

Spring 2015 – Math 4023: Introduction to Modern Analysis

MWF 10:30 – 11:20pm, HSCI (Human Sciences) 129

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Prerequisites: Math 2163 (Calculus III) and Math 3163 (Introduction to Modern Algebra) or permission of instructor.

Textbooks:

A. *Book of Proof*, Second Edition (2013) by Richard Hammack. [[Web](#)]

B. *Elementary Real Analysis*, Second Edition (2008), Volume 1 by Brian S. Thomson, Judith B. Bruckner, and Andrew M. Bruckner. [[Web](#)]

Course Goals and Plan: We aim to achieve a thorough understanding of the key elements of real analysis – real numbers, sequences, functions, limits, and basic topology. We will place special emphasis on mathematical rigour and on understanding, devising, and writing proofs. We will begin with a fast-paced overview of the basic elements of logic and proof before proceeding to discuss topics in real analysis, which is the main focus of this course.

Time Commitment: Plan to spend about 8-10 hours *outside of class* on Math 4023 each week. This includes reading the text (*before* and after lecture), working on problems, discussions with other students, talking to me during office hours or over e-mail.

In Class: I like a lively classroom environment with plenty of student interaction. I expect you to come prepared to lectures and to participate actively in classroom discussions. To maintain a vibrant academic space we need it to be free of distractions – especially from electronic gadgets. So, turn all of them off! We only need writing implements, and sharp and attentive minds to do Mathematics. Please talk to me if you need an exception to this requirement.

Grades: Earning a score of 90% guarantees an A, 80% a B, 70% a C, and 60% a D. This score will be computed as follows.

Homework	40%
Exams	30% (15% each)
Final Exam	30%

Homework: Mathematics is not a spectator sport! Solving problems and carefully writing down solutions and proofs is crucial to mastering the material in this course; this is when true assimilation and learning happens. There will be weekly written homework due at the beginning of class each Monday. Late homework will not be accepted. I encourage you to collaborate on solving problems but I expect you to write your solutions independently. You can discuss ideas and strategies but not copy someone else's solution. This applies to resources from the internet as well (see the section on Academic Integrity). I expect legible presentation of your solutions and encourage you to typeset them in LaTeX. I'll be happy to help you with setting up and using LaTeX.

Graduate Credit: Some advanced, involved, or difficult problems will be assigned in each homework set. Students enrolled in this course for graduate credit are expected to solve these problems while they are optional for others.

Exams: There will be two in-term exams and a comprehensive Final Exam for this course. All exams will be in HSCI 129 (usual classroom).

Exam 1	Wednesday, February 18
Exam 2	Wednesday, April 8
Final Exam	Friday, May 8 at 10-11:50am

Missed Work Policy: I will offer reasonable accommodation in the event that you miss a major assessment activity for a valid and documented reason, assuming documentation is provided in advance unless absolutely impossible. If you will be missing an exam, you must let me know in advance. If it is unforeseen, then contact me as soon as possible.

Academic Integrity: Do not cheat! In particular, do not write down work that is not your own and do not help others cheat. You must include citations to any published or internet source that you have used. If you get help from someone outside this class that must be cited as well. I expect you to adhere to the high standards of integrity and ethical conduct at OSU. If you are unsure whether an action meets these standards discuss it with me. Violations may subject you to disciplinary action including possible suspension from the university. More information regarding this policy is available at academicintegrity.okstate.edu.

Syllabus Attachment: Please read the OSU Syllabus Attachment for Spring 2015 available at academicaffairs.okstate.edu/faculty-a-staff. This has a lot of important information, including instructions about disability accommodations. Please contact me privately during the first week of the course if you need accommodations as the result of a disability.