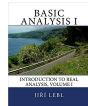


MA421.01 Fall 19: Analysis I Syllabus



10:00 MWF 318 Knott Hall

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Class webpage: math.loyola.edu/~loberbro/ma421/index.html

Piazza: [Piazza site](#)

Moodle: moodle.loyola.edu

Office Hours: 12-1 MWF. Also by appointment (see my [schedule](#))



I reserve the right to make changes to the syllabus at any time during the term by announcing them in class and on the webpage. You are responsible for knowing not only what is discussed/announced in class but also what is posted on Piazza website.

Prerequisites

MA395: Discrete Methods.

Course Description

A rigorous development of topics in calculus, and a systematic study of basic analysis with an emphasis on formal proofs. Topics include properties of the real line, sequences, series, theory of limits, continuity, theory of differentiation, and integration of functions of one variable.

Learning Goals

The material covers in detail topics which are crucial for the development of calculus. Many of these topics were only briefly cited and/or not proven in the calculus courses. An important goal of this course is to teach the students the rigorous study of the concepts behind elementary calculus. Students will take a closer look at the concepts of real numbers, limits, continuity and differentiation and learn to write proofs. For most students this will be the first course that gives a glimpse of what pure mathematicians do and what any applied mathematician should know. List of learning objectives:

- properties of the real line, including completeness, infimum, and supremum;
- finite and infinite sets;
- rigorous treatment of sequences and limits; and
- rigorous treatment of single-variable functions, continuity and differentiation.

In addition, this course follows the broader [University Learning Aims](#) and the Natural and Applied Sciences Learning Aims.

Text

Required: *Basic Analysis: Introduction to Real Analysis* by Jiří Lebl version 4.0. Paperback edition dated May 8, 2018.

Grading

Based on:

Homework	40%
2 Exams*	20% and 15%
*The higher of the two exams counts 20%	
Final Exam	25%

Basic Scale:

A	90-100%
B	80-89%
C	70-79%
D	60-69%
F	0-59%

I give +/- grades, the cutoffs being at the 7's and 3's, respectively. Thus 80-82.9 = B-, 83-86.9 = B, 87-89.9 = B+.

Homework

The homework will be time consuming so do not procrastinate. This course will emphasize problem solving and proof writing; thus homework is the most important aspect of the course. Assignments will consist of exercises from the book and any additional exercises or computer problems that are assigned. These will be posted on the homework webpage. They will be collected periodically (about every 1.5-2 weeks) throughout the term as announced in class and on the webpage. Of the set of problems turned in on an assignment, I will choose a handful to correct and give feedback.

Late Homework

Each homework set is worth 40 points. I will dock 4 points on any late homework. I will not accept any late homework two class periods beyond the due date.

Homework Redos

For each homework set, you may rewrite one of the problems of your choice that was corrected. You MUST turn in your original HW along with the rewritten one. The problem will be worth up to the number of points the problem was worth.

In other words, one of your problems, when turned in, can be treated as a "rough draft" if needed. The rewrite will be due in the class following the class the corrected homeworks were handed out. You should take care to rewrite it as concisely and neatly as possible.

Important: you may NOT get help from each other on redos, but you may ask me or another professor.

Exams

There will be 2 in-class exams during the term. They are tentatively scheduled on Friday, October 11 and Wednesday, November 6. Other information about the exams will be announced in class as each exam approaches.

Final Exam

The final exam is cumulative and is on **Wednesday, December 18 at 9 AM.**

Extra Credit:

Do not count on extra credit in this course to boost your grade. I make it a policy to not give extra credit on an individual basis so do not ask for it, especially at the end of the semester.

Honor Code

All students of the University are expected to understand the meaning of the [Loyola University Honor Code](#). Ignorance of the Code is not a valid reason for committing an act of academic dishonesty. The following constitute violations of the Code and are defined in the Community Standards Handbook: cheating, stealing, lying, forgery, plagiarism and the failure to report a violation.

As it pertains to this course: I expect and encourage you to work with others on homework (**by collaborating, not copying!**). However, you must write and understand the work that you turn in and you may not share written solutions before they are turned in. If you learn how to solve a problem by talking to a classmate, looking it up in a book or on the internet, you should cite the source in your homework write-up, as you would for a literature paper. As stated above, you may not discuss homework redos with each other. I will ask you to sign a pledge on exams but not on all assignments although I will expect the same honesty on all of them. Any questions or concerns should be directed immediately to me.

Classroom Etiquette:

When you come to class, I expect you to not only be in attendance physically but also mentally. That means no cell phones, no leaving class during lecture, no extraneous chatter, etc. If you know you must leave class, sit by the door to minimize the disruption. If cell phones and texting become a problem, I will confiscate the phone.

The goals of this course are best accomplished when in a setting of mutual respect. The study of mathematics does not usually lead to much controversy. That being said, we must all work to provide a safe environment that is conducive to learning. All are welcomed and encouraged to actively participate in the learning of analysis, regardless of gender, race, nationality, native language, sexual orientation, gender identity, political ideology, and especially personal mathematical history. Any student who feels she or he is experiencing a hostile environment should speak to me immediately.

Student Athletes:

If you are a student athlete, please provide me with your travel and game schedule indicating when you will need to miss class to participate in athletic events. While travel for athletics is an excused absence, you will need to make up any missed work. Absences only on the travel letter will be accommodated.

Students Needing Accommodations:

If you are registered with the Disability Support Services Office (DSS) and wish to discuss academic accommodations, please contact me as soon as possible. If you have an accommodation that has not been documented, you may contact the Disability Support Services Office (410-617-2602) for assistance.

GENERAL SUGGESTIONS:

- This course will test your study and time management skills. The **homework WILL be time consuming** so DO NOT put off the homework until the night before they are due. I cannot and will not give extensions on these due dates.
- Participate in class, ASK QUESTIONS, **stop by my office**. If you get behind or stuck, see me or work with other students RIGHT AWAY.
- This course will be much more enjoyable if you form a study group with others in the class. You may work together on homework but everyone must join in and work.
- READ THE BOOK. Lectures will be much more understandable. It will be important to READ the book, not just look at the highlighted boxes because I will not be able to cover all of the details or show nearly enough examples in class.
- If you think you'll need extra help, get it as soon as possible. Do not wait until right before an exam! There are tutoring services available -- many are FREE.