

Instructor: Jindrich Zapletal. Office LIT456, e-mail zapletal@ufl.edu. Office phone 352-294-2343. Office hours MWF period 3: 9:35-10:25am online only at <https://ufl.zoom.us/j/7401025557> (Links to an external site.)

General outline of the course. (MHF4102-0822,7102,1105,7101(26746,28584,26748,28583) – Elements of Set Theory) The course contains an outline of axiomatic set theory as a foundation of mathematics. The meeting time is MWF period 6: 12:50pm—1:40pm. Mondays and Fridays the F2F section will meet in the classroom (LIT235), and the online section will watch via a zoom conference. Wednesdays the class meets online only via a zoom conference. The first week will be held online only, so as to allow for post-travel covid testing. The zoom conference link is published at the Canvas site.

Textbook. Cenzer, Larson, Porter, Zapletal: Set Theory and Foundations of Mathematics, available as an e-book from the library. There will be supplemental pdf files as well.

Grading. There will be seven graded homework assignments, each of them worth 10% of the grade:

1. Published Jan. 22, due Jan. 25, covers Chapter 2
2. Published Feb. 5, due Feb. 8, covers axiomatization
3. Published Feb. 19, due Feb. 22, covers natural numbers and finite sets
4. Published Mar. 5, due Mar. 8, covers ordinals
5. Published Mar.19, due Mar. 22, covers cardinals
6. Published Apr. 2, due Apr. 5, covers axiom of choice
7. Published Apr. 16, due Apr. 19, covers Ramsey theory

All of these homework assignments are open book, open notes, no cooperation, no internet solvers. They are all due at 9 p.m. of the stated day as scanned pdf into my Canvas mailbox.

There will also be a group presentation project worth 15% of the grade. I expect to have five project groups per at most four students each, with presentation dates to be determined. The remaining 15% of the grade will be attendance. I will record the number of sessions you attended and cap it off at 30 to figure the attendance grade. (There are 43 lectures in total. This leaves plenty of elbow room for health or other emergencies on part of the student, so I will not negotiate any attendance excuses.) There is no other basis for the final grade. The final grade will be calculated from the total score using a straight curve (93-100=A, 90-92=A-, 87-89=B+, 83-86=B and so on).

Requirements for class attendance and make-up exams, assignments, and other work in this course are consistent with university policies. Click [here](#) to read the university attendance policies.

Project. I expect everybody in the class to participate in one of the group presentation projects. Topics for these projects are outlined below. Each group will have 30-50 minutes to present their work.

1. New Foundations, presentation date Feb. 10
2. Philosophy of mathematics (formalism, realism, intuitionism) Feb. 17
3. Well-quasi-orders, Kruskal's tree theorem, Mar. 10
4. The Continuum Hypothesis, Mar. 24
5. Van der Waerden's theorem, April 21

A closer description: New Foundations is an alternative axiomatization of set theory introduced by American logician Quine. The project should describe it and compare with Zermelo—Fraenkel set theory. The philosophy of mathematics project should introduce the main approaches to the topic and what they say about set theory. Well-quasi-orderings are generalizations of well-orderings, and many categories of mathematical objects come with a natural well-quasi-orders. The most famous one is the category of trees in Kruskal’s theorem, but there are others (Robertson—Seymour theorem). The project should explain what these theorems say, possibly with applications. The Continuum Hypothesis is the most famous sentence of the language of set theory which is neither provable nor refutable from the axioms. The project should explain what it says and describe the history of the undecidability results. Van der Waerden’s theorem is one of the oldest theorems in Ramsey theory of natural numbers. The project should describe it and discuss it with some variations (there are very many).

Covid policies.

We will have face-to-face instructional sessions to accomplish the student learning objectives of this course. In response to COVID-19, the following policies and requirements are in place to maintain your learning environment and to enhance the safety of our in-classroom interactions.

You are required to wear approved face coverings at all times during class and within buildings. Following and enforcing these policies and requirements are all of our responsibility. Failure to do so will lead to a report to the Office of Student Conduct and Conflict Resolution.

This course has been assigned a physical classroom with enough capacity to maintain physical distancing (6 feet between individuals) requirements. Please utilize designated seats and maintain appropriate spacing between students. Please do not move desks or stations.

Sanitizing supplies are available in the classroom if you wish to wipe down your desks prior to sitting down and at the end of the class.

Follow your instructor’s guidance on how to enter and exit the classroom. Practice physical distancing to the extent possible when entering and exiting the classroom.

If you are experiencing COVID-19 (Click [here](#) for guidance from the CDC on symptoms of coronavirus), please use the UF Health screening system and follow the instructions on whether you are able to attend class. Click [here](#) for UF Health guidance on what to do if you have been exposed to or are experiencing Covid-19 symptoms.

Course materials will be provided to you with an excused absence, and you will be given a reasonable amount of time to make up work. Find more [information](#) in the university attendance policies.

The rules listed below will apply to all individuals who participate in the lectures and are present in the classroom.

Only the instructor and the students registered for “in-person” sections are allowed in the classroom.

Only individuals who are cleared by UF Health to be on campus are allowed in the classroom.

The face masks, the types approved by the UF and placed on the face according to CDC guidelines, have to be worn all the time.

Eating and/or drinking in the classroom at any time (meeting time or between the classes) are not allowed.

Each person needs to sanitize the work area when they arrive and right before they leave.

A student not cleared by UF Health and/or one who does not follow the etiquette will not be allowed to stay in the classroom.

If a student's behavior creates an environment that is deemed hazardous to the health of others present in the classroom that student will be asked to leave and/or the class will be dismissed.

Further administrative matters.

Requirements for class attendance and make-up exams, assignments, and other work in this course are consistent with university policies that can be found in the [online catalog \(Links to an external site.\) \(Links to an external site.\)](#).

Students are expected to provide professional and respectful feedback on the quality of instruction in this course by completing course evaluations online via GatorEvals. Guidance on how to give feedback in a professional and respectful manner is available [here \(Links to an external site.\) \(Links to an external site.\)](#). Students will be notified when the evaluation period opens, and can complete evaluations through the email they receive from GatorEvals, in their Canvas course menu under GatorEvals, or via [this link \(Links to an external site.\) \(Links to an external site.\)](#). Summaries of course evaluation results are available to students [here \(Links to an external site.\) \(Links to an external site.\)](#).

Students with disabilities requesting accommodations should first register with the UF Disability Resource Center (352.392.8565) by providing appropriate documentation. Once registered, students will receive an accommodation letter which must be presented to the instructor when requesting accommodations. Students with disabilities should follow this procedure as early as possible in the semester.

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.

The UF Religious Holidays Policy is available [here. \(Links to an external site.\) \(Links to an external site.\)](#)

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 \(Links to an external site.\) \(Links to an external site.\)](#) 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 TAs in this class.

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.