

PHILOSOPHY 211: INTRODUCTION TO LOGIC
AMERICAN UNIVERSITY OF BEIRUT
SPRING 2014
SEC. 3 MWF 11:00 – 11:50 NICELY 323

Instructor: Dr. Chris Johns
E-Mail: cj08@aub.edu.lb
Phone: Ext. 4259

Office: 139 Fisk Hall
Office Hours: MWF 12:15 – 1:15
and by appointment.

Course Description: This is an introduction to the formal methods of rational argument. It also provides some historical context for the development of foundational studies in mathematics and computation. After an introduction to the general idea of Logic, we will focus on the basics of *sentential* logic—symbolization, syntax, derivation, and semantics. Midway through the course we will turn to the same basics, except focusing on *predicate* logic. The main goal of the course is to instill in the student the habit of rational thinking: thinking clearly, consistently, and with “logical consequence.”

This course fulfills the FAS General Education “quantitative thought” requirement and is required for philosophy majors.

Program Learning Outcomes—by the end of this course you will be able to:

- Understand the difference between validity, truth, and soundness.
- Determine the logical validity of arguments, by symbolizing English sentences and submitting them to “truth-tables” and derivations (proofs).
- Recognize and use correct “rules of inference” in formal studies and everyday thinking.
- Recognize fallacious reasoning in everyday arguments.
- Understand the role of the “quest for certainty” in the development of computational logic.
- Understand the power of deductive reasoning to ward off the evils of fallacy and contradiction!
- Bow before the god of logical validity!
- Admire the elegant beauty of demonstrative proof!

Essential: Read this syllabus carefully. By taking this class, you agree to understand and comply with this syllabus. By ‘syllabus’ I mean any document appearing directly under the SYLLABUS section of Moodle. To maintain organization and fairness, I must maintain the policies stated herein. If I make any changes to the syllabus, I will inform you. If you have a question about any policy, I am happy to talk about it. But if it is in the syllabus, you can never say that you did not know.

Required Texts: See course schedule below for schedule of assigned readings.

- *The Logic Book*, Sixth Edition, by Bergmann, Moor and Nelson. Available at AUB Bookstore.
- *Logicomix: An Epic Search for Truth*, by Doxiadis and Papadimitriou. Available at AUB bookstore.

Graded Requirements:

- Homeworks, 5%
- Graded Exercises (weekly) 85% of course grade
- In-class midterm 10%
- Optional Final exam: To be figured
- Bonus points: Two points will be added to your final grade for doing the Bonus Point project.

Homeworks (HW): will be due every Wednesday. While they will not be graded, they are very important to do, since they prepare you for the weekly exercises on Friday. ~~Successful completion of 90% of the homeworks gets you a 92 for 5% of your course grade.~~ To get full credit (100) homeworks must be handed in *complete*. If NEW you did not complete all problems, you get 90 points. MOre than one, 80, and so on. 90% of your homeworks are complete, then you will get 92 for 5% of your course grade. For an example of how to calculate this portion of your grade, see “Calculating and Estimating Your Grades” on Moodle under the syllabus section.

Graded Exercises (GE). Exercises will be done each Friday and take up 20 minutes of class time. They will consist of exercises very much like the homework exercises assigned from the textbook (*The Logic Book*), and reading questions about *Logicomix*. Exercises may *not* be made up. Your two lowest scores will be dropped from the sum of your scores. Cheating on the exercises will result in a zero for that exercise. Cheating means looking at someone else’s work or talking (whispering) during the exercise. Points will be removed from your final course grade for using cell phones at any time in class. NEW POLICY: the condition for dropping your lowest two GE grades is that you take all of them.

In-class mid-term: like the weekly exercises, only an hour long. The midterm is cumulative.

Optional Final Exam: During finals week. You may want to take the final if you have not done as well as you would like on the weekly Graded Exercises. If you choose to take the final, it will count as 25% of your Course Grade. This would entail that the weight of your Graded Exercise grade will be reduced to 60% ($85 - 25 = 60$). If you do not choose to take the Final Exam, then the weight of your Graded Exercise grade will remain 85%. However, if you do badly on the Final, it will not count against you. Your Course grade will be calculated as if you did not take the final.

Bonus Point project: New Policy: one point for sentential, two points for Predicate. You can get two-points added to your final grade for doing the following project: Find an argument in a news article or in a casual conversation. Show that the statements are indeed an argument. Symbolize the argument. Determine whether the argument is valid. You must have six or fewer premises in your argument and no less than four. Submit your work with a copy of the original source no later than the day the Final Exam is scheduled.

Attendance: is up to you. However, it is in your best interest to attend every class, to be attentive, and to participate in the discussions. Learning logic is a cumulative process and to learn it well requires repeated practice. Also, if you are absent more than eight times, you will automatically fail the course. If you are having problems attending class, you must tell me right away. Do not start showing up at the end of the semester expecting to make up the work and pass. You will have missed too much.

Participation and class conduct: Participation is strongly encouraged. In order to participate well, you must do the homeworks *before* class so we can go over them. Ask questions, make comments, and respond (respectfully) to other students. No question or comment is too silly or off-base. Everyone has questions, and surely others have the same questions as you. However, please do not monopolize the discussion. Give others a chance to speak. *Be respectful of me and others by listening to what is going on, rather than talking among yourselves.*

NOTE: Repeat offenders of the following behaviors will be ejected from class and will have **points removed from their final grade**. (1) Talking while someone else is talking. If you cannot avoid talking to your neighbor, then sit somewhere else. (2) Using cell phones in class. This is a no phone zone. All electronic devices must be turned off and put away completely out of sight. If you must take notes with a computer, the internet connection must be turned off. (3) Leaving the room to make or answer phone calls; playing games or reading non-class material during class. (4) Repeated lateness; leaving early. Also, as a courtesy to me, *please do not make preparations to leave class until I say class is over*. If I seem unaware that class time has expired, kindly alert me, thank you.

Grade Calculation: I want you to understand how your grades are assigned and calculated, so that you can know better what I expect and so that you can exercise more control over your own progress. See “Calculating and Estimating Your Grades” on Moodle.” This will show you completely explicitly how all calculations are made, so that you can do them yourself. Here is a brief explanation: All grades are recorded on Moodle’s “Grades” (as well as on the assignments themselves), so you can view them as soon as I have put them up (Moodle→Administration→Grades).

To estimate your grade at any point in the semester, simply figure your average and multiply it by the “weighted” amount; then sum the weighted amounts (see “Calculating and Estimating. . .”). Be sure to drop your two lowest exercise scores. Your course grade will not be rounded up. An 82.75 is an 82.

NOTE: Never tell me that you “need” a certain course grade, nor ask me to “go easy” on grades or anything else. The request is completely inappropriate and unethical. The only reason students make such a request is that they think it will influence their grade—and they are right. If made, I will *reduce* your course grade by at least 2 points. The best way to get the grade you need is to do the required work as best you can; although I offer no guarantees that you will get it.

Moodle: Here you will find course material such as the syllabus, answers to textbook exercises, and the occasional fun thing. Class notices and announcements will be sent to you by e-mail (via the “News Forum” on Moodle) so, **check your AUB e-mail** regularly.

E-mail: So that we may better communicate, you must use your AUB e-mail and “authenticate” it so that I can see your name and know who you are.

See Course Schedule, next page--

Course Schedule: This schedule is subject to change, although any changes will be announced well in advance. *Always* bring the assigned material to class. **Monday** lists the topic for the week. We will go over the fine points of the assigned chapter in class. Homework will be assigned. **Wednesday:** Homework is due. We will go over any other fine points or answer questions about the homework. **Fridays:** Additional questions will be answered (briefly), and then we will have an in-class Graded Exercise (GE), taking up most of class time. Time permitting, we will get a preview of next week's readings. Answers to the Graded Exercises will be posted after class. I then suggest that you read up over the weekend in preparation for Monday's new lesson. Read any new postings, including "previews" of next week's lesson.

Week	Monday	Wednesday	Friday
1. Jan	27 Intro to syllabus, logic	29 Chapter 1, 1.1-1.2 Assign HW	31 HW: All unstarred in 1.2E Practice Exercise on 1.1 & 1.2.
2 Feb	3 Ch. 2: Syntax & Symbolization (sentential logic) Sec. 2.1, 2.2, 2.3	5 HW1: 2.1E, all un. 2.2E, all un 2.3E, all un	7 GE 1 Logicomix, <u>Overture</u>
3	10 Ch. 3: Sentential Logic: Semantics Sec. 3.1 – 3.5	12 HW2 3.1E: 1. a &c 3.2E: 1. a, c, e; 3.3E 1. a, c, e 3.5E: 1. a, 2. a, c	14 GE 2 Logicomix 1. “Pembroke Lodge”
4	17 Ch. 5 Sentential Logic: Derivations. Sec. 5.1	19 HW3: 5.1.1: unstarred	21 GE 3 Logicomix 2, “The Sorcerer’s Apprentice.”
5	24 Ch. 5 Sentential Logic: Derivations. Sec. 5.2	26 HW4 5.1.2: unstarred 5.1.3: unstarred 5.2. Read, no exercises	28 GE 4 Logicomix 3, Wanderjahre.”
6 Mar	3 Ch. 5 Sentential Logic: Derivations Sec. 5.3	5 HW5 5.3: 1. a, c. 2. a, i. 3. a,c,e. 4. a, c. 5. e. g. 6. c. e. 7. a, g, m 11. a, c, e	7 Work on homework, prepare for Midterm.
7	10 Midterm , through 5.3	12 Ch. 7 Predicate Logic: Syntax & Symbolization Sec. 7.1. 7.2 HW 6: Show up for points.	14 GE 5, on 7.1 & 7.2 Logicomix 4, “Paradoxes.” forgot Entracte!!
8	17 Ch. 7 Predicate Logic: Syntax & Symbolization Sec. 7.3	19 HW7: Exercises 7.3 1. a. b. c. d 2. a. b. c. d 3. a. b. c. d 4. a. b. c. d.	21 GE 6 Logicomix 5, “Logico-Philosophical Wars.”
9	24 7.4 Symbolization fine-tuned.	26 ** HW 8: There are no exercises in the book for this section. HMWK will be done in class.	28 GE 7 on 7.2,3,4 <u>**Proctored</u>
10 Apr	31 Class cancelled Ch. 10 Predicate Logic: Derivations Sec. 10.1	2 Class cancelled HW: Exercises 10.1 1. a. b. c. d. e. g. 2. a. b. c. d. e. f.	4 GE 8 on 10.1 Logicomix 6. “Incompleteness.”
11	7 Ch. 10 Predicate Logic: Derivations, Sec. 10.2	9 HW: Exercises 10.2 1. a. b. c. e. g. i.	11 GE 9 10.2
12	14 Ch. 10 Predicate Logic: Derivations, Sec. 10.2	16 HW: 10.2 2. a. b. 3. a. b. 4. a. b. 5. a. b. 6. a. b.	18 Easter Break—no class
13	21 Easter Break—no class	23 10 TBA HW TBA	25 GE 10 on 10.2 Logicomix, “Finale.”
1 May	28 Ch. 10 Predicate Logic: Derivations, Sec. 10.2	30 HW 6. c. h. 7. a. j. 8. a. b. 9. b. e.	2 Last class GE 11 on 10.2 Logicomix, “Finale.”
15	5 Reading period ---	7 ---	9 ---
16	12 Final Exam 8AM Nicely 210	14 ...	16 ...