

**PHIL ###: Introduction to Symbolic Logic
Semester/Year**

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Office Hours: Office hour times Or by Skype
Meeting times: Time1 – time2 in Building#

Course Description

This course provides an introduction to symbolic logic. Logic, more generally, is the science of arguments; more specifically, it develops and utilizes methods for determining whether an argument is good or bad. This course will focus on evaluating deductive arguments. Some of the methods you will learn for evaluating deductive arguments include 1) translating statements of natural language, such as English, into formal languages, such as propositional and predicate logic, 2) utilizing truth-tables for determining the truth-functionality of compound statements, 3) utilizing natural deduction systems for determining the validity of deductive arguments, and 4) constructing formal and informal counterexamples. We will begin with the syntax and semantics of sentential logic, and then we will move on to predicate logic. From there, we will study naïve set theory, setting us up to do some metatheory. Studying logic is good for anyone looking to sharpen his or her reasoning skills. It is essential for doing good philosophy and is quite helpful for computer-programming and studying linguistics.

Required Text

- Dave Barker-Plummer, Jon Barwise, and John Etchemendy. *Language Proof and Logic*. 2nd ed., CSLI Publications, 2011.
 - **DO NOT BUY USED; IT WILL BE LESS THAN WORTHLESS TO YOU!**
 - You can buy an electronic version here: <http://ggweb.stanford.edu/store>.
 - You will need either the electronic version for \$55, or the physical version for \$70
 - **DO NOT** buy either of the Tarski's World packages: one for \$30; the other for \$39.95. **You will not be able to complete the required homework with them.**
- The text comes with software that is required for taking this course. You must have a new edition in order to have a Grade Grinder key, which, for most of your homework, is necessary for turning it in; hence, **do not buy a used edition**.
 - Having access to a computer is, therefore, also required for this class.
- CSLI Publications has a website where you will find hints to selected exercises in the text. The URL is ggweb.stanford.edu/lpl (The URL is also available on pg. 11 of your text.).

- There is a course Blackboard site for this course. Please log in to make sure you are familiar with the layout. I anticipate making announcements regularly; it is your responsibility to be aware of any changes to the schedule, syllabus, testing dates, etc.

Grading

The following is the grading scheme for the class.

- Homework: 35%
- Test 1: 25%
- Test 2: 25%
- Take Home: 15%

Homework

Throughout this course, homework will be regularly assigned with a specific deadline. For every minute that homework shows up late in my inbox, a point will be automatically deducted until you can no longer earn any points. Extensions require excused absences or good reason, where I am the arbiter of what counts as a good reason.

It is best to work on the exercises the day that the corresponding material is covered; this way you can approach me or a peer with any difficulties you are having prior to the deadline. **Approach me or a peer if you are having difficulties when you have it!** This material tends to build on itself, so one difficulty will likely cause more and more if it is not taken care of.

Much of the homework you will be assigned will be graded electronically. Other times, you will have to write an answer. I intend for written homework to be completed in class. If you're absent on such a day, it is your responsibility to turn in your written answers. **For written answers, I want a Microsoft Word file, such as docx.**

You may have peer-to-peer assistance on your homework outside of class; this does **not** mean you can copy your peers' homework and submit it as yours. What it means is that a peer, if he or she is nice enough, is allowed to teach you how to get to the right answer; you should then attempt to solve the problem using that explanation, but on your own. Note that you actually benefit from struggling with a problem. So you should use peer-to-peer assistance only if you have spent a good amount of time attempting to solve the problem. If I come to judge that peer-to-peer assistance is being abused, I reserve the right to make the homework worth less and the tests more (e.g. I might reduce the worth of homework to 10% of your grade, while increasing the worth of the tests to 30% of your grade each).

Do the homework, especially early on when it is relatively easy. This is a great way to buffer against a poor test performance, not to mention that it will likely help you to avoid a poor test performance altogether.

As you may have gathered, this is a homework intensive class. Please note the definition of 'a credit hour'. A credit hour is an amount of work represented in intended learning outcomes and verified by evidence of student achievement that is an institutionally-established equivalency that reasonably approximates not less than:

- One hour of classroom or direct faculty instruction and a minimum of two hours of out-of-class student work each week for approximately fifteen weeks;
- Or at least an equivalent amount of work...

Tests

There will be three non-comprehensive tests. The first covers the material leading up to the completion of propositional logic (or sentential logic). That occurs after we have covered the logic of conditionals. I plan for the second to cover the material picking up to the completion of predicate logic. The third is a take home test, in which you will need to prove a piece of the completeness of propositional logic (due by the end of the allotted final time).

Please note that I intend to tailor the speed of this course to the class. However, we *must* cover predicate logic. Everything thereafter is a bonus.

Excused absentees can make up exams without penalty, so long as it is made up within a reasonable amount of time. Unexcused absentees can make up exams, but with severe penalty (automatic 40% deduction) and only if it is made up within a reasonable amount of time.

Tentative Schedule

Below is the order we will proceed through the material.

	Topic	Pages
1	Syllabus, introduction, and tutorial	Introduction
2	Propositional Logic: Atomic Sentences	1 (pp. 19-31)
3	The Logic of Atomic Sentences:	2 (pp. 41-66)
4	The Boolean Connectives	3 (pp.67-90)
5	The Logic of Boolean Connectives	4 (pp. 93-118)

6	Methods of Proof for Boolean Logic	5 (pp. 128-139)
7	Formal Proofs and Boolean Logic	6 (pp. 143-168)
8	Conditionals	7 (pp. 178-189)
9	The Logic of Conditionals	8 (pp. 199-207; 223-225)
10	Review	
11	Test 1	
12	Introduction to Quantification	9 (pp. 229-245)
13	The Logic of Quantifiers	10 (pp. 259-277; 291-297)
14	Multiple Quantifiers	11 (pp. 298-313)
15	Method of Proof for Quantifiers	12 (pp. 328-338)
16	Formal Proofs and Quantifiers	13 (pp. 351-361)
17	Metatheory: Truth-functional Completeness and Soundness of PL	14 (pp. 215-222)
18	Metatheory: First-order Set Theory	15 (pp. 413-436)
19	Review	
20	Test 2	
21	Mathematical Induction	16 (pp. 454-465; 473-475)
22	Metatheory: Completeness of PL	17 (pp. 484-493)
23	Review	
24	Turn in take home test	

Grading Scale:

<http://www.ucmo.edu/registrar/grades/> defines the grading scale as such:

- A – work of marked excellence
- B – work of superior quality
- C – work of average quality
- D – work of inferior quality
- F – failure to do work of passing quality

Accordingly, letter grades will be assigned using the following scale:

>89 – 100:	A
>79 – 89:	B
>69 – 79:	C
>59 – 69 :	D
0 – 59:	F

Note that, since UCMO does not use +/- scale, I roundup in determining the grades. But also note that the amount I am willing to roundup is already accounted for.

Attendance Policy

Attendance and participation are mandatory. Do not expect to do well in this class if you do not attend regularly. Our textbook provides the essential elements required for understanding the concepts and relies on you intuitively grasping the material via the software. As such, many of you will find my lectures an invaluable resource in understanding the material.

The University's attendance policy appears on page 20 of the Undergraduate Catalog 2015. It states that [s]tudents are expected to attend all lectures, seminars, laboratories, and fieldwork for each registered class, and to complete all work assigned by the instructor for the class." It also states that students have the right to make up missed course requirements "when a student is absent because of participation in approved university activities, university programs (that the student is required to attend), or when absence has been verified by the Office of Student Experience and Engagement [(660-543-4114, ADM 214)]. A student must contact his/her instructor on the first day the student returns to class... When absent due to extenuating circumstances such as documented medical issues, a death in the family, or military order, a student may ask the Office of Student Experience and Engagement to verify the absence. If the absence is verified, the student will be provided a written electronic notice which s/he may distribute to faculty. It is the responsibility of the student to make the request within a reasonable time frame, distribute the documentation to faculty within two days of receiving it, and to make arrangements with faculty to make up all missed work." An absence will be excused if the above conditions are met, including the requirement that the electronic documentation is distributed to me within a reasonable time frame. For further details, please consult the Undergraduate Catalog (<https://www.ucmo.edu/academics/catalogs/documents/2015UGCatalog.pdf>).¹

In accordance with department policy, a student with more than 4 unexcused absences will have his or her grade lowered by one letter grade. Further absences may result in further grade reduction, as determined by the instructor. Furthermore, a student who accumulates more than 8 unexcused absences will not receive credit for this course.²

¹ Dr. Brian Brost's Fall 2014 Philosophy 1400 syllabus.

² Dr. Brian Brost's Fall 2014 Philosophy 1400 syllabus.

Note that office hours and appointments are not an opportunity for unexcused absentees to gain lecture notes. Rather, their purpose, in general, is for attendees to clarify concepts, etc.

Other Policies

Academic Dishonesty: Academic dishonesty will not be tolerated. Academic dishonesty includes, but is not limited to, giving or receiving unauthorized aid on examinations or other assigned work, and plagiarism. For more on academic honesty and dishonesty, including UCMO's definition of 'plagiarism' see:

<http://www.ucmo.edu/acct/documents/AcademicHonestyPolicy.pdf>

Intellectual Property: Course materials prepared by the instructor, together with the content of all lectures presented by the instructor, are the **property of the instructor**. Video and audio recording of lectures without the consent of the instructor is **prohibited**. On request, the instructor may grant permission for students and auditors to audiotape lectures, on the condition that the individual making the recording only uses these audio recordings as a study aid. Unless explicit permission is obtained from the instructor, recordings of lectures may not be modified and must not be transferred or transmitted to any other person, whether or not that individual is enrolled in the course. **Students and auditors of this class are also prohibited from making commercial use of class lectures.**

Students with Disabilities: The Office of Accessible Services, Elliot Union 222, 660-543-4421, coordinates accommodations and services for KU students with disabilities. If you have a disability for which you may request accommodation in UCMO classes and have not contacted the Office of Accessible Services, please do so as soon as possible. They will contact me regarding the accommodations you need.