

**INTRODUCTION TO FORMAL LOGIC - PHIL 21002 - 002 Fall,
2016, Kent Campus**

MEETING TIMES AND DATES: M/W/F 2:15 am - 3:05 pm.

LOCATION: Bowman 204

PROFESSOR: Brian R. Huth

EMAIL: bhuth3@kent.edu

OFFICE HOURS: Mondays, Wednesdays, and Fridays from 11:15 – 1:00. In Bowman 320 room W.

REQUIRED TEXTS: (1) *Introduction to Logic, Propositional Logic*. Revised Third Edition. Howard Pospesel. ISBN: 0-13-025849-0. (2) *Introduction to Logic, Predicate Logic*. Second Edition. Howard Pospesel. ISBN: 0-13-164989-2

COURSE DESCRIPTION:

Techniques of formal logic, traditional and contemporary. Prerequisite: None.

STUDENT LEARNING OUTCOMES:

The goal of this course is to develop technical skill in the formal axiomatic deductive languages of propositional logic and predicate logic. We will learn proof strategies and be able to identify valid and invalid arguments. By the end of this course, students should be able to construct and understand proofs in both predicate and propositional logic. Additionally, students will gain a higher understanding of how useful formal logic really is in their daily lives.

COURSE OBJECTIVE:

Formal logic is a tool that provides us with the resources to be able to analyze and describe the content and structure of arguments with mathematical precision. Logic also provides us with a means for demarcating between good and bad arguments, which provides a foundation for argumentative skills. In this class, we will focus on developing and analyzing deductive arguments in categorical, propositional, and predicate logic.

This class does not presume that students have had any exposure to the formal elements of logic.

REQUIREMENTS

During the semester, students will be expected to complete the following:

(1) Four in-class (open notes) quizzes

(2) Two in-class (closed notes) tests

(3) Twenty homework assignments

*Students are also expected to attend class and contribute to class discussion.

ASSIGNMENTS, TESTS, AND GRADING

There are three different kinds of assignments in this class: homework, quizzes, and tests. Tests and quizzes are completed in-class and both will take the full class period. Quizzes are open-notes tests while tests are closed-notes. Homework assignments will be due on the class period after they are assigned. You are allowed to work together on homework assignments, however, you are not allowed to simply copy one another's work. It is often very easy to figure out if two students have been copying off of one another, and this case is especially true in logic.

If you have questions, please ALWAYS feel free to email me. I am generally pretty good at responding to students within a couple of hours after receiving an email. Please do not wait until the last minute to ask me questions concerning the homework assignments, as I will not be able to answer everyone's questions at the last minute.

Reading Assignments:

All reading assignments correspond to one of the two Pospesel books. See the Course Outline for more detailed information concerning the reading assignments.

Homework Assignments:

Logic is related to mathematics in many ways. Both systems are formal languages and both systems require a good amount of practice in order to master them. Just like in a mathematics class, there will be homework almost every single session. The homework assignments are worth forty percent of the class, so take your time when completing them.

Tests:

There will be two tests: a "midterm" and a final. Our midterm exam won't actually occur until well after the middle of the term. Each test is worth ten percent of your final grade. These tests are closed notes and they are in-class exams. As is the case with any class, if I catch you cheating I will simply fail you with no chance for a makeup.

Quizzes

There will be four quizzes throughout the semester. Each quiz will be worth five percent of the final grade. They are open notes exams. You will have the full forty-five minutes to complete them, however, an over reliance on notes is a very bad idea. These quizzes will help to gauge where you are in the class. If you find that you are struggling on a quiz, you should email me or come to office hours so that we can try and work through your struggles.

EVERY SINGLE ASSIGNMENT CAN RECEIVE PARTIAL CREDIT (LIKE IN A MATHEMATICS CLASS). YOU HAVE TO ATTEMPT THE QUESTION IN

ORDER TO RECEIVE PARTIAL CREDIT! IF YOU CANNOT FINISH A PROBLEM, WORK IT OUT AS FAR AS YOU CAN IN ORDER TO RECEIVE MORE POINTS!

ALL GRADES WILL BE POSTED ON BLACKBOARD. THIS CLASS HAS A TOTAL OF 1000 POSSIBLE POINTS. I WILL POST ASSIGNMENTS BY THEIR POINTS, NOT THEIR PERCENTAGES. THIS MAKES IT EASIER FOR YOU TO FIGURE OUT YOUR GRADE. EACH STUDENT WILL HAVE AN ATTENDANCE GRADE THAT WILL START OFF AT 200 POINTS. YOUR ATTENDANCE WILL SLOWLY DROP BY INCREMENTS OF 50 (5 TOTAL PERCENTAGE POINTS) IF YOU ARE NOT COMING TO CLASS.

Grading:

The percentage for grading is broken down as follows:

HOMEWORK: 40% (this means each homework is worth 2% each)

QUIZZES: 20% (each quiz is worth 5% each)

TESTS: 20% (each test is worth 10% each)

ATTENDANCE: 20%

Attendance is essential to success in logic. I will take a head count at the beginning of class and pass out an attendance sheet or I will simply take roll. You will be given 3 free unexcused absences after which each unexcused absence will lower your final score by 5 percentage points. This is a pretty generous attendance policy for a logic class, so please do not abuse it. **SHOW UP TO CLASS.**

Participation will also be taken into account. If you are on the cusp between two grades, depending upon how much you participate, I will either give you the higher or lower of the two grades.

The following provides a translation from the numerical score to a letter grade:

A	93- 100
A-	90 - 92
B+	86 - 89
B	83 - 85
B-	80 - 82
C+	76 - 79
C	73 - 75
C-	70 - 72
D+	66 - 69
D	63 - 65
D-	60 - 62
F	59 or below

GENERAL ETIQUETTE

- Turn off your cell phones or turn off your ringer and take your cell phone off of vibrate. PLEASE. I hate interrupting class because someone is texting or because someone keeps getting text messages. If it is an accident, that happens; but let's try to minimize the accidents as well.
- Don't catch Pokémon in my class. If I catch you catching Pokemon I will give your best Pokémon to the Professor. Repeated violations will see your grade suffer.
- Don't use your laptop for notes in this class. You will not be able to take the notes effectively and in an efficient manner. I actually suggest you take notes in pencil. Nobody is perfect, and even the best students and teachers make mistakes.
- During email correspondences, please make sure to give the email a title. Also, please sign your name. Treat your email correspondences with me as if you were emailing any other professional.
- DO NOT SLEEP IN MY CLASS. This is college; if you need to sleep, please leave the room. If you sleep in my class I will take 5% off of your final grade. This is your one and only warning.
- If the classroom has plenty of open seating, avoid sitting in the back of the room.
- If you are going to be late, email me if you can. Also, if you show up late, please just quietly and respectfully find the seat closest to the door. If any student is repeatedly tardy, it will count as an absence. See me if you are concerned.

If you continue to violate my policies, your grade will suffer. I don't like making grades suffer, so please don't violate my policies.

KENT STATE UNIVERSITY POLICIES

Drop and Withdrawal Dates

The official registration deadlines for this course can be found by doing a Detailed Class Search from the Schedule of Classes found at:

https://keys.kent.edu:44220/ePROD/bwlkffcs.P_AdvUnsecureCrseSearch?term_in=201580

University policy requires all students to be officially registered in each class they are attending. Students who are not officially registered for a course by published deadlines should not be attending classes and will not receive credit or a grade for the course. Each student must confirm

enrollment by checking his/her class schedule (using Student Tools in FlashLine) prior to the deadline indicated. Registration errors must be corrected prior to the deadline.

Plagiarism, Cheating, and other forms of Academic Dishonesty

Please note that I do not tolerate academic dishonesty in any form. Ignorance of university policy will not be accepted as an excuse. University policy 3-01.8 deals with the problem of academic dishonesty. The sanctions provided in this policy will be used to deal with any violations. If you have any questions, please read the policy at:

http://www.kent.edu/policyreg/policydetails.cfm?customel_datapageid_1976529=2037779

Information for Students with Documented Disabilities

University policy 3-01.3 requires that students with documented disabilities be provided reasonable accommodations to ensure their equal access to course content. If you have a documented disability and require accommodations, please contact me at the beginning of the semester to make arrangements for necessary adjustments. Please note, you must first verify your eligibility for these through Student Accessibility Services. Contact 330-672-3391 or visit www.kent.edu/sas for more information on the relevant procedures.

COURSE OUTLINE

Pl = *Introduction to Logic: Propositional Logic* (red book)

Lpl = *Introduction to Logic: Predicate Logic* (green book)

Week 1

M 8/29: Introduction to the course. Syllabus. What is logic and why study it?

W 8/31: Pl Ch. 1.1 - 1.2. The basics of a formal language of logic.

F 9/2: *No Reading*. Handout: syntax and semantics of Pl.; logical operators.

Week 2

M 9/5: LABOR DAY. NO CLASSES.

W 9/7: *No Reading*. Handout: syntax and semantics of Pl.; logical operators (cont.)

HOMEWORK SET 1 DUE NEXT CLASS

F 9/9: Pl Ch. 2.2 - 2.3. Translating conditional arguments. Practice proofs using Arrow Out Rule. Handout: proper proof methodology.

Week 3

M 9/12: *No Reading*. Formal proofs (cont.) Arrow Out.
HOMEWORK SET 2 DUE NEXT CLASS

W 9/14: Pl Ch. 3.1. Symbolizing Conjunctions

F 9/16: Pl Ch 3. 2 – 3.3. Ampersand In and Ampersand Out.
HOMEWORK SET 3 DUE NEXT CLASS

Week 4

M 9/19: Pl Ch 4.1. More on Symbolizing Conditionals.
HOMEWORK SET 4 DUE NEXT CLASS

W 9/21: Pl Ch. 4.2. Arrow In Rule.

F 9/23: QUIZ # 1

Week 5

M 9/26: Pl Ch. 5.1. – 5.2. Symbolizing Negations and Dash In.
HOMEWORK SET 5 DUE NEXT CLASS

W 9/28: *Pl* Ch. 5.2 Dash Out and Dash In.
HOMEWORK SET 6 DUE NEXT CLASS

F 9/30: *Pl* Ch 6 (entirety). Symbolizing Biconditionals. Double Arrow In and Double Arrow Out.
HOMEWORK SET 7 DUE NEXT CLASS

Week 6

M 10/3: *Pl.* Ch. 7 (entirety) Wedge Out and Wedge In.
HOMEWORK SET 8 DUE NEXT CLASS.

W 10/5: *No Reading.* Wedge Out and Wedge In (cont.).

F 10/7: *Pl* Ch 9.1. Derived rules: Modus Tollens, Disjunctive Argument, Chain Argument.
HOMEWORK SET 9 DUE NEXT CLASS

Week 7

M 10/10: QUIZ #2.

W 10/12: *Pl* Ch 9.2. Derived rules: Double Negation, De Morgan's Law.
HOMEWORK SET 10 DUE NEXT CLASS

F 10/14: *Pl* Ch 10 (entirety). Truth Tables.

Week 8

M 10/17: Truth Tables (cont)

W 10/19: Truth Tables (cont)
HOMEWORK SET 11 DUE NEXT CLASS

F 10/21: *Pl.* Ch 11 (entirety). Truth Trees.

Week 9

M 10/24: Truth Trees (cont)

W 10/26: Truth Trees (cont)
HOMEWORK SET 12 DUE NEXT CLASS

F 10/28: MIDTERM.

Week 10

M 10/31: *No Reading.* Categorical Logic Handout.

W 11/2: *No Reading.* Categorical Logic Handout (cont.).

F 11/4: *Lpl* Ch 2 (entirety). Handout on the language of Predicate Logic.

Week 11

M 11/7: *Lpl* Ch 3 (entirety) Universal Out and Existential Out.
HOMEWORK SET 13 DUE NEXT CLASS

W 11/9: QUIZ #3

F 11/11: NO SCHOOL! VETERAN'S DAY!

Week 12

M 11/14: *Lpl* Ch 4.1. Existential Quantifier In and Universal Quantifier In.
HOMEWORK SET 14 DUE NEXT CLASS

W 11/16: Quantifier Exchange.
HOMEWORK SET 15 DUE NEXT CLASS

F 11/18: *Lpl* Ch. 5.1. Translation and Domains.
HOMEWORK SET 16 DUE NEXT CLASS

Week 13

M 11/21: *Lpl* Ch 6 (entirety). Intermediate proofs.
HOMEWORK SET 17 DUE NEXT CLASS

W 11/23: DAY BEFORE THANKSGIVING!

F 11/25: THANKSGIVING BREAK! NO CLASS!

Week 14

M 11/28: *Lpl* Ch 8 (entirety) Truth Trees.

W 11/30: *No Reading.* Truth Trees (cont.).
HOMEWORK SET 18 DUE NEXT CLASS

F 12/2: Quiz #4

Week 15

M 12/5: *Lpl* Ch 11 (entirety). Two-Place Relational predicates. Relational proofs.
HOMEWORK SET 19 DUE NEXT CLASS

W 12/7: Relational Proofs.
HOMEWORK SET 20 DUE NEXT CLASS

F 12/9: Relational Predicates: Identity. Handout: Rules of Identity.

Week 16

FINAL: Wednesday, Dec. 14 from 12:45 – 3:00

***ALL CONTENT IN THIS COURSE OUTLINE IS SUBJECT
TO REVISION BY THE INSTRUCTOR**