Phil 370: Theoretical Logic
Syllabus

Instructor: Dr. Audrey Yap (ayap@uvic.ca)
Office: CLE B307. Phone: 721-7510
Office Hours: Thursdays 10:00-12:00 and by appointment
Class Information: TWF 1:30-2:20 in COR A229.
Drop-in Hours: TBA
Course Website: Through CourseSpaces http://coursespaces.uvic.ca
Textbook: Open Logic Textbook, downloadable from the course website. For more information on this textbook, see http://openlogicproject.org
Prerequisites: Phil 203, Math 122, or permission of the instructor.

Course Objectives: Techniques of formal symbolic logic are used in modeling deductive arguments. We use them most often to model the validity of arguments, and to prove that a conclusion follows from the premises. We have criteria for determining when one sentence is a logical consequence of others, and when one sentence is deducible from others. The metatheory of formal logic is the study of these rules and criteria. For instance, we want to make sure that our rules for deduction will always lead us to correct conclusions, and that we have enough rules to ensure that everything that logically follows can also be deduced. The goal of this course is to introduce you to the main ideas and metatheorems of formal symbolic logic, as well as teach you how to write mathematically rigorous proofs. It is important to know how to prove theorems, but such proofs also need to be clear and readable. Proof-writing skills will also be emphasised in this course.

Communication: Office hours are held on a drop-in basis. If you want to schedule an appointment outside my office hours, try emailing me with a few suggestions for times that would work for you. If you ask me a question over email, you can expect a reply within about 1 working day. If you don’t hear back from me after that time frame, feel free to try again in case your message went astray.

Course Logistics: This course typically requires regular attendance, and almost all students find it useful to attend at least one of the designated drop-in sessions. These are held every week in which an assignment is due and will give you the chance to work on the assignments in groups with instructor feedback. There will be 8 homework assignments which must be turned in by class time on the due date unless otherwise specified. Assignments will generally be due on Fridays, but any one assignment can be turned in late (the following Monday) without penalty, so long as you email me and ask for an extension before the class when it is due. Documentation is only required if you need an extension on more than one assignment without penalty. Otherwise, a second late assignment will lose 2 points per day and will not be accepted more than 5 days after the due date. Note that while I encourage you to work on your assignments in groups, you must write up your
answers independently. Plagiarised work will not receive credit. For more information on plagiarism, see the University Calendar.

Homework is worth 25% of the final grade. There will also be two non-cumulative tests (20% each) and a cumulative final to be held during the final examination period to be scheduled by the Registrar (35%). Exam rewrites will only be scheduled in cases of documented illness or other extenuating circumstances. Documentation must be received within a week of the exam date.

**Numerical and Letter Grades:** Grades will be given as percentile marks. The percentile mark for the course will be converted to a letter grade in the following manner:

- A+ = 90 - 100
- A = 85 - 89
- A- = 80 - 84
- B+ = 77 - 79
- B = 73 - 76
- B- = 70 - 72
- C+ = 65 - 69
- C = 60 - 64
- D = 50 - 59
- F = 0 - 49

The A range means exceptional, outstanding and excellent performance. A grade in the B range means a very good, good and solid performance. A grade in the C+ or C range means satisfactory, or minimally satisfactory, performance. A grade of D or D- indicates merely passable or marginal performance. An F indicates unsatisfactory performance.

**Schedule:**

- **Week One:** Sep 7, 9
  
  Topic: Sets and Relations.
  
  Reading: Chap 1, 2

- **Week Two:** Sep 13, 14, 16
  
  Topic: Sets and Relations, continued. Functions.
  
  Reading: Chap 3, 4

- **Week Three:** Sep 20, 21, 23
  
  Topic: Propositional Logic. Induction
  
  Reading: Chap 5
  
  HW1 due Sep 23rd

- **Week Four:** Sep 27, 28, 30
  
  
  Reading: Chap 5
  
  HW2 due Sep 30th

- **Week Five:** Oct 4, 5, 7
  
  Topic: First-Order Languages.
  
  Reading: Chap 6
  
  HW3 due Oct 7th
• Week Six: Oct 11, 12, 14
  Topic: Structures.
  Reading: Chap 6
  Test One: Oct 12th

• Week Seven: Oct 18, 19, 21
  Topic: Natural Deduction.
  Reading: Chap 7
  HW4 due Oct 21st

• Week Eight: Oct 25, 26, 28
  Topic: Natural Deduction. Soundness
  Reading: Chap 7
  HW5 due Oct 28th

• Week Nine: Nov 1, 2, 4
  Topic: Complementeness.
  Reading: Chap 8
  HW6 due Nov 4th

• Week Ten: Nov 8
  Topic: Completeness.
  Reading: Chap 8

• Week Eleven: Nov 15, 16, 18
  Topic: Model Theory.
  Reading: Chap 9
  Test Two: Nov 16th

• Week Twelve: Nov 22, 23, 25
  Topic: Model Theory.
  Reading: Chap 9
  HW7 due Nov 25th

• Week Thirteen: Nov 29, 30, Dec 2
  Topic: Review.
  HW8 due Dec 2nd

Note: This syllabus is provisional, and should only be used to give a rough guide to the course schedule. Dates may be changed if necessary.