



COURSE SYLLABUS

Introduction to Formal Logic

Phil. 21002-002-16262

Fall, 2024

TR 12:30-1:45

Bowman 301

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Hours: MTWR 1:45-3:00

Course Design: “Some people would rather die than think,” wrote Bertrand Russell, “in fact they do.” This course is an introduction to formal logic: the study of correct and incorrect patterns of reasoning. After examining basic concepts—the structure of arguments, deductive versus inductive patterns, validity, and soundness—we’ll investigate two important logical systems: 1) propositional logic, a system based upon simple sentences combined by logical operators such as “and,” “or,” and “if. . .then;” and 2) predicate logic that builds upon propositional logic to include relations of quantity such as “all,” “no,” and “some.” We devote special attention to a) the connection between ordinary and formal artificial languages and b) *natural deduction*, a set of rules and strategies for inferring conclusions from premises by a series of intermediate steps. Beyond learning techniques employed by philosophers, logicians, mathematicians, and computer programmers, skills developed here sharpen your ability to reason in in your academic studies and later life.

Required Text: Patrick J. Hurley and Lori Watson, *A Concise Introduction to Logic*, 13th edition. A traditional book is preferable, but the ebook edition is also acceptable. A copy of this text is on two hour reserve at the Library.

Grading:

15% is an assignment grade determined by your response to exercises we cover in class. Each response receives 100% (substantially correct answer), 75% (partially correct answer), or 50% (incorrect answer, no response, or absent without excuse). Responses averaged at the end of the semester determine this assignment grade. If presenting work in class is a significant obstacle, contact your instructor for an alternative way to satisfy this assignment.

60% is determined by three online unit tests (20% ea.), administered during a regular class period and similar in format to the unit exercises.

20% is determined by an online final examination covering predicate logic only.

5% is an attendance grade determined by the number of *unexcused* absences:

A= 0-1, B= 2, C= 3-4, D = 5, F = 6+ 2

Course Grades are calculated according to the standard scale:

>93 = A

90-92 = A-

88-89 = B+

83-87 = B

80-82 = B-

78-79 = C+

73-77 = C

70-72 = C-

68-69 = D+

60-67 = D

<60 = F

Important: Students who make significant contributions to class discussions may earn 1-3 points added to their overall course grade.

Expectations: THIS IS A CHALLENGING COURSE! Like mathematics, logic is a progressive skill with exacting procedures mastered only with focused attention and diligent practice. It is extremely important that you attend class regularly and complete all graded and ungraded assignments. Don't fall behind! Ask questions in class or consult your instructor by email if you do not fully understand a concept or technique.

Attendance Policy: I am generally happy to excuse absences when informed in advance or on the same day by email notification. Without such timely notification, written documentation in conformance with University policy is required in order to receive an excused absence.

Prerequisite, Enrollment and Withdrawal Policy. Prerequisite: Minimum math score of 35 ALEKS, 22 ACT, or 530 SAT' or MATH 00022 with a minimum grade of C. .By University policy, all students must be officially registered in each class they are attending. Those not officially registered for a course should not attend classes and will not receive credit or a grade for the course. Please confirm your enrollment by checking your class schedule (using Student Tools in Flashline). The deadline for withdrawing from the class is Sunday, October 27, 2024.

Cultural Diversity Element: Like mathematics, logic is a trans-cultural language common to a spectrum of communication practices. While embracing reason as a common value, logic also recognizes that the appraisal of the content of discourse varies widely from culture to culture.

Religious Compliance Statement: The University welcomes the beliefs and practices of diverse faiths, philosophies, and other systems of belief. In compliance with University policy and the Ohio Revised Code, students are permitted to request excused class absences for up to three days per term to participate in sanctioned activities authorized by a religious or spiritual organization. The request for excusal must be made in writing during the first fourteen days of the semester and include 1) the date(s) of each proposed absence, 2) a clear explanation of the activities involved, and 3) the specific accommodation(s) you desire.

Academic Honesty: For the complete policy, go to www.kent.edu/policyreq/chap3/3-01-8cfm

Acts of cheating and plagiarism are serious offenses that subvert the goals of the institution and the rights of fellow students. Students caught cheating will receive no credit for the assignment and are subject to additional sanctions including failing the course and additional University disciplinary action.

I. "Cheat" means to intentionally misrepresent the source, nature, or other conditions of academic work so as to accrue undeserved credit, or to cooperate with someone else in such misrepresentation. Cheating includes, but is not limited to:

1. Using Artificial Intelligence (AI) prompts or guidance for any written assignment.

2. Using unauthorized information in examinations.

3. Securing, giving or exchanging information during examinations.

4. Having another person take one's place for any academic performance.

5. Possessing partial or whole copies of examinations, tests or quizzes before these are distributed for student use.

6. Using a substantial portion of a piece of work previously submitted for another course or program to meet the requirements of the present course or program without notifying the instructor to whom the work is presented.

7. Presenting falsified information in order to postpone or avoid examinations, tests, quizzes, or other academic work.

Student Accessibility: If you have a documented disability and require accommodations, please contact the instructor at the beginning of the semester. You must first verify your eligibility through Student Accessibility Services located in the University Library, Suite 100; Email: sas@kent.edu; Phone: 330-672-3391; Web: www.kent.edu/sas.

Grievance Policy: The Philosophy Department Grievance Procedure for handling grievances is in conformity with the Student Academic Complaint Policy and Procedures set down as University Policy 3342-4-16 in the *University Policy Register*. For information concerning the details of the grievance procedure, please contact the Departmental Chairperson.

<u>Date</u>	<u>Topic & TESTS</u>	<u>Reading</u>	<u>Graded In-Class Exercises</u>
8/20	Syllabus Review; Why Be Logical?		

I. The Structure of Arguments

8/22	1.1 Premises & Conclusions	1-7	1.1: I 11-18, IV
8/27	1.3 & 1.4 Deduction and Induction	33-37; 45-48	1.4: I

II. Propositional Logic

8/29	6.1 Logical Operators	327-334	
9/3	6.1 Exercises		6.1: I 16-40
9/5	6.2 Compound Proposition Forms	341-347	
9/10	6.2 Exercises		6.2: I 6-10, II 8-11, III 10-15
9/12	Review Session		
9/17 UNIT TEST 1			
9/19	6.3 Truth Tables for Propositions	354-361	
9/24	6.3 Exercises		6.3: I 1-10, II 6-10, III 1-4
9/26	6.4 Truth Tables for Arguments	364-367	6.4: I 8-10, II 1-10
10/1	6.6 Argument Forms	381-385	
<i>10/3-10/6 Fall Break</i>			
10/8	6.6 Invalid Forms & Applications	385-386; 389-393	
10/10	6.6 Exercises and Review Session		6.6: I 1-15, II 1-5

10/15 UNIT TEST 2

III. Natural Deduction

10/17	7.1 Implication Rules I	403-411	
10/22	7.1 Exercises		7.1: I 1-3, III 1-12, IV 1-3
10/24	7.2 Implication Rules II	416-421	
10/29	7.2 Exercises		7.2: III 1-16

10/31	7.3 Replacement Rules I	426-432	
11/5	7.3 Exercises		7.3: III 1-16
11/7	7.4 Replacement Rules II	440-445	
11/12	7.4 Exercises		7.4: III 1-16
11/14	UNIT TEST 3		
IV. Predicate Logic			
11/19	8.1 Symbols and Translation	470-475	
11/21	8.1 Exercises		8.1: I 1-20
11/26	8.2 Rules of Inference (UI & UG)	480-482; 486; 488	
	<i>11/27-12/1 Thanksgiving Break</i>		
12/3	8.2 Exercises		Exercises on Canvas
12/5	Review Session		

FINAL EXAM 12:45-3:00 Wednesday, December 11