Sergei Pilyugin
Department of Mathematics

College *of* Liberal Arts *and* Sciences

- Sergei S. Pilyugin
- Courses
  - MAA 4102/5104 Intro Real Analysis/Adv Calc 1 (Fall 2023)
  - MHF 3202 Sets and Logic (Fall 2023)
  - MAA 4402/5404 Intro to Complex Variables (Summer 2023)
  - 4th per MAA 4103/5105 Intro Real Anal 2 (Spring 2023)
  - 5th per MAA 4103/5105 Intro Real Anal 2 (Spring 2023)
- Publications
- Research
- Schedule

Related Links

MAA 4102/5104 Intro Real Analysis/Adv Calc 1 (Fall 2023)

- Instructor: Sergei S. Pilyugin
- Course web page: https://people.clas.ufl.edu/pilyugin/courses/maa4102_f2023/
- Announcements: Lectures will be delivered live in LIT 0223. Quizzes will be given in class. Take home
midterms will be posted and collected in Canvas.
- Homeworks: List of HW problems.
- Prerequisites: MAC 2313 (Calculus 3).
- Time and Room: MWF 5 (11:45 a.m – 12:35 p.m.) in LIT 0223.
- Literature: Witold A. J. Kosmala, *A Friendly Introduction to Analysis* , Pearson, Prentice Hall, Upper Saddle River, NJ 07458.
- Critical dates: 08/23 classes begin, 12/06 classes end. Midterms: M1 – due on 09/29, M2 – due on 11/03, M3 – due on 12/01. Quizzes: Q1 – 09/01, Q2 – 09/22, Q3 – 10/13, Q4 – 11/17, Q5 – 12/06.
- Holidays: 09/04 Labor Day, 10/06 Homecoming, 11/10 Veterans Day, 11/22–25 Thanksgiving break.
- Office Hours: MWF 4 (10:40 a.m.-11:30 a.m.) in LIT 0458, or in zoom (see info in canvas) by appointment. Please, use e-mail: pilyugin@ufl.edu for general inquiries or canvas messaging 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 take home midterms (20% each, posted and collected in Canvas); 5 quizzes (10% each, best 4 count, in class) based on homework assignments. There will be no final exam. 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:

UF Covid-19 policies: For policy updates please refer to the University of Florida list of Covid-19 related FAQ at https://coronavirus.ufl.edu/faqs/ .

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

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 quiz. 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://gatorevals.aa.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.

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.

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