MATH 10b: Techniques of Calculus II, Summer 2016

Instructor: Katherine Raoux
Office: Goldsmith 103
e-mail: kraoux@brandeis.edu
Office hours: TBA

Course Meets: July 11-August 10, Monday, Tuesday, Wednesday, Thursday, 9:00am-10:50am


Prerequisites: A grade of C- or above in Math 10a or a satisfactory score on the calculus placement exam at: http://www.brandeis.edu/registrar/newstudent/testing.html#mathtest You must also know the material in Section 4.8, which was covered in Math 10a.

Exams:

- Midterm Exam: Thursday 7/28 in class
- Final Exam: Thursday 8/11 9am-12pm

Grades: Your grade in the course will be comprised of the following:

1. : Homework (10%) I will assign homework daily. No late homework will be accepted but, I will drop your lowest 3 homework grades.
2. Weekly Quizzes (30%) Every Thursday during class I will give a 50 minute quiz, except the the days of the exams, 7/28 and 8/11.
3. Midterm Exam (30%)
4. Final Exam (30%)

Calculators: Calculators are not allowed during exams or quizzes. You should have access to a scientific calculator for homework, but you do not need a graphing calculator.

Students with disabilities: If you are a student who needs academic accommodations because of a documented disability you should email me and present your letter of accommodation as soon as possible. If you have questions about documenting a disability or requesting academic accommodations you should contact the Office of Academic Services, Disability Services. Letters of accommodations should be presented at the start of the term to ensure provision of accommodations. Accommodations cannot be granted retroactively.

LATTE: All course materials for Math 10b will be available online on LATTE, http://latte.brandeis.edu Log in using your Unet username and password.

Academic Integrity: You are expected to follow the University’s policy on academic integrity, which is distributed annually as section 4 of the Rights and Responsibilities Handbook (http://www.brandeis.edu/studentaffairs/sdc/rr/index.html). Instances of alleged dishonesty will be forwarded to the Department of Student Development and Conduct for possible referral to the Student Judicial System. Potential sanctions include failure in the course and suspension from the University. If you have any questions about how these policies apply to your conduct in this course, please ask.

Learning Goals for Math 10b: The learning goals for the course are as follows:

- Understand the definition of the definite integral, and its interpretation in terms of area and net change.
- Understand the relationship between differential and integral calculus (The Fundamental Theorem of Calculus).
- Learn to compute elementary integrals and to use the following techniques of integration: substitution, integration by parts and partial fractions.
• Understand improper integrals and learn to determine if an improper integral converges.
• Understand some of the applications of integration, including area, volume, arc length and average value of a function.
• Understand the definition of an infinite series and learn to test infinite series for convergence.
• Understand the definition of a power series and learn to find the interval of convergence of a power series.
• Learn to find the Taylor series of a function

Sections covered
• 3.6 Inverse Trig functions and their Derivatives
• Appendix F Sigma notation
• 5.1 Areas and Distances
• 5.2 The Definite Integral
• 5.3 Evaluating Definite Integrals
• 5.4 Fundamental Theorem of Calculus
• 5.5 The Substitution Rule
• 5.6 Integration by Parts
• 5.7 Additional Techniques of Integration (Partial Fractions)
• 5.9 Approximate Integration (Midpoint and Trapezoid rule)
• 5.10 Improper Integrals
• 6.1 More about Areas
• 6.2 Volumes
• 6.4 Arc Length
• 6.7 Applications to Economics and Biology
• 7.1 Introduction to Differential Equations
• 7.3 Solving Separable Differential Equations
• 8.1 Sequences
• 8.2 Series
• 8.3 Integral and Comparison Tests
• 8.4 Other Convergence Tests
• 8.5 Power Series
• 8.6 Representations of Functions as Power Series
• 8.7 Taylor and Maclaurin Series