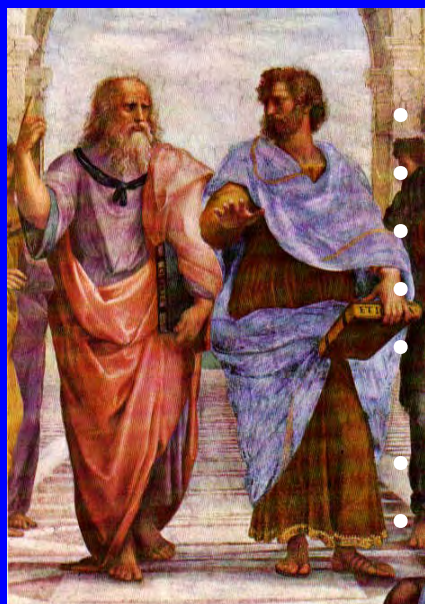


# PRACTICAL LOGIC

Bryan Rennie



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## GENERAL NOTES ON THIS CLASS

### THE SET TEXTS

ITL = *Introduction to Logic*, by Irving Copi, Carl Cohen, and Kenneth McMahon (14th edition).

E-text: ISBN-13: 978-0205829088 | ISBN-10: 0205829082

### COURSE OBJECTIVES

This course is an introduction to the basics of logic as an academic discipline. We will consider what logic is. It is the study of the distinction between valid and invalid reasoning. Having established our working attitude to logic we will

investigate the basic terms, forms, types, and style of argument and the uses of language in argument. To that end the basic vocabulary of logic and argument must be learned.

Our most extensive analysis will be of deductive logic, that is to say, arguments which produce logically necessary conclusions once their premises are accepted. The standard forms of such arguments will be analyzed, and their accompanying fallacies noted. The symbol systems used to express and analyze these forms will be practiced.

The overall objective of this is two-fold: first, it will inform students of the precise and formal nature of logical proof (and its relative rarity); second, exposure to and practice with arguments and their identification as valid or invalid should greatly sharpen the students' natural skill at validating arguments and constructing their own valid arguments. This last is in many ways the final objective of this course.

Our final detailed consideration will be of informal fallacies, those common errors which render arguments invalid in common language argument. Once again the difficulties of irrefutable argument and final proof will be encountered.

So the course objectives can be stated to be:

1. To learn what an argument is. What components does it contain, what assumptions does it make?
2. To learn what makes a good argument. Why does a given conclusion follow from certain assumptions?
3. To learn what makes a bad argument. Why are certain conclusions not entailed by certain propositions?

## **COURSE REQUIREMENTS**

### **Attendance**

Since this is a once-per-week, three-hour long evening class, attendance is *crucial*. Missed classes will be penalized.

Learning good logic skills is like learning both language and manual skill--they require practice, both physical and mental. To that end all students will be required to answer questions, solve problems, and do exercises from the textbook in class. Note that these exercises are not graded. All you need to do is to demonstrate to the instructor and to the class that you have made an effort to complete them. It is your responsibility to raise questions about points which you have not understood. This is your opportunity to seek clarification on difficult passages. You are NOT automatically expected to fully understand everything you read.

**IF STUDENTS DO NOT MAKE AN EFFORT TO PERFORM THESE EXERCISES POINTS WILL BE SUBTRACTED FROM THEIR TOTAL.**

### **Homework**

There will be a certain amount of reading homework after every class to ensure a constant and ongoing effort to master each section before moving on to the next. This homework will not be handed in and will not be graded as such. It is for your own good rather than for the grading process. However, questions will be asked about the homework at the start of each class, and *if it is apparent that you have not done it points will be subtracted*. Time will be allowed in class to attempt the exercises but they must be studied beforehand as homework.

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## **GRADING**

Grading will be done on a points system up to a maximum of 400 total possible points:

1. Quizzes (7 @ 30 points) These quizzes are the most important element of

the course and are meant to ensure steady effort and ongoing understanding. **WARNING:** Failure to score a passing grade on any quiz will result in the loss of all point for that quiz. 210 points = c.52%.

2. **Computer Exercises.** Although these exercises will not be graded for performance 100 points will be given for simply completing them. *Up to one quarter of your total grade points can be lost by not doing the required exercises.* 100 points = 25%
3. **Final examination** This will review the whole course so the start is not forgotten at the end. **WARNING:** Failure to pass the final is failure to pass the course. 90 points = c.23%

The written quizzes will take a form similar (but not identical) to these [sample quizzes](#).

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# SAMPLE QUIZ QUESTIONS

[Quiz #1](#) | [Quiz #2](#) | [Quiz #3](#) | [Quiz #4](#) | [Quiz #5](#) | [Quiz #6](#) | [Quiz #7](#) |

## SAMPLE QUIZ #1

(ITL Chapter One)

1. Explain the difference between deduction and induction.
2. Define "argument."
3. What is "inference?"
4. In the following argument mark the premises with "p," and the conclusion with a "c."  
Dave's car is dangerous. It has bald tires and bad brakes and bald tires and

bad brakes are dangerous.

5. Is the preceding argument valid?
6. Indicate which of the following sentences (1-3) are correctly described by the following terms (a-c).
  - 1) If I understood all this I'd be a genius. 2) What am I, a genius? 3) I'm a geniusa) rhetorical question, b) hypothetical statement, c) proposition
7. Sort the following terms into conclusion indicators and premise indicators: therefore . . , for the reason that . . , as a result . . , which implies that . . , . . may be deduced from, inasmuch as . . , hence, accordingly, proves that . . , for . . , so . . , I conclude that . . , because . . , since . . , follows from . . .
8. Which of the given passages are arguments, which are explanations? (For examples see ITL 1.4)

## SAMPLE QUIZ #2

(ITL Chapters Two and Three)

1. Paraphrase the following argument.
2. Diagram the following argument.
3. Solve the following problem.
4. What are the five functions of language?
5. What functions of language do the given examples serve? (Egs. ITL pp. 66 - 71).
6. Identify the kinds of agreement or disagreement most probably exhibited by the following paired passages.
7. Exchange the expressive or ceremonial terms in the given paragraph with emotively neutral language. Be careful not to lose any informative significance.
8. Identify the disagreements of belief and the disagreements of attitude in the given examples. (Egs. ITL pp. 76 - 79)

# SAMPLE QUIZ #3

(ITL Chapters Three & Five)

1. Arrange the following groups of terms in order of increasing intension. (Egs. ITL 89)
2. Define the following terms by example/by genus and difference. (Egs. ITL 91. 98).
3. Name the *form* of the given propositions. Give both the name (eg. universal affirmative) and letter (eg. "A") identification.
4. Identify the subject and predicate terms in the following propositions. Are they distributed or undistributed. (egs.)
  - Some television presenters are not responsible citizens.
  - No poets are aggressive.(More egs. ITL pp. 184-85.)

The following material will be covered in class 2/17 immediately before the quiz.

5. Draw the traditional/Aristotelian square of oppositions.
6. What immediate inferences can be made from the following propositions? (Assuming these propositions to be true.) (egs.)
  - All successful business executives are intelligent people.
  - No college professors are entertaining lecturers.(More egs. ITL p. 201-02)
7. Define the following immediate inferences (egs.):
  - conversion
  - obversion
  - contraposition
8. Given a certain proposition determine whether following propositions are its converse/obverse/contrapositive/subalternate. If the first given proposition is true, are the following propositions true? That is to say, are

these valid immediate inferences?

- Given a sequence of immediate inferences which are valid by Aristotelian logic, identify where an existential fallacy occurs.
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## SAMPLE QUIZ #4

(ITL 5.7 - 6.5)

- Express the given propositions as equations (eg.  $SP = 0$ , etc.) *and* as Venn diagrams for propositions.
- Rewrite the given arguments in standard form, *indicating their mood and figure*.
  - No motorcycles are safe forms of transport, so, since some police vehicles are motorcycles, some safe forms of transport are not police vehicles.
  - All proteins are organic compounds, whence all enzymes are proteins, as all enzymes are organic compounds.

[The four figures are: 1st - (M-P\S-M), 2nd - (P-M |S-M), 3rd - (M-P| M-S), 4th - (P-M/M-S). You might also remember: maim, Imam, mime, ammo]

- Attempt to refute the given arguments by constructing logical analogies, that is, arguments of the same form which are more obviously fallacious.
- Use a Venn diagram to test the validity of the given arguments. Write out the argument using S, P, and M, both in standard form (No S is P etc.) and in logical notation ( $SP = 0$  etc.)

5. Fill in the blanks in the Six Rules and Fallacies for categorical syllogisms.
6. Name the fallacies committed or the rules broken by syllogisms of the given forms.
7. Name the fallacies committed or the rules broken by the given syllogisms.
  - Some carbon compounds are not precious stones.
  - Some carbon compounds are diamonds.
  - Therefore some diamonds are not precious stones.
  
  - All people who are most hungry are people who eat most.
  - All people who eat least are people who are hungry.
  - Therefore all people who eat least are people who eat most.
8. Answer the given question(s) with reference to the six rules. Explain how you reach your conclusion. For example:
  - In what figure or figures, if any, can a valid standard-form categorical syllogism have two particular premises?
  - In what figure or figures, if any, can a valid standard-form categorical syllogism have a particular premise and a universal conclusion?
  - What are the possible valid forms of a standard form syllogism with an A/E/I/O conclusion?

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## SAMPLE QUIZ #5

(ITL Chapter Seven)

1. Translate the following propositions into standard-form categorical propositions.

Only power-hungry people become politicians.

- If he isn't rich he isn't successful.
- There are also positive reasons to vote.

2. Translate the following propositions into standard form with the help of appropriate parameters.

- Politicians always criticize other politicians when they want to conceal their own shortcomings.
- The use of violence is sometimes beneficial.
- People in subordinate positions do not complain unless provoked.

3. Translate the following syllogistic argument into standard form and then

(a) Name the mood and figure of the standard form translation.

(b) Test its validity using the six syllogistic rules.

(c) If it is invalid name the fallacy committed.

- Everyone who smokes marijuana goes on to try heroin. Everyone who tries heroin becomes addicted to it. So everyone who smokes marijuana becomes addicted to it.

4. Translate the following syllogistic argument into standard form and then

(a) Name its mood and figure.

(b) Test its validity using a Venn diagram.

(c) If it is invalid name the fallacy committed.

- There are plants growing here, and since vegetation requires water, water must be present.

5. Explain briefly what (a) Enthymemes and (b) Sorites are.

6. Are the following arguments (I, II, & III)

(a) disjunctive, pure hypothetical, or mixed hypothetical?

(b) Are they valid or invalid?

(c) If they are invalid what fallacy do they commit? Identify modus ponens or modus tollens forms where applicable.

I. If the one-eyed prisoner does not know the color of the hat on his own head, then the blind prisoner cannot have on a red hat. The one-eyed prisoner does not know the color of the hat on his own head. Therefore the blind prisoner cannot have on a red hat.

II. If this syllogism commits the fallacy of affirming the consequent then it is invalid. It does not affirm the consequent, therefore it is valid.

III. The stranger is either a knave or a fool. The stranger is a knave, therefore he is no fool.

7. Attempt to refute the following dilemmas. Explain your reasoning. Can you grasp the horns of the dilemma or go between the horns?

I. If the conclusion of a deductive argument goes beyond the premises, then the argument is invalid, while if the conclusion of a deductive argument does not go beyond the premises, then the argument brings nothing new to light. The conclusion of a deductive argument must either go beyond the premises or not go beyond them. Therefore either deductive arguments are invalid or they bring nothing new to light.

II. If Socrates died, he died either when he was living or when he was dead. But he did not die while he was living; for assuredly he was living, and as living he had not died. Nor when he had died, for then he would be dead twice. Therefore Socrates did not die.

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## SAMPLE QUIZ #6

(ITL Chapter Eight)

(questions could have multiple examples)

1. Using the truth tables for conjunction, disjunction, and negation determine which of the given statements are true. (egs. 8.2.I)
2. Rewrite the given statement in symbolic form using parentheses (), brackets [], and braces {} in the correct order. (egs. 8.2.IV)
3. If A & B are true statements and X & Y are false statements which of the following are true? (egs. 8.3.I)

4. If A & B are true statements and X & Y are false statements and the values of P & Q are unknown, which of the given statements can be determined to be true or false? (egs. 8.2.III and 8.3.II)
  5. Give the specific forms of the given statements and the given arguments. (8.4.I and 8.5.A)
  6. Use truth Tables to identify which of the given statement forms are tautologous, self-contradictory, or contingent. (egs. 8.5.II)
  7. Which of the given biconditionals are tautologies? (egs. 8.5.III)
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## SAMPLE QUIZ #7

(ITL Chapter Four)

Name and explain the following fallacies. These have been selected to be clear examples of certain single fallacies. Select ONE explanation only for each example.

1. You should avoid four letter words. “Work” is a four letter word. So you should avoid work.
2. A public lecture was delivered on smoking as a cause of cancer in the Orr Auditorium. Several students have undertaken never to smoke in that building again.
3. Every player of the Washington Redskins is a better player than his opposite number in the Green Bay Packers. So the Redskins are the better team.
4. The local chapter of Phi Sigma Tau has a collective I.Q. of 190, so Dr. Rennie, who is a member, must have an I. Q. of 190.
5. All plants produce chlorophyll, so the GM plant in Detroit produces chlorophyll.
6. “I think I like hot dogs more than you.”  
“Well, if that’s the way you feel, I never want to see you again.”
7. A recent poll shows that 75% of the people have changed their voting

allegiance. You should change yours, too.

8. I deserve a B+ on this course. If I don't get a B+ I won't be able to graduate next Fall.
9. You shouldn't take Dan's arguments about farming subsidies seriously since he manages one of the largest farms in the area..
10. Yesterday I had a wonderful stroke of luck just after I had seen a black cat. So black cats are lucky.
11. It is only when it is believed that I could have acted otherwise that I am held to be morally responsible for what I have done. For a man is not thought to be morally responsible for what it was not in his power to avoid.
12. There is no such thing as a leaderless group. For, though the style of leadership will differ with each group, a leader will always emerge in a task oriented group or the task will never get done.
13. Do you realize that the majority of painful animal experimentation has no relationship whatever to human survival or the elimination of disease?
14. Scientists hope that fish treated with new growth hormones will grow bigger, faster than normal fish. Other scientists are developing fish that could be introduced into cold Northern waters where they cannot now survive. The intention is to boost fish production for food. The economic benefits may be obvious, but not the risks. Does this make the risks reasonable? No, they are not.

## Section Two.

The fallacies in the following section are slightly more complex. If you can identify more than one fallacy do so. Explain them both, and state which you take to have logical priority, that is, to be most important to the apparent argument

1. Opponents of monopolies claim they are unfair insofar as they limit competition. But when AT&T was synonymous with the telephone company, we had the most efficient telephone system in the world. When Standard Oil dominated the petroleum industry, there was cheap gasoline for everyone. When 'Carnegie' meant steel, America dominated steel production. So, obviously, monopolies are extremely efficient.

2. To press forward with a properly ordered wage structure in each industry is the first condition for curbing competitive bargaining; but there is no reason why the process should stop there. What is good for each industry can hardly be bad for the economy as a whole.
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## SCHEDULE OF CLASSES

**The class will meet on Tuesday from 6:30 to 9:30 in Patterson Hall 105. I will be available in my office in Paterson 336 on Monday, Wednesday, and Friday from 11:30 to 12:30, on Tuesday and Thursday from 3:30 to 4:30, and by arrangement.**

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Week: [1](#) | [2](#) | [3](#) | [4](#) | [5](#) | [6](#) | [7](#) | [8](#) | [9](#) | [10](#) | [11](#) | [12](#) | [13](#) | [14](#)

Click the number to see the week.

### **Week 1.**

#### **Tuesday, 1/13**

Introduction to the course, the textbook, "[e-logic](#)," and the class webpage.

ITL Chapter One: Introduction.

ITL 1.1 - What Logic Is.

ITL 1.2 - Propositions and Arguments.

ITL 1.3 - Recognizing Arguments.

Computer exercises: "Basic Logical Concepts."

Homework: Read ITL Chapter One. Do exercises from 1.3 to 1.5.

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## **Week 2.**

**Tuesday, 1/20**

Questions on the Homework.

ITL 1.4 - Arguments and Explanations.

ITL 1.5 - Deductive and Inductive Arguments.

ITL 1.6 - Validity and Truth. Summary of Chapter 1.

QUIZ ON CHAPTER ONE ([Sample](#))

Computer exercises: "Basic Logical Concepts."

Homework: Read Chapter Two. Do exercises from 2.1, 2.2, & 2.3.

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## **Week 3.**

**Tuesday, 1/27**

Chapter Two - Analyzing Arguments.

ITL 2.1 - Paraphrasing Arguments.

ITL 2.2 - Diagramming Arguments.

ITL 2.3 - Complex Argumentative Passages.

ITL 2.4 - Problems in Reasoning.

Questions on the Homework.

Computer exercises: "Analyzing Arguments, Diagramming Arguments, Complex Argumentative Passages, and Problems in Reasoning."

## Homework: Online Exercises, Homework 3.1. Preparation for Quiz #2 ([Sample](#)).

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### Week 4.

#### Tuesday, 2/3

ITL Chapter Three - Language and Definitions.

ITL 3.1 - Language Functions.

ITL 3.2 - Emotive Language, Neutral Language, and Disputes.

ITL 3.3 - Disputes and Ambiguity.

ITL 3.4 - Definitions and their Uses.

Quiz #2 ([Sample](#)).

Homework: Read Chapter Five, parts 4 & 5.

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### Week 5.

#### Tuesday, 2/10

Part II. Chapter Five: Deduction.

ITL 3.5 - The Structure of Definitions: Extension and Intension.

ITL 3.6 - Definition by Genus and Difference.

ITL 5.1 - The Theory of Deduction.

ITL 5.2 - Classes and Categorical Propositions.

## Computer exercises: "Homework 3.5 - 3.6"

Homework: Read Chapter Five, 5.3 -5.6.

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### Week 6.

**Tuesday, 2/17**

ITL 5.3 - The Four Kinds of Categorical Propositions.

ITL 5.4 - Quality, Quantity, and Distribution.

ITL 5.5 - The Traditional Square of Opposition.

ITL 5.6 - Further Immediate Inferences.

QUIZ #3 ([Sample](#)).

Homework: Read Chapter Six, parts 1 through 3. Do exercises.

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### Week 7.

**Tuesday, 2/24**

ITL 5.7 Existential Import and the Interpretation of Categorical Propositions.

ITL 5.8 Symbolism and Diagrams for Categorical Propositions.

ITL 6.1 - Standard Form Categorical Syllogisms.

ITL 6.2 - The Formal Nature of Syllogistic Argument.

Questions on the Homework.

Computer exercises: "Categorical Syllogisms," parts 1 - 3.

Homework: Read Chapter Six, parts 4 and 5.

Learn the [rules and fallacies](#).

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**Week 8.**

**Tuesday, 3/3**

ITL 6.2 - Concluded: Refutation by Logical Analogy.

ITL 6.3 - The Venn Diagram Technique for Testing Syllogisms.

ITL 6.4 - Syllogistic Rules and Syllogistic Fallacies.

ITL 6.5 - Exposition of the 15 valid forms of categorical syllogism.

We will spend part of this class reviewing the question of categorical standard form syllogisms and the processes of assessing their validity. The quiz will follow immediately after.

QUIZ #4 ([Sample](#)).

Computer exercises: "Categorical Syllogisms," parts 4 - 5.

Homework: Read Chapter Seven, parts 1 - 4.

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Spring Break: Saturday 7th through Sunday 15th

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**Week 9.**

**Tuesday 3/17**

ITL Chapter Seven: Syllogisms in Ordinary Language.

ITL 7.1 - Syllogistic Arguments.

ITL 7.2 - Reducing the number of terms to three.

ITL 7.3 - Translating Categorical Propositions into Standard Form.

ITL 7.4 - Uniform Translation.

Questions on the Homework.

Computer exercises: "Arguments in Ordinary Language," parts 1 - 4.

Homework: Read Chapter Seven, parts 5 - 8.

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## **Week 10.**

**Tuesday, 3/24**

ITL Chapter Seven - Arguments in Ordinary Language.

ITL 7.5 - Enthymemes.

ITL 7.6 - Sorites.

ITL 7.7 - Disjunctive and Hypothetical Syllogisms.

ITL 7.8 - The Dilemma.

Summary of Chapter Seven.

Computer exercises: "Arguments in Ordinary Language," parts 5 - 8.

Homework: Read Chapter Eight, parts 1 - 4.

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## **Week 11.**

## **Tuesday, 3/31**

Quiz #5 ([Sample](#)).

ITL Chapter Eight - Symbolic Logic.

ITL 8.1 - Modern Logic and its Symbolic Language.

ITL 8.2 - The Symbols for Conjunction, Negation, and Disjunction.

ITL 8.3 - Conditional Statements and Material Implication.

ITL 8.4 - Argument Forms and Refutation by Logical Analogy.

ITL 8.5 - The Precise Meaning of Valid and Invalid.

Questions on the Homework.

Computer exercises: "Symbolic Logic," parts 1 - 4.

Homework: Read Chapter Eight, parts 5 - 8 (up to section D).

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Easter Break: Thursday 2nd through Monday 6th

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## **Week 12.**

### **Tuesday 4/14**

Review of 8.1 - 8.4: Symbolic Logic to Argument Forms and Arguments.

ITL 8.6 - Testing Argument Validity using Truth Tables.

ITL 8.7 - Some Common Argument Forms.

ITL 8.8 - Statement Forms and Material Equivalence.

ITL 8.9 - Logical Equivalence and DeMorgan's Theorems.

ITL 8.10 - The Three "Laws of Thought."

QUIZ #6 ([Sample](#))

Homework: Read Chapter Eight, part 6 to 8.

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**Week 13.**

**Tuesday, 4/21**

ITL Chapter Four - Informal Fallacies.

ITL 4.1 - What is a Fallacy?

ITL 4.2 - Classification of Fallacies.

ITL 4.3 - Fallacies of Relevance.

ITL 4.4 - Fallacies of Defective Induction.

Computer exercises: ITL 4.3 & 4.4.

Questions on the Homework.

Homework: Read Chapter Four on informal fallacies. Practice fallacy recognition.

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**Week 14.**

**Tuesday, 4/28**

Last Day of classes

ITL 4.5 - Fallacies of Presumption.

ITL 4.6 - Fallacies of Ambiguity.

Computer exercises: 4.5 & 4.6.

Quiz #7 (Sample).

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The **final examination** will take place on Tuesday May 5<sup>th</sup> from 6:30 to 9:30 in PH 105.

Term ends Saturday, May 9<sup>th</sup>.

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## The Six Rules of Standard-Form Categorical Syllogisms

(and corresponding fallacies)

1. A valid standard-form categorical syllogism must contain exactly three terms, each of which is used consistently in the same sense throughout the argument. (If not--fallacy of four terms, *quaternio terminorum*.)
2. In a valid standard-form categorical syllogism, the middle term must be distributed in at least one premise. (If not--fallacy of the undistributed middle.)
3. In a valid standard-form categorical syllogism, if either term is distributed in the conclusion, then it must be distributed in the premises. (if not--illicit major or illicit minor depending on where the undistributed term occurs.)
4. No standard-form categorical syllogism having two negative premises is valid. (If it does--fallacy of exclusive premises.)  
Note that this rule renders all standard-form categorical syllogisms of EO\*, EE\*, OE\*, AND OO\* moods INVALID, regardless of their figure.
5. If either premise of a valid standard-form categorical syllogism is negative,

the conclusion must be negative. (Drawing an affirmative conclusion from a negative premise is a fallacy.)

Note that this rule renders all standard-form categorical syllogisms which have a positive conclusion (\*\*A or \*\*I) and any negative premises (E or O) INVALID regardless of their figure.

6. No valid standard-form categorical syllogism having a particular conclusion can have two universal premises. (If it does it commits the existential fallacy.) Note that this rule renders all standard-form categorical syllogisms with particular conclusions (\*\*I or \*\*O) and two universal premises (AA, EE, AE, EA) INVALID regardless of their figure.

## Symbols used in Basic Logic.

Symbol used in class	Alternative form of Symbol	Name of symbol in class	Alternative Name(s) of symbol	Corresponding Verbal expressions
$S \supset R$	$S > R$	material implication	consequence	S implies R. R is a consequence of S. S has R as a consequence. If S then R. R given S. S only if R. S is a sufficient condition for R. R is a necessary condition for S.
$S \equiv R$	$S \leftrightarrow R$	equivalence		S is equivalent to R. R is equivalent to S. S if and only if R. R if and only if S.
$S \vee R$		disjunction		S or R. Either S or R. S unless R. Note that all these can be reversed.
$\sim S$		negation		not S

				<b>It is not the case that S</b>
<b>H ? E</b>		<b>conjunction</b>		<b>H and E</b> <b>the conjunction of H and E</b> <b>both H and E</b> <b>H but E</b>

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**Back**

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## The Logic Final Examination

(Failure to pass the final will be failure to pass the course --no matter what your other grades may be.)

The exam will consist of a total of 20 questions covering:

- Definitions of the basic terms of logic, such as argument, inference, premise, etc.
- The relationship of premises and conclusions.
- Basic argument diagrams showing premises and conclusions, independent and co-dependent premises.
- The distinction between argument and explanation.
- Aristotelian analysis of standard form categorical propositions: A, E, I, and O propositions and the rules of distribution.
- The Aristotelian square of the oppositions and the immediate inferences involved.  
(Remember that inferences are best defined in terms of their respective truth and falsity: eg. contraries cannot both be true, but they can both be false).

- The other immediate inferences.
- Venn diagrams for categorical propositions and standard form categorical syllogisms.
- The Rules and Fallacies of standard form categorical syllogisms.
- Mood and figure (you will be given the four figures)
- The common valid argument forms; disjunctive syllogism, pure and mixed hypothetical syllogism (modus ponens and modus tollens are the two *valid* forms).
- Basic Symbolic Logic including:

Deriving the truth of a compound statement by applying the definitions of conjunctions, disjunctions, and hypotheticals,

Showing the specific forms of arguments as conditional statements,

The use of truth tables to determine validity,

## DeMorgan's Theorems.

- Informal fallacies: you will be given three fallacies and three examples and asked to fit the definition to the fallacy. You will also be asked to define three named informal fallacies.