

# PHIL 1001: Introduction to Logic (Spring 2021, 4 units)

January 18, 2021

**Course Modality:** Completely online and synchronous. See below for the meeting pattern for lectures and discussion sections.

## Teaching Staff, Meeting Times, and Communication

**Instructor:** Prof. Samuel C. Fletcher (scfletch@umn.edu)

**Preferred Address:** Prof. Fletcher, he/his

**Lectures:** Tu/Th 9:45–11:00 via Zoom

**Office Hours:** Tu/Th 11:15–12:15 and by appointment via Zoom

**Teaching Assistant:** Tomoya Imaizumi (imaiz002@umn.edu)

**Preferred Address:** Tomoya, he/his

**Discussion Sections:** M 9:05–9:55, 10:10–11:00, via Zoom

**Office Hours:** M 11:30–12:30 and by appointment via Zoom

**Teaching Assistant:** Justin Ivory (ivory017@umn.edu)

**Preferred Address:** Justin, he/his

**Discussion Sections:** F 9:05–9:55 via Zoom

**Office Hours:** F 10–11 and by appointment via Zoom

**Teaching Assistant:** Rebecca Kosten (koste121@umn.edu)

**Preferred Address:** Becca, she/her

**Discussion Sections:** F 10:10–11:00 via Zoom

**Office Hours:** F 11:30–12:30 and by appointment via Zoom

**Course Website:** <https://canvas.umn.edu/courses/214940>. We will send class announcements via Canvas, so please enable Canvas notifications so that you can know of them in a timely manner.

**Timely Communication:** We prefer that you contact us via Canvas Inbox or email, and will respond within two business days. We expect the same of any email or Canvas queries to you.

## Course Requirements

**Textbook:** Russell Marcus. *Introduction to Formal Logic*, Oxford University Press, 2018. Available through the campus bookstore.

**Technology:** Every lecture and discussion section requires the use of a laptop, desktop, or tablet computer with reliable, high-speed internet access, a webcam, microphone, and a recommended web browser (Mozilla Firefox or Google Chrome) that will allow you to access our course's Canvas site. During lecture you are not required to turn on your webcam, but you are strongly encouraged to do so when in Zoom breakout rooms with your peers and in discussion sections. You should be able to open and access more than one browser window at a time. If you anticipate having technology issues, please consult the UMN Information Technology page, "Working and Learning Off Campus."

**Prior Courses:** No prerequisites are assumed, you should be ready to be challenged in lecture to think about arguments in a different way than you may be accustomed.

## Description and Objectives

This is an introductory course in formal logic. Just as many of the sciences use mathematics to formally represent systems (whether physical, biological, social, etc.), logic uses a formal language to represent arguments and good patterns of reasoning. And, just as there are many sorts of mathematics, there are many sorts of logic. This course focuses on propositional logic (**PL**) and predicate logic (in its monadic (**M**) and first-order (**F**) forms). For both of these logical systems, we will cover: their grammar (syntax), how to translate between them and English, their notions of meaning and truth (semantics), and their allowed patterns of inference (derivations/proofs). By the end of the semester, students will:

1. be familiar with the concept of formality and able to apply its associated techniques to evaluate and analyze arguments using a formal language;
2. identify logical concepts relevant to certain widespread forms of reasoning and inference; and
3. understand some of the strengths and limitations of particular formal systems and tools.

## Instructional Time and Student Effort

There will be 200 minutes of instructional time per week, 150 of which will be in lecture and 50 of which will be in discussion section. In lectures, the instructor will introduce new concepts and methods using PDF slides, audience response polls using ChimeIn, peer-to-peer discussion in virtual breakout rooms, and class-wide Q & A. They will be recorded and posted on the course Canvas page, but only with the instructor's presentation slides and video. In discussion sections, teaching assistants will focus on review of and practice with new concepts

and methods introduced. You should expect to spend, on average, about 400 minutes per week completing reading and homework assignments, practicing methods, and studying for exams. In any given week, you may spend more or less than this. Spending more or less time does not necessarily indicate that you are *achieving* less or more, respectively. In particular, studying *effectively* for exams for shorter periods of time often leads to higher achievement than studying *ineffectively* for longer periods of time. Discussion sections especially will touch on effective study strategies.

## Assessment

### Basis for Evaluation

**Exams (51%)** There will be 3 open-book exams during scheduled class times and administered through Canvas, each worth 17% of your grade: on Thursday, February 18th, covering chapters 1–2; on Thursday, April 1st, covering chapters 3.1–3.5, 3.7–4.3, and 5.1; and on Monday, May 10th, covering chapters 4.4–4.8 and 5.2–5.3. Although the exams will not be cumulative, understanding much of the material in the later parts of the course depends on mastering that of the earlier parts. This includes the last exam, which is scheduled for 1:30–3:30 p.m. (as it is during the finals period). The exams will not require any special technology, but it is especially important for you to use a computer with a reliable internet connection while taking them.

**Homework (38.5%)** There will be 12 homework assignments due just before the beginning of lecture on Thursdays before spring break, and on Tuesdays after spring break. You may discuss the homework problems with your classmates; if you do, include their names with your homework when you submit it. You should submit your homework via Canvas, preferably using the Word or PDF template provided. (If you decide to upload a document with handwriting, please ensure that your writing is legible; illegible homework will not be graded.) Late homework will be accepted up to 24 hours past due, but with a multiplier of 75% (i.e., the final score on a late homework will be 75% of the regular score). After 24 hours, late homework will not be accepted. Nevertheless, your lowest homework score will be dropped, so that the remaining assignments will each be worth 3.5% of your grade. This is to allow automatic flexibility with occasional technical difficulties while submitting assignments; no further homework will be waived for these reasons.

**Participation (10.5% + 2.5% Extra Credit)** During lectures, there will be periodic ChimeIn questions that you can use to help test your understanding—not to verify your attendance!—and that will be graded for completeness, not correctness. Sometimes I will direct you to Zoom breakout rooms with some of your classmates to discuss a question if the class does not have a consensus on it. Your teaching assistants will visit random breakout rooms to answer your questions and spur discussion. The best 21 (out of 26) daily participation scores will be counted. Each daily participation score is worth 0.5% of your grade. This policy is designed to mitigate technical issues that may arise while

connecting to the lectures and the occasional non-excused absence; no further participation will be waived for these reasons. Nevertheless, any additional participation beyond these 22 will count as extra credit at the same rate.

**ECoach (1%+ Extra Credit)** ECoach is a personalized study strategy tool designed to help you succeed. You'll get extra credit by participating in its intake survey and possibly more, and using it may help you get higher scores on exams and homework.

If you request to submit any assignment for regrading, you must provide to me an argument in writing detailing the grounds for your request no more than one week but no less than one day (24 hours) after grades for that assignment are released. If your request is granted, the resulting new grade overrides the old one, whether higher or lower.

## Understanding Your Letter Grade

In past versions of this course, I have applied a curve to exams or to finals grades. If I plan to do so this semester, I will notify you via Canvas announcement with details concerning how. Whether or not a curve is applied, final grades will be converted from numeral scores to letter grades as follows.

<b>How to Compute Your Letter Grade</b>												
	90 >	B+ ≥	87	80 >	C+ ≥	77	70 >	D+ ≥	67			
A ≥	93	87 >	B ≥	83	77 >	C ≥	73	67 >	D ≥	63	F <	60
93 >	A- ≥	90	83 >	B- ≥	80	73 >	C- ≥	70	63 >	D- ≥	60	

Grades in the following ranges represent the following corresponding levels of achievement relative to the level necessary to meet course requirements:

- A:** Outstanding.
- B:** Significantly above.
- C:** Adequate in every respect.
- D:** Worthy of credit despite not fully meeting course requirements.
- F:** Not meeting enough course requirements to be deserving of credit.

Students taking this course “pass/fail” will receive an “S,” representing satisfactory achievement, for any standard final letter grade of “C-” or higher that he or she would have been assigned. Such students will receive an “N,” representing unsatisfactory achievement, for any standard final letter grade of “D+” or lower that he or she would have been assigned.

For additional information about University policies about grading and transcripts, please refer to the UMN policy library.

## Policies

### Student Conduct Code

The University seeks an environment that promotes academic achievement and integrity, that is protective of free inquiry, and that serves the educational mission of the University.

Similarly, the University seeks a community that is free from violence, threats, and intimidation; that is respectful of the rights, opportunities, and welfare of students, faculty, staff, and guests of the University; and that does not threaten the physical or mental health or safety of members of the University community.

As a student at the University you are expected adhere to the Board of Regents' Student Conduct Code. Note that the conduct code specifically addresses disruptive classroom conduct, which means "engaging in behavior that substantially or repeatedly interrupts either the instructor's ability to teach or student learning. The classroom extends to any setting where a student is engaged in work toward academic credit or satisfaction of program-based requirements or related activities." The classroom extends to any setting where a student is engaged in work toward academic credit or satisfaction of program-based requirements or related activities.

## **Scholastic Dishonesty**

You are expected to do your own academic work and cite sources as necessary. Failing to do so is scholastic dishonesty. Scholastic dishonesty means plagiarizing; cheating on assignments or examinations; engaging in unauthorized collaboration on academic work; taking, acquiring, or using test materials without faculty permission; submitting false or incomplete records of academic achievement; acting alone or in cooperation with another to falsify records or to obtain dishonestly grades, honors, awards, or professional endorsement; altering, forging, or misusing a University academic record; or fabricating or falsifying data, research procedures, or data analysis. If it is determined that a student has cheated, he or she may be given an "F" or an "N" for the course, and may face additional sanctions from the University. For additional information, please see the UMN policy library.

The Office for Student Conduct and Academic Integrity has compiled a useful list of Frequently Asked Questions. If you have additional questions, please clarify with your instructor for the course. Your instructor can respond to your specific questions regarding what would constitute scholastic dishonesty in the context of a particular class, e.g., whether collaboration on assignments is permitted, requirements and methods for citing sources, if electronic aids are permitted or prohibited during an exam.

## **Makeup Work for Legitimate Absences**

Students will not be penalized for absence during the semester due to unavoidable or legitimate circumstances. Such circumstances include verified illness (inclusive of dependents), medical conditions relating to pregnancy, participation in intercollegiate athletic events, subpoenas, jury duty, military service, bereavement, religious observances, and participation in formal University system governance. Such circumstances do not include voting in local, state, or national elections. For complete information, please see the UMN policy library.

Under such legitimate circumstances leading a student to be absent for any exam or assignment, including class participation, that student must contact me at least two weeks in advance of the exam or assignment, or as soon as possible if the circumstances are known later, to schedule a make-up exam or assignment or an extension on the assignment deadline, as I deem appropriate.

## **Appropriate Student Use of Class Notes and Course Materials**

Taking notes is a means of recording information but more importantly of personally absorbing and integrating the educational experience. However, broadly disseminating class notes beyond the classroom community or accepting compensation for taking and distributing classroom notes undermines instructor interests in their intellectual work product while not substantially furthering instructor and student interests in effective learning. Such actions violate shared norms and standards of the academic community. For additional information, please see the UMN policy library.

## **Sexual harassment, Sexual Assault, Stalking and Relationship Violence**

The University prohibits sexual misconduct, and encourages anyone experiencing sexual misconduct to access resources for personal support and reporting. If you want to speak confidentially with someone about an experience of sexual misconduct, please contact your campus resources including the Aurora Center, Boynton Mental Health or Student Counseling Services. If you want to report sexual misconduct, or have questions about the University's policies and procedures related to sexual misconduct, please contact your campus Title IX office or relevant policy contacts.

Instructors are required to share information they learn about possible sexual misconduct with the campus Title IX office that addresses these concerns. This allows a Title IX staff member to reach out to those who have experienced sexual misconduct to provide information about personal support resources and options for investigation. You may talk to instructors about concerns related to sexual misconduct, and they will provide support and keep the information you share private to the extent possible given their University role.

For additional information, please consult the Board of Regents' policy on the matter.

## **Equity, Diversity, Equal Opportunity, and Affirmative Action**

The University provides equal access to and opportunity in its programs and facilities, without regard to race, color, creed, religion, national origin, gender, age, marital status, disability, public assistance status, veteran status, sexual orientation, gender identity, or gender expression. To this effect, please notify me if you have a preferred name or pronoun not indicated in your official enrollment data. For more information, please consult the Board of Regents' policy on the matter.

## **Disability Accommodations**

The University of Minnesota is committed to providing equitable access to learning opportunities for all students. The Disability Resource Center (DRC) is the campus office that collaborates with students who have disabilities to provide and/or arrange reasonable accommodations. If you have, or think you may have, a disability (e.g., mental health, attentional, learning, chronic health, sensory, or physical), please contact the DRC at 612-626-1333 to arrange a confidential discussion regarding equitable access and reasonable accommodations.

Students with short-term disabilities, such as a broken arm, can often work with instructors to *minimize* classroom barriers. In situations where additional assistance is needed, students should contact the DRC as noted above. If you are registered with the DRC and have a disability accommodation letter dated for this semester or this year, please contact me as early in the semester as possible to review how the accommodations will be applied in the course. If you are registered with the DRC and have questions or concerns about your accommodations, please contact your access consultant or disability specialist. For more information, please see the DRC website.

## Mental Health and Stress Management

As a student you may experience a range of issues that can cause barriers to learning, such as strained relationships, increased anxiety, alcohol/drug problems, feeling down, difficulty concentrating and/or lack of motivation. These mental health concerns or stressful events may lead to diminished academic performance and may reduce your ability to participate in daily activities. University of Minnesota services are available to assist you. You can learn more about the broad range of confidential mental health services available on campus via the Student Mental Health Website.

## Academic Freedom and Responsibility

Academic freedom is a cornerstone of the University. Within the scope and content of the course as I have defined it, this includes the freedom to discuss relevant matters in the classroom. Along with this freedom comes responsibility. Students are encouraged to develop the capacity for critical judgment and to engage in a sustained and independent search for truth. Students are free to take reasoned exception to the views offered in any course of study, but they are responsible for learning the content of any course of study for which they are enrolled. Reports of concerns about academic freedom are taken seriously, and there are individuals and offices available for help, including me, the Philosophy Department Chair Prof. Peter Hanks (pwhanks@umn.edu), your adviser, or College of Liberal Arts Associate Dean for Arts and Humanities Jane Blocker (block023@umn.edu).

## Tentative Course Schedule

As the section title indicates, the course schedule is open to (reasonable) modification in light of the class's progress. All readings, except this syllabus, are from our course textbook; you are advised to have the reading assigned for a particular day done before that day's lecture. Each homework assignment will be posted on the course Canvas site at least one week before it is due.

Date	Topic	Reading	Notes
Tu 1/19	Introduction/What is logic?	Course Syllabus, Ch. 1.1–1.3	
Th 1/21	Arguments & Logical Concepts I	Ch. 1.4	

Date	Topic	Reading	Notes
Tu 1/26	Arguments & Logical Concepts II	Ch. 1.5	
Th 1/28	<b>PL</b> : Syntax & Translation I	Ch. 2.1–2.2	HW #1 due
Tu 2/2	<b>PL</b> : Syntax & Translation II	Ch. 2.1, 2.8	
Th 2/4	<b>PL</b> : Semantics I	Ch. 2.3–2.4	HW #2 due
Tu 2/9	<b>PL</b> : Semantics II	Ch. 2.5–2.6	
Th 2/11	<b>PL</b> : Semantics III	Ch. 2.7	HW #3 due
Tu 2/16	<b>PL</b> : Inference I	Ch. 3.1	
Th 2/18			Exam 1
Tu 2/23	<b>PL</b> : Inference II	Ch. 3.2–3.3	
Th 2/25	<b>PL</b> : Inference III	Ch. 3.3	HW #4 due
Tu 3/2	<b>PL</b> : Inference IV	Ch. 3.4–3.5	
Th 3/4	<b>PL</b> : Inference V	Ch. 3.7–3.9	HW #5 due
Tu 3/9	<b>PL</b> : Inference VI	Ch. 3.10	
Th 3/11	<b>M &amp; F</b> : Syntax & Translation I	Ch. 4.1, 4.3	HW #6 due
Tu 3/16	<b>M &amp; F</b> : Syntax & Translation II	Ch. 4.1, 4.3	
Th 3/18	<b>M &amp; F</b> : Syntax & Translation III	Ch. 4.2, 5.1	HW #7 due
Tu 3/23	<b>M &amp; F</b> : Syntax & Translation IV	Ch. 4.2, 5.1	
Th 3/25	<b>M &amp; F</b> : Semantics I	Ch. 4.7	HW #8 due
Tu 3/30	<b>M &amp; F</b> : Semantics II	Ch. 4.7, 5.2	
Th 4/1			Exam 2
Tu 4/6			Spring Break
Th 4/8			Spring Break
Tu 4/13	<b>M &amp; F</b> : Semantics III	Ch. 4.8, 5.2	HW #9 due
Th 4/15	<b>M &amp; F</b> : Semantics IV	Ch. 4.8	
Tu 4/20	<b>M &amp; F</b> : Inference I	Ch. 4.4	HW #10 due
Th 4/22	<b>M &amp; F</b> : Inference II	Ch. 4.4, 4.6	
Tu 4/27	<b>M &amp; F</b> : Inference III	Ch. 4.5	HW #11 due
Th 4/29	<b>M &amp; F</b> : Inference IV	Ch. 4.6, 5.3	
Tu 5/4			HW #12 due
M 5/10			Exam 3, 1:30–3:30 p.m.