Sergei Pilyugin
Department of Mathematics

MAA 4102/5104 Advanced Calculus 1 E and PS (Fall 2020)

MAA 4102/5104 Advanced Calculus 1 E&PS (Sections 3044/3049)

Instructor: Sergei S. Pilyugin https://people.clas.ufl.edu/pilyugin/courses/maa4102_f2020/

Announcements: The class will be taught online via Canvas/Zoom. The lectures will be delivered in synchronous manner, that is, I will be giving live lectures at the designated meeting times. The lectures will be also recorded and the links to the recordings will be posted in canvas. All testing will be done in Canvas.
Anybody interested might want to check out the University Math Society at UF. Here is the link to their webpage:
https://ums.math.ufl.edu/.

Homeworks: List of HW problems.

Prerequisites: MAC 2313 (Calculus 3).

Time and Room: MWF 5 (11:45 a.m – 12:35 p.m.) in Zoom (see Canvas page for details).

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

Critical dates: Aug. 31 classes begin, Dec. 09 classes end. Midterm exams: M1 – Sep. 30, M2 – Nov. 02, M3 – Dec.7 . Quizzes: Q1 – Sep. 9, Q2 – Sep. 23, Q3 – Oct. 9, Q4 – Oct. 26, Q5 – Nov. 18.

Holidays: Sep. 07 Labor Day, Nov. 11 Veterans Day, Nov. 25-28 Thanksgiving break.

Make ups: TBA.

Office Hours: MWF 6 (12:50-1:40 p.m.) via Zoom (Meeting ID 7078342997, use course password), or by appointment. Please, use e-mail: pilyugin@ufl.edu for general inquiries or Canvas e-mail tool for all private communication including all questions regarding scores/grades. For more details, see my schedule.

Description and Objectives of the Course:

What is the difference between the advanced calculus and the calculus courses that you have taken? In the current course, we will revisit the same concepts as before (real numbers, sequences, functions, limits, continuity, differentiation and integration, etc), but we will treat them in a more accurate and rigorous way.

So, the main difference is that we have PROOFS here.

Weekly Schedule:

W1: Proof techniques, mathematical induction;
W2: Ordered fields and the real number system, basic inequalities;
W3: Sequences, convergence, finite limits; monotone sequences;
W4: Cauchy sequences, subsequences;
W5: Applications of limits, transcendental number e;
W6: Limits of functions, sided limits;
W7: Continuity, properties of continuous functions;
W8: Uniform continuity;
W9: Applications of continuity, compact sets;
W10: Derivatives, properties of differentiable functions;
W11: Mean value theorems;
W12: Higher-order derivatives, L'Hopital's rule;
W13: Taylor's theorem and applications;
W14: Approximation of derivatives, convex functions.

Grading System:

3 midterms (20% each); 5 quizzes (10% each) based on homework assignments, the best 4 count towards the grade. There will be no make-up exams, rather a replacement for any one midterm can be taken at the time scheduled for the final. The resulting score determines the letter grade according to the following table

Letter Grade	**A**	**A-**	**B+**	**B**	**B-**	**C+**	**C**	**C−**	**D+**	**D**
Score	**100 – 93**	**92 – 88**	**87 – 83**	**82 – 74**	**73 – 69**	**68 – 64**	**63 – 59**	**58 – 54**	**53 – 49**	**48 – 40**

Course policies:

Video recordings consent: Our class sessions may be audio-visually recorded for students in the class to refer back and for enrolled students who are unable to attend live. Students who participate with their camera engaged or utilize a profile image are agreeing to have their video or image recorded. If you are unwilling to consent to have your profile or video image recorded, be sure to keep your camera off and do not use a profile image. Likewise, students who un-mute during class and participate orally are agreeing to have their voice recorded. If you are not willing to consent to have your voice recorded during class, you will need to keep your mute button activated and communicate exclusively using the "chat" feature, which allows students to type questions and comments live. The chat will not be recorded or shared. As in all courses, unauthorized recording and unauthorized sharing of recorded materials by students or any other party is prohibited.

Closed-book policy: No use of calculators, or books will be allowed during in-class tests.

Grading disputes: Any issues or questions about the grading of exams must be brought to the instructor's attention within one week after the exams are returned to the class.

Excused absences: In certain circumstances, a student will be able to make up a missed exam. These circumstances could include medical situations, family emergencies, travel for University activities (eg. band, debating club, etc), and religious observances. In these cases the student must inform the instructor before or within one week after the missed work and **provide written documentation.** All make ups must be taken during the final exam time slot.

Policy on 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
Most students benefit a great deal from attending class regularly. Arriving late and/or leaving early, reading the newspaper, looking at your cell phone, etc. disrupts the class and is rude and unprofessional.

UF 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 or TA's in this class."

Diversity statement: The University of Florida and the Department of Mathematics are committed to diversity
and inclusion of all students. We recognize the diversity of backgrounds and learning needs of our students and strive to create a more inclusive and welcoming environment for everyone. We strongly believe that an inclusive learning environment promotes higher academic achievements.

For students with disabilities: "Students with disabilities requesting accommodations should first register with the Disability Resource Center (352-392-8565, https://www.dso.ufl.edu/drc/) 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 based on 10 criteria. These evaluations are conducted online 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.