Sergei Pilyugin
Department of Mathematics

College *of* Liberal Arts *and* Sciences

- Sergei S. Pilyugin
- Courses
  - MAA 4102 Intro Real Analysis/ 1 (Fall 2024)
  - MHF 3202 Sets and Logic (Fall 2024)
  - MAA 4402/5404 Intro to Complex Variables (Summer 2024)
  - MAA 4103/5105 Intro Real Anal 2 (Spring 2024)
  - MAT 6932 Special Topics: Population Persistence and Dynamical Systems (Spring 2024)
- Publications
- Research
- Schedule

Related Links

MHF 3202 Sets and Logic (Fall 2024)

- Instructor : Sergei S. Pilyugin
- Course web page : https://people.clas.ufl.edu/pilyugin/courses/mhf3202_f2024/
- Announcements : Lectures will be delivered live in LIT 0205. Midterms will be given in class. Writing projects will be posted and collected in Canvas.
- Prerequisites : Any 2000+ level UF math course with a minimum grade of C.
- Time and Room : MWF 7 (1:55-2:45 p.m.) in LIT 0205.
- Textbook: Book of Proof, third edition, by Richard Hammack. The pdf is also available here.
  Additional reading:
  Transition to Higher Mathematics: Structure and Proof, second edition, by Bob A. Dumas and John E. McCarthy.
  Proof and the Art of Mathematics, by Joel David Hamkins, MIT Press, 2020.
- Critical dates: 08/22 classes begin, 12/04 classes end. Writing projects due: P1 – 09/06, P2 – 09/13, P3 – 09/20, P4 – 10/11, P5 – 10/21, P6 – 11/01, P7 – 11/15, P8 – 11/22. Midterms: M1 – 09/27, M2 – 10/25, M3 – 12/04.
- Holidays: 09/02 Labor Day, 10/18 Homecoming, 11/11 Veterans Day, 11/25–30 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 : This course is an introduction to the formal language of mathematics. The goal is to learn how to read, understand and write your own rigorous and precise mathematical arguments. You may be familiar with most of the factual content discussed in the examples, but the novelty is the mathematical rigor and the skill of formal writing.

Tentative weekly schedule :

W1: Introduction to sets, Cartesian product, subsets;

W2: Algebra of sets; sets that are number systems;

W3: Logical statements, logical operations;

W4: Conditional and bi-conditional statements;

W5: Quantifiers, negations, logical inference;

W6: Counting (permutations, combinations, inclusion-exclusion), Pigeonhole principle;

W7: Methods of proof (direct, contrapositive, by contradiction);

W8: Proofs involving sets, non-conditional statements, disproofs;

W9: Mathematical induction;

W10: Relations and functions;

W11: Cardinality of sets, Cantor-Bernstein theorem;

W12: Cantor ternary set and its properties;

W13: Sample proofs in number theory;

W14: Sample proofs in geometry.

Grading System: There will be 8 take home writing projects (each worth 7%, best 7 count) and 3 midterms (each worth 17%, all 3 count). There will be no final exam. The letter grade is determined according to the following table:

Letter Grade	A	A-	B+	B	B-	C+	C	C-	D+	D
Score	100 – 93	92 – 89	88 – 83	82 – 77	76 – 71	70 – 66	65 – 60	59 – 55	54 – 50	49 – 40

Course policies:

Closed-book policy : No use of notes or books will be allowed during in-class midterms.

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 test. 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 no later than the last day of classes.

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.

U Matter, We Care : Your well-being is important to the University of Florida. The U Matter, We Care initiative is committed to creating a culture of care on our campus by encouraging members of our community to look out for one another and to reach out for help if a member of our community is in need. If you or a friend is in distress, please contact umatter@ufl.edu so that the U Matter, We Care Team can reach out to the student in distress. A nighttime and weekend crisis counselor is available by phone at 352-392-1575. The U Matter, We Care Team can help connect students to the many other helping resources available including, but not limited to, Victim Advocates, Housing staff, and the Counseling and Wellness Center. Please remember that asking for help is a sign of strength. In case of emergency, call 9-1-1.