

Course Instructor: Zdeňka Guadarrama

E-mail: guadarrama@rockhurst.edu

Office: Science Center 120F (ext. 4526)

Office Hours: TR 1:45-3:00 pm

Text: Analysis with an introduction to Proof (4th Edition) by Steven R. Lay

Course description

This course is a rigorous introduction to the calculus of functions of one real variable with an emphasis on proof reading and writing.

Objectives

- Explore the fundamental concepts of analysis for real functions of a single variable, including: sets, functions, sequences, continuity, limits, differentiation and integration.
- Develop the student's ability to read, write, and present rigorous mathematical arguments.

Grading

2 in-class tests with corrections	50%
Quizzes	10%
HW	20%
Final	20%

Border lines for grading

A 93.3%	B+ 86.7%	C+ 76.7%	D+ 66.7%
A- 90%	B 83.3%	C 73.3%	D 63.3%
	B- 80%	C- 70%	F <63.3%

Make-up policy

Make up exams will be given only in the event of medical problems or emergencies, and only if I am notified of your imminent absence before the test. There will be **no make-up quizzes**.

Late assignments will be accepted until up to a week after the due date but will incur a 25% deduction penalty.

Homework

There will be a list of recommended problems from each section and I will specify a subset of them to be turned in. You are encouraged to work together on the assignments, but each of you has to sit down and write the arguments carefully and clearly. Remember that one of the objectives of the class is to improve your formal writing skills, pay careful attention to your statements and notation. **Read your homework before you turn it in**, if it does not make sense to you try again before you turn it in.

Quizzes

Every class period will start with a short quiz on definitions and statements of theorems.

Tests

Tests will consist of two equally weighted parts:

Part I: Definitions and starred theorems.

Part II: Problems: 80% from the recommended problem list, 20% problems of my inspiration ☺.

After I grade your test and give it back, you will have a week to come by my office during office hours and, on the board, explain to me the problems that you missed on the test. This corrections, if done well, will give you back 20% of the missed points.

Ex. Suppose you made 80/100 in Test 1. You come to my office and correctly explain all the problems you missed. Your grade for Test 1 = $80 + .2(20) = 84$.

Attendance

Roll will not be taken explicitly but there will be a record of attendance based on the class quizzes. Remember that quizzes are worth 10% of your grade and will be given at the beginning of each class!

OHH! (Optional Homework Help)

I will try to coordinate a group homework help session on Fridays. The objective of it will be that you discuss with your classmates your advances on the homework and ask me questions if necessary.

VERY IMPORTANT NOTE

This class is an introduction to formal mathematics, it takes time to get used to thinking about the material correctly; success requires a lot of effort and practice. I recommend that you attend every lecture and **do not let too much time pass before you work on your homework assignments**. Please feel free to talk to me if you have any questions, stop by my office or send me e-mail.

Academic Honesty

Every effort will be made to encourage academic honesty and insure fair and equal assessment of each student. Please refer to page 253 in the University Catalog for definitions and details about academic honesty and plagiarism.

“Rockhurst University is committed to providing reasonable accommodations for students with disabilities. Please contact Sandy Waddell, Director of Access Services (Massman Hall, Room 7, 816.501.4689, sandy.waddell@rockhurst.edu) to provide documentation and request accommodations. If accommodations have already been approved by the Access Office, please communicate with the instructor(s) of this course regarding these arrangements by the second week of class in order to coordinate receipt of services”

“Student contact information must be kept current in order to receive important notices from Rockhurst university. Your contact information is online via your OracleWeb account. Please check your local address, local phone number, and emergency contact information on OracleWeb and revise as needed. All important University notices will be sent only to your RU email address. Please check your RU email account in addition to any other email accounts you may have. Accounts are activated at the Computer Services Help Desk.”

“Course withdrawals are the responsibility of the student. The RU Catalog lists the procedures for a student to withdraw from one or all courses and will be upheld. If the student does not process course withdrawal(s) correctly, it will result in a failing grade.”

I reserve the right to make changes to the above stated policies at any point during the semester if I consider it necessary. You will be notified if any changes take place.

Tentative outline.

Week	Date	Topics	Sections
1	VIII 22	Relations	2.6
2	VIII 27, 29	Functions Cardinality	2.7 2.8
3	IX 5	Ordered Fields	3.11
4	IX 10, 12	Completeness Axiom Topology of the reals	3.12 3.13
5	IX 17, 19	Compact sets Convergence	3.14 4.16
6	IX 24, 26	Limit Theorems Monotone sequences and Cauchy sequences	4.17 4.18
7	X 1, 3	Subsequences Limits of functions	4.19 5.20
	X 8	Test 1	
9	X 15, 17	Continuity	5.21 5.22
10	X 22, 24	The derivative Mean Value Theorem	6.25 6.26
11	X 29, 31	L'Hopitals Rule Taylor's Theorem	6.27 6.28
12	XI 5, 7	The Riemann Integral Properties of the Riemann Integral	7.29 7.30
13	XI 12, 14	Fundamental Theorem of Calculus	7.31
14	XI 19	Test 2	
15	XI 26, 28	Tie the knots and review	
16	XII 3-8	Finals	