Math 110a – Introduction to Real Analysis, Part I
Information for students, Fall 2016

Class meets at: Gerstenzang 122, TTh 2:00 PM–3:20 PM
Lecturer: Dmitry Kleinbock, office: Goldsmith 207, phone 6-3059;
    office hours: Wed afternoon (more precisely TBA);
    e-mail address: kleinboc@brandeis.edu
Grader/TA: TBA

Text: Foundations of Mathematical Analysis, by Johnsonbaugh and Pfaffenberger,
There is a copy on reserve in the library. We will cover Chapters 1–8 with some
omissions.

Learning Goals for Math 110a. The purpose of this course is to study the
analysis of the real numbers and real-valued functions, emphasizing careful mathe-
matical thinking and proof writing. As an honors course focused on proof-writing,
it is highly recommended that you have taken Math 23b or passed the Math 23b
exemption exam. In fact, mathematical thinking and proof writing could be said
to be the principal emphasis, with real analysis as the mathematical topics you will
practice with. The goal of the first half of the course will be to understand the real
numbers, including sequences and series of real numbers and real-valued functions
on real numbers that you have studied in single-variable calculus. Topics to be
learned about include limits, continuity, infinite series and their convergence. The
goal of the second half of the course is to understand metric spaces, the basic ab-
straction from the real numbers, with some training in point-set topology included.
Topics include open and closed sets, distance, continuous functions on metric spaces,
connectedness, compactness and completeness. composed of functions themselves.

4-Credit Course. Success in this 4 credit hour course is based on the expectation
that students will spend a minimum of 9 hours of study time per week in preparation
for class (readings, homework, preparation for exams, etc.).

Grades will be computed as follows:

<table>
<thead>
<tr>
<th>Component</th>
<th>Weight</th>
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<tbody>
<tr>
<td>A midterm exam, in class, date TBA</td>
<td>25 %</td>
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<tr>
<td>The final exam, as scheduled by registrar</td>
<td>45 %</td>
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<tr>
<td>Graded homework</td>
<td>30 %</td>
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The date of the midterm exam will be announced in advance. Homework will
be assigned once every one or two weeks and will be due the following week; the
deadline for the first assignment is Thursday, 9/1. Most of the homework problems
will be drawn from the textbook. Other parameters, such as class participation
(answering or asking questions in class) and bonus points (for optional problems or
exceptionally thoughtful analysis of tests/homework) will also affect the students’ performance. Late homework will be accepted with a 25% penalty, up to one week after the due date and before the solution has been posted. Homework submitted more than one week late or after the solution has been posted will not be accepted. Students who miss an exam will not be granted a make-up test unless there is a documented medical or other emergencies.

**Policies:** You may discuss the homework problems with your classmates; however, if you do, you should write on your homework submission the names of the classmates with whom you have discussed the assignment. You do not need to mention any help you have received from the instructor or the TA. **You may not copy the written work of another student or from any other sources, or allow another student to copy your written work.** What you submit should be your own work. You should state the source of a mathematical fact you use when writing up your work, unless the fact you use is something you had learned earlier as part of your prerequisite for 110a. You can state the source by citing a theorem in the textbook, the page number of an exercise we have gone over in class or in a prior homework, or a fact we have proved in class. Both the instructor and the TA are available during their weekly office hours or by appointments. Students are encouraged to seek help from them on any course related matters.

**Students with Disabilities:** If you are a student with a documented disability on record at Brandeis University and wish to have a reasonable accommodation made for you in this class, please contact me immediately.

**Academic Integrity:** You are expected to be familiar with, and to follow, the University’s policies on academic integrity. Please consult Brandeis University Rights and Responsibilities for all policies and procedures. All policies related to academic integrity apply to in-class and take home projects, assignments, exams, and quizzes. Students may only collaborate on assignments with my permission. Allegations of alleged academic dishonesty will be forwarded to the Director of Academic Integrity. Sanctions for academic dishonesty can include failing grades and/or suspension from the university.

**Have a great semester!**