

## Philosophy 5135: Graduate Logic Syllabus

PHI 5135; Section 0938  
Spring 2021  
Mondays 3:00pm - 6:00pm  
Class Meets over Zoom

### Instructor Information

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Office: 312 Griffin-Floyd Hall  
Office Hours: Wednesdays 12:00pm - 3:00pm, or by appointment  
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### Course Description

This course is designed to familiarize graduate students with some important metalogical results about sentential and predicate calculi. To that end, we will introduce a derivation system (modeled on the one developed by Kalish, Montague, and Marr, 1980), learn how to do derivations with that system, and then prove that the system is both sound and complete. We will do this for both sentential and first order predicate logic. We will wrap up by proving the Löwenheim-Skolem theorem. The assignments will consist of homeworks and two exams: a midterm and a final. The course will take place entirely online.

### Learning Objectives

At the end of this course, students will be able to:

- Parse and symbolize sentences in our symbolic languages
- Perform derivations in sentential and predicate logic using the KMM derivation system
- Test for validity and invalidity using truth tables and the method of models
- Be able to construct proofs using mathematical induction
- Explain how the soundness and completeness proofs work
- Explain the content of the Löwenheim-Skolem theorem and why it holds

### Academic Honesty

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 (<http://www.dso.ufl.edu/sccr/process/student-conduct-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.

**Plagiarism on any assignment will automatically result in a grade of "E" for the course.** Plagiarism is defined in the University of Florida's Student Honor Code as follows: "A student

shall not represent as the student's own work all or any portion of the work of another. Plagiarism includes (but is not limited to): a. Quoting oral or written materials, whether published or unpublished, without proper attribution. b. Submitting a document or assignment which in whole or in part is identical or substantially identical to a document or assignment not authored by the student." Students found guilty of academic misconduct will be prosecuted in accordance with the procedures specified in the UF honesty policy.

### **Attendance and Zoom Classroom Policies**

Students are expected to attend all scheduled Zoom meetings and to have done all assigned reading in advance. Failure to do so will adversely affect students' ability to perform well in this course. Students are strongly encouraged to have their cameras turned on during Zoom class meetings, and to communicate via microphones rather than text in the meeting chat. 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>.

### **Canvas e-Learning Environment**

This course is supplemented by online content in the e-Learning environment known as "Canvas." To login to the e-Learning site for this course, go to <https://lss.at.ufl.edu/>, click the **e-Learning in Canvas** button, and on the next page enter your Gatorlink username and password. You can then access the course e-Learning environment by selecting PHI 5135 from the **Courses** pull-down menu at the top of the page. If you encounter any difficulties logging in or accessing any of the course content, contact the UF Computing Help Desk at (352) 392-4537. Please do not contact the course instructor regarding computer issues.

### **Online Course Evaluation**

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/>.

### **Accommodation for Students with Disabilities**

Students with disabilities requesting accommodations should first register with the Disability Resource Center (352-392-8565, [www.dso.ufl.edu/drc/](http://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.

### **Counseling and Wellness Center:**

<http://www.counseling.ufl.edu/cwc/Default.aspx>, 392-1575

**University Police Department:**

392-1111 or 9-1-1 for emergencies.

**Course Texts**

- Logic: Theory and Metatheory (PDF by Keith Simmons)

**Course Requirements**

Attendance/Participation: 5%

Homework Assignments: 45%

Midterm Exam: 25%

Final Exam: 25%

**Participation**

Respectful participation in class is expected of everyone. Since there are so few of us, we have plenty of time to make sure everyone understands everything and is on the same page. If you are confused or feel lost, please don't feel afraid to speak up and say so, whether that is in class or in office hours. Your grade depends on your participation and your performance on the assignments and exams, *not* on whether you understand everything the first time you encounter it!

**Homework Assignments**

There will be intermittent homework assignments throughout the semester, derived from (but not identical to) the Exercise Sets in the text. Because of the variegated nature of the course material, these assignments will be nonuniformly distributed, so there will be some periods with more assignments than others. They will be assigned at the beginning of the week (after class concludes on Monday), and will be due by the start of class on the following week. They should be submitted over Canvas. Since many of our logical symbols are difficult to type out (especially in Word, though if you are familiar with LaTeX, you may have a better time with it), you may write out your assignments on paper and submit scans or pictures of them over Canvas. You may work together on homework assignments, but you may not copy each others' work.

**Midterm and Final Exams**

The Midterm and Final Exams will have a take-home format and will be assigned at the beginning of the week and due on Friday at 11:59pm. This is intended to decrease the stress caused by tighter time constraints. Generally speaking, whereas homework assignments will be more concerned with your ability to *use* our derivation systems, the exams will be more concerned with your ability to prove metatheoretical results *about* those derivation systems. Unlike with the homework, you are not allowed to collaborate on the exams.

**Grading**

The following grade scale will be used to assign final letter grades for the course.

Grade Scale	Grade Value
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100-93=A	A=4.0
92-90=A-	A-=3.67
89-87=B+	B+=3.33
86-83=B	B=3.00
82-80=B-	B-=2.67
79-77=C+	C+=2.33
76-73=C	C=2.00
72-70=C-	C-=1.67
69-67=D+	D+=1.33
66-63=D	D=1.00
62-60=D-	D-=0.67
59-0=E	E=0.00

### Course Schedule

The following is a tentative schedule for the course. Any official changes to the schedule will be announced in class and over email. Items listed for a given class meeting are to be read before that meeting (except for the first meeting).

January 11

- Chapter 1: Sentential Calculus, pp. 1-16

January 25

- Chapter 1: Sentential Calculus, pp. 17-29

February 1

- Chapter 1: Sentential Calculus, pp. 29-46

February 8

- Chapter 2: Soundness of the Sentential Calculus, pp. 47-56

February 15

- Chapter 3: Completeness of the Sentential Calculus, pp. 57-68

February 22

- Chapter 4: Monadic Predicate Calculus, pp. 69-82

March 1

- Chapter 4: Monadic Predicate Calculus, pp. 82-89

**March 5: Midterm Exam due by 11:59pm (submit on Canvas)**

March 8

- Catch-Up Day

March 15

- Chapter 5: Full Predicate Calculus, pp. 89-105

March 22

- Chapter 5: Full Predicate Calculus, pp. 105-120

March 29

- Chapter 5: Full Predicate Calculus (no new reading)

April 5

- Chapter 6: Soundness of the Predicate Calculus, pp. 121-144

April 12

- Chapter 7: Completeness of the Predicate Calculus, pp. 145-152

April 19

- Chapter 8: Lowenheim-Skolem Theorem, pp. 153-158

**April 23: Final Exam due by 11:59pm (submit on Canvas)**