MATH 3322/01 Analysis II (BS track) Spring 2016 Syllabus
MWF 11:00-11:50, Cushing 335

Instructor: Mark Reeder, Mahoney 519, reederma@bc.edu

Office hours: Mon 2-3, Tues 2-3, Thurs 3-4, Fri 3-4 and by appointment. Email is good for quick questions and hints.

Course website: https://www2.bc.edu/mark-reeder/3322.html


Further reading (optional): Principles of Mathematical Analysis, 3rd edition, by W. Rudin

Course Topics: This is the second semester of a rigorous two semester course in Real Analysis. Here is a tentative outline of topics. (The symbol (n) means approximately n lectures on that topic or subtopic.)

I. Sequences and series of functions (12) Pugh ch4, Rudin ch7,
   - Uniform convergence, M-test, Stone-Weierstrass Thm (6)
   - Continuous nowhere-differentiable functions, Baire Category Thm (3)
   - Solutions of ordinary differential equations (3)

II. Fourier Series and Partial Differential Equations (12) Class notes
   - Fourier series (6)
   - Partial Derivatives (2)
   - PDE and Fourier Series (4)

III. Higher dimensional Analysis (12) Pugh ch 5, Rudin ch 9
   - Derivatives as linear maps (2)
   - Multiple Integrals (5)
   - Stokes’ Thm (3)
   - Brouwer fixed-point thm (2)

Prerequisites: As this is a continuing course you are expected to have had MATH3321. If you took another first-semester course in analysis, please see me, as well as my web page for MATH3321. You must also have taken a one semester course in Linear Algebra, such as MATH2210.

Homework: It will be assigned and collected every week, approximately. HOMEWORK WILL NOT BE ACCEPTED AFTER THE DAY IT IS DUE. Your lowest homework score will not count, so missing one assignment will not harm your grade. You can discuss homework problems with others, but
the solutions you type up and hand in should be your own work. Copying directly from someone else will be considered a violation of academic integrity. Your homework must be typed in \LaTeX.

**Exams:** We will have two in-class exams on **Wed Feb 22** and **Wed April 5**, along with a final exam **Saturday May 13 at 9:00 am**.

Calculators, cell phones and other electronic devices may NOT be used on any exam. Using an electronic device on an exam will be considered as cheating. See www.bc.edu/integrity.

**Make-up policy** Unexcused absence from an exam results in a zero score. If you have a legitimate reason for missing an exam, you must arrange to take the exam **before** the scheduled day of the exam. If you are sick the day of the exam, or have a family emergency, etc. go to Health Services or your dean’s office; they will provide me with documentation of your illness or emergency.

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.

**Grades:** The scores are weighted as follows.

<table>
<thead>
<tr>
<th>Component</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>Homework</td>
<td>30%</td>
</tr>
<tr>
<td>Exams</td>
<td>20% each</td>
</tr>
<tr>
<td>Final</td>
<td>30%</td>
</tr>
</tbody>
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Thus, at the end of the course you will receive a number $N$, using this formula:

$$N = \left( \frac{3}{10} \times \text{HW} \% \right) + \left( \frac{2}{10} \times \text{Exam 1} \% \right) + \left( \frac{2}{10} \times \text{Exam 2} \% \right) + \left( \frac{3}{10} \times \text{Final} \% \right)$$

Your grade will be determined by your value of $N$, based on the following two rules:

1) Any student with the highest $N$ gets an A.
2) Students with nearby $N$’s receive nearby grades.