Syllabus–Math 511, Spring 2018
Introduction to Analysis II

Instructor: Matthew Blair
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Office: SMLC 330
Meeting times/location: Monday, Wednesday, and Friday 9-9:50am in SMLC 352.
Course Website: `www.math.unm.edu/~blair/math511s18.html`
Office Hours: 2:15-4:15pm Mondays and 1:30-2:30pm Tuesdays. Also by appointment.
Prerequisites: Successful completion of Math 510 at UNM is a firm prerequisite. Consult the instructor concerning possible equivalent courses at another university. Students are expected to have a thorough background in proof writing and mathematical rigor.
Texts:

1. *Principles of Mathematical Analysis*, Third Edition, by Walter Rudin.
2. *An Introduction to Analysis*, Fourth Edition, by William R. Wade (Chapter 12 only).
3. *A Geometric Introduction to Differential Forms*, Second Edition, by David Bachman.

Course Description

Continuation of 510. Exponential, logarithmic, and trigonometric functions; Gamma function (Ch. 8 Rudin). Fourier Series (Ch. 8 Rudin). Differentiation in $\mathbb{R}^n$ (Ch. 9 Rudin). Inverse/implicit function and rank theorems (Course notes and Ch. 9 Rudin). Integration in $\mathbb{R}^n$ (Ch. 12 Wade). Differential forms and Stokes' Theorem (Course notes and Bachman). The course also aims to prepare students for the qualifying examination in real analysis.

Grading Scheme

Homework: 35%, 2 midterm exams: 20% each, Final exam: 25%. Requests to change grading modes to Audit or Credit/No-Credit will be considered, but these requests should be fully processed before May 4, the last day of class.

Exams

There will be in-class midterms on Wednesday, February 21 and Wednesday, April 4. The final exam is Wednesday, May 9, 7:30-9:30am, in our usual class room. Information regarding the content of the exams will be provided in class as the time approaches. If you must miss an exam for a **valid** and **documented** reason such as illness, family emergency, active participation in scholarly or athletic activities, then you should notify the instructor as soon as possible. Otherwise, registration for the course constitutes an agreement that you will make every possible effort to be present for the exams.

Homework

Homework will be assigned on a weekly basis, typically collected on Wednesdays, with possible exceptions on exam weeks and holidays. Assignments will be handed out in class and posted on the course website. Important considerations for homework include:

- **If you are stuck on a problem, get help in office hours.** This is what office hours are for! Reliance on combing through textbooks and searching the internet for solutions will only hinder your understanding of the material and your problem solving skills.
- **Each assignment must be written up on your own and in your own words**. You may discuss homework problems with others, but your own understanding must be evident in your written work. **Assignments that are excessively unoriginal will not go unnoticed**. No collaboration is permitted on the exams.
- **Policy on responsible internet use:** You may use the internet as well as other texts to supplement your reading and enhance your understanding of the material. **However, you may not seek out the written solutions of others for the purpose of preparing a graded homework set**. This includes solutions manuals for the text and solutions found or solicited on internet forums.
- **When writing a proof, limit yourself to theorems and definitions from the textbook and class.** Much of the homework is designed to see what can be solved using only the basic principles introduced to that point. Appealing to theorems from outside these two resources defeats this purpose and does not reflect your knowledge of the situation.
- **The instructor reserves the right to not accept late homework, for any reason.** If you feel you need extra time on an assignment, you need to approach the instructor before the due date and be prepared to have a conversation about your circumstances.
- **Presentation matters.** Your homework will be graded on the clarity and cogency of your mathematical reasoning. Take care to hand in a neat, legible assignment and staple the pages together in the upper left hand corner. Provide enough room for comments and other marks in the margins. The instructor does not supply a stapler for homework sets.
- **Hand in a *hard copy* of the assignment at the beginning of class.** Do not email a scanned copy of the assignment unless you have made *prior* arrangements with the instructor.
- **You are expected to read the textbook outside of class.** Reading sections in the book before they are discussed in class will help you to get the most out of class time and to stay on top of the material.
- **Don't neglect the "On your own" problems.** You will often be given homework problems which you are to do on your own, i.e. it will not be collected for a grade. These are typically assigned as problems of significance to think about without overloading an assignment with too many written problems.

Other expectations

- **You are expected to attend class.** Absences should be rare and warranted. If circumstances are causing you to miss a substantial amount of class, you should contact the instructor as soon as possible. Be ready to engage yourself in the lecture every class period.
- **You are expected to arrive to class on time.** Class will start promptly at 9am. Being punctual is important so that we may conduct important business at the start of each class period and so as not to disrupt the instructor or your classmates.
- **No extracurricular cell phone use during class time.** If an emergency requires you to answer a call or text a message please handle this outside of the classroom. Please mute your phone during class time, particularly if you use your phone to take pictures of the chalkboard.

Email

On occasion, important announcements may be communicated through email. It is your responsibility to ensure that you either check the email account on file with University regularly or have these messages forwarded to an account which you do check regularly.

Email is a good way to communicate with the instructor during the working day, but please do use good email etiquette, including the use of greetings and topical subject headings. These are important to organize messages and distinguish your message from spam. Given the sophistication of the subject, mathematical questions cannot always be answered over email, particularly if there are several questions or if the answer is involved.

Academic Integrity

Academic dishonesty will not be tolerated. Any violations of academic ethics will be investigated thoroughly and penalized accordingly. Academic dishonesty as defined by the student code of conduct includes but is not limited to "dishonesty in quizzes, tests or assignments; claiming credit for work not done or done by others; hindering the academic work of other students; misrepresenting academic or professional qualifications within or without the University; and nondisclosure or misrepresentation in filling out applications or other University records."

Title IX Statement

The classroom and university should always be spaces of mutual respect, kindness, and support, without fear of discrimination, harassment, or violence. Should you ever need assistance or have concerns about incidents that violate this principle, please access the resources available to you on campus, especially the LoboRESPECT Advocacy Center and the support services listed on its website (`loborespect.unm.edu/`). Please note that, because UNM faculty, TAs, and GAs are considered "responsible employees" by the Department of Education, any disclosure of gender discrimination (including sexual harassment, sexual misconduct, and sexual violence) made to a faculty member, TA, or GA must be reported by that faculty member, TA, or GA to the university's Title IX coordinator. For more information on the campus policy regarding sexual misconduct, please see: `policy.unm.edu/university-policies/2000/2740.html`.

Special Arrangements

Accomodations will be made for students with documented disabilities. Students requiring such accomodations must make arrangements with the Accessibility Resource Center (ARC) and inform the instructor prior to the first exam.