COURSE SYLLABUS

Introduction to Formal Logic

Phil. 21002-002-16314
Spring, 2024
TR 12:30-1:45
Bowman 224

Dr. Frank Ryan
Email: fryan@kent.edu
Phone: (330) 672-0274
Hours: MW 2:30-3:45
TR: 3:30-4:45
+24/7 by email

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 exploration of correct and incorrect patterns of reasoning. After examining basic concepts—the structure of arguments, deductive and 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 logical 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 central to the work of 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 copy of the textbook is at the Library Reserve Desk for two hour checkout)

Grading:
15% is a homework grade determined by your response to exercises you prepare in advance and we review 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 throughout the semester determine this assignment grade. Contact your instructor if a documented condition precludes your participating in class exercises.
60% is determined by three online unit tests (20% ea.), administered during a regular class period and similar in format to the unit exercises. You may use your notes, book, and PowerPoints as you wish, but must work alone and without assistance.
20% is determined by an online final examination covering predicate logic only. You may use your notes, book and PowerPoints as you wish, but must work alone and without assistance.
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 a standard scale:

>93 = A	78-79 = C+
90-92 = A-	73-77 = C
88-89 = B+	70-72 = C-
83-87 = B	68-69 = D+
80-82 = B-	60-67 = D
	<60 = F

Important: Students who make significant contributions to class discussions may earn 1-2 points added to their overall course grade.

Expectations: THIS IS A CHALLENGING COURSE! Like mathematics, logic is a progressive skill 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. Take advantage of extra credit opportunities! *I cannot accommodate requests for makeup or extra credit work made after the deadline.*

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

Enrollment and Withdrawal Policy. All participants must be officially enrolled in accordance with University Policy. **The deadline for withdrawing from the class is April 1, 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.

Academic Honesty: 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. See the complete policy at: policyhttp://www.kent.edu/policyreg/administrative-policy-regarding-student-cheating-andplagiarism

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.

Date Topic	Reading	**Graded In-Class Exercises & TESTS**
1/16 Syllabus Review; Why Be Logical?		
I. The Structure of Arguments		
1/18 1.1 Premises & Conclusions	1-7	**1.1: I 11-18, IV**
1/23 1.3 & 1.4 Deduction and Induction	33-37; 45-48	**1.4: I**
II. Propositional Logic		
1/25 6.1 Logical Operators	327-334	
1/30 6.1 Exercises		**6.1: I 16-40**
2/1 6.2 Compound Proposition Forms	341-347	
2/6 6.2 Exercises		**6.2: I 6-10, II 8-11, III 10-15**
2/8 UNIT TEST 1		
2/13 6.3 Truth Tables for Propositions	354-361	
2/15 6.3 Exercises		**6.3: I 1-10, II 6-10, III 1-4**
2/20 6.4 Truth Tables for Arguments	364-367	**6.4: I 8-10, II 1-10**
2/22 6.6 Argument Forms	381-385	
2/27 6.6 Invalid Forms & Exercises	385-386; 389-393	**6.6: I 1-15, II 1-5**
2/29 Unit Review Session		
3/5 UNIT TEST 2		
III. Natural Deduction		
3/7 7.1 Implication Rules I	403-411	
3/12 7.1 Exercises		**7.1: I 1-3, III 1-12** (IV 1-3 Extra Credit)
3/14 7.2 Implication Rules II	416-421	
3/19 7.2 Exercises		**7.2: III 1-16**
3/21 7.3 Replacement Rules I	426-432	
3/25-3/31 Spring Break		
4/2 7.3 Exercises		**7.3: III 1-16**
4/4 7.4 Replacement Rules II	440-445	
4/9 7.2 Exercises		**7.4: III 1-16**
4/11 Unit Review Session		
4/16 UNIT TEST 3		
IV. Predicate Logic		
4/18 8.1 Symbols and Translation		470-475
4/23 8.1 Exercises		**8.1: I 1-20**
4/25 8.2 Rules of Inference **(UI & UG)**		480-482; 486; 488
4/30 8.2 Exercises		Exercises on Canvas
5/2 Unit Review Session		

FINAL EXAM (UNIT TEST 4) Friday May 10 3:15-5:30 pm.