

PHIL 21002: Introduction to Formal Logic

Fall 2009 Section 003 MW 12:30-1:45 Bowman 204

Professor: Gina Zavota
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Office Hours: M 11:30-12:30; 3:30-5:30
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COURSE DESCRIPTION

This course will introduce you to several formal languages which allow us to represent the logical structure of deductive reasoning. We will begin with Propositional Logic and will go on to study Categorical Logic— a system first developed by Aristotle over 2,300 years ago— and Predicate Logic, one of the formal languages which is most widely used today. Not only will we study the formal structure and properties of these languages, but we will also use them as a tool for evaluating arguments expressed in the natural language of English.

This course has several distinct but related objectives. In particular, after successfully completing the course, you should be able to:

- construct formal proofs for a wide variety of valid arguments
- translate English sentences into the languages of Propositional and Predicate Logic
- recognize common mistakes in reasoning
- more accurately evaluate the strength of English-language arguments you hear or read
- construct stronger, more rational arguments for your own positions on various realworld issues

I hope that you will find this course enjoyable in its own right. In addition to this, the critical thinking, reasoning, and analytical skills that you will gain in this course will benefit you no matter what your major is or what type of career you choose to pursue.

COURSE REQUIREMENTS

Required Texts: Howard Pospesel, *Introduction to Logic: Propositional Logic*, revised 3rd ed.
Howard Pospesel, *Introduction to Logic: Predicate Logic*, 2nd ed.
Course Packet (CP) containing handouts and excerpts from Hurley's *A Concise Introduction to Logic*, available at WordSmiths, 402 E. Main St, (330) 677-9673 (ask for packet #52)

For each class meeting, you will be expected to read the designated sections in the texts and arrive prepared to discuss them. **Please bring the appropriate text(s) and handouts with you to class each day.** Unless I indicate otherwise, you are responsible for *all* of the material in the assigned readings, whether or not it is discussed in class.

Attendance: Due to the complexity of the material we will cover in this course, regular attendance is crucial for success. With this in mind, I will pass around an attendance sheet at the beginning of each class.

- No one arriving 15 or more minutes late will be allowed to sign the attendance sheet
- If you accumulate six unexcused absences (two weeks' worth of classes), your grade will be lowered one full letter (e.g. from an A to a B)
- **Twelve unexcused absences (four weeks' worth of classes) will result in your failing the course, regardless of your performance on the exams and homework assignments**
- Absences will be excused if you provide acceptable, written documentation of illness or other circumstances that made the absence(s) unavoidable

Since regular attendance and participation in class discussions will greatly expand your understanding of the material, I highly encourage you to show up prepared for each session. You are responsible for all material presented in class, whether or not it appears in the texts.

Assignments: Your final grade will be determined based on your performance on the following:

- **Homework Assignments** – There will be approximately one homework assignment per week throughout the semester.
 - Homework will be graded on a scale of zero to 20 points
 - Although you will be expected to complete all homework assignments, only your ten highest scores will count toward your final grade
 - Assignments will generally be handed back within a week of when they are turned in
 - **Unexcused, late homework will be docked two points for each class that it is late**
 - No homework will be accepted later than the date of the midterm exam on which the material covered in the homework is included

- **Exams** – There will be three exams, one each on Propositional Logic, Categorical Logic, and Predicate Logic. While they will not be explicitly cumulative, each section of the course will build on the material covered in previous sections. **You must take all three exams in order to pass the course. If you miss one or more exams, you will fail the course, regardless of how well you have done on the other exams and the homework assignments.**

If you have an acceptable reason for missing an exam, you **must** see me beforehand to arrange a time for a make-up exam. Simply not showing up for the exam and contacting me later will result in your failing the exam and the course, except in the most extreme emergencies. (My standard for documenting an absence is much higher in this case than in the case of a regular missed class.)

Assignments and handouts will be made available online on Vista; your grades for each assignment will also be posted there. Go to <http://vista.kent.edu> and log on with your Flashline ID and password. Once you've logged on, you'll see this course in your course list, and you'll have access to the handouts, your grades, and other information about the course.

GRADING PRACTICES

Your final numerical grade will be calculated using the percentages given in the table on the left. It will then be translated into a letter grade using the scale in the table on the right.

Assignment	Percentage of Final Grade
Homeworks (10)	4% each
Exams (3)	20% each
Total	100%

Numerical Grade	Final Letter Grade
93-100	A
90-92	A-
87-89	B+
83-86	B
and so on...	
67-69	D+
60-66	D
<60	F

Students must take all three exams and have fewer than twelve unexcused absences in order to pass the class. However, this alone does not guarantee a passing grade.

UNIVERSITY POLICIES AND PROCEDURES

Students with Disabilities: University policy 3342-3-18 requires that students with disabilities be provided reasonable accommodations to ensure their equal access to course content. If you have a documented disability and require accommodations, please contact the instructor at the beginning of the semester to make arrangements for necessary classroom adjustments. Please note that you must first verify your eligibility through Student Accessibility Services, located on the ground floor of the DeWeese Health Center (contact SAS at (330) 672-3391 or visit <http://www.registrars.kent.edu/disability/> for more information on registration procedures).

Academic Dishonesty: In accordance with University Policy 3342-3-07 in the *University Policy Register*, cheating and plagiarism are punishable by several possible sanctions, including (but not limited to) refusal to accept coursework for credit, assigning a grade of "F" or zero to an assignment, assigning a grade of "F" for the course, or the revocation of a degree. It is recommended that students familiarize themselves with this policy.

Academic Complaint Procedure: The Philosophy Department Grievance Procedure for handling student 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 see the departmental chairperson.

READING AND ASSIGNMENT SCHEDULE

This schedule is tentative. You are responsible for knowing about any changes announced during class. In addition to the homework problems listed, additional translation exercises may sometimes be assigned.

Week 1: 8/31 Introduction: what is logic? Basic terms and concepts.
9/2 Introduction to Propositional Logic
Reading: *Propositional Logic*, Ch 1

Propositional Logic

Week 2: 9/9 Conditional Statements; Conjunctions **HOLIDAY: LABOR DAY, 9/7**
Reading: *Propositional Logic*, Ch 2, 3

Due Mon 9/14 HW #1 : Ch 2: Exercises 1(d), (i), (k); 2(a), (c); 3(a), (c); 4; 7; 8
Ch 3: Exercises 1(c), (g), (i); 2(c), (d); 3(d); 7; 9; 12

Week 3: 9/14 - 9/16 Conditional Statements (continued); Negations
Reading: *Propositional Logic*, Ch 4, 5

Due Mon 9/21 HW # 2: Ch 4: Exercises 1(c), (h), (l); 4(a), (c); 8; 9(a); 16
Ch 5: Exercises 1(c), (h), (i); 3(a), (d); 4; 8; 12

Week 4: 9/21 - 9/23 Biconditionals; Disjunctions
Reading: *Propositional Logic*, Ch 6, 7

Due Mon 9/28 HW #3 Ch 6: Exercises 1(c), (e); 3(c); 6; 11; 12
Ch 7: Exercises 1(c), (e), (l); 3(c); 5; 7; 12

Week 5: 9/28 - 9/30 Derived Rules
Reading: *Propositional Logic*, Ch 9

Due Mon 10/5 HW #4 Handout

Week 6: 10/5 - 10/7 Truth Tables
Reading: *Propositional Logic*, Ch 10.1

Due Wed 10/7 HW #5 Ch 9.1: Exercises 5(a), (b), (c)
Ch 9.2: Exercises 10(c), (d)
HW #6 Ch 10.1: Exercises 1(c); 2; 6; 8

Categorical Logic

Week 7: 10/12 - 10/14 Syntax and Semantics; The Boolean Standpoint; Venn Diagrams
Reading: Hurley, Sections 4.1 - 4.3 (CP) **EXAM #1: MONDAY, OCT 12th**
Due Mon 10/19 HW #7: Exercise 4.2: (I) #3, 5, 6, 8; (II) #2,3;(III) #2, 3; (IV) #4
Exercise 4.3: (II) #2, 3, 6, 11, 14; (III) #2, 3, 6, 11, 14

Week 8: 10/19 - 10/21 Conversion, Obversion, and Contraposition; The Aristotelian Standpoint
Reading: Hurley, Sections 4.4-4.6 (CP)
Due Mon 10/26 HW #8: Exercise 4.5: (II) #6, 9; (III) all; (IV) #3, 6, 9
Exercise 4.6: (II) #6, 8, 14

Week 9: 10/26 - 10/28 Syllogisms
Reading: Hurley, Sections 5.1-5.3 (CP)
Due Mon 11/2 HW #9: Exercise 5.2: (I) #5, 9; (II) #2, 8
Exercise 5.3: (I) #5, 15; (II) #6, 9

Week 10: 11/2 Syllogisms (continued)
Reading: Hurley, Section 5.4 (CP)
11/4 Introduction to Predicate Logic **EXAM #2: WEDNESDAY, NOV 4th**

Predicate Logic

Week 11: 11/9 Translations; The Rules of Predicate Logic **HOLIDAY: VETERANS DAY, 11/11**
Reading: *Predicate Logic*, Ch 1, 2, 3
Due Mon 11/16 HW #10 Ch 2.2: Exercises 1(c), (e), (h); 2(a), (d), (e)
Ch 2.3: Exercises 4(a), (d), (k); 5(c), (d)

Week 12: 11/16 - 11/18 The Rules of Predicate Logic (continued)
Reading: *Predicate Logic*, Ch 3, 4
Due Mon 11/23 HW #11 Ch 3.1: Exercise 4; Ch 3.2: Exercise 12
Ch 4.1: Exercises 5, 8; Ch 4.2: Exercises 11, 14

Week 13: 11/23 More Translations; Proof Strategies **HOLIDAY: THANKSGIVING, 11/25**
Reading: *Predicate Logic*, Ch 5, 6
Due Mon 11/30 HW #12 Ch 5.1: Exercises 1(c), (i); 2(e), (k); Ch 5.2: Exercises 8(e), (k); 9(g)
Ch 6: Exercises 5, 10(c), 12

Week 14: 11/30 - 12/2 Truth Trees
Reading: *Propositional Logic*, Ch 11; *Predicate Logic*, Ch 8
Due Mon 12/7 HW #13 *Propositional Logic*, Ch 11: Exercises 2(a), 5(d)
Predicate Logic, Ch 8: Exercises 6, 7, 8

Week 15: 12/7 - 12/9 Truth Trees (continued); Review for Final

FINAL EXAM: MONDAY, DEC 14, 10:15 AM - 12:30 PM, BOWMAN 204