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## Sets and Logic S25

University of Florida  
**Little Hall 235, MWF4 (10:40–11:30)**

### Instructor information

Vincent Vatter

Office: Little Hall 406  
Office phone: 352-294-2338  
Email: [vatter@ufl.edu](mailto:vatter@ufl.edu)

Office hours: Monday 7th period (1:55–2:45), Tuesday 9th period (4:05–4:55), and by appointment

### Teaching assistant

Raymond Ying

## Text

Hamkins' *Proof and the Art of Mathematics*, 1st edition.

## Course content, goals, and objectives

This course is the first introduction to rigorous mathematical proofs. We will use familiar notions of a sets, relations, functions, and games to learn how mathematical statements come to be, how to make a conjecture, and how to prove a conjecture to make it a theorem, or find a counterexample to show that the conjecture is false.

By the end of the course, you should be able to:

1. Analyze and formulate mathematical statements.
2. Correctly use deduction and detect incorrect deduction.
3. Apply a variety of strategies to find, write, and verify a mathematical proof.

## Tentative weekly schedule

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Weeks 1–3: Proof techniques and  $\sqrt{2}$

Weeks 4–6: Induction, the fundamental theorem of arithmetic, and the pigeonhole principle

Weeks 7–9: Sets, relations, and functions

Weeks 10–11: Infinity

Weeks 12–14: The real numbers

## Expectations and grading rubric

Work submitted for a grade in this course will be graded in a rigorous fashion and should be prepared with a good deal of thought and care.

Most of the work required in this course will consist of writing proofs. For a proof worth 10 points, scores will be based on the following guidelines.

### 0 points.

The work contains no original steps toward a correct solution. This includes work that simply consists of relevant definitions or theorems without interpretation.

### 3 points.

The work contains some original steps toward a correct solution but does not contain a workable outline of the full solution. This grade is also used if the student has misunderstood the question or made an unwarranted simplifying assumption that makes the problem trivial.

### 6 points.

The work contains an outline of a correct solution and several steps toward this solution. However, the writing may be unclear, or there may be holes in the argument.

### 8 points.

The work resembles a full, complete proof, but it has some deficiencies. These may include incomplete sentences, abbreviating words with logical symbols such as those for “for all” or “implies”, imprecise definitions, or overlooking trivial cases.

### 10 points.

The work consists of a full, complete proof and is reasonably well written in complete sentences, without logical symbols. There may be minor typos or clumsy writing that could be improved, but no important steps of the solution are omitted or incorrect.

## Evaluation

There will be **4 non-comprehensive exams**, on the following dates

1. Wednesday 2/5,
2. Wednesday 2/26,
3. Wednesday 3/26,
4. Wednesday 4/16.

There will be **9 homework assignments** (due every Wednesday except the first on which we don’t have an exam).

The exams will collectively count for 60% of final numerical grades (each exam will count equally, none will be dropped) and the homework assignments for 40% of final numerical grades (each homework will count equally, none will be dropped).

## Differential Equations S13

### Graphs & Digraphs 7th edition errata

Final letter grades will be assigned on a curve, which will be no tougher than the 10-point scale: 90%–100% will be some form of A, 80–90% will be at least some form of B, etc.

Exams will be **in-person and closed book**, held in the classroom. Homework may be submitted either online or in physical form before the start of class on the due date. Both handwritten and typed submissions are acceptable. For homework, you are encouraged to refer to your notes and textbook, and to consult with your classmates.

Late assignments will only be accepted by prior agreement or in the case of an excused absence.

If you have a disagreement with the grading of one of your solutions, I ask that you submit a written request for reconsideration within one month.

The UF grading policy for assigning grade points may be found at <https://catalog.ufl.edu/UGRD/academic-regulations/grades-grading-policies/>

## 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.

## Class attendance

Attendance is strongly encouraged but is not a component of grades. 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.

Requirements for class attendance and make-up exams, assignments, and other work in the course are consistent with university policies. See [UF Academic Regulations and Policies](#) for more information regarding the [University Attendance Policies](#).

## Accommodations for students with disabilities

Students with disabilities who experience learning barriers and would like to request academic accommodations should connect with the Disability Resource Center. See the [“Get Started With the DRC”](#) webpage on the Disability Resource Center site. It is important for students to share their accommodation letter with their instructor and discuss their access needs, as early as possible in the semester.

# Online course evaluations

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 at <https://gatorevals.aa.ufl.edu/students/>. 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 <https://ufl.bluera.com/ufl/>. Summaries of course evaluation results are available to students at <https://gatorevals.aa.ufl.edu/public-results/>.

## 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](mailto: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.

## In-class recording

Students are allowed to record video or audio of class lectures. However, the purposes for which these recordings may be used are strictly controlled. The only allowable purposes are (1) for personal educational use, (2) in connection with a complaint to the university, or (3) as evidence in, or in preparation for, a criminal or civil proceeding. All other purposes are prohibited. Specifically, students may not publish recorded lectures without the written consent of the instructor.

A “class lecture” is an educational presentation intended to inform or teach enrolled students about a particular subject, including any instructor-led discussions that form part of the presentation, and delivered by any instructor hired or appointed by the University, or by a guest instructor, as part of a University of Florida course. A class lecture does not include lab sessions, student presentations, clinical presentations such as patient history, academic exercises involving solely student participation, assessments (quizzes, tests, exams), field trips, private conversations between students in the class or between a student and the faculty or lecturer during a class session.

Publication without permission of the instructor is prohibited. To “publish” means to share, transmit, circulate, distribute, or provide access to a recording, regardless of format or medium, to another person (or persons), including but not limited to another student within the same class section. Additionally, a recording, or transcript of a recording, is considered published if it is posted on or uploaded to, in whole or in part, any media platform, including but not limited to social media, book, magazine, newspaper, leaflet, or third party note/tutoring services. A student who publishes a recording without written consent may be subject to a civil

cause of action instituted by a person injured by the publication and/or discipline under UF Regulation 4.040 Student Honor Code and Student Conduct Code.

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