

UC 11834 12F

CBM003 ADD/CHANGE FORM

APPROVED DEC 05 2012

Undergraduate Council  
 New Course  Course Change  
 Core Category: Math/Reason Effective Fall 2014

or

Graduate/Professional Studies Council  
 New Course  Course Change  
 Effective Fall 2013

1. Department: Philosophy College: CLASS
2. Faculty Contact Person: Cynthia Freeland Telephone: 3-3206 Email: cfreeland@uh.edu
3. Course Information on New/Revised course:

- Instructional Area / Course Number / Long Course Title:  
PHIL / 1321 / Logic I
- Instructional Area / Course Number / Short Course Title (30 characters max.)  
PHIL / 1321 / LOGIC I
- SCH: 3.00 Level: FR CIP Code: 38 .0102 .00 Lect Hrs: 3 Lab Hrs: 0

RECEIVED OCT 12 2012

4. Justification for adding/changing course: To meet core curriculum requirements
5. Was the proposed/revised course previously offered as a special topics course?  Yes  No  
If Yes, please complete:

- Instructional Area / Course Number / Long Course Title:  
    /    /
- Course ID:      Effective Date (currently active row):

6. Authorized Degree Program(s): B.A.
  - Does this course affect major/minor requirements in the College/Department?  Yes  No
  - Does this course affect major/minor requirements in other Colleges/Departments?  Yes  No
  - Can the course be repeated for credit?  Yes  No (if yes, include in course description)

7. Grade Option: Letter (A, B, C ...) Instruction Type: lecture ONLY (Note: Lect/Lab info. must match item 3, above.)

8. If this form involves a change to an existing course, please obtain the following information from the course inventory: Instructional Area / Course Number / Long Course Title  
PHIL / 1321 / Logic I
  - Course ID: 038502 Effective Date (currently active row): 20120827

9. Proposed Catalog Description: (If there are no prerequisites, type in "none".)  
Cr: 3. (3-0). Prerequisites: MATH 1310 Description (30 words max.): May not be taken for credit by students who already have credit for PHIL 2321. Techniques for analyzing statements and evaluating arguments, primarily through use of the apparatus of modern symbolic logic.

10. Dean's Signature: \_\_\_\_\_ Date: 10/8/12

Print/Type Name: Dr. John Roberts

## REQUEST FOR COURSES IN THE CORE CURRICULUM

Originating Department or College: Philosophy

Person Making Request: William Nelson

Telephone: 713 743 3203

Email: philb@central.uh.edu

Dean's Signature: \_\_\_

Date: Sept. 10, 2012

Course Number and Title: Philosophy 1321 Logic I

Please attach in separate documents:

Completed CBM003 Add/Change Form with Catalog Description

Syllabus

List the student learning outcomes for the course (Statements of what students will know and be able to do as a result of taking this course. See appended hints for constructing these statements):

Students will understand the concept of logical validity and the concept of logical form.

Students will learn formal proof and truth table methods for determining validity

Students improve their capacity for abstract thought.

Component Area for which the course is being proposed (check one):

Communication

Mathematics

Language, Philosophy, & Culture

Creative Arts

Life & Physical Sciences

American History

Government/Political Science

Social & Behavioral Science

MR Component Area Option

Competency areas addressed by the course (refer to appended chart for competencies that are required and optional in each component area):

Critical Thinking

Communication Skills

Empirical & Quantitative Skills

Teamwork

Social Responsibility

Personal Responsibility

Because we will be assessing student learning outcomes across multiple core courses, assessments assigned in your course must include assessments of the core competencies. For each competency checked above, indicated the specific course assignment(s) which, when completed by students, will provide evidence of the competency.

Provide detailed information, such as copies of the paper or project assignment, copies of individual test items, etc. A single assignment may be used to provide data for multiple competencies.

**Critical Thinking:**

Students will learn to assess reasoning for deductive validity

Before the end of the semester, students will take from 1 to 3 short tests in which they will be required

1. to symbolize English sentences so as to reveal their logical content
2. to construct formal proofs of valid arguments
3. to perform truth table analysis to reveal the logical properties of arguments and statements

These tests will be posted in an appropriate location online.

[Two sample tests accompany this document.]

**Communication Skills:**

In the same tests, students will demonstrate their skills at interpreting logically complex statements.

**Empirical & Quantitative Skills:**

In the same tests, students will demonstrate their ability to calculate, by formal methods, the validity or invalidity of symbolized arguments

**Teamwork:**

Click here to enter text.

**Social Responsibility:**

Click here to enter text.

**Personal Responsibility:**

Click here to enter text.

Will the syllabus vary across multiple section of the course?     Yes                       No

If yes, list the assignments that will be constant across sections:

Tests like those described will be given in every section.

Inclusion in the core is contingent upon the course being offered and taught at least once every other academic year. Courses will be reviewed for renewal every 5 years.

The department understands that instructors will be expected to provide student work and to participate in university-wide assessments of student work. This could include, but may not be limited to, designing instruments such as rubrics, and scoring work by students in this or other courses. In addition, instructors of core courses may be asked to include brief assessment activities in their course.

Dept. Signature: \_\_\_\_\_  
Rey Trevino for Cynthia Freeland

## Quiz 3

## Part I (10 pts)

Do a full truth table for the following sequent and say whether it is valid or invalid.

$$\neg (A \& B) \rightarrow C, \neg B \quad \vdash \quad \neg C \vee A$$

## Part II (10 pts)

Do a full truth table for the following statement and say whether it is a Logical Truth, Contingent, or a Contradiction.

$$(P \& \neg Q) \vee (\neg P \rightarrow Q)$$

Part III (20 pts)

Construct formal proofs to show that the statement on the left is a Contradiction and that the statement on the right is a Logical Truth.

Contradiction  
 $\neg P \ \& \ \neg (\neg P \vee Q)$

---

Logical Truth  
 $\neg P \rightarrow (P \rightarrow Q)$

---

## Test

**Part I:** Answer True (A) or False (B) on your answer sheet

1. Every sound argument has a true conclusion.
2. Every valid argument with a false premise has a false conclusion.
3.  $(A \& B) \& (\neg A \& \neg B)$  is a standard contradiction.
4.  $Q \& R$  follows from the formula  $(Q \& R) \vee P$  by the rule "wedge out."

**Part II:** Pick the correct symbolization for each of the following. Mark only one answer for each question.

5. Breakfast will be READY on time only if I go to the STORE and buy EGGS.

**A.**  $S \rightarrow (E \rightarrow R)$  **B.**  $R \rightarrow (S \& E)$  **C.**  $R \rightarrow (S \rightarrow E)$  **D.**  $(R \& S) \rightarrow E$

6. We won't LEAVE unless it becomes a HURRICANE.

**A:**  $\neg H \rightarrow \neg L$  **B:**  $\neg(L \& H)$  **C:**  $H \rightarrow L$  **D:**  $\neg H \rightarrow L$

7. We will hire either ANDERSON or CAMPBELL but not both.

**A.**  $C \leftrightarrow A$  **B.**  $\neg(A \& C)$  **C.**  $A \vee C$  **D.**  $(A \vee C) \& \neg(A \& C)$

8. Both HEAT and OXYGEN are necessary for COMBUSTION.

**A.**  $(H \& O) \rightarrow C$  **B.**  $(C \& H) \rightarrow O$  **C.**  $C \rightarrow (O \& H)$  **D.**  $C \rightarrow (O \rightarrow H)$

9. Neither WEAPONS of mass destruction nor TIES to Al Qaida were found.

**A.**  $\neg(W \& T)$  **B.**  $\neg(W \vee T)$  **C.**  $\neg W \vee \neg T$  **D.**  $\neg W \& \neg T$

**Part III:** Construct a formal proof for each of the following sequents.

$A \rightarrow B, B \rightarrow C \ /- \ A \rightarrow C$

$A \rightarrow (B \vee C), A \vee B \ /- \ B \vee C$

$\neg(P \ \& \ Q), P \ /- \ \neg Q$





# COURSE SYLLABUS

\*\*\*\*\*

YEAR COURSE OFFERED: 2012

SEMESTER COURSE OFFERED: FALL

DEPARTMENT: PHIL

COURSE NUMBER: 1321

NAME OF COURSE: LOGIC I

NAME OF INSTRUCTOR: GARSON

\*\*\*\*\*

**The information contained in this class syllabus is subject to change without notice. Students are expected to be aware of any additional course policies presented by the instructor during the course.**

\*\*\*\*\*

## Learning Outcomes

This course is an introduction to formal logic. It covers translation from English to formal notation, and checking for validity with proofs, truth tables and trees. It includes basic concepts of formal logic including validity, counterexamples, equivalence, and consistency. The last three weeks will include a brief account of predicate logic.

Students will understand the concept of logical validity and the concept of logical form. Students will learn formal proof and truth table methods for determining validity. Students improve their capacity for abstract thought.

## Major Assignments/Exams

1. Due Sep. 5: READING Ch. 1-2  
EXERCISES Ch. 1: 1, 2 Ch. 2: 1 2 3a, b, c, 5 7 8 9 11  
Sep. 10 **QUIZ 1**
2. Due Sep. 19: READING Ch. 3-4  
EXERCISES Ch. 3: 1a, b, c, f, g, j 2b, d 3b, d 6 7 8 9 12 13;  
Ch. 4: 1b, c, e, f, g, i, j, n 4a, b, c, d 6 9a 10 13 14 16  
Sep. 24 **QUIZ 2**
3. Due Oct. 3: READING Ch. 5-7  
EXERCISES Ch. 5: 1a, b, c, e, f, g, j, m 3a, b, c 4 5 8 9 10 12 13  
Ch. 6: 1b, d, f, g 2b, c 5 7 9 10 11 13 15  
Oct. 8 **QUIZ 3**
4. Due Oct. 17: READING Ch. 8.1, 8.2, 9.2 (9.1 optional)  
EXERCISES Ch. 7: 1a, b, e, f, j, l, n, p, r 3a, b 4 5 6 8 10 11 13

# COURSE SYLLABUS

Ch. 8: 2b 4 6 8 9 10 12 13

Ch. 9: 8a, b 9b, f, g 10b, d 11 12 14b, d 15 16 21b, c, i

Oct. 22 **QUIZ 4**

5. Due Oct. 31: READING Ch. 10.1 "How to Make a Tree" Notes, 17-24

6. Weeks Ch. 12-13, Predicate Logic Ch. 2

EXERCISES Ch. 12: 1 2 4 5 7 9 10 Ch. 13: 2 3 4b 6 7 9

Predicate Logic Ch. 2: 1 2 3 4 6 (all parts)

Nov. 19 **QUIZ 6**

7. Due Dec. 5: READING Predicate Logic Ch 3, Ch. 4.2

EXERCISES Predicate Logic Ch. 3: 1-6 8-13 do proofs and trees

Predicate Logic Ch. 4: 10-15 do proofs and trees

**COMPREHENSIVE FINAL** 11:00-2:00 in our classroom

Dec. 14 (11-12 class) OR Dec. 17 (10-11 class)

## **Grading Policy:**

How your grade is calculated: The 6 Quizzes count 12% each, for a total of 72% The Final counts 28%.

A class participation grade will be assigned to you based on your homework and attendance.

Your lowest quiz grade (including zero) will be replaced by the participation grade if this improves your grade.

## **Required Reading**

Propositional Logic (revised third edition) by H. Pospesel

Predicate Logic (second edition) by H. Pospesel

We will cover all of Propositional Logic, but you only need to use Chapters 2-4 of Predicate Logic. Copies of these books are available on reserve in the Library and Chapters 2-4 of Predicate Logic are on e-reserve,

## **Recommended Reading**

**none**

## **List of discussion/lecture topics**

1. Weeks 1-2 Validity and Conditionals
2. Weeks 3-4 Conjunction and more on Conditionals
3. Weeks 5-6 Negation, Biconditionals and Disjunction
4. Weeks 7-8 Proof Strategy, Derived Rules and Truth Tables
5. Weeks 9-10 Truth Trees

# COURSE SYLLABUS

6. Weeks 11-12 Properties of Statements, Logical Relations and Translation in Predicate Logic
7. Weeks 13-14 Proofs in Predicate Logic

