

Philosophy 220/001: Symbolic Logic I

University of British Columbia
Department of Philosophy
Summer 2022, term 1
TR 10:00-1:00

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Description. This is a first course in formal reasoning. You will learn to symbolize and evaluate deductive arguments. Topics include symbolization in sentential logic (SL), predicate logic (PL) and relational predicate logic (RPL); truth tables; and proofs and invalidity in SL, PL and RPL.

I. Course learning objectives.

1. You will understand how to symbolize and evaluate arguments using a variety of logical systems and tools.
2. You will be able to explain, and apply, key logical concepts such as validity, logical form, and derivability.

II. Text. *Understanding Symbolic Logic, 5th edition*, V. Klenk (Prentice-Hall, 2008). Course pack available by online order from UBC bookstore at <https://bookstore.ubc.ca> (mail-out or pick-up). If you buy it elsewhere, make sure to get the 5th edition.

III. Requirements. The final grade will be based upon the following scheme:

	<u>Weight</u>	
Unit tests (best 3 out of 4)	12%	**Initial practice test (0 marks)**
Problem sets (best 4 out of 5)	16%	
Midterm test 1	18%	
Midterm test 2	24%	
Final exam (exam period)	30%	

IV. Course organization. This course is online and accelerated (6 weeks instead of 13). You will need to organize your schedule to keep on top of the material and the assignments. The two key organizational tools are the **textbook** and the **Canvas page**. There are multiple ways to learn the course material, as follows:

- **Independent reading of textbook.** As with any course, you will learn through careful reading of the textbook, following the schedule posted below ([Lecture and Assignment Schedule](#)).
- **Pre-recorded and posted lectures.** Rather than deliver two live 3-hour lectures per week on Zoom, I have opted for *pre-recorded lectures* (approximately one hour each, or less) covering Units 1-19 of the textbook. You are responsible for listening to these lectures and keeping up with the [Lecture and Assignment Schedule](#). You can find the lectures on the Canvas page under **Lecture Recordings**.
- **Posted lecture overheads and handouts.** The accompanying lecture overheads, as well as the handouts utilized in lecture, are posted in the “Modules” section of Canvas. Each handout is

listed in the Module section with the corresponding lecture date(s). Use the relevant handout(s) as you listen to the lecture.

- **Tutorials and office hours.** I will hold live tutorials twice weekly, typically T R 10-11, followed by an open office hour T R 11-12. These tutorials and office hours will be **Zoom sessions**, open to anyone who wishes to join. Both the tutorials and the office hours are optional and will not introduce any new material. If you require a confidential discussion, please send me an email message and we can set up a private meeting using Zoom.

Exceptions: On two dates (see [Lecture and Assignment Schedule](#)), **midterm tests** will start at 10 a.m. The tutorial and office hour will follow the midterm test. I will be online (on Zoom) and checking email during these tests, in case you have questions.

On four dates (see [Lecture and Assignment Schedule](#)), short **unit tests** will start at 10 a.m. I will remain online (on Zoom) and will be monitoring email during these tests. The tutorial and office hour will follow the unit tests.

- **Discussions.** I encourage you to raise questions of general interest using the **Discussion** section of Canvas. Posts are welcome, but **please do not indicate solutions** to assigned problems. I will monitor the discussions to ensure that this constraint is respected.

V. Course calendar. This is a compressed (six week) course. The start and end dates are strict. You will need to **keep up with the readings, lectures and assignments**. The course calendar on Canvas lists all assignment dates, apart from the final exam. This course syllabus also includes a [Lecture and Assignment Schedule](#) that lists assignment dates, topics and units covered each class.

VI. Announcements. Please read carefully all announcements posted throughout the term. These will include course updates, information about upcoming tests, changes to assignments or due dates, corrections, and important alerts. They will remain posted in the **Announcements** section of Canvas.

VII. Assignments (please read this section with particular attention).

- **General information.**

All assignments will be administered through the **Assignments** tab in Canvas. Each **Problem set** must be submitted as a pdf file upload, by the posted deadline, using the portal in the **Assignments** section. **Unit tests**, **Midterm test 1**, and **Midterm test 2** will be conducted online via Canvas, at the **exact times** indicated. All of these tests occur during scheduled lecture hours. The **Final Examination** will also be conducted on Canvas, at a time yet to be determined.

Assignment grades will be recorded and posted to Canvas in the **Grades** section.

Please note: although grades for problem sets, unit tests and midterm tests will be accurate, ignore cumulative grade scores computed by Canvas. I use a separate spreadsheet to compute cumulative grades. Please inform me of any discrepancies between assignment grades on Canvas and your own records.

- **Problem Sets.**

The problem sets are listed at the end of this syllabus and are also listed under Canvas Assignments. Almost all of the problems are taken from the textbook. You will receive a grade of 0 for any missed problem set. However, your lowest problem set is dropped in the calculation of your problem set grade.

Problem sets must be submitted by 11:59 p.m. on the day that they are due. No late assignments will be accepted. I will post solutions the day after the submission deadline.

Submission procedure for problem sets:

- Please **include your name** at the top of the assignment.
- Your problem sets may either be typed or handwritten.
- You must combine all of the pages into a **single pdf file**. For a handwritten problem set, you can either scan the pages to a single pdf file, or take photos of the individual pages and then combine the photos into a single pdf file (if you don't know how, try googling "print jpg files to pdf").
- Use the **Assignments** section of Canvas to submit your pdf file by the deadline.

Problem sets are the key to success in this course! The problem sets are worth only 16%, but doing them independently and thoroughly is the best way to do well in Logic. Although I strongly recommend that you do the problem sets individually, you may work with another student in the class. If so, **please indicate this on your assignment** in writing as follows: "I worked with NNNN on this assignment". There is no penalty; I value your honesty. For additional practice, there are many problems in the textbook. All starred problems have answers at the back of the book.

- **Unit tests.** These short tests (20 or 25 minutes) begin at **10:00 a.m.** on the scheduled day. Be sure to log in to Canvas in time. Evaluation of these tests will be a mixture of automation and hand-grading, so don't be worried if your immediate result on Canvas seems incorrect. I cannot offer make-up tests, but the lowest unit test will be dropped.
- **Midterm test 1 and Midterm test 2.** These will be 60 minutes and 75 minutes respectively, scheduled for **10:00 – 11:00 on May 26 (Midterm 1)** and **10:00 – 11:15 on June 7 (Midterm 2)**. The tutorial and office hour will follow the tests on these two days. Be sure to log in to Canvas on time. More details will be provided closer to the test dates. I cannot offer make-up tests, but if you have valid grounds for academic concession, the test percentage can be added to the final exam. For example, if you miss test 1 due to illness, your final exam can be worth 48%.
- **Final examination.** This will be a cumulative three-hour examination at a time yet to be determined, also conducted using Canvas. More details will be provided during the course.

VIII. Extra Help. Please send me email if you require a confidential discussion (via Zoom) outside normal office hours. Also, see next point if you have special needs for accommodation.

IX. Statement of UBC values and policies.

UBC provides resources to support student learning and to maintain healthy lifestyles but recognizes that sometimes crises arise and so there are additional resources to access including those for survivors of sexual violence. UBC values respect for the person and ideas of all members of the academic community. Harassment and discrimination are not tolerated, nor is suppression of academic freedom. UBC provides appropriate accommodation for students with disabilities and for religious and cultural observances. UBC values academic honesty and students are expected to acknowledge the ideas generated by others and to uphold the highest academic standards in all of their actions. Details of the policies and how to access support are available [here](#).

Additional statement on honesty: Because this is an online course, all tests and assignments will be open book. However, apart from potential collaboration on problem sets (see section VII), **you are expected NOT to collaborate in any form with other students on unit tests, midterm tests or the final examination. All work done on tests must be your own.**

[UBC Centre for Accessibility](#) works with instructors to provide appropriate accommodation for students with disabilities. Please notify them of any needs for accommodation well in advance of assignment due dates, and please feel free to discuss with me any way in which I can be of assistance.

IMPORTANT

Preliminary Assignment: please do the practice quiz by May 18. There are no assigned marks, but it will familiarize you with the testing format for the course.

Lecture and Assignment Schedule

<u>Date</u>	<u>Topics</u>	<u>Units covered</u>	<u>Assignment due</u>
May 17	SL: structure and truth values	Units 1-3	Practice quiz (by May 18)
May 19	SL: translation, truth tables	Units 4-6	Unit test 1 (Units 2-3), 10 a.m.
May 24	SL: proofs	Units 7-8	Prob. Set (PS) #1, 11:59 p.m.
May 26	SL: proofs (continued)	Units 8-9	Midterm test 1 (Units 2-6), 10 a.m.
May 31	Monadic PL: basics	Units 10-12	Unit test 2 (Units 7-8), 10 a.m.
June 2	Monadic PL: symbolization	Units 12-14	PS #2, 11:59 p.m.
June 7	Monadic PL: proofs	Units 14-15	Midterm test 2 (Units 7-9), 10 a.m.
June 9	Monadic PL: proofs and invalidity	Units 15-16	PS #3, 11:59 p.m.
June 14	Invalidity, RPL	Unit 16-17	Unit test 3 (Unit 15), 10 a.m.
June 16	RPL: symbolization, proofs	Units 17-18	PS #4, 11:59 p.m.
June 21	RPL: proofs. Identity.	Units 18-19	Unit test 4 (Unit 17), 10 a.m.
June 23	Identity. REVIEW.	Unit 19	PS #5 due June 24, 11:59 p.m.

FINAL EXAM: date and time TBA

Problem Sets

Problem Set #1 (due May 24, 11:59 p.m.)

Unit 2

Study question 7; Problems 1: f, h, l, n; **2:** j, n

Unit 3

1: f, j, t; **2:** h; **3:** f, j; **4:** b

Unit 4

1: f, h, r; **3:** h, j, l; **4:** d, h; **5:** d; **6:** f, h, n

Unit 5

1: d, n; **2:** b; **3:** h; **4:** b, d, f

Unit 6

1: h, j, l; **2:** d, h; **3:** e, i; **4:** b; **5:** c, d; **6:** d; **7:** f; **8:** b

Problem Set #2 (due June 2, 11:59 p.m.)

Note: See “Textbook Errors” for Problem Set 2 in “Course Content” module.

Restrictions: Use only Unit 7 rules for Unit 7 proofs. Use Unit 7 or 8 rules for Unit 8 proofs. Use all of Unit 7-9 rules for Unit 9 proofs.

Unit 7

Recommended (but don't submit):

1: (5); **2:** e, q; **3:** e, h; **4:** c; **5:** (c) 3, 4, 5, 6;

Submit:

7: f; **8:** b, q; **9:** d, h, i, k; **10:** e

Unit 8

Recommended (but don't submit):

1: k, l, n, t; **2:** c, d, w, y; **3:** d

Submit:

4: b, f; **5:** c, k, n, p; **6:** b, c, o; **7:** e, m

Unit 9

Recommended (but don't submit):

1: h; **2:** c, k; **3:** d

Submit:

4: e, g; **5:** b, g; **6:** b, e, k, m, q; **7:** c, n, s; **8:** b; **9:** e

Problem Set #3 (due June 9, 11:59 p.m.)

Unit 10

1: b, k, o; **2:** d, f, j

Unit 11

1: d, f, h; 2: d, f, j; 3: d, h, p, z; 4: d, n, t

Unit 12

2: f; 4: d, h, l, n, r; 5: d, f, l, p; 6: f, g, n, z; 7: h, j

Unit 13

1: d; 2: f, j, n; 3: b; 4: d, h, j; 5: h, i; 6: h; 7: b, d, h; 8: b

Problem Set #4 (due June 16, 11:59 p.m.)

Unit 14

1: b, d; 2: d, n; 3: d, h; 4: f, j, k, l; 5: d, h; 6: b, h, n, v

Extra problem (required): Provide a dictionary and symbolize the following sentence:

Not all provincial and federal politicians are re-elected if they are honest, and some politicians who are not honest are re-elected.

Unit 15

Recommended (but don't submit):

1: h, k, l, p; 3: c

Submit:

2: a, f, q, s; 4: b, g; 5: f

Unit 16

1: d, f; 2: f, m; 3: h, l; 6: d, f; 7: d

Problem Set #5 (due June 24, 11:59 p.m.)

Unit 17

1. d, h, j; 2: d, f, n; 3: f, p; 4: n, p; 5: d; 6: d, h, n, t; 7: d, h, r; 8: d, h; 9: b, h, l

Unit 18

1: g, k, p, q, s; 2: b, e; 3: f, i

Unit 19

1: b, h, j; 2: b, l, r, t; 3: b, d, j; 4: d, f; 5: b, d; 6: b, t