Fall 2020, Advanced Calculus for Engineers and Physical Scientists 1

MAA 4102 section 3043 and MAA 5104 section 6153

Instructor: Louis Block

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This course is a synchronous online class, with meetings (using Zoom) Monday, Wednesday, and Friday, period 4 (10:40 – 11:30 AM). It carries 3 credits and entails 3 contact hours. We will use Canvas.

To protect student privacy, I will not record class meetings.

Office Hours:

I will be available via Zoom, Monday, Wednesday, and Friday, period 8, for questions or discussions. If you want to meet with me during that time period, send me an email and I will set up a Zoom meeting. If you want to meet with me, but you can not meet during that time period, send me an email and let me know when you are available to meet. I will try to set up a Zoom meeting.

Prerequisites:

(MAC 2313 or MAC 3474) and (MAS 4105 or MAS 3114) with minimum grades of C.

Description and Goals:

This course is the first course in a two course sequence. In this sequence we present a rigorous mathematical treatment of the fundamental ideas of calculus. The emphasis of the two courses is on theory and proofs.

Because the concepts covered in this course play an important role in the physical sciences and engineering, students in these areas may choose to take this course. **However, no particular applications are discussed in the course.** Students in mathematics, education, and other areas may also choose to take this course. However, **students who intend to pursue graduate study in mathematics**

should not take this course. These students should take MAA 4211 instead.

The primary goal of the course is to obtain a sound understanding of the basic mathematical concepts of calculus. A secondary goal is to improve the ability to reason carefully and creatively when dealing with mathematical material.

There will be five parts of the course as follows:

Part 1, sets, functions, mathematical induction, the real number system (3 weeks).

Part 2, limits of sequences of real numbers, subsequences, accumulation points, subsequential limit points (4 weeks).

Part 3, limits of real valued functions (3 weeks).

Part 4, continuity of real valued functions, types of discontinuities (2 weeks).

Part 5, differentiation of real valued functions (2 weeks).

Text:

Witold A. J. Kosmala, **A Friendly Introduction to Analysis**, second edition, Pearson Prentice Hall, Upper Saddle River, NJ 07458.

Additional Reference:

Robert G. Bartle and Donald R. Sherbert, **Introduction to Real Analysis**, fourth edition, John Wiley & sons, Hoboken, NJ 07030.

Grades

Grades will be based on seven assigned problem sets. The first two problem sets will be worth 25 points each, and the five other problem sets will be worth 30 points each. So there are 200 possible points. No exams will be given. Grades will be assigned according to the following:

A: 180-200   A-: 175-179   B+: 170-174   B: 160-169   B-: 155-159
C+: 150-154   C: 140-149   C-: 135-139   D+: 130-134   D: 120-129

Scores on the assigned problem sets will be based mostly on the correctness and completeness of your solutions. However, I will also consider the clarity, coherence, and organization of your written work. You should submit your work on Canvas (either typed or neatly hand written). The due dates will be given on Canvas.

Additional Information and Links:

Grades: Grading will be in accord with the UF policy stated at
https://catalog.ufl.edu/ugrad/current/regulations/info/grades.aspx

Honor Code: "UF students are bound by The Honor Pledge which states, "We, the members of the University of Florida community, pledge to hold ourselves and our peers to the highest standards of honor and integrity by abiding by the Honor Code. On all work submitted for credit by students at the University of Florida, the following pledge is either required or implied: "On my honor, I have neither given nor received unauthorized aid in doing this assignment." The Honor Code specifies a number of behaviors that are in violation of this code and the possible sanctions. Furthermore, you are obligated to report any condition that facilitates academic misconduct to appropriate personnel. If you have any questions or concerns, please consult with the instructor in this class."

Class Attendance: "Requirements for class attendance and make-up exams, assignments, and other work in this course are consistent with university policies that can be found at: https://catalog.ufl.edu/ugrad/current/regulations/info/attendance.aspx."

Accommodations for Students with Disabilities: "Students with disabilities requesting accommodations should first register with the Disability Resource Center (352-392-8565, https://disability.ufl.edu/https://disability.ufl.edu/) by providing appropriate documentation. Once registered, students will receive an accommodation letter which must be presented to the instructor when requesting accommodation. Students with disabilities should follow this procedure as early as possible in the semester."

Online Evaluations: "Students are expected to provide feedback on the quality of instruction in this course by completing online evaluations at https://evaluations.ufl.edu. Evaluations are typically open during the last two or three weeks of the semester, but students will be given specific times when they are open. Summary results of these assessments are available to students at https://evaluations.ufl.edu/results/."

Contact information for the Counseling and Wellness Center: https://counseling.ufl.edu/, 392-1575; and the University Police Department: 392-1111 or 9-1-1 for emergencies.

Supplementary note: The Mathematics Department is committed to diversity and inclusion of all students. We acknowledge, respect, and value the diverse nature, background and perspective of students and believe that it furthers academic achievements.
It is our intent to present materials and activities that are respectful of diversity: race, color, creed, gender, gender identity, sexual orientation, age, religious status, national origin, ethnicity, disability, socioeconomic status, and any other distinguishing qualities.