Syllabus for

Abstract and Real Analysis 2

Math 714, Spring 2017

Stanislav Jabuka
Abstract and Real Analysis 2
Math 713, Fall 2016

Location AB 206
Time Mondays and Wednesdays, 4:00 – 5:15 pm
Instructor Stanislav Jabuka
Telephone (775) 784-6816
Email jabuka@unr.edu
Office DMS 318
Office hours Mondays 10:00 – 11:30 am,
   Wednesdays 2:30 – 4:00pm,
   and by appointment.

Course Website http://wolfweb.unr.edu/homepage/jabuka/analysis/


Course Description
This course is a continuation of Math 713 and the material covered here picks up where Math 713 left off. We will start by continuing the study of product measures in Chapter 6, and learn about Lebesgue integration in product spaces. In Chapter 7 we will see applications of measure spaces and Lebesgue integrals to probability theory. In Chapter 8 we will turn to differentiation, an operation on functions that was hitherto ignored but which is essential in, for example, generalizing the Fundamental Theorem of Calculus to a version that uses the Lebesgue rather than the Riemann integral. In Chapter 13 we shall study function spaces, most notably Lp-spaces. Time permitting, we shall close the semester with material from Chapter 17 where we will learn about the Hausdorff measure and its use in fractal geometry.

Student Learning Outcomes

1. Students will be able to demonstrate understanding of advanced topics in measure theory.
2. Students will be able to demonstrate understanding of advanced topics in modern integration
3. Students will be able to demonstrate understanding of the relation between integration and differentiation.
Course Prerequisite
Math 713, or consent from the instructor.

Grading: Your overall course grade is based on homework assignments, a midterm exam and a cumulative final exam. These components contribute to your final grade as in the left table below.

<table>
<thead>
<tr>
<th>Percentage</th>
<th>Component</th>
<th>Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>50%</td>
<td>Homework</td>
<td>88% - 100% A</td>
</tr>
<tr>
<td>25%</td>
<td>Midterm exam</td>
<td>76% - 87% B</td>
</tr>
<tr>
<td>25%</td>
<td>Final exam</td>
<td>63% - 75% C</td>
</tr>
<tr>
<td>50% - 62%</td>
<td></td>
<td>50% - 62% D</td>
</tr>
<tr>
<td>0% - 49%</td>
<td></td>
<td>0% - 49% F</td>
</tr>
</tbody>
</table>

The table on the right indicates how your final course grade is determined based on your percentage of earned points. In borderline cases, a “+” or “-” may be added to your grade, at the discretion of the instructor.

Homework
Homework assignments will be given most weeks, and you will have one week to complete them. Late homework will not be accepted unless there are extenuating circumstances.

Homework is the most important component in learning mathematics. I suggest that you try to work through as many as you have time for of the exercises found at the end of each section in the book, ideally all of them.

I encourage you to work on homework assignments with your fellow students in the class. I do ask however that when you write up graded homework assignments that it be in your own words, reflecting your own understanding of the matter. You are always welcome to ask me questions about the homework during office hours.

Exams
The midterm and final exams are scheduled for

- **Midterm exam** Monday, March 27 (tentative date).
- **Final exam** Monday, May 15, 2:45 - 4:45pm.

The midterm exam will be a take-home exam. You will be given the chance to re-write and re-submit problems from the midterm on which you have received 5 or
fewer points (with each problem graded out of 10 points), to earn extra credit, for a maximum of 8 points per problem.

Policies

Attendance
Attendance is not required but is strongly recommended. You are responsible for all of the material presented in class. If you do have to miss a lecture, please get notes and assignments from another student in the class. If this is not possible, contact the instructor.

Academic misconduct
Any behavior inappropriate to test taking that may disturb other students will be considered cheating. You may not read notes or books while taking tests unless you have permission from your instructor.

Equal opportunity
The Department of Mathematics and Statistics encourages any student needing to request accommodations for a specific disability, to meet with their instructor at their earliest convenience, to ensure timely and appropriate accommodations.

Conduct
Please turn off your cell phones before the start of the lecture. Try to arrive to class on time so as not to disturb the lecture by entering the classroom late. Behavior that disrupts the learning environment is disrespectful to your fellow students and to the instructor. Please be considerate and polite towards your peers and teachers.

Audio and Video Recording
The following is university policy: “Surreptitious or covert video-taping of class or unauthorized audio recording of class is prohibited by law and by Board of Regents policy. This class may be videotaped or audio recorded only with the written permission of the instructor. In order to accommodate students with disabilities, some students may be given permission to record class lectures and discussions. Therefore, students should understand that their comments during class may be recorded.”