

Math 442: Foundations of Analysis II

Meets: TuTh 4:30–5:45p in LD002

Final Exam: Tuesday, May 1, 3:30–5:00p

Replacement Instructor: Carl Cowen **Office:** LD 224P **Phone:** 278-8846

Office Hours: MWF 10:40a – noon, or by appointment

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URL: <http://www.math.iupui.edu/~ccowen/Math442.html>

General Information and Goals

Math 442 is a continuation of Math 441 and the two courses together form a foundation for analysis, both as a rigorous treatment of many topics in calculus and as an introduction to the mathematical area of analysis generally and the analysis of real-valued functions of a real variable specifically. Many of the topics in these courses came about in response to deepening understanding of the subject over the course of the decades following the development of calculus to the formalization of many of the basic ideas at the end of the 19th century. This formalization forms an important backdrop and motivation for the changing view of rigor and the foundations of mathematics generally that were important in 20th century mathematics. Real analysis, including much of the material of these courses, is at the heart of much of modern mathematics and forms essential background for the understanding of these subjects and their applications.

Text: *Real Mathematical Analysis*, Springer Verlag (2002), by Charles Pugh

The topics covered will be those of 3.3, 4.1 – 4.5, parts of Chapter 6 on Lebesgue measure and integration, and, if there is time, the parts of Chapter 5 that lead to the inverse and implicit function theorems.

Homework, Test, Exam, and Grading Policies

In addition to the comprehensive Final Exam on May 1, there will be 2 tests during the semester, the first of which will be on March 27 and will cover 3.3, 4.1, 4.2, 4.4, and the fixed point theorems of 4.5.

Grades for the course will be based on the homework (approximately 30%), two midterm tests (approximately 20% each), and a comprehensive final examination (approximately 30%).

General Academic Policies

The work you submit for homework, tests, and exams must be your own. For homework, you will probably find it beneficial to consult with other students about the material and this kind of conversation and collaboration is encouraged. At the end of the consultation, however, each participant is expected to prepare their own summary of the discussion and their own solution to the problem or project. More information about student conduct can be found at

<http://registrar.iupui.edu/misconduct.html>

More information concerning adaptive services for learning or other disabilities at IUPUI can be found at

<http://life.iupui.edu/aes/>

The policies for this class will be those derived from IUPUI's policies on academic conduct and adaptive services.