Philosophy 2101: Formal Logic I

University of Central Florida
Fall Semester 2017
Class #80835

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Meeting Times: Tuesdays and Thursdays, 12-1:15
Course Location: Visual Arts Building 0111
Office Hours: Tuesdays, 6:15-7:15pm, Wednesdays, 12-1pm, and by appointment. (See Course Policies, section 5 below for instructions on making appointments for times other than the standard scheduled time.)

Course Catalog Description
      A study of sentence and predicate logics, with introduction to modal, epistemic, deontic, multi-valued, and indeterminant logics.

Enriched Course Description
      This course will provide students a theoretical and practical understanding of the basic elements of symbolic logic. We will start by explaining what it is to symbolize natural language and apply logical calculus to it. Students will become adept at translating everyday English sentences into symbolic notation and performing numerous operations on these notated sentences, eventually gaining the ability to construct and evaluate various kinds of formal arguments. The course will conclude with a brief introduction to the theory of logic itself and a few "non-classical" variations on its basic form.

Course Goals
1) Mastery of the concepts of logical transcription, soundness, validity, standard first-order logical connectives and operators, predication, and quantification.

2) Competence in computation and derivation in a standard comprehensive first-order logical derivation system for sentential ("sentence") and first-order predicate logic.

3) Augmentation of critical thinking skills by comparing/contrasting English-language arguments with formal reasoning.

Course Policies
1) *Academic Conduct.* All members of the academic community at UCF are expected to practice and uphold standards of academic integrity and honesty. "Academic integrity" means representing oneself and one's work honestly. Misrepresentation is cheating, since it involves claiming credit for ideas and

work not actually one's own and thus trying to attain a certain academic evaluation without actually earning it. Here are some examples of academic dishonesty:

a) *Cheating on examinations.* This includes using materials such as books and/or notes when not authorized by the instructor, copying from someone else's paper, helping someone else copy work, substituting another's work as one's own, theft of exam copies, or other forms of misconduct on exams.

b) *Plagiarizing the work of others.* UCF's Golden Rule defines plagiarism as follows: "whereby another's work is used or appropriated without any indication of the source, thereby attempting to convey the impression that such work is the student's own." Whether students have read or heard the information used, they must document the source of the information. When dealing with written sources, a clear distinction should be made between quotations (which reproduce the information word-for-word within quotation marks) and paraphrases (which digest the source of information and provide it in the students own words). Both direct quotations and paraphrases must be documented. Even if students rephrase, condense, or select from another person's work, the ideas are still the other person's, and failure to give credit constitutes misrepresentation of the student's actual work and plagiarism of another's ideas. Buying a paper or taking information from the internet without attribution and handing it in as one's own work is, in fact, plagiarism.

c) *Falsifying records or providing misinformation regarding one's credentials.*

d) *Unauthorized collaboration on computer assignments and unauthorized access to and use of computer programs.* This includes the modification of computer files created by others and representing that work as one's own.

2) *Completion of Required Work.* Completion of all required work is necessary in order to pass the course. (See "Assignments" below.)

3) *Excused Absences.* Students are obligated to inform their instructors of dates they will miss class due to an excused absence prior to those anticipated dates. For activities such as athletic competitions whose schedules are known prior to the start of a term, students must provide their instructors during the first week of each term a written schedule showing days they expect to miss class. For other university excused absences, students must provide each instructor at the earliest possible time the dates they will miss. If your absence is not known prior to the start of a term, please fill out the Absence Form, which is available in my Google Forms cache and accessible via a link on our course's Canvas site.

Although class attendance/participation is not a component of the grade in this course, it is still *extremely important* in two respects. 1) Listening to and actively engaging with the lectures will give you understanding and know-how that will almost certainly improve your grades on quizzes and exams. 2) You have to show up for quizzes and the in-class portions of exams. If you will be absent for a university scheduled event, please follow the policy outlined in the previous paragraph. After I receive your schedule of anticipated absences, we will make alternative arrangements for you to take the exam. If a *sudden emergency* arises that will prevent you from attending an exam period, please notify me as soon as possible, and provide me alternative times at which you could take the examination. (Confirmation of the emergency may require you to submit certain documentation—I will make sure to respect your right to privacy.)

4) *Add/Drops.* UCF's policy will be followed strictly. It is the student's responsibility to be aware of deadline dates for dropping courses.

5) *Office Hour Policies.* Most of the time, you'll be able to drop by office hours whenever you want, no appointment required. In periods right before exams in the courses I'm teaching, however, I may inform you that first-come, first-serve signups are required to attend office hours. I will make it clear if this becomes necessary.

I'm also happy to meet with you outside the scheduled office hours. To do this, send me a message via Webcourses with your availability and we'll work out a mutually-agreeable time.

6) *In-Classroom Conduct – General:* Philosophy requires the discussion of controversial ideas. Everyone should feel comfortable voicing their reasoned assessments of these ideas. Therefore, it's essential that we maintain a respectful academic environment in the classroom. No derogatory or discriminatory speech acts will be permitted.

If you have any questions about what this entails, feel free to contact me. (Please also see section 9.)

7) *In-Classroom Conduct – Electronic Devices.* Since I want you to engage with the material through discussion and concentration on the lectures, use of laptops and smartphones during class is prohibited. Note-taking is indeed a good idea, but you should use paper and a writing utensil. Notes: 1) It's fine to keep your cellphone on with the ringer silenced. You just can't look at it. I recommend stowing it in your bag. 2) If you have a documented condition that conflicts with this policy, see "Accessibility Accommodation" below.)

8) *Accessibility and Accommodation.* The University of Central Florida is committed to providing access and inclusion for all persons with disabilities. This syllabus is available in alternate formats upon request. Students with disabilities who need specific access in this course, such as accommodations, should contact the professor as soon as possible to discuss various access options. Students should also connect with Student Accessibility Services (Ferrell Commons, 7F, Room 185, sas@ucf.edu, phone (407) 823-2371). Through Student Accessibility Services, a Course Accessibility Letter may be created and sent to professors, which informs faculty of potential access and accommodations that might be reasonable.

9) *Diversity and Inclusion.* The University of Central Florida considers the diversity of its students, faculty, and staff to be a strength and critical to its educational mission. UCF expects every member of the university community to contribute to an inclusive and respectful culture for all in its classrooms, work environments, and at campus events. Dimensions of diversity can include sex, race, age, national origin, ethnicity, gender identity and expression, intellectual and physical ability, sexual orientation, income, faith and non-faith perspectives, socio-economic class, political ideology, education, primary language, family status, military experience, cognitive style, and communication style. The individual intersection of these experiences and characteristics must be valued in our community.

Title IX prohibits sex discrimination, including sexual misconduct, sexual violence, sexual harassment, and retaliation. If you or someone you know has been harassed or assaulted, you can find resources available to support the victim, including confidential resources and information concerning reporting options at www.shield.ucf.edu and http://cares.sdes.ucf.edu/.

If there are aspects of the design, instruction, and/or experiences within this course that result in barriers to your inclusion or accurate assessment of achievement, please notify the instructor as soon as possible and/or contact Student Accessibility Services.

For more information on diversity and inclusion, Title IX, accessibility, or UCF's complaint processes contact:

- Title IX – OIE - http://oie.ucf.edu/ & askanadvocate@ucf.edu

- Disability Accommodation – Student Accessibility Services
  - http://sas.sdes.ucf.edu/ & sas@ucf.edu

- Diversity and Inclusion Training and Events – www.diversity.ucf.edu

- Student Bias Grievances – Just Knights response team - http://jkrt.sdes.ucf.edu/

- UCF Compliance and Ethics Office
  - http://compliance.ucf.edu/ & complianceandethics@ucf.edu

- Ombuds Office - http://www.ombuds.ucf.edu

10) *Classroom Safety.* Instructors and staff at UCF take classroom safety very seriously. In the event of an emergency, please follow all orders from the instructor (if the instructor is available to give orders). For a complete statement of UCF's emergency procedures, please visit the website of UCF's Office of Emergency Management at http://emergency.ucf.edu/.

Sources

The textbook for the course is Paul Teller's *A Modern Logic Primer* (see the course bibliography). The book is available, free and legally, at http://www.macs.hw.ac.uk/~markl/teaching/LOGIC /Teller.html. The few other assigned sources will be available through links from our Canvas site.

Homework from Teller is assigned frequently, but is not graded. It is up to you to complete and check all homework problems. *Problem sets* are graded, but they are assigned less frequently. These problem sets cannot be found in the textbook. They will be provided to you either in class or via Canvas.

Assignments

Online Completion Quizzes (5% of final grade). This small quiz, which just concerns some basic course information available in this syllabus must be completed by the end of the first week of courses (Friday, Aug. 24, 5pm). You will receive full credit for the quiz if you score a 70% or higher, and you are permitted (even encouraged) to consult the syllabus while taking the quiz. This quiz is assigned in order to: a) give students incentive to familiarize themselves with the syllabus, and b) verify each student's "academic engagement" with the course, which enables any student due to receive financial aid for the course to receive that aid in a timely fashion. IMPORTANT NOTE: You must complete this quiz before the due date, or receipt of your financial aid may be delayed.

Problem Sets (25% in total). Six problem sets will be assigned over the course of the semester. Five of them will be counted towards your final grade, and are each worth 5% of that figure; your lowest-

scored problem set will be dropped. (If more than one tie for lowest, only one tied problem set will be dropped.) They are each worth 5% of your final grade in the course. Each will be due at the beginning of class on its specified date on the syllabus. You'll learn what those are as the course proceeds.

Note: The easiest way to submit completed problem sets is just by submitting physical copies to me in person. I will, however, copies in .pdf, .doc, or .docx form that are uploaded to the assignment submission portal on our Canvas site. (Please ensure these files are legible.)

Quizzes (22% of the final grade). Five quizzes are scheduled, four of which contribute equally to the 22% "Quizzes" portion of the grade. As with the problem sets, one of your very lowest quizzes will be dropped. You'll take these quizzes in class on the dates specified in the course schedule below. Here are some important things you should know about the quizzes:

1) Each quiz will concern material covered since the previous quiz (or, in the case of the first quiz, covered since the beginning of the course). *Even so*, logic "builds upon" itself, so it's likely that each quiz (besides the first) will require knowledge of topics covered on prior quizzes.

2) They are designed to *reward* students who keep up with the reading and the homework—they are not designed to fool or trick you. The problems on the quizzes should be representative of what you will have encountered in the homework.

3) *It is very likely that you will have to keep up with the homework (and reading and problem sets) to do well on the quizzes.*

4) You can make-up quizzes for which you are absent if you have a legitimate documented excuse for missing the sessions they cover. (Remember to file the aforementioned form if you want to make up a quiz.)

5) Consultation with notes, textbooks, and/or classmates during quizzes is prohibited.

Midterm Examination (20% of the final grade): The examination will occupy the entirety of the class period scheduled for it on the syllabus. It is due at the end of the session. It will cover all the material we have covered in the course up until that point. Consultation with notes, textbooks, and classmates during the exam is prohibited. If you know that you are going to be absent (with a university-sanctioned excuse) for the midterm, please contact me at least 24 hours before the midterm begins in order to make alternate arrangements to take it.

Final Examination (30% of the final grade): The examination will occupy the course's final examination period. It is due at the end of the session, and will cover all the material addressed in the course. Consultation with notes, textbooks, and classmates during the exam is prohibited. If you know that you are going to be absent (with a university-sanctioned excuse) for the final examination period, please contact me at least 72 hours before the start of the final examination period in order to make alternate arrangements to take it.

SPECIAL NOTE: I will be offering expanded office hours before each exam if there's sufficient interest. I'll provide more information about these as the semester progresses.

Grading
The grade will be determined by the percentage of possible points you earn on the various assignments (see below). The percentages correspond to letter grades as follows:

A grades
A: 93.33-100%
A-: 90-93.32

B grades
B+: 86.67-89.99
B: 83.33-86.66

B-: 80-83.32

C grades
C+: 76.67-79.99
C: 73.33-76.66
C-: 70-73.32

D grades
D+: 66.67-69.99
D: 63.33-66.66
D-: 60-63.32

F grades
>59.99

Late quizzes and examinations (without documented excuse) will suffer the following standardized penalties

Submission 0-24 hours after due date: 10 percentage points
…24h1m-48 hours after due date: 20 percentage points.
…48h1m-72 hours after due date: 30 percentage points
(and so on)

Even if you've already missed a deadline so much that you will not receive any points on an assignment, you must complete the assignment to pass the course. See section 2 in "Course Policies" above.

*Course Schedule**
Notes: 1) *Underlined* items are graded. 2) The listed "Reading" and "Homework" are to be done *before* the session under which they are listed. 3) Quizzes and exams will take place in the session in which they are listed. 4) If "In-Class Work Planned" is blank, then the class will comprise standard lecture and practice activities. 5) The schedule is subject to change due to emergency, university dictates, and pedagogical advisability.

DATE	TOPIC	READING	HOMEWORK DUE	IN-CLASS WORK PLANNED
Aug 21	What Formal Logic Is, and Why You Should Care	None	Read syllabus after class	Take syllabus quiz ASAP; due Friday, August 24 by 5pm.
	Unit I: Sentence Logic			
Aug 23	Truth and Arguments: Propositions/Sentences, Validity, and Soundness	T vol. 1, Chapter 1	Memorize the definitions of "valid," "sound," "truth-value," "sentence," and "entailment"	
Aug 28	Basics: Transcription and Connectives	T vol. 1, Chapters 2 and 3	T vol. 1, Exercises 1-2, 1-5; also 2-1, every other	

			problem starting with 2-1a.	
Sept 6	Transcription and Connectives, Cont'd	None	T vol. 1, Exercises 1-6	**Quiz 1**
Sept 11	The Properties of Truth Tables	T vol. 1, Chapter 4	**Problem Set 1: Transcription and Connectives**	
Sept 13	Truth-Tables, Cont'd	None	T vol. 1, remaining Ch. 1 exercises	
Sept 18	Derivations in Sentence Logic, I	T vol. 1, Chapter 5	**Problem Set 2: Truth-Tables**	
Sept 20	Derivations in Sentence Logic, II	None	T vol. 1, Exercises 5-1, 5-3, and 5-4a-e	**Quiz 2**
Sept 25	Derivations in Sentence Logic, III	T vol. 1, Chapter 6	T vol. 1, Exercise 5-4f-l, o-p	
Sept 27	Practice and Review	None	**Problem Set 3: Basics of Derivation**	
Oct 2	Derivations in Sentential Logic, IV	T vol. 1, Chapter 7	T vol. 1, Exercise 6-1	
Oct 4	Concluding Sentence Logic	None	T vol. 1, Exercise 7-7a, b, f, and g	**Quiz 3**
Oct 9	Midterm Review	TBD	Take Midterm Practice Quiz Online	Midterm review session
Oct 11	<u>Midterm Examination</u>	None; study for midterm	None assigned; practice for midterm	**Midterm Exam**
	II: First-Order Predicate Logic (FOPL)			
Oct 16	Introducing Predicates	T vol. 2, Chapter 1, §§1.1 and 1.2	None	
Oct 18	Basic Predicate Calculus	T vol. 2, Chapter 1, §§1.3	T vol. 2, Exercises 1-1 and 1-2	
Oct 23	Introducing the Quantifiers	T vol. 2, Chapter 2	T vol. 2, 1-3 and 1-4	
Oct 25	Complexities with Quantifiers	T vol. 2, Chapter 3	**Problem Set 4: Transcriptions in Predicate Logic**	
Oct 30	Derivations with New Machinery, I	T vol. 2, Chapter 5, §§5-1 to 5-3	T vol. 2, Exercises 5-2, first half	
Nov 1	Derivations with New Machinery, II	T vol. 2, Chapter 5, §§5-4 to 5-6	T vol. 2, Exercises 5-2, second half	

Nov 6	Derivations with New Machinery, III	T vol. 2, Chapter 6, §§6-1 and 6-2	T vol. 2, Exercises 5-4	**Quiz 4**
	III: Extending Logic; Exploring Concepts			
Nov 8	A Taste of Modal Logic, I	Priest, pp. 20-24, and 36-49 [Course reserve]	**Problem Set 5: Derivations in FOPL**	
Nov 13	A Taste of Modal Logic, II: Deontic Logic	McNamara, "Deontic Logic," §§1.1, Stanford Encyclopedia of Philosophy (link on Canvas)	Optional exercises on Canvas	
Nov 15	A Taste of Modal Logic, III: Epistemic Logic	Review handout after class	Optional exercises on Canvas	**Quiz 5**
Nov 20	True, False, and Something Else: Three-Valued Logic	Priest, pp. 120-136 (posted on Canvas)	Optional exercises on Canvas	
Nov 22	Thanksgiving Day. No class. Eat well!	No class – enjoy the holiday!		
Nov 27	Metalogic: Soundness and Completeness	T vol. 2, Chapter 10	Optional exercises on Canvas	
Nov 29	Final Review	None	**Problem Set 6: A Taste of Further Logic**	
Dec 6, 10-12:50 asm	Final Exam	Study for the exam		**Final Exam**

Course Bibliography

McNamara, Paul. 2010. "Deontic Logic." *Stanford Encyclopedia of Philosophy*,
        https://plato.stanford.edu/entries/logic-deontic/
Priest, Graham. 2008. *An Introduction to Non-Classical Logic: From Ifs to Is.* Second Edition. Cambridge: Cambridge University Press.
Teller, Paul. 1989. *A Modern Formal Logic Primer: Predicate Logic and Metatheory, Volume II.* available online.
—. 1989. *A Modern Formal Logic Primer: Sentence Logic, Volume I.* available online.