department's evening tutoring sessions whenever you like. These are available to students in Math 5a, 10a and 10b every Monday, Tuesday, Wednesday and Thursday evening anytime between 7:00 pm and 9:00 pm. Tutoring sessions are held in the Math Common Room (room 300) and begin on Tuesday, September 6th.

STUDENTS WITH DISABILITIES: If you are a student who needs academic accommodations because of a documented disability you should contact Professor Mario Bourgoïn and present your letter of accommodation as soon as possible. Professor Bourgoïn's email is mob@brandeis.edu and his extension is 6-3072. If you have questions about documenting a disability or requesting academic accommodations you should contact Beth Rodgers-Kay in Undergraduate Academic Affairs at 6-3470. Letters of accommodations should be presented at the start of the semester to ensure provision of accommodations. Accommodations cannot be granted retroactively.

ACADEMIC INTEGRITY: You are expected to follow the University's policy on academic integrity (see <http://www.brandeis.edu/studentlife/sdc/ai>). In particular, you are expected to be familiar with Section 3 of the Rights and Responsibilities handbook. If you have any questions about how these policies apply to your conduct in this course, please ask. Instances of alleged dishonesty will be forwarded to the Office of Student Life for possible referral to the Student Judicial System.

SELF-QUIZZES: There is an icon entitled Self-Quizzes on your Math 10a WebCT coursepage. The self-quizzes cover the material being studied in the course. Complete solutions to each self-quiz are given. We encourage you to use the self-quizzes to check your mastery of the course material, on your own time and at your own pace, without the pressure of a grade. *These self-quizzes are optional and for your use only, and have no effect on your grade.*