Fall 2018 - CS 100 - Final Exam Review Suggestions

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- CS 100 - Final Exam will be given **10:20 am - 12:10 pm** on **Wednesday, December 12**, in FH 125
- This Final Exam is **comprehensive**.
  - **ALL MATERIAL COVERED IN THE EXAM 1 AND EXAM 2 STUDY GUIDES (as posted on the public course web site) IS ALSO RELEVANT TO THE FINAL EXAM. REVIEW THOSE DOCUMENTS ALONG WITH THIS ONE!** I will not be repeating the information from those other Study Guides here – you are **EXPECTED** to consult those Guides as well as this one.
  - It covers all class lectures, all assigned readings from Chapters 1, 2, 3, 5, 6, 7, 9, 10, and 15 in the course textbook,and all homeworks up through and including Homework 11. There will also be questions about Scheme expressions and functions.
- As for Exam 1 and Exam 2, based on suggestions from Prof. Deb Pires from UCLA: Because of the research-supported learning potential when students study together and explain concepts to one another, you will receive (a maximum) ***5 POINTS BONUS*** on the Final Exam if you do the following:
  - set up and/or attend an exam study session with at least one other CS 100 student (but it can involve as many other CS 100 students as you would like!)
  - for **YOU** to receive the bonus, **YOU** SEND an e-mail to me, sent on the **same day** as the study session (which needs to take place **before the Final Exam time on Wednesday, December 12**) in which you:
    - use as the e-mail `Subject: CS 100 - Final Exam bonus`
    - **briefly DESCRIBE (a sentence or two is fine) what** you **covered** at the exam study session (it needs to mention AT LEAST ONE COURSE ***TOPIC*** discussed)
    - INCLUDE a **picture** of everyone involved in the study group (or at least yourself and at least one other CS 100 student)
    - (**EACH** person who wants the 5 point bonus **should send an e-mail message to me** containing this `Subject:` line AND these **TWO** parts.)
  - Please let me know if you have any questions about this, and I hope it encourages you to study together for 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 **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/closed-electronic-devices**.
  - You are to work **individually** on this exam and follow all rules and guidelines of the HSU Academic Honesty policies.
  - (Studying *beforehand* in groups is an **excellent** idea, however! See the bonus opportunity above.)

- Note that final exams are **not** returned. I will retain them for at least 2 years, and you may come by my office to see them if you wish after grades are posted into the course Canvas site.
- The general style of the final exam will be similar to Exams 1 and 2, and will be only longer proportional to the time allotted (the Final is 1 hour, 50 minutes instead of 50 minutes).
- This will be a pencil-and-paper exam. You only need to bring something to write with, and, if you'd like, the page of notes mentioned above.
- Your studying should include careful study of assigned readings, posted examples and notes, and posted homework solutions.
- I expect that the exam questions will be a combination of short-answer and multiple choice.
- EXPECT IT --
  - ...you WILL have to determine whether phrases/sentences are logical statements or not
  - ...you WILL have to identify the premises and conclusion of at least one argument
  - ...you WILL have to determine whether arguments are deductive or inductive
  - ...you WILL have to study arguments and identify the fallacies they contain
  - ...you WILL have to diagram arguments
  - ...you WILL have to at least answer questions about summarizing arguments by writing them in standard logical form
  - ...you WILL have to use 3-circle Venn diagrams to determine if categorical syllogism arguments are valid, following the procedure we discussed in class
  - ...you WILL have to use truth tables to determine if arguments written in propositional logic form are valid, following the procedure we discussed in class

Chapter 7

- What do we mean by analyzing an argument? What are the two approaches to analyzing arguments given in this chapter?
- EXPECT IT: you will have to diagram arguments.
- You may be asked questions *about* diagramming arguments as well.
- EXPECT IT: you will at least be asked questions *about* summarizing arguments
- You might be asked to summarize arguments as well.
- What is the basic approach to diagramming an argument?
- One the exam, you are expected to follow the approach to diagramming arguments that we demonstrated in class, including:
  - circling premise, conclusion indicator words
  - numbering the statements, writing the numbers in circles at/near the beginning of each statement
  - in arranging the statement-numbers on the page after the argument, arrange the numbers on the page

such that the premises' numbers are ABOVE the conclusion's number

  - determining if each premise provides independent or linked support, and indicating those as discussed
- If something is not a statement that's logically relevant to the argument, how is it handled in diagramming that argument?
- In the diagram, how do you indicate that a premise provides independently support? How do you indicate that a collection of premises are linked to provide support?
- Be familiar with the tips provided for diagramming arguments.
- Note that I could also given you an example of just a diagram, and ask what that diagram implies about the argument that has been diagrammed.
- What is paraphrasing? What are the characteristics of a good paraphrase?
- You could be asked to paraphrase an argument; you could also be asked questions *about* paraphrasing and paraphrases.
- What is a missing statement in an argument, and how is that situation handled? What is an **enthymeme**?
- You should be able to fill in missing premises or conclusions within an argument; what are two basic rules for filling in such missing premises or conclusions?
- What is standard logical form when paraphrasing and summarizing? When is an argument said to be in standard logical form?
  - EXPECT IT: you will have to answer questions *about* standard form.
  - What is the general format of standard logical form?
  - Does the order of elements matter in standard logical form?
  - What is added at the end of subconclusions and conclusions in standard logical form?
  - How are missing premises and conclusions handled in standard logical form?
- Be familiar with the suggested steps for standardizing an argument by converting it into standard logical form.
- When summarizing an argument by rewriting it into standard logical form...
  - ...should one paraphase?
  - ...how should non-statements be handled?
  - ...how should irrelevant statements be handled?
  - ...how should missing premises and conclusions be handled?

Chapter 15 - Science vs. Pseudoscience

- You should be familiar with the basic procedure of the “scientific method” as outlined in class –
  - Identifying and Specifying the Problem, Gathering Relevant Data, Formulating a Hypothesis, and

Testing the Hypothesis by Observation or Experiment

- You should be familiar with the limitations of science, and the types of questions it CANNOT answer.
- You should be familiar with the telltale signs of pseudoscience as described in class, and how those signs distinguish it from "true" science.
- Given a claim made by a pseudoscience, you should be able to determine whether the claim can be scientifically tested, and if it can, describe in general terms a simple test of the claim that can satisfy the basic principles of science.
- You should be able to describe and give basic definitions for the following terms: Hypothesis, Controlled Study, Double-Blind Test, Experimental Group, Control Group
- You should be able to identify Questions of Meaning and Value that science cannot answer.

Chapter 5 - Logical 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: Ad Hominem (Personal Attack), Attacking the Motive, Tu Quoque (Look Who's Talking), 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

Chapter 6 - Logical Fallacies of Insufficient Evidence

- EXPECT IT: given an argument containing a fallacy of insufficient evidence, you should be able to tell which such fallacy it contains: Inappropriate Appeal to Authority, Appeal to Ignorance, False Alternatives, Loaded Question, Questionable Cause, Hasty Generalization, Slippery Slope, Weak Analogy, Inconsistency.
- EXPECT IT: You will also be asked questions *about* the fallacies of insufficient evidence.
- What is the fallacy of Inappropriate Appeal to Authority? What are some examples of circumstances where the Inappropriate Appeal to Authority fallacy might occur?
  - What are some reasons for questioning the reliability of a source?
- When does the fallacy of Appeal to Ignorance occur? When can it be legitimate to treat a lack of evidence as evidence that a claim is false?
- When is the fallacy of False Alternatives committed?
- What is a Loaded Question? What is the suggested advice for how to answer such a question?
- What is the Questionable Cause fallacy? What are three common varieties of the Questionable Cause fallacy?

  - What is the Post Hoc variety of the Questionable Cause fallacy?
  - What is the Correlation variety of the Questionable Cause fallacy?
  - What is the Oversimplified Cause variety of the Questionable Cause fallacy?
  - **make sure you know**: correlation does NOT imply causation!
- What is a generalization? What is the fallacy of Hasty Generalization?
  - When is a hasty conclusion *not* a Hasty Generalization?
- When is the fallacy of Slippery Slope committed? What is a basic common pattern of arguments committing this fallacy?
- When does the fallacy of Weak Analogy occur? What are three common patterns of the Weak Analogy fallacy?
  - for each of these patterns, how can you evaluate whether that instance is legitimate or fallacious?
- When does the fallacy of Inconsistency occur?
- A few side notes...
  - with regard to the "Hasty Generalization" fallacy -- an argument does not contain this fallacy if its conclusion is not a generalization;
  - with regard to the "Weak Analogy" fallacy -- an argument does not contain this fallacy unless it has the pattern of (attempted) argument from analogy;
  - with regard to the "False Alternatives" fallacy -- an argument does not contain this fallacy unless it falsely limits the number of options and then argues against all but one of those.