



UNIVERSITY OF ALBERTA

FACULTY OF ARTS

Department of Philosophy

Symbolic Logic I

PHIL 120 (Section A1)

Fall 2023

Instructor: Hassan Masoud

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Office Hours: Tuesday 12:00 – 1:00 PM (or by appointment)

Course Location, Days & Time: NRE 2-003, Monday, Wednesday, Friday 1:00 – 1:50 PM

Teaching assistant: Nazar Palykhata (palykhat@ualberta.ca)

Land Acknowledgement: The University of Alberta respectfully acknowledges that we are situated on Treaty 6 territory, traditional lands of First Nations and Métis people.

Course Description:

This is an introductory course in symbolic logic which covers what is known as ‘elementary logic’. Symbolic logic is a mathematical model of logical reasoning. This course covers both ‘truth-functional logic’ (a.k.a. sentential logic, or logic of propositions) and first-order logic (a.k.a. predicate logic, or logic of quantifiers). In each of truth-functional logic (TFL) and first-order logic (FOL), three topics are discussed:

- Language and Syntax
- Semantics
- Proofs

The goal of the first topic, namely “language and syntax”, is to learn a formal (symbolic) language and how to translate sentences from natural language to that symbolic language; the second topic, that is “semantics”, is concerned with the interpretation of symbolic sentences; and the third with giving proofs (derivations) by using inference rules. The proof method adopted in this course is natural deduction.

Note: It is your responsibility as a student to ensure that you have the appropriate prerequisites for the course.

Course Objectives and Expected Learning Outcomes:

At the end of the term, you will be able to:

- 1- understand the specific logical sense of a sentence, an argument, and premises and the conclusion of an argument;
- 2- distinguish deductive arguments from other types of arguments;
- 3- understand fundamental concepts of deductive reasoning, such as validity, soundness, logical consequence, theorem, and axiom;
- 4- analyze the meanings of sentential connectives, such as “and”, “or”, “if-then”, and “not”, and quantifiers, such as “all”, “some”, and “none”, in English and distinguish their specific meanings in symbolic logic;
- 5- learn a symbolic language characterized with a mathematical precision;
- 6- translate sentences from English into that symbolic language;
- 7- interpret sentences in the symbolic language, and apply those interpretations to determine the validity of arguments;
- 8- learn rules of inference and analyze how they determine the meanings of sentential connectives and quantifiers with a mathematical precision;
- 9- and, apply those rules and construct derivations or proofs to analyze how the information of a conclusion can be extracted from the information contained in the premises step-by-step with a mathematical rigor.

Course Format:

This course is delivered in-person; all classes, office hours, midterms, and the final exam are held on campus. Each session is divided into short lectures and working on exercises. All concepts and techniques are explained from scratch. Guidelines for midterms are provided and explained in class, and sample questions will be available. All the three midterms will be held in the classroom at the usual class time.

Attending classes is mandatory; however, there are no participation marks.

Textbook:

There is a required textbook for this course; it is titled *for all x Calgary: An Introduction to Formal Logic*.

This textbook is available online for free. You can download it via this link:

<http://forallx.openlogicproject.org/forallxyyc.pdf>. Parts I – VII of the textbook are covered in this course. Note that we use the latest edition of the textbook (Fall 2021). You can also find solutions to selected exercises here: <http://forallx.openlogicproject.org/solutions/forallxsol.pdf>.

Additional Course Fees: N/A

Important Dates:

First Day of Class: Sep. 5

Add/Delete Date: Sep. 18

50% Withdrawal Date: Oct. 5

Withdrawal Date: Dec. 1

Last Day of Class: Dec. 8

Final Exam Date: Dec. 14

Date of Deferred Final Exam: Dec. 21

Lecture Schedule & Assigned Readings:

Week	Dates	Topic	Readings from the textbook
1	Sep. 4 – Sep. 10	Introduction	Part I: Key notions of logic
2	Sep. 11 – Sep. 17	Unit 1. Truth-functional logic (TFL): Language and syntax	Part II: Truth-functional logic
3	Sep. 18 – Sep. 24		
4	Sep. 25 – Oct. 1	Unit 2. Truth-functional logic (TFL): Semantics	Part III: Truth tables
5	Oct. 2 – Oct. 8		
6	Oct. 9 – Oct. 15	Unit 3. Truth-functional logic (TFL): Proofs	Part IV: Natural deduction for TFL
7	Oct. 16 – Oct. 22		
8	Oct. 23 – Oct. 29	Unit 4. First-order logic (FOL): Language and syntax	Part V: First-order logic
9	Oct. 30 – Nov. 5		
10	Nov. 6 – Nov. 12	Unit 5. First-order logic (FOL): Semantics	Part VI: Interpretations
	Nov. 13 – Nov. 19	Reading Week	
11	Nov. 20 – Nov. 26	Unit 5. Cont.	
12	Nov. 27 – Dec. 3	Unit 6. First-order logic (FOL): Proofs	Part VII: Natural deduction for FOL
13	Dec. 4 – Dec. 10		

Components of Course Grade:

Component	Weighting	Date
Midterms (3)	50% (10% + 20% + 20%)	Midterm 1: Sep. 27 (10%) Midterm 2: Oct. 25 (20%) Midterm 3: Nov. 22 (20%)
Final exam	50%	Dec. 14

In this course:

Midterms: There are 3 midterms throughout the term, altogether make 50% of the course grade. Each midterms will be a set of multiple-choice or short-answer questions. Midterms are taken at the class time (1:00 PM – 1:50 PM) on the mentioned dates. Exams are taken on paper and no online options are available.

Final Exam: The final exam is scheduled to be on Dec. 14 at 2 PM and it takes 2 hours. The final exam will contain a set of multiple-choice, short-answer, or long-answer questions.

Grading: Marks for the course work and exams are given in numbers (percentages). The percentage mark resulting from the entire term work and examination then produces the final letter grade for the course, according to the table below (“Department of Philosophy Undergraduate Grading Scale”).

Percentage	Letter grade	4-point value	Descriptor
95.00-100	A+	4.0	Excellent
90.00-94.99	A	4.0	
85.00-89.99	A-	3.7	
80.00-84.99	B+	3.3	Good
75.00-79.99	B	3.0	
70.00-74.99	B-	2.7	
67.00-69.99	C+	2.3	Satisfactory
63.00-66.99	C	2.0	
60.00-62.99	C-	1.7	
57.00-59.99	D+	1.3	Poor
50.00-56.99	D	1.0	Minimal pass
0-49.99	F	0	Failure

Note 1: The final mark will be absolute, and no curves will be applied.

Note 2: Student grades are unofficial until they have been approved by Arts Faculty Council or delegate.

Past Evaluative Material: Sample questions will be available on eClass.

Attendance: Regular attendance is essential for optimal performance in any course. However, there are no attendance marks for this course.

Policy for Late Assignments: There are no extensions or make-ups for midterms. If due to health issues, or any other serious reasons, you cannot attend the class in which one of the midterms is taken, you should email me as soon as possible, preferably before the midterm date.

Missed Tests and Assignments: Receiving alternate arrangements for the completion of term work is a privilege and not a right. There is no guarantee that late work will be accepted or that an absence will be excused. Misrepresentation of facts to gain an unfair academic advantage over other students is a serious breach of the [Code of Student Behaviour](#).

Deferred Final Examination: Students must apply to their home Faculty for a deferred examination. The application form for Arts students is in “Forms for Students” on [the Arts Student Services site](#).

Student Responsibilities

Academic Integrity: The University of Alberta is committed to the highest standards of academic integrity and honesty. Students are expected to be familiar with these standards regarding academic honesty and to uphold the policies of the University in this respect. Students are particularly urged to familiarize themselves with the provisions of the Code of Student Behaviour (on the [University Governance](#) website) and avoid any behaviour which could potentially result in suspicions of cheating, plagiarism, misrepresentation of facts, and/or participation in an offence. Academic dishonesty is a serious offence and can result in suspension or expulsion from the University.

Instructors are required to report suspected violations of the COSB. See the [Academic Discipline Process](#).

All students should consult [the Academic Integrity website](#). If you have any questions, ask your instructor. Students who want to strengthen their academic skills and learn more on topics such as note-taking, time management, and academic integrity are encouraged to explore [The Academic Success Centre](#).

Recording of Lectures: Audio or video recording, digital or otherwise, of lectures, labs, seminars or any other teaching environment by students is allowed only with the prior written consent of the instructor or as a part of an approved accommodation plan. Student or instructor content, digital or otherwise, created and/or used within the context of the course is to be used solely for personal study, and is not to be used or distributed for any other purpose without prior written consent from the content author(s).

Learning and Working Environment

The Faculty of Arts is committed to ensuring that all students, faculty and staff are able to work and study in an environment that is safe and free from discrimination and harassment. It does not tolerate behaviour that undermines that environment.

If you are experiencing harassment, discrimination, fraud, theft or any other issue and would like confidential advice and information, please contact any of these campus services:

- [Office of Safe Disclosure & Human Rights](#): A safe, neutral and confidential space to disclose concerns about how the University of Alberta policies, procedures or ethical standards are being applied. They provide strategic advice and referral on matters such as discrimination, harassment, duty to accommodate and wrong-doings. Disclosures can be made in person or online using the [Online Reporting Tool](#)
- [University of Alberta Protective Services](#): Peace officers dedicated to ensuring the safety and security of U of A campuses and community. Staff or students can contact UAPS to make a report if they feel unsafe, threatened, or targeted on campus or by another member of the university community. For non-emergency dispatch, call 780-492-5050. For lost and found, call 780-492-2943. **In an emergency, call 911.**
- [Sexual Violence Supports](#): - It is the [policy](#) of the University of Alberta that sexual violence committed by any member of the University community is prohibited and constitutes misconduct. The University takes seriously its responsibility to reduce sexual and gender-based violence through a culture of consent, gender inclusivity, anti-oppression and support, and to respond to misconduct or conditions that allow, facilitate, or give rise to sexual and gender-based violence.

Student Resources

[The University Calendar](#) is one of the principal sources of U of A policy information for students. It includes admission requirements and deadlines, academic regulations, programs of study, academic standards, degree requirements, and University policies for both undergraduate and graduate students.

[The Student Service Centre](#) provides students with information and access to services to support academic, financial, mental, and physical well-being.

[First Peoples' House](#) provides an environment of empowerment for First Nations, Métis, and Inuit learners to achieve personal and academic growth.

[The Academic Success Centre](#) provides professional academic support to help students maximize their academic success and achieve their academic goals. They offer appointments, advising, group workshops, online courses, and specialized programming year-round to students in all university programs, and at all levels of achievement and study.

[Writing Services](#) offers free one-on-one writing support to students, faculty, and staff. Students can request a consultation for a writing project at any stage of development. Instructors can request class visits and presentations.

Under the [Discrimination, Harassment and Duty to Accommodate policy](#), the Office of the Dean of Students coordinates academic accommodations for prospective and current students with

documented disabilities affecting mobility, vision, hearing, learning, and physical or mental health. The provision of academic accommodations helps to remove structural barriers that these students encounter in academic environments in order to facilitate equivalent learning opportunities for these students. [Academic Accommodations](#) promotes an accessible, inclusive, and universally-designed environment at the University of Alberta.

[Health and Wellness Support for Students](#) outlines the mental and physical health resources which are offered on-campus and in the community.

[The Office of the Student Ombuds](#) is a confidential service which strives to ensure that university processes related to students operate as fairly as possible. They offer information, advice, and support to students, faculty, and staff as they deal with academic, discipline, interpersonal, and financial issues related to student programs.

[Need Help Now](#) webpage offers contact information for a variety of supports if you are in immediate need of mental health and wellness support. You can also call the 24-hour Distress Line: 780-482-4357 (HELP).

Disclaimer: Any typographical errors in this syllabus are subject to change and will be announced in class and posted on eClass. The date of the final examination is set by the Registrar and takes precedence over the final examination date reported in this syllabus.

Policy about course outlines can be found in [Course Requirements, Evaluation Procedures and Grading](#) in the University Calendar.

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