Request for Renewal of
Philosophy 110: Introduction to Deductive Logic
as a FS course

Kapi‘olani Community College
Spring 2012

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Appendices
1. Sample Syllabi
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I. Course Description

PHIL 110: Introduction to Deductive Logic (3) AA/ML
3 hours lecture per week
Prerequisite: Qualification for English 100
Corequisite: none
Recommended Preparation: Qualification for Math 103

PHIL 110 is an introductory course in Deductive Logic focusing on methods and principles of deductive reasoning. Integral to this study will be the presentation of methods for representing logical form, to include quantification, and the development of a system of inference rules and strategies that allow for the determination of validity (or invalidity), of deductive arguments.

Upon successful completion of PHIL 110, the student should be able to:

- Use logical languages of Sentential and Predicate to translate arguments into and out of symbolic notation, supplying language keys as necessary.
- Employ a basic system of Inference Rules to present well constructed proofs of validity for symbolized arguments.
- Correctly introduce and follow protocols governing the use of assumptions in deductive reasoning.
- Construct and read truth tables for arguments, statements and sets of statements, to include demonstrating (in)validity and (in)consistency.
- Explain the different criteria for assessing the quality of arguments and the particular importance of argument structure among these criteria.

II. Changes

There have been no substantive changes to the course.
- Course competencies were consolidated to facilitate Course Assessment.
**III. Assessing of Course.** Below we provide examples of course materials (including sample lecture topics, sample homework and in-class exercises, and sample exam questions, etc.) that illustrate how Philosophy 110 course meets the Foundations Hallmarks. Original course materials may be viewed upon request.

**Hallmark 1: Students will be exposed to the beauty, power, clarity and precision of formal systems.**

**Sample Class Lectures:**

- A Context for Reasoning: What distinguishes deductive reasoning?
  - Patterns in Deductive Reasoning
  - Deductive vs Inductive Reasoning
  - Assessing Quality In Deductive Reasoning: The Values Of Clarity And Precision
- Basic Argument Analysis: Distinguishing premises and conclusions
- The Value Of Symbolization: Bringing Logical Structure into the Foreground
- Symbolizing in Sentential: Focus on Logical Operators
- Truth Tables for statements
  - Calculating truth value with given and unknown values
  - Testing for logical equivalence
  - Tautologies, Contradictions and Contingent statements
- Symbolizing in Predicate: Symbolizing quantity, individuals vs classes
- Representing asyllogistic arguments
- Validity
  - Validating Deductive Conclusions: Truth table methods
  - Using truth tables for consistency
  - The concept of argument soundness
- Deductive Proof
  - The 2 column method
  - Basic proofs using quantifier, conjunction and conditional rules
  - Using Assumptions
  - Conditional Proof, *Reductio ad absurdum*, Disjunctive Proofs
  - Multiple assumptions and Nesting
- Developing Proof Strategies: A Complete Set of Inference Rules
  - Focus on Strategy: Thinking Through Challenging Proofs

- Beauty: explain and show the elegance of formal reasoning, from math to science to philosophy and beyond.
- Power: in addition to the above, show also the extent to which our information age depends on the philosophical/logical precursors of computation.
- Clarity: demonstrate how reasoning fits together in ways that can be seen to be self-evident.
- Precision: reveal how formal reasoning exhibits precision unlike most other forms of argumentation.

**Sample Questions for Essays and/or Short answer:**

**Essay Questions:**

- How can an argument be evaluated? Of the criteria used to assess the quality of an argument which is most important to logicians and why?
• How do the following pairs of concepts help us to evaluate more precisely the interrelationship between content and structure in deductive arguments: valid/invalid, sound/unsound, consistent/ inconsistent? Discuss these concepts in relationship to the different perspectives from which a deductive argument can be evaluated.
• What are the values that drive deductive reasoning? Explain using specific examples
• How are inductive and deductive reasoning distinguished?

Short Answer Questions:

• Assume this statement is a true inclusive disjunction. What can you know about the truth value of each disjunct?
• If a conditional statement is presented as true, what can you know with certainty about its component statements?

Sample Exam Questions:

• For the argument below outline an assumption strategy for a proof of validity.
  A \implies (B \implies C)
  (D \land C) \implies E
  \neg U \implies \neg E  / \therefore  A \implies \{B \implies [D \implies (E \implies U)]\}

• Analyze and demonstrate the validity of the following argument: All gods are supernatural. No humans are supernatural. Therefore, no humans are gods.

Hallmark 2. Instructors will help students understand the concept of proof as a chain of inferences.

A majority of Philosophy 110 is devoted to the concept of proof as a sequence of valid inferences, each of which is explicitly justified by reference to prior truth claims and a relevant Rule of Inference. Students will be required to master basic skills in proof construction as a problem-solving device, using a basic set of inference rules plus rules for quantification. The conventions of a two-column proof and the distinction between formal and informal proof will be stressed. Students will be encouraged to understand that proofs are not a mechanical device but require imagination and sensitive attention to the relationships that exist among a set of statements, and to the implications of each Rule of Inference. The need for both a precise understanding of rules as well as creativity in applying them to reach solutions is stressed.

Within the context of proof construction, strategies for dealing with assumptions will be stressed. The need to follow proper protocols regarding the introduction and discharge of all assumptions will communicate their power and their limitations within the context of deductive reasoning.

Sample Class Lectures:

• The nature of a formal deductive proof
  o The conventions of a two column proof of formal deduction
• Basic proofs of validity: Introducing The Two Column Proof
  o Validating Deductive Conclusions
• Using Assumptions In The Context Of Deductive Proofs
Multiple assumption strategies
- Nesting

- Strategizing proofs
- Deriving rules, Expanding the system by proving theorems
  - Proving the Law of Double Negation
  - Proving the Law of Commutation for & and v.
  - Proving the Law of Association for & and v.
  - Proving the Law of Distribution for & and v.
  - Proving the Law of Transposition

Questions for Essays and/or Short answer:

Sample Essay Questions:
- Discuss in detail the idea of a deductive proof and its relationship to the concept of validity.
- Distinguish between a premise, an assumption and a derivation and explain their function within the context of a deductive proof.
- Each rule of inference reflects what can be known deductively with respect to each of the logical operators. Discuss what you have learned about the basis for such deductions and how these rules allow a deductive proof to proceed to its final conclusion.
- Discuss what you have learned about using assumptions within the context of a deductive proof of validity. Pay particular attention to the protocols used in connection with different assumption strategies that assure validity.
- What protocols ensure that a proof provides a demonstration of validity? Pay specific attention to how the Rules of Inference used are used to draw forward the inferences inherent in the premises?
- Explain how the principle of logical analogy plays a critical role in the process of proof construction.

Sample Short Answer:
- Describe the difference between an assumption and a premise in a formal deductive proof.
- What is a derivation in the context of a formal deductive proof?
- Explain what the purpose of a formal proof of deduction is.
- Explain, in the context of Disjunction Elimination rule why both disjuncts must be used as assumptions to demonstrate validity.

Sample Homework Exercises:
- Proofs With Quantification Rules
- Practice With Proofs Using Rules Of Inference
  - Simple Rules
  - Focus On Modus Ponens/ Conditional Elimination Rule
  - Conditional Proof/ Conditional Introduction Rule
  - Working With Bi-Conditionals
  - Reductio Ad Absurdum/ Indirect Proof
  - Disjunction Rules
- Practice With Proofs Using Multiple Assumptions
- Developing Derived Rules
Hallmark 3. Instructors will teach students how to apply formal rules or algorithms.

A simple set of formal rules will be introduced to students through a system of Natural Deduction complemented by Quantification Rules. Logical Equivalence rules will also be presented and students will have the opportunity to expand a basic system of inference rules by proving rules of replacement. Truth tables will be introduced as an algorithmic device that, in addition to stipulating the meaning of specific logical operators, provides a strictly mechanical means for demonstrating (in)validity and (in)consistency.

Sample Class Lectures:

- Using Truth Tables to determine truth value.
- Using Truth Tables to determine validity or invalidity
- Using Truth Tables to determine consistency and inconsistency
- Using Truth Tables to determine logical equivalency
- Logical Equivalence Transformation: A simple algorithm

Sample Questions for Essays and/or Short answer:

Sample Short answer/ problems:

- Construct a truth table for the following statement and determine the type of statement based on its resulting truth value profile.

\[ [A \Rightarrow (\sim B \lor A)] \land [B \lor (A \Rightarrow \sim B)] \]

Note: For all symbolic representations: Symbols may appear differently depending on operating system or program. Different symbols may also be used.

- Apply the tautology test to the following arguments to determine their validity.

\[
\begin{align*}
A & \Rightarrow B \\
B & \lor \sim A \quad /: B \\
A & \Rightarrow B \\
B & \Rightarrow A \\
\sim B & \quad /: A \\
C & \Rightarrow A \\
\sim C & \Rightarrow B \\
\sim B & \quad /: C \Rightarrow A
\end{align*}
\]

- Use the grid below to complete the table below to determine the truth value character of the statement, \((p \Rightarrow q) \Rightarrow \sim(p \lor q)\).

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<th>q</th>
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Provide truth tables that illustrate the validity of the following Rules of Inference:
- Conditional Introduction
- Disjunction Introduction
- Bi-Conditional Elimination

Complete the following table and assess the argument indicated for validity and consistency.

<table>
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<tr>
<th>A</th>
<th>B</th>
<th>P1 B v A</th>
<th>P2 ~ (B • ~A)</th>
<th>: A</th>
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Provide truth tables to determine if the following statements are contingent, tautologies or contradictions:
- p v ~p, ~p ≡ ~p, p & (q v r) ≡ (p & q) v (p & r)

Provide truth tables to determine the logical equivalence of the following pairs of statements:
- p v q and ~p ≥ q, p v (q & r) and (p v q) & (p v r), p ≡ q and ~(p & q) & (p v q)

Sample Class/ Homework Exercises:

Develop proofs for the following replacement Rules:
- Commutation: Conjunction Disjunction
- DeMorgan’s Theorem
- Material Implication
- Association: Conjunction and Disjunction

Sample Exam Questions: Proof Construction—Techniques and Strategies

Present deductive proofs of validity for the following arguments:

(C • A) ⇒ B
~A ⇒ ~B
B ⇒ D
C v D / : A ⇒ B

A ⇒ (B ⇒ C)
(~D • C) ⇒ E
D ⇒ ~ C / : A ⇒ (B ⇒ E)

~G ⇒ (C ⇒ D)
A ⇒ ~ G
D ⇒ (~ G • C)
~ ~ A / : C ⇒ D

(∀x) (Gx ⇒ ~Dx)
(∀x) [ Ix ⇒ (Tx ⇒ Dx)]
(∃x) (Tx • Ix) / : (∃x) (Dx • ~Gx)
(∃x) [(Ax ∩ Lx) ∧ (Ox ∩ Kx)]
(∀x) [(~Lx ∩ ~ Kx) ∨ ~Sx)] /: (∃x) [Ax ∩ (~Kx ∩ ~Sx)]

**Hallmark 4. Students will be required to use appropriate symbolic techniques in the context of problem solving, and in the presentation and critical evaluation of evidence**

**Sample Class Lectures:**
- The Value of Symbolization
  - The Problem of Ambiguity
  - The value of Objectivity
  - Bringing Structure into the Foreground
- Symbolization in Predicate
  - The Elements of Predicate
  - Language Keys in Predicate
- Symbolization in Sentential
  - The Elements of Sentential
  - Language Keys in Sentential
- Recognizing Logical Fallacies in Argument Structure
  - Fallacies of Material Implication
  - False Dichotomies
    - Inclusive vs exclusive disjunctions
  - Reasoning from small samples, Hasty Generalizations
- Necessary vs Sufficient Conditions
- Assessing Argument Quality: Different Criteria for Evaluation

**Sample Questions for Essays and/or Short answer:**

**Essay Questions:**
- Discuss the effectiveness of the logical language of Predicate to eliminate the logical ambiguity we find in natural languages. Use specific examples to illustrate your point. What ambiguities does Predicate present? Again, use specific examples to illustrate your point.
- Discuss the various facets from which an argument can be evaluated. Be sure to illustrate you points with specific examples.
- Discuss the relationship between validity and the truth value content of an argument.
- How does persuasiveness stand relationship to other evaluative criteria in the assessment of the quality of arguments?
- Discuss the role formal logical languages play in the analysis and evaluation of deductive arguments. What specific differences do the two languages (Predicate and Sentential) present? How can you know which one to choose when assessing the validity of a given argument?

**Short Answer Problems/Questions:**
- Given a true conditional statement, what valid inferences can be drawn?
- Given a true disjunction statement, what valid inferences can be drawn?
- Given a true bi-conditional, what valid inferences can be drawn?
• Use the following language key to provide an appropriate translation for each of the following. If the statement cannot be translated write “not a wff” in the space provided.

Key:  Let c = Charlys
      Let Cx = x is a criminal
      Let Kx = x has been convicted

1. \( \sim (\forall x)( Cx \implies Kx) \)
2. Charlys is a criminal.
3. \( \sim (\exists x) \sim Kx \)
4. Only criminals have been convicted.
5. Put #1 into standard form.
6. Simplify #5 using the Logical Equivalence and Double Negation Rules.
7. Present the general Predicate formula for any universal negative type categorical statement.

• Use the following Language Key and translate the statements that follow.
Let W = Weather systems will become more violent.
E = The earth’s atmosphere continues to warm
G = Humans continue using polluting fossil fuels.

1. It is false that both the earth’s atmosphere continues to warm and weather systems do not become more violent.
2. The earth’s atmosphere continues to warm if and only if humans continue to use polluting fossil fuels.
3. If humans continue to use polluting fossil fuels, then if the earth’s atmosphere continues to warm, weather systems will become more violent.
4. Weather systems will become more violent but humans will not continue using polluting fossil fuels.

Other Exam Questions

• Analyze the following arguments and then translate them into Sentential:

Even if the Israeli incursion into the occupied territories continues, it will not be successful in stopping terror since continued Israeli incursion means the Palestinian people will become angrier and the US will look weaker. If the Palestinians become angrier then their resistance to negotiation will strengthen; likewise, if the US looks weaker, its alliance with Arab countries will fragment and their resolve against Israel will heighten. But if either the Palestinian resistance to negotiation strengthens, or the US looks weaker and Arab resolve heightens, terror will not successfully be stopped.

Either the vote counts were mistaken or Santorum did win the Iowa caucuses by a narrow margin. If Santorum won by a narrow margin, then either Romney was the loser or some previously uncounted votes would have made the difference in the election. The vote counts were mistaken but still Romney still lost. For these reasons, some previously uncounted votes made no difference in the election’s outcome.

• Take the following arguments through a process of analysis into symbolization and then provide a proof of their validity. What if anything can you determine about their soundness?
All valid arguments are sound. Any sound argument is consistent and in fact has true premises. Arguments that are consistent and indeed have true premises should be persuasive. Therefore, valid arguments should all be persuasive.

Sound arguments should be persuasive because all sound arguments are valid. Furthermore, any valid argument has a solid structure and its conclusion in fact follows from its premises. Arguments that have a solid structure and whose conclusions follow from given premises, should be persuasive.

**Hallmark 5. The course will not focus solely on computational skills.**

**Sample Class Lectures:**
- Why We Reason
- Types of Argument: Deductive vs Inductive
- Argument: Analysis vs Evaluation
- Natural vs Artificial Languages
- Difficult Proofs: The Need for Strategy
  - Thinking Backwards
  - Diagramming Strategies

**Sample Questions for Essays and/or Short answer:**

**Essay Questions:**
- Discuss the difference between analysis and evaluation in the assessment of a deductive argument. What feature or features of arguments are logicians most concerned with and why?
- Distinguish between natural languages and artificial languages such as the logical language of Predicate. What advantages does Predicate present over natural language and why is it important or useful for logicians to have such a tool?
- Use Predicate to help you illustrate possible interpretations that expose the ambiguity in the following statements:
  - Everyone is not happy.
  - All the volunteers are not here.
  - It’s not true that John is a fireman and Mary is a lawyer.
  - Diamonds are expensive.

**Sample Class Exercise:**

The following arguments come from the writings of ancient philosophers in the Greek and Roman traditions. They illustrate how deductive logic was used to present arguments on a variety of topics. Consider their validity, their soundness and their persuasiveness.

1. That which is evil does harm; that which does harm makes a man worse. But pain and poverty do not make a man worse; therefore, they are not evil. Seneca

2. Death is one of two things. Either it is annihilation, and the dead have no consciousness of anything, or it is really a change – a migration of the soul to another place. Now if there were no consciousness . . . death must be a marvelous gain . . . If on the other hand death is a removal from here to some other place, what a greater blessing could there be than this. Plato, *The Apology*

3. Either the boy has at some time acquired knowledge (of geometry) which he now has, or he has always possessed it. If he always possessed it, he must always have known. If on the other hand he acquired it
some time previously, it cannot have been in this life, unless somebody has taught him geometry. . . . Has anyone taught him these things? I know that no one ever taught him. . . . Then if he did not acquire them in this life, isn’t it immediately clear that he possessed and learned them during some other period. 

Plato, *The Meno*

**Hallmark 6. Instructors will build a bridge from theory to practice and show students how to traverse this bridge.**

**Sample Class Lectures:**
- How and Where Do We Reason?
  - Reasoning and Argument
- What Makes Our Reasoning Deductive?
- Logic Applied: Boolean Operators in Advanced Searching Techniques
- Logic Applied: Preparing a simple tax return—Do you qualify for this deduction?

**Sample In-Class Exercises:**
- Recognizing Validity In Theory and Practice
- Applying Symbolic Techniques: Recognizing Logical Language in Everyday Argument
- Using Boolean Operators In Research
- Applied Deductive Reasoning: Sudoku
- Applied Deductive Reasoning: Argument in Philosophic Literature
- Applied Deductive Reasoning: What he said – where’s the argument?
Appendix B: Sample Syllabi

Syllabus: Phil 110 (Intro to Deductive Logic)

Prerequisite: Qualification for ENG 100
Recommended preparation: Qualification for Math 103
Instructor: Dr. Kyle Takaki, PhD
Email: ktakaki@hawaii.edu
Office Hours: Office hours are only via email; generally I should get back to you within 24 hours (usually quite a bit less). Be sure to keep your emails professional, clear, and focused on particular problems you are encountering.

Text: Language, Proof and Logic by Barwise and Etchemendy (you must buy a NEW book)

Grading: Homework: 40%; Midterm: 30%; Final: 30%. Homework (HW) is to be turned in on the dates indicated (before 12 that night). HW will be marked by points: 0 = no credit (less than 50% correct); 1 = credit (adequate work—between 50-75% correct); 2 = excellent work (at least 75% correct). HWs may be turned in late, but with restrictions: HWs more than a week late after the turn-in date will not be accepted under any circumstances; HWs less than a week late will only receive partial credit—one point will be docked from what you would have received if the assignment were turned in on time.

Expectations: This is an online course; it is expected that you keep up with the reading and the homework. On average, about 10 hours per week outside of “attending” the online lectures should be dedicated to reading, and working the homework problems.

Disability Support Services: If you have a documented disability and have not voluntarily disclosed the nature of your disability and the support you need, you are invited to contact the Disability Support Services Office (DSSO), 734-9552, Ilima 103, for assistance.

Upon successful completion of Phil 110, you should be able to:
- Use logical languages of Sentential and Predicate to translate arguments into and out of symbolic notation, supplying language keys as necessary.
- Employ a basic system of Inference Rules to present well-constructed proofs of validity for symbolized arguments.
- Correctly introduce and follow protocols governing the use of assumptions in deductive reasoning.
- Construct and read truth tables for arguments, statements and sets of statements, to include demonstrating (in)validity and (in)consistency.
- Explain the different criteria for assessing the quality of arguments and the particular importance of argument structure among these criteria.

(Course subject to change at instructor’s discretion.)

In your Laulima account, the lectures cover the major concepts in the book (LPL—Language, Proof, and Logic); the lectures and other downloadable files will also guide you through the homeworks. In general, please READ the relevant chapters in LPL first before OPENING the lectures in Laulima.

Note that ALL messages to students will be posted in Laulima (and/or your hawaii.edu email account), so please check your accounts on a regular basis.

Week 1

1/9: Open (Laulima) Lecture1: What is Logic? Read (book) LPL Introduction; install software
1/13: Read Chapters 1.1-3; continue to get acquainted with software (skim through Manual)

Last day to drop with a 100% tuition refund

Week 2

1/17 (Tues.): Open Lecture2. Read Valid and Sound Arguments Ch. 2.1, start HW1
1/20: HW1 due #1.1-1.4, 2.1-2; Lecture3 guides you through HW1. Read Proofs 2.2-4

Week 3

1/24 (Tues.): HW2 due 2.8, 10, 18, 20; Lecture4 will guide you. Read Nonconsequence 2.5
1/27: HW3 2.24-7; open Lecture5. Read Boolean Connectives 3.1-4

Week 4

1/30 Monday: HW4 3.3, 6, 7, 9, 10; open Lecture6. Read Ambiguity and Translation 3.5-7

Last day to drop with a 50% refund
2/3: HW5 3.15-16, 18, 21; open Lecture7. Read Tautologies 4.1

Week 5

2/6: HW6 4.2, 4, 5, 6; open Lecture8. Read Equivalence and Consequence 4.2-4
2/10: HW7 4.13, 18, 20, 23, 27; open Lecture9. Read Methods of Proof 5.1-3

Week 6
2/13: Read Formal Proofs 6.1-3. **Start working on HW8 (stuff gets hard here)**
2/17: HW8 6.2, 3, 5, 9, 11; open Lecture10. Read Subproofs and Strategy 6.4-6

**Week 7**
2/24: HW10 7.1, 2, 10, 11; open Lecture12. Read Formal Proofs 8.2

**Week 8**
Note that the midterm is a week away. The exam is to be taken at a UH testing facility; see the following website for a list of testing centers:
http://www.hawaii.edu/dl/faculty/prep/proctor_office.html
Make sure to call (except KCC; see below) the proctoring center of your choice by Tuesday, 2/28, to schedule an appointment and/or get familiar with the testing center’s hours, policies, etc.

For those taking the exam at KCC, you do NOT need to call to schedule an appointment, although you should visit their website to familiarize yourself with their policies:
http://www2.hawaii.edu/~kcctest

All of you MUST inform me (via email) WHEN and WHERE you are taking the exam by this Tuesday, 2/28 (FAILURE TO DO SO WILL RESULT IN A PENALTY). Please also call the testing center (except KCC) one working day before the exam to make sure that your exam is ready to take.

2/27: HW11 8.18-23; open Lecture13

**Week 9**
3/5-6 (MONDAY OR TUESDAY): Midterm. You will need to bring your UH ID to the exam. Please also call (except for KCC) the testing center one working day before the exam to make sure that your exam is ready to take.
3/9: Take a break

**Week 10**
3/12: Read Quantifiers 9.1-5
3/16: HW13 9.1-3, 5, 6, 9; open Lecture15. Read Translation 9.5-6

**Week 11**
3/23: HW15 10.1(#1-5), 2, 12, 13; open Lecture17. Read Equivalences and Axioms 10.3-5

Week12
Spring Break

Week13
4/2: HW16 10.22, 23, 26; open Lecture18. Read Multiple Quantifiers 11.1-2 (Last day to Withdraw, or change to Credit/NC, for KCC students)
4/6: HW17 11.3-5; open Lecture19. Read Translation 11.3 (hard)

Week14
4/13: Formal Proofs continued. Start working on HW19 (proofs...hard)

Week15

Week16
4/25 Wed: Quiz20
4/27: Open Lecture22

Week17

Note that the midterm is a week away. The exam is to be taken at a UH testing facility; see the following website for a list of testing centers:
http://www.hawaii.edu/dl/faculty/prep/proctor_office.html
Make sure to call (except KCC; see below) the proctoring center of your choice by Tuesday, 5/1, to schedule an appointment and/or get familiar with the testing center’s hours, policies, etc.

For those taking the exam at KCC, you do NOT need to call to schedule an appointment, although you should visit their website to familiarize yourself with their policies:
http://www2.hawaii.edu/~kcctest

All of you MUST inform me (via email) WHEN and WHERE you are taking the exam by this Tuesday, 5/1 (FAILURE TO DO SO WILL RESULT IN A PENALTY). Please also call the testing center (except KCC) one working day before the exam to make sure that your exam is ready to take.

Week18
**Final Exam**: May 4-9 (Friday through Wednesday). **Again, you must** inform me when and where you will be taking the exam. You will need to bring your UH ID to the exam. **Please also call (except for KCC) the testing center one working day before** the exam to make sure that your exam is ready to take.
Sample Syllabus 2

Syllabus Phil 110 Spring '12

KCC S2012
PHILOSOPHY 110: Introduction to Deductive Logic (3cr)
CLASSROOM: Kalia 201
Prerequisite: Qualified for English 100
Instructor: Sharon Rowe, PhD, MFA
CRN: 34687, 33445

OFFICE: Kalia 212
PHONE/VOICE MAIL: 734-9744
EMAIL: srowe@hawaii.edu

COURSE WEBSITE :www2@hawaii.edu/~srowe And through Laulima. The course website is an extension of the syllabus and should be thoroughly reviewed by all students the first week of class.

RECOMMENDED: Pencils and erasers (don’t use pen or overwrite–I won’t grade it), Lots of scratch paper, 3x5 cards (to help memorize stuff), colored pens, pencils or highlighters (to make patterns easier to see), a good pair of ears (for listening), your brain (for thinking), time (to practice).

Course Objectives: This course addresses the General Education Foundations requirement in Symbolic Reasoning (SR). For this reason the course will focus on concepts, techniques, and skills in formal, deductive reasoning. To illustrate the nature of deductive inference we will work with symbolic languages and a system of Inference Rules. A large focus of the course will be on presenting and building skills using logical languages and in systematically applying deductive reasoning using a 2-column method of proof. Truth tables will assist your understanding of how the meaning of logical operators is stipulated, and provide tools for assessing the truth value properties of statements and the structural quality of arguments. The concepts of soundness and consistency address the broader range of criteria used to assess the quality of arguments. Attention to Informal criteria and basic elements of inductive reasoning, including the study of fallacies will be studied as time allows.

Assignments & Assessment: Final grades reflect your level of understanding and ability to work with the material as reflected through grades received on the following assignments:

I. Homework to be handed in once a week and graded informally (20%) I use an Informal Grading System for homework:
**Full credit is given for ✓ and above.**

✓++ = Good understanding of all points. Should do well putting material together (B / A-)
✓+ = Basic understanding but some points need clarification. Read text, review notes (C /C-)
✓- = Missing important points. Read text, review notes, ask for help (D-/F).
✓- - = Major misunderstanding of key points. Read text/review notes, ask for help (F).
I = Incomplete. I cannot assess your understanding (full credit is not given)

NOTE ON HOMEWORK: Late homework receives no credit. You may turn it in for feedback. Be aware that exam grades often fall below grades given for homework.

**II. Flash Quizzes**: Unannounced quizzes will be given. (5@ 4 points each = 20%). Given first 5 minutes of class. NO MAKE-UPS. 5 best scores will be counted toward final grade.

**III. Vocabulary Quizzes** 2 @ 10% each. Beginning of weeks 3 and 7.* Study the glossary. Questions will be in the form of 10 True/false and 5-6 short answer.

**IV. Midterm on Logical Languages** (20%) Given end of 4 week*

**V. Cumulative Final** (20%) Given on final exam date.
CHECK “KCC WEBSITE” FOR SPECIFIC DATE

*tentative dates. Generally I will give these tests on Thurs and return them on Monday.

Two alternative assignments will be offered. Both are independent studies, and REQUIRE students meet with the instructor at least 4 times – once to initiate the assignment and determine how it will be credited, and 3x to review progress and learning.

**Informal Assignment**: Keep a journal from Mid Sept through Nov. Identify in your daily life–from what you hear, read, or perhaps think,– first statements, and then simple reasoning/arguments/inference patterns that you can recognize and that have been introduced in class. Note the date and place of each entry. As the semester goes on, apply the techniques of analysis and evaluation to the statements and arguments come across. You should have at least 1 entry/day; 5 / week. Max credit 10 /100 points.

**Formal Proof Construction**: For those who find they like doing proofs. Construct proofs for a series of classical Rules of Replacement or logical theorems. This assignment is in the Manual II. Credit will be given for each proof completed and reviewed with the instructor.

**COURSE COMPETENCIES**: Upon successful completion of Phil 110, the student should be able to:

- Use logical languages of Sentential and Predicate to translate arguments into and out of symbolic notation, supplying language keys as necessary
- Employ a basic system of Inference Rules to present well constructed proofs of validity for symbolized arguments
• Correctly introduce and follow protocols governing the use of assumptions in deductive reasoning.
• Construct and read truth tables for arguments, statements and sets of statements, to include demonstrating (in)validity and (in)consistency.
• Explain the different criteria for assessing the quality of arguments and the particular importance of argument structure among these criteria

FIRST ASSIGNMENT:
• Read the Dear Student Letter and come back with questions
• Read this Syllabus and review the course website thoroughly, and come back with questions
• Download the course Manual Part 1 AND THE GLOSSARY
  This requires ACROBAT READER.
• Manual should be brought to class EVERY day. It will need to bring a copy for work in class.
• You should study the glossary throughout the semester. A clear understanding of how vocabulary is used is critical to success in this course.

Tentative Course Sequence Phil 110

• You are responsible for reading The Manual as indicated below, identifying where you do not understand, asking questions that will help you to clarify your understanding and ability to complete the exercises in a consistent and accurate way.
• You should practice using given models and exercises until you are competent applying a given technique. This may mean redoing a given exercise set until it is pa’a pono (solidly known).
• We will follow the sequence below.
• If you miss class, you are responsible for the material covered. Check first with your teammates to know what is to be handed in for homework credit.
• If you do not understand, it is your responsibility to come and work individually with me. When in doubt – if you do what is stated below, you won’t be behind.

• Sequence of Readings and Exercises
• This is not a calendar but an outline of the sequence we will follow for the 1st half of the course. We may spend a day or we may spend 2 days on any given reading/exercise set. We may do 2 sets in one day. Your job is to follow the sequence.

Reading & exercises due
1 Read Manual I: pp.1-23 Exercises p. 17 & 22 Hand in evens only.
2 Read Manual I: pp 23-35 Exercises: p 28 in class/
3 Read Manual I: pp.36-38 Exercises: p 37 & 38 hand in evens only
4 Read Manual I: 39-42 Exercises: p 41-42 Hand in odds only
BE PREPARED FOR Vocabulary Quiz I
7 Read Manual I: pp 60-64 Exercises as needed
8 Review for Midterm Exam

Exercises will sometimes be done in class, and sometimes as homework. Some will be graded in class and some I will collect and grade. You MUST be in class or contact a team member to know what will be collected.
APPENDIX 2: Course Outline:

1. Course Alpha [required field]
   
   PHIL

2. Course Number [required field]
   
   110

3. Addition? Deletion? Modification? If this is a modification, what changes are proposed?
   
   Maximum enrollment is changed from 35 to 30.

   In accord with campus strategic plan and the department’s tactical plan to include: Goal 1: To promote learning and teaching for student success and Goal 6: To invest in the learning environment. The reasons for this include: Low success rate (approximately 50%); the same course is capped at between 20 to 30 at other CC campuses (depending on campus and on-line vs face to face sections), 25 at some. limited classroom space; the difficulty of the course is comparable with that taught at UH-Manoa which offers students 2 lecture/week + a lab once a week. Faculty are interested in promoting student success which requires more 1 on 1 communication so that we can discern what problems keep students from a) attending class, b) grasping material, c) achieving to their aptitude, etc.

4. Full Course Title for the Catalog [required field]
   
   Introduction to Deductive Logic

5. Date of this Course Outline [required field]
   
   05/30/2011

6. Prerequisite(s) for catalog text and linking to courses (click yellow prereq button to access linking level)
   
   ENG 100   Composition I (Qualification for)
   ENG 160   Business and Technical Writing (Qualification for)
   ESL 100   Composition I (Qualification for)
Prerequisite(s): Qualification for ENG100, ENG 160 or ESL 100.

7. Corequisite(s) for catalog text and for linking (click yellow coreq button to access linking level)

8. Recommended preparation for catalog text and for linking (click yellow Rec Prep button to access linking level)

9. Credits [required field]
   
   3

10. Repeatable for additional credits?
    
    NO

11. Maximum number of credits for student transcript
    
    3

12. Cross-listed
    
    NO

13. Contact Hours (type) [required field]
    
    - LEC (lecture)

14. Contact Hours (quantity) How many hours will the student spend per week in lectures, laboratories, lecture/labs, clinical, etc.? [required field]
    
    **3 hours lecture per week**

15. Course Description [required field]
    
    PHIL 110 is an introductory course in logic focusing on methods and principles of deductive reasoning. Integral to this study will be the presentation of methods for representing logical form
and the development of a system of inference rules and strategies that allow for the analysis and evaluation of deductive arguments.

16. Suggested Methods of Evaluation - Measures of Student Achievement [required field]

- Exam(s)
- Final Exam
- Homework
- Quiz(zes)

<table>
<thead>
<tr>
<th>Method of Evaluation</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Exam(s)</td>
<td></td>
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<tr>
<td>Final Exam</td>
<td></td>
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<tr>
<td>Homework</td>
<td></td>
</tr>
<tr>
<td>Quiz(zes)</td>
<td></td>
</tr>
</tbody>
</table>

17. Suggested Methods of Instruction [required field]

- Lectures
- Problem-based Learning (PBL)

18. General Education Student Learning Outcomes

<table>
<thead>
<tr>
<th>Thinking/Inquiry</th>
<th>Make effective decisions with intellectual integrity to solve problems and/or achieve goals utilizing the skills of critical thinking, creative thinking, information literacy, and quantitative/symbolic reasoning.</th>
<th>Level 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Communication</td>
<td>Ethically compose and convey creative and critical perspectives to an intended audience using visual, oral, written, social, and other forms of communication.</td>
<td></td>
</tr>
<tr>
<td>Self and Community/Diversity of Human Experience</td>
<td>Evaluate one's own ethics and traditions in relation to those of other peoples and embrace the diversity of human experience while actively engaging in local, regional and global</td>
<td></td>
</tr>
</tbody>
</table>
Aesthetic Engagement - Through various modes of inquiry, demonstrate how aesthetics engage the human experience, revealing the interconnectedness of knowledge and life.

Integrative Learning - Explore and synthesize knowledge, attitudes and skills from a variety of cultural and academic perspectives to enhance our local and global communities.

<table>
<thead>
<tr>
<th></th>
<th>Thinking/Inquiry</th>
<th>Communication</th>
<th>Self and Community/Diversity of Human Experience</th>
<th>Aesthetic Engagement</th>
<th>Integrative Learning</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exam(s)</td>
<td>✔</td>
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<tr>
<td>Final Exam</td>
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<tr>
<td>Homework</td>
<td>✔</td>
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<td>✔</td>
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</tbody>
</table>

GenED SLO
Thinking/Inquiry - Make effective decisions with intellectual integrity to solve problems and/or achieve goals utilizing the skills of critical thinking, creative thinking, information literacy, and quantitative/symbolic reasoning.

19. Program Student Learning Outcomes Addressed

Program SLO
Make effective decisions with intellectual integrity to solve problems and/or achieve goals utilizing the skills of critical thinking, creative thinking, information literacy, and quantitative/symbolic reasoning.

20. Specific course level Student Learning Outcomes [not currently used at KapCC]

21. Course Competencies with links [required field] (click yellow Competencies button to enter individual competencies), (to link with grading and Program SLOs use chain link icon in the upper
<table>
<thead>
<tr>
<th>Competency/MethodEval</th>
<th>Exam(s)</th>
<th>Final Exam</th>
<th>Homework</th>
<th>Quiz(izes)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Use logical languages of Sentential and Predicate to translate arguments into and out of symbolic notation, supplying language keys as necessary.</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
</tr>
<tr>
<td>Employ a basic system of Inference Rules to present well constructed proofs of validity for symbolized arguments.</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
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<tr>
<td>Correctly introduce and follow protocols governing the use of assumptions in deductive reasoning.</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
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<tr>
<td>Construct and read truth tables for arguments, statements and sets of statements, to include demonstrating (in)validity and (in)consistency.</td>
<td>✔️</td>
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<td>✔️</td>
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<tr>
<td>Explain the different criteria for assessing the quality of arguments and the particular importance of argument structure among these criteria.</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
</tr>
</tbody>
</table>

| Competency/PSLO | Make effective decisions with intellectual integrity to solve problems and/or achieve goals utilizing the skills of critical thinking, creative thinking, information literacy, and quantitative/symbolic reasoning. |
| Use logical languages of Sentential and Predicate to translate arguments into and out of symbolic notation, supplying language keys as necessary. | ✔️ |
| Employ a basic system of Inference Rules to present well constructed proofs of validity for symbolized arguments. | ✔️ |
| Correctly introduce and follow protocols governing the use of assumptions in deductive reasoning. | ✔️ |
| Construct and read truth tables for arguments, statements and sets of statements, to include demonstrating (in)validity and (in)consistency. | ✔️ |
| Explain the different criteria for assessing the quality of arguments and the particular importance of argument structure among these criteria. | ✔️ |

22. Course Content with links [required field] (click on the blue help icon in the upper right corner for details on how to fill out this field)
<table>
<thead>
<tr>
<th>Content/Competency</th>
<th>Use logical languages of Sentential and Predicate to translate arguments into and out of symbolic notation, supplying language keys as necessary.</th>
<th>Employ a basic system of Inference Rules to present well constructed proofs of validity for symbolized arguments.</th>
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</tr>
</thead>
<tbody>
<tr>
<td>10% Basic proof technique</td>
<td>☑</td>
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<tr>
<td>10% Application of assumption rules</td>
<td></td>
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</tr>
<tr>
<td>10% Application of Quantifier Rules</td>
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<td>☑</td>
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<td></td>
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<tr>
<td>10% Translating statements into Sentential</td>
<td>☑</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>10% Translating statements into Predicate</td>
<td>☑</td>
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<td></td>
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</tr>
<tr>
<td>10% Building and reading Truth Tables for statements</td>
<td></td>
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<td>☑</td>
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<td></td>
</tr>
<tr>
<td>10% Developing strategies of proof technique</td>
<td>☑</td>
<td>☑</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10% Building languages keys for Sentential and Predicate</td>
<td>☑</td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>10% Application of inference rules for logical operators</td>
<td>☑</td>
<td>☑</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10% Building and reading Truth Tables for arguments</td>
<td></td>
<td>☑</td>
<td>☑</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

23. Text and materials


24. Auxiliary Materials and Content

None

25. Reference Materials

None

26. Semester information

- FALL
- SPRING
- SUMMER

27. Effective Term [required field]

Fall 2011

28. Suggested Methods of Delivery

- Online
- Traditional Classroom

29. Grading Options [required field]
• Audit
• Credit/NoCredit
• Letter grade

30. Grading Scale and Weighting Suggestions (reflect suggested selections from #16) [required field]

Suggested Grading Scale:
90 - 100% = A
80 - 89% = B
70 - 79% = C
60 - 69% = D
less than 60% = F

Weighted Grading:

25% Homework
25% Quizzes
25% Final Exam
25% Exams

Whatever method of evaluation is used, it is understood that the instructor reserves the right to make necessary and reasonable adjustments to the evaluation policies outlined.

31. Is the course required or an elective in a degree or certificate program? If so, name the degree or certificate where the course is required.

Elective

32. For what program(s) was the course designed? Will the course lengthen the time for the students to complete the program? Will it replace another course?

AA Liberal Arts

no

no
33. Will this course proposal increase or decrease the number of required hours needed for a certificate or degree? Yes/No If yes, provide justification.

No

34. Will this proposal require a change in staff, equipment, facilities, or other resources?

No

35. Do we have a full-time faculty member who meets the requirements to teach this course? If not, who will teach the course?

Yes

36. Is this an experimental course seeking regular status? Yes/No If "Yes", what was the experimental number and when (what semesters/years) were the experimental classes offered?

No

37. How is this course related to the educational needs and goals of the division, college, and community as reflected in the Strategic Plan? How is it related to courses and programs?

Problem-solving and decision-making abilities

38. Basic skills (reading, writing and analytical) needed for success in the course. The concern here is with the skill levels required of students rather than the level of material in the class.

Students should be ready to read and write and analyze at the college-ready level.

39. Amount (quantity) and level of reading, writing or other independent work required. As a rule of thumb, much of the reading material for a freshman level course should be at 12th or 13th grade level.
5 hours of independent reading and practice at a 13 grade level is required.

40. Amount (quantity) and level of quantitative and logical reasoning required. Where the course involves use of mathematics, a minimum of one year of high school algebra, or its equivalent, as background for the course would be required for transfer courses.

High school algebra or equivalent.

41. Background knowledge in related subject matter expected of students entering the course. Is a course based on the expectation that students will have completed normal high school courses in related areas?

None

42. Expectations for student participation outside of class. Students are expected to spend at least three hours outside of class for every hour in class by means of the following activities:

- Homework Assignments

43. Justify the level of proposed course: 100 level, 200 level, 300 level, or lower than 100 level.

Introductory level course applicable to baccalaureate degree

44. Identify similar courses at other UH colleges: list college, alpha, number, title, and credits for each. If it differs in important ways, explain how.

Honolulu Community College    PHIL 110  Introduction to Logic       3 credits
Windward Community College    PHIL 110  Introduction to Logic       3 credits
Leeward Community College     PHIL 110  Introduction to Logic       3 credits
Kaua‘i Community College      PHIL 110  Introduction to Logic       3 credits
Maui Community College        PHIL 110  Introduction to Logic       3 credits
University of Hawai‘i-Manoa    PHIL 110  Introduction to Deductive Logic 3 credits

45. Is a similar course taught on the upper-division level by a four year UH college? If so, explain why
this course is appropriate at the lower division, or how it differs from its upper-division counterpart.

None

46. Is this course appropriate for articulation with the UH Manoa General Education Core Requirements? Yes/No

Yes

47. Is the course currently articulated with any two or four-year program at another UH institution? If so, give details and dates of agreement(s) and explain any impact the proposed change may have upon articulation. (Please note that this is NOT a reference to UHM Gen Ed articulation.)

No

48. Maximum enrollment per class section? (and justification if maximum enrollment is not standard) [required field]

30

49. Number of sections per semester or year?

4 to 5 per semester

50. Exclude from catalog? Yes/No

NO

51. Justification

Course update for 5 year review. Linking course competencies to course content, updating for 5 year cycle, linking course competencies to program SLOs and Gen Ed SLOs

Class cap from 35 to 30: Justification-In accord with campus strategic plan and the department’s tactical plan to include: Goal 1: To promote learning and teaching for student success and Goal 6: To invest in the learning environment. The reasons for this include: Low success rate (approximately 50%); the same course is capped at between 20 to 30 at other CC campuses (depending on campus and on-line vs face to face sections), 25 at some. limited classroom space; the difficulty of the course is comparable with that taught at UH-Manoa which offers students 2 lecture/week + a lab once a week. Faculty are interested in promoting student success which requires more 1 on 1 communication so that we can discern what problems keep
students from a) attending class, b) grasping material, c) achieving to their aptitude, etc.

52. Special Comments for Catalog

53. Status (active/inactive)
   Active

54. Restricted to Specific Semester(s)

55. Explain the reason for and purpose of prerequisites, corequisites, and recommended preparation [Kap CC Faculty Senate requirement if have prereqs/coreqs/rec preps]

Phil 110 has a prerequisite of "Qualification for English 100." This prerequisite is to ensure that students have a basic knowledge of sentence structure and the relationships between statements. In order to be successful in Phil 110 students must be able to perform subject-predicate analysis of categorical statements, identify simple statements within compounds, analyze and identify how statements function in an argument context.

56. AA General Education Area (contact the Faculty Senate for directions on completing documentation for Foundations categories FS, FW, FGA, FGB, FGC)

   AA/FS

57. AA General Education Extra

58. AS General Education Area

59. AS General Education Extra

60. Banner title (30 characters or fewer) [required field]

   Introduction to Deductive Logic

Outline Information
<table>
<thead>
<tr>
<th>Proposer:</th>
<th>SHARON ROWE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Progress:</td>
<td>APPROVED</td>
</tr>
<tr>
<td>Modify Date:</td>
<td>05/30/2011</td>
</tr>
<tr>
<td>Approved Date:</td>
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