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 ELL 162.
Drop-in Hours: Wed 2:30-4 in CLE B315 and Thu 12-1 in CLE B346
Course Website: Through CourseSpaces http://coursespaces.uvic.ca
Textbook (optional): Herbert Enderton, A Mathematical Introduction to Logic
Course notes will be distributed on the website.
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 students to the main ideas and metatheorems of formal symbolic logic, as well as teach them 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.

Coursework:

There will be 8 homework assignments, which must be turned by class time on the due date, unless otherwise specified. Late homework will be penalised by 3 points if it is not received by the deadline, and will lose an additional 2 points every additional day until it is turned in. Homework will not be accepted more than 5 days after the due date. The clarity of proofs will be an important aspect of their evaluation, in addition to their correctness. Exceptions to these rules will only be made in the case of documented illness or other extenuating circumstances which interfere with the timely completion of the assigned work. However, in order to be considered, requests for exceptions must be received before the due date for the assignment. Students are encouraged to work on the homework assignments in small groups, but must write their answers to the homework independently. Plagiarised work will not receive credit. For more information on plagiarism, see the University Cal-
endar.

Homework will be worth 25% of the final grade. There will also be two non-cumulative tests (20% each) and a cumulative final exam to be held during the final examination period to be scheduled by the Registrar (35%). Rewrites will only be scheduled in cases of documented illness or other extenuating circumstances. Such documentation must be received within a week of the exam date. Numbers will be converted to a letter grade in accordance with the following scale:

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

Schedule:

- **Week One:** Sept 3, 5
  Topic: Sets, Functions, and Formulas.

- **Week Two:** Sept 9, 10, 12
  Topic: Sentential Logic.

- **Week Three:** Sept 16, 17, 19
  Topic: Induction.
  HW1 due Sep 19th

- **Week Four:** Sept 23, 24, 26
  HW 2 due Sep 26th

- **Week Five:** Sept 30, Oct 1, 3
  Topic: Introduction to First-Order Logic.
  HW3 due Oct 3rd

- **Week Six:** Oct 7, 8, 10
  Topic: Structures.
  Test One: Oct 8th

- **Week Seven:** Oct 14, 15, 17
  Topic: Logical Implication. Definability.
  HW4 due Oct 17th

- **Week Eight:** Oct 21, 22, 24
  Topic: Homomorphisms and Isomorphisms.
  HW5 due Oct 24th
• Week Nine: Oct 28, 29, 31
  Topic: Homomorphisms and Isomorphisms. Deductions in FOL.
  HW6 due Oct 31st

• Week Ten: Nov 4, 5, 7
  Topic: Deductions. Soundness.
  Test Two: Nov 5th

• Week Eleven: Nov 14
  Topic: Soundness.

• Week Twelve: Nov 18, 19, 21
  Topic: Completeness and Compactness.
  HW7 due Nov 21st

• Week Thirteen: Nov 25, 26, 28
  Topic: Models and Theories.
  HW8 due Nov 28th

• Week Fourteen: Dec 2, 3
  Topic: Review

Note: This syllabus is tentative, and should only be used to give a rough guide to the course schedule. Additional readings may be assigned, and dates may be changed if necessary.