

CS 100 - Exam 1 Review Suggestions - Fall 2012

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- You are responsible for material covered in class sessions, required reading, and homeworks; but, here's a quick overview of especially important material.
 - This exam covers all class lectures up through and including Week 7 Lecture 1, Chapters 1, 2, 3, and 5 in the course textbook, and all homeworks up through and including Homework 7
 - (You are **not** responsible for Chapter 6 - Logical Fallacies - II - Fallacies of Insufficient Evidence for Exam 1. You will be tested on that material as part of Exam 2 & the Final Exam.)
- You are permitted to bring into the exam a single piece of paper (8.5" by 11") on which you have **HANDWRITTEN** whatever you wish on one or both sides. This paper must be **turned in with your exam**, it must **include your name**, it must be **handwritten by you**, and it will **not** be returned.
 - **Other** than this piece of paper, the exam is **closed-note**, **closed-book**, and **closed-computer**. (Also **closed-cell-phone**!)
 - You are to work individually on all exams in this course.
- This will be a pencil-and-paper exam. You only need to bring something to write with, and, if you'd like, the handwritten page of notes mentioned above.
- Your studying should include careful study of the covered textbook chapters, the posted examples and notes. and the homeworks (and posted example solutions) thus far.
- I expect that the exam questions will be a combination of short-answer and multiple choice.

Chapter 1 - Intro to Critical Thinking

- what is meant by the term "critical thinking"?
- what are some reasons why critical thinking can be a useful ability to have?
- consider the critical thinking standards discussed in Chapter 1 (clarity, precision, accuracy, relevance, consistency, logical correctness, completeness, fairness)
 - what is meant by each of these standards, within the area of critical thinking?
 - for each of these, why is a lack of that standard detrimental to critical thinking?
- what are some common barriers to critical thinking?

Chapter 2 - Recognizing Arguments

- EXPECT IT: you will have to tell whether natural language sentences are statements or not (in a logical sense)
- EXPECT IT: you will be asked to tell whether a given passage is an argument or not
- EXPECT IT: you will be asked to give the premise(s) and conclusion of given arguments
- You could be asked questions about the concepts of a logical (natural language) statement, argument,

premise, and conclusion;

- what is a rhetorical question? what is an ought imperative? You should be able to recognize these types of statements as well;
- You could be asked questions about the discussed 5 types of nonargumentative discourse that are sometimes confused with arguments (reports, unsupported assertions, conditional statements, illustrations, explanations)
 - you could also be asked to identify which of these 5 types a non-argument passage is;
 - for a conditional statement, what is its antecedent? What is its consequent? You should be able to identify the antecedent and the consequent in a conditional statement.
 - what is the principle of charity? how might it be able to be used in distinguishing an illustration or explanation from an argument?
 - what are 4 basic tests for distinguishing an argument from an explanation?
- You are also responsible for the material covered in class that is not in the course textbook, including:
 - what is meant by the term expression
 - what is meant by an expression's type, and by an expression's value
 - the two possible values of type boolean
 - the boolean operations boolean and, boolean or, and boolean not
 - You will not be asked to give syntactically-correct expressions, BUT you **should** be able to **read** them, and give their **type**; you should also be able to give the **value** of a syntactically-correct boolean expression that includes boolean operators boolean and, boolean or, and boolean not
 - You should be able to recognize expressions of type string, number, and boolean.
 - You should be able to **read** syntactically-correct Prolog facts and rules; given a knowledge base of syntactically-correct facts and rules, and given a query with variables, you should be able to give what those variables would match if the query can be proven true given that knowledge base.
 - Given a syntactically-correct Prolog fact, you should be able to restate it as a natural-language logical statement.
 - Given a syntactically-correct Prolog rule, you should be able to restate it as a natural-language conditional statement.

Chapter 3 - Basic Logical Concepts

- what are two key questions one should always ask in evaluating an argument?
- what is a syllogism? what is a hypothetical syllogism?
- EXPECT IT: given a hypothetical syllogism, you should be able to identify which type it is (modus ponens, modus tollens, chain argument, denying the antecedent, or affirming the consequent)
- Given the first two steps of a valid hypothetical syllogism, you should be able to give a reasonable

conclusion

- EXPECT IT: given a deductive argument, you should be able to give which common deductive pattern it uses (hypothetical syllogism: modus ponens, hypothetical syllogism: modus tollens, hypothetical syllogism: chain argument, hypothetical syllogism: denying the antecedent, hypothetical syllogism: affirming the consequent, categorical syllogism, argument by elimination, argument based on mathematics, or argument from definition)
- EXPECT IT: given an inductive argument, you should be able to give which common inductive pattern it uses (inductive generalization, predictive argument, argument from authority, causal argument, statistical argument, argument from analogy)
- EXPECT IT: given an argument, you should be able to determine whether it is best interpreted as deductive or inductive; you might also be asked what common pattern it uses.
- EXPECT IT: given a deductive argument, you should be able to answer whether it is valid or invalid; given an inductive argument, you should be able to answer whether it is strong or weak
- EXPECT IT: for appropriate deductive arguments, you should be able to tell whether they are valid or invalid, AND whether they are sound or unsound
- EXPECT IT: for appropriate inductive arguments, you should be able to tell whether they are strong or weak, AND whether they are cogent or uncogent
- You could be asked to explain why a deductive argument is valid or invalid, and you could be asked to explain why an inductive argument is strong or weak.
- You could also be asked questions about what it means for an argument to be deductive or inductive, and the characteristics of deductive and inductive arguments. You could be asked about the key differences between deductive and inductive reasoning in general.
- What are 4 tests we discussed for helping to determine whether an argument should be regarded as deductive and inductive? You could be asked questions about these tests, also;
- You could also be asked questions about the common deductive and inductive patterns
- You could also be asked questions about the concepts of validity, invalidity, soundness, unsoundness, strength, weakness, cogency, and uncogency;

Chapter 5 - Logical Fallacies - I - Fallacies of Relevance

- You could be asked questions about the concepts of relevance, positive relevance, negative relevance, and irrelevance;
- EXPECT IT: given an argument, you should be able to tell if its premises are positively relevant, negatively relevant, or irrelevant to the conclusion
- EXPECT IT: given an argument containing a fallacy of relevance, you should be able to tell which such fallacy it contains (personal attack (ad hominem), attacking the motive, look who's talking (tu quoque), two wrongs make a right, scare tactics, appeal to pity, bandwagon argument, straw man, red herring, equivocation, begging the question)
- You could also be asked questions about the fallacies of relevance