Math 414/514, Introduction to Analysis II, Winter 2022

Class Time:	TuTh 8:30-9:50a.m. in 252 Straub
Instructor:	Dr. Marcin Bownik
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Office Hours:	M 10–11, Tu 10–11, and F 11–12, or by appointment
Textbook:	*Principles of Mathematical Analysis*, Walter Rudin, 3rd edition

1. **Learning Outcomes.** This course introduces students to the subject of mathematical analysis. The course, which is the second of three in the sequence, covers most of the chapters 6–9 of the textbook. Students should be able to solve problems by providing clear and logical proofs involving the following concepts:
   - Riemann-Stieltjes integral, change of variable, integration by parts, the fundamental theorem of calculus,
   - uniform convergence of sequences and series of functions, equicontinuous families of functions, Stone-Weierstrass Theorem,
   - power series, exponential and logarithmic functions, trigonometric functions, Fourier series, the Gamma function,
   - differentiation of functions of several variables, the inverse function theorem, the implicit function theorem, the rank theorem, and differentiation of integrals with parameter.
2. **Exams.** There will be a midterm in-class exam on Thu. Feb. 10 and a final exam on Mon. Mar. 14, 10:15-12:15.
3. **Homework.** Homework problems will be assigned every week and be due in on Wednesday on the material of the previous 1–2 weeks. Homework needs to be submitted on Canvas. Group work on homework is encouraged, but each student must individually write and turn in her/his own assignment.

   Most homework problems consists of proofs. In particular, if a problem asks for an example or counterexample, you must prove that your example has the required properties. Likewise, if a problem asks if something is true, you must not only decide whether it is true, but also provide a proof or counterexample.

4. **Grading.** The grading distribution will be as follows:

Homework	25%
Midterm Exam	25%
Final Exam	50%

5. **University policies.** A link to university policies on accessible education, academic misconduct, and emergency:
   https://provost.uoregon.edu/syllabus-guidelines
   For COVID-related information see:
   https://provost.uoregon.edu/winter-2022-academic-council-expectations