PHIL 223: Introduction to Formal Logic

Term:	Spring 2018	**Instructor:**	Robert Smithson
Time:	MWF 10am-10:50pm	**Email:**	rsmithson@rollins.edu
Room:	LODGE REEVES	**Office:**	French House, Room 104
		Office Hours:	TR 10-11am and by appointment

Course Description

We know that some arguments are good and some arguments are bad. But just what is it that makes some arguments good? In general, an argument is good only if its conclusion follows logically from its premises—we call these types of arguments valid. Logic is the formal study of validity. In this class, we will use formal techniques that help us determine in a rigorous way whether or not a given argument is valid. To this end, we will study special formal languages and will learn how to translate between these languages and English. We will begin the course by studying sentential logic and will then move on to study a richer system of quantificational logic. In this class, we will see how evaluating arguments in formal languages can help clarify our everyday patterns of reasoning.

Course Texts:

The text used for this course is "An Introduction to Symbolic Logic" by Terence Parsons. It is available at www.philosophy.ucla.edu/people/faculty/tparsons/Logic%20Text/. The course will cover the first three chapters.

Logic 2010

Homework assignments are submitted **online** using UCLA's "Logic 2010" program (http://logiclx.humnet.ucla.edu/). So a working computer with access to the internet is a requirement for this course. Students need to download, install, and register for this program ASAP (see attached document). You will need to know your Rollins ID number and pick a password when you register with the system. **Students who have not registered for the program after the first three days of class will be dropped from the course.**

Course Website

There are two websites for this course. The most important website for the course is the Logic 2010 student page: https://logiclx.humnet.ucla.edu/Logic/Student/Course. Students must register for the Logic 2010 program before they can access the Logic 2010 course website. The Logic 2010 website lists the homework assignments and records student grades for those assignments. It also contains a section (under the "Documents" tab) with many helpful documents explaining how to use the Logic 2010 program. The second course website is the Rollins Blackboard site for this course. The Blackboard site will mainly be used for announcements and for posting documents.

PHIL 223: Intro to Formal Logic

Course Requirements
Homework assignments: 20%
Midterm 1: 20%
Midterm 2: 20%
Final: 35%
Class attendance/participation: 5%

Homework
There will typically be 1-2 homework assignments per week, due ten minutes before lecture. Late homework assignments receive no credit unless a valid excuse is communicated (if possible) well in advance of the deadline for the assignment.

Homework assignments can be accessed through the Logic 2010 program (by clicking on the "Assignments" button on the Main Menu) or by signing in to the Logic 2010 student page. Homework assignments must be submitted over the internet to the Logic 2010 database directly from the logic software. Please make sure that your computer is connected to the internet before submitting your assignment. Further instructions for using the program and for submitting homework to the database are available in the attached document and under the "Documents" tab on the Logic 2010 website.

Exams
There will be two midterms and a final. The exams are open-note and open-book. you will **NOT** be able to use the software to take the exams.

Participation
The participation grade takes into account both attendance and discussion in class. Class attendance is mandatory. Students arriving late will receive reduced credit for attendance that day. Students leaving class early will also receive reduced credit.

The professor will accommodate a reasonable number of excused absences for religious holidays and official off-campus college business such as academic conference presentations and athletic competitions. However, per the College's policy on excused absences (http://www.rollins.edu/catalogue/academic_regulations.html#class-attendance), students must discuss with the professor the dates of the anticipated absences no later than the last day of the drop period. Students must present to their professor written evidence of the anticipated absences and discuss with him/her how and when make-up work should be completed prior to missing the class. Students should not expect to receive allowance for excused absences if they do not meet with the professor beforehand and clarify the dates as necessary.

Absences will be addressed by the professor in accordance with his attendance policy. The professor retains the right to determine what would be considered to be a reasonable number of absences (excused or otherwise) for the course. A student will not fail

a course because the number of religious observances and/or college business absences exceed the number of absences allowed, except if excessive absences make it impossible to fulfill the expectations of the course. The student's class participation grade in the course, though, may still be affected.

Honor Code

Membership in the student body of Rollins College carries with it an obligation, and requires a commitment, to act with honor in all things. The student commitment to uphold the values of honor—honesty, trust, respect, fairness, and responsibility—particularly manifests itself in two public aspects of student life. First, as part of the admission process to the College, students agree to commit themselves to the Honor Code. Then, as part of the matriculation process during Orientation, students sign a more detailed pledge to uphold the Honor Code and to conduct themselves honorably in all their activities, both academic and social, as a Rollins student. A student signature on the following pledge is a binding commitment by the student that lasts for his or her entire tenure at Rollins College:

> The development of the virtues of Honor and Integrity are integral to a Rollins College education and to membership in the Rollins College community. Therefore, I, a student of Rollins College, pledge to show my commitment to these virtues by abstaining from any lying, cheating, or plagiarism in my academic endeavors and by behaving responsibly, respectfully and honorably in my social life and in my relationships with others.

This pledge is reinforced every time a student submits work for academic credit as his/her own. Students shall add to the paper, quiz, test, lab report, etc., the handwritten signed statement:

> *"On my honor, I have not given, nor received, nor witnessed any unauthorized assistance on this work"*

Material submitted electronically should contain the pledge; submission implies signing the pledge.

Credit Hour Statement for Rollins Courses

This course is a four-credit-hour course that meets three hours per week. The value of four credit hours results, in part, from work expected of enrolled students both inside and outside the classroom. Rollins faculty require that students average at least 2.5 hours of outside work for every hour of scheduled class time. In this course, the additional outside-of-class expectations include the careful study of (i) the assigned readings, (ii) the class handouts posted to Blackboard, and (iii) the student's notes from lecture.

Accessibility Services

Rollins College is committed to equal access and inclusion for all students, faculty and staff. The Rehabilitation Act of 1973 and the Americans with Disabilities Act of 1990 create a foundation of legal obligations to provide an accessible educational environment that does not discriminate against persons with disabilities. It is the spirit of these laws which guides the college toward expanding access in all courses and programs, utilizing innovative instructional design, and identifying and removing barriers whenever possible.

If you are a person with a disability and anticipate needing any type of academic accommodations in order to fully participate in your classes, please contact the Office of Accessibility Services, located on the first floor of the Olin Library, as soon as possible. You are encouraged to schedule a Welcome Meeting by filling out the "First Time Users" form on the website: http://www.rollins.edu/accessibilityservices/ and/or reach out by phone or email: 407-975- 6463 or Access@Rollins.edu.

All test-taking accommodations requested for this course must first be approved through the Office of Accessibility Services (OAS) and scheduled online through Accommodate **at least 72 hours before the exam**. Official accommodation letters must be received by and discussed with the faculty in advance. There will be no exceptions given unless previously approved by the OAS with documentation of the emergency situation. We highly recommend making all testing accommodations at the beginning of the semester. OAS staff are available to assist with this process.

Title IX Statement

Rollins College is committed to making its campus a safe place for students. If you tell any of your faculty about sexual misconduct involving members of the campus community, your professors are required to report this information to the Title IX Coordinator. Your faculty member can help connect you with the Coordinator, Oriana Jiménez (TitleIX@rollins.edu or 407-691-1773). She will provide you with information, resources and support. If you would prefer to speak to someone on campus confidentially, please call the Wellness Center at 407-628-6340. They are not required to report any information you share with the Office of Title IX.

Sexual misconduct includes sexual harassment, stalking, intimate partner violence (such as dating or domestic abuse), sexual assault, and any discrimination based on your sex, gender, gender identity, gender expression or sexual orientation that creates a hostile environment. For information, visit http://www.rollins.edu/titleix/.

Electronic Device Policy

Because I will often work through problems in class using the Logic 2010 program, it is **recommended**, but not required, that students bring a laptop to class. But students should refrain from using their laptop to browse the web, etc., during class.

PHIL 223: Intro to Formal Logic

In order to protect the integrity of the classroom experience, the use of recording devices is limited to either the expressed permission of the faculty member or with proper documentation from the Office of Accessibility Services. Information about accommodations through Accessibility Services can be found at http://www.rollins.edu/accessibility-services/. Recording without the proper authorization is considered a violation of the Rollins Code of Community Standards.

Course Schedule:
In the first third of the course (up until the first midterm), we will cover a sentential logic with negation/conditional symbols. The second third of the course (up to the second midterm) will cover an expanded sentential logic with conjunction, disjunction, and biconditional symbols. In the final third of the course, we will study a richer logic with existential and universal quantifiers. Homework assignments will be made available day to day based on how quickly we cover material in class. Midterms will be announced ten days in advance.

This schedule is subject to change, depending on the progress of the discussion in the class. If there are changes, I will make note of them in class and will send out an email about the changes. For each class period, there is a listed reading. The reading for 01/23 should be completed before class on 01/23, etc.

Date	Topic
W 1/17	**Syllabus, validity, formal languages**
	Reading: None
F 1/19	**A language with negation and conditionals, grammatical trees**
	Optional reading: Ch. 1, section 1 (1.1)
M 1/22	**Symbolizations**
	Optional reading: 1.3
W 1/24	**Symbolizations**
	Optional reading: 1.3
F 1/26	NO CLASS (makeup class TBA)
M 1/29	**Introduction to derivations- rules of inference**
	Optional reading: 1.4
W 1/31	**Direct derivations**
	Optional reading: 1.5
F 2/2	**Direct derivations**
	Optional reading: 1.5
M 2/5	NO CLASS (makeup class TBA)

W 2/7	**Conditional derivations**
	Optional reading: 1.6
F 2/9	**Conditional derivations, indirect derivations**
	Optional reading: 1.6

M 2/12	**Indirect derivations**
	Optional reading: 1.7
W 2/14	**Subderivations**
	Optional reading: 1.8
F 2/16	**Hint sheet**
	Reading: "Hint sheet (version 1)" on Blackboard
	Optional reading: 1.10

M 2/19	**More derivations**.
	Reading: none.
W 2/21	**Review**
	Reading: Practice midterm on Blackboard
F 2/23	**Midterm 1**
	Reading: None

M 2/26	**A language for propositional logic, symbolizations**
	Optional reading: 2.1, 2.3
W 2/28	**Symbolizations, new rules of inference**
	Optional reading: 2.4, 2.5
F 3/2	**Derivations**
	Reading: none.

M 3/5	**Derivations and derived rules of inference**
	Optional reading: 2.8
W 3/7	**More derivations, updated hints**
	Reading: "Hint sheet (version 2)" on Blackboard
F 3/9	**More derivations, updated hints**
	Reading: none.

	SPRING BREAK

M 3/19	**Truth tables**
	Reading: 2.10
W 3/21	**Truth value analysis, shortcut "reductio method"**
	Reading: "Reductio method" handout on Blackboard
F 3/23	**Review**
	Reading: Practice midterm on Blackboard

M 3/26	**Midterm 2**
W 3/28	**A language for predicate logic, free and bound variables**
	Optional reading: 3.1-3.3
F 3/30	**Symbolizations**
	Optional reading: 3.5
M 4/2	**Symbolizations**
	Optional reading: 3.5
W 4/4	**New rules of inference, basic derivations**
	Optional reading: 3.6
F 4/6	**Basic derivations**
	Reading: none.
M 4/9	**Universal derivations, quantifier negation rules**
	Optional reading: 3.7-3.8
W 4/11	**Universal derivations, quantifier negation rules**
	Optional reading: 3.7-3.8
F 4/13	**More derivations**
	Reading: None
M 4/16	**More derivations**
	Reading: None
W 4/18	**More derivations**
	Reading: None
F 4/20	**Showing invalidity: the method of models**
	Optional reading: 3.10
M 4/23	**Showing invalidity: the method of models**
	Optional reading: 3.10
W 4/25	**Showing invalidity: the expansion method**
	Reading: "Expansion Method" handout on Blackboard
F 4/27	**Showing invalidity: the expansion method**
	Reading: "Expansion Method" handout on Blackboard
M 4/30	**Review**
	Reading: Practice final on Blackboard
5/03, 10:am	**FINAL EXAM**