

LOGIC

PHIL 230 (3 hrs), Manchester College, Fall 2011

Instructor: Dr. Steve Naragon, Office: Ad Bldg., #231c (Phone — *office:* 982-5041; *home:* 982-6033)

Required Text: Hurley, *A Concise Introduction to Logic*, 11th ed. (Wadsworth Publ., 2008). This should include the CD-ROM: "Learning Logic" (this is a tutorial of the entire book, arranged by chapter-sections and with new practice problems).

Course Objectives. This course has the highly practical aim of improving your ability *to think clearly*. Specifically, by the end of the semester you should have improved your abilities to: (1) identify arguments from other kinds of discourse, and separate what is relevant to an argument from what is not; (2) evaluate arguments in a reasoned and constructive way (as opposed to merely disagreeing with their conclusions); and (3) construct your own arguments that are clearly stated and free of fallacies.

On the more theoretical side, you will become familiar with different forms of deductive and inductive logic. Deductive forms include terminal (or syllogistic), propositional (or statement or sentential), and quantified predicate logics. Inductive forms include analogical, causal, statistical, and hypothetical, and includes work on calculating the probability of simple and compound events.

This will be, at times, a strenuous journey, but one not without rewards, perhaps the finest being the opportunity to contemplate beauty in its purest form. It also boosts your LSAT and GRE scores, for whatever that's worth.

Requirements

Attendance. The occasional student will be able to master this material simply by working through the text and the computer tutorial, but most students will need some help from class in order to fully understand what's going on. Apart from that, I will try to make class amusing.

Most class sessions will consist of four parts: (1) a brief quiz on the material discussed the previous day, (2) an explanation of the new material for that day, (3) a consideration of one or two practice exercises, and (4) a review of homework exercises (either orally or on the board). You should come to class each day having completed your homework to the best of your ability, and prepared to ask questions regarding concepts or homework exercises you didn't understand.

Exams. There will be four non-cumulative exams. [**Makeup:** Exams missed due to an excused absence are to be taken as soon as possible or else will be forfeited. It is your responsibility to see me about this.]

Quizzes. There will be a brief quiz nearly every day, given at the beginning of class, on material discussed the day before.

[**Makeup:** Missed quizzes can be made up in my office the following day or at the beginning of the next class session; it is your responsibility to make this arrangement.]

Homework. I assign homework with each section. I will not be picking up this homework, but you must get in the habit of working it out on paper prior to class. Part of each class will involve working through this homework, either orally or on the board. **If you neglect your homework**, then you will find yourself unable to participate properly in class, you will be grossly under-prepared for the exams, and you will either fail the course, or else withdraw or wish you had. It will not be pleasant.

I have tried to assign just enough homework so that you understand the necessary concepts, learn the basic skills, and then have repeated them enough to get them well stuck in your head. If you honestly believe that you have mastered the material before finishing the homework set, then there is no reason to keep working through the remaining exercises. If you work through the text, the tutorial CD, the homework exercises, and participate in class, you will almost certainly do quite well in this class.

Grading. The four exams are worth a total of 80% (22%, 14%, 22%, 22%); the set of quizzes is worth 20%. I use the following letter grade conversion scale: A (94-100), A- (90-93), B+ (87-89), B (83-86), B- (80-82), C+ (77-79), C (73-76), C- (70-72), D+ (67-69), D (63-66), D-(60-62), F (0-59).

Weekly Work Schedule

Wed. Aug 31

Overview of Logic

1: Basic Concepts

Fri. Sep 2

1.1... Premise/Inference/Conclusion
1.1/ I: 1-15; II: 2, 3, 5, 6; III: 1-10
(definitions); IV: 1-10

Mon. Sep 5

1.2... Recognizing Arguments
1.2/ I: 1-15; IV: 1-11 (definitions);
V: 1-10; VI: 1-10

Wed. Sep 7

1.3... Deduction and Induction
1.3/ I: 1-20; III: 1-15;
Bring to class: 1.3/IV

Fri. Sep 9

1.4-1.5... Validity and Invalidity
1.4/ I: 1-10; II: 1-10; III: 1-10; IV
(definitions); V: 1-15
1.5/ I: 1-5

Mon. Sep 12

1.6... Extended Arguments
1.6/ I: 1-10

Wed. Sep 14

1.6... Extended Arguments (cont.)
1.6/ II: 1-12
Bring to class: 1.6/III

2: Language

Fri. Sep 16

2.1-2.2... The Meaning of Words
2.1/ II: 2, 3, 5, 6, 8; III: 1-10
2.2/ I: 1-5, II: 1-10
Bring to class: 2.2/I.5

3: Informal Fallacies

Mon. Sep.19

3.1-3.2... of Relevance
3.1/ 1-10
3.2/ I: 1-15; II: 1-10

Bring to class: an example of one of the featured fallacies from a newspaper (e.g., editorial) or a blogsite.

We. Sep.21

3.3... of Weak Induction
3.3/ I: 1-15; II: 1-10, III: 1-15

Bring to class: an example of one of the featured fallacies from a newspaper (e.g., editorial) or a blogsite.

Fri. Sep.23

3.4... of Presumption, etc.
3.4/ I: 1-15; II: 1-15; III: 1-20

Bring to class: an example of one of the featured fallacies from a newspaper (e.g., editorial) or a blogsite.

Mon. Sep.26

3.5... Fallacies in Ordinary Language
3.5/ I: 2, 5, 6, 8, 9, 12, 32, 33, 42, 48

Wed, Sep 28 **1st Exam**

9-13: Induction

Fri. Sep.30

9.1-9.3... Analogical Reasoning
9/ II: 2, 3, 5, 9, 12

Mon. Oct.3

10.1-10.3... Determining Causality
10/ I: 1-10; II: 1-5; III: 1-5

Wed. Oct.5

11.1-11.2... Probability
11/ I: 1-10; II: 1-10, 15

Fri. Oct.7

11.2... Probability: Bayes's Theorem
11/ II: 17, 20

Mon. Oc.10

12.1-12.6... Statistical Reasoning

12/ I: 1-10, 15, 17, 20; II: 2, 3; sIII: 1-20.

Wed. Oct.12

13.1-13.4... Hypothetical Reasoning
13/ I: 1-5; IV: 1-20.

Fri, Oct 13 **2nd Exam**

Mon. Oct.17 — Fall Break

4: Categorical Propositions

Wed. Oct.19

4.1-4.2... Quality, Quantity, Distribution
4.1/ 1-8
4.2/ I: 1-8; II: 1-4; III: 1-4; IV: 1-4

Fri. Oct.21

4.3... Venn Diagrams
4.3/ I: 1-8; II: 1-15; III: 1-15

Mon. Oct.24

4.4... Licit Inferences
4.4/ I: 1-12, II: 1-3, III: 1-10

Wed. Oct.26

4.5... Square of Opposition
4.5/ I: 1-5; II: 1-5; III: 1-10; IV: 1-20;
VI: 1-10

Fri. Oct.28

4.6-4.7... Translation
4.6/ I: 1-10; II: 1-10
4.7/ I: 1-30

5: Syllogisms

Mon. Oct.31

5.1... Standard Form, Mood & Figure
5.1/ I: 1-5; II: 1-5; III: 1-5; V: 1-10

Wed. Nov.2

5.2... Venn Diagrams
5.2/ I: 1-10; II: 1-5; III: 1-10

Fri. Nov.4

5.3-5.4... Rules
5.3/ I: 1-10; II: 1-5; III: 1-10
5.4/ I: 1-5

Mon. Nov.7

5.5-5.6... Enthymemes
5.5/ 2, 3, 5, 6, 8, 9
5.6/ I: 2, 3, 5, 6, 8; II: 2, 3, 5, 6

Wed, Nov 9

3rd Exam

6: Propositional Logic

Fri. Nov.11

6.1... Symbols & Translations
6.1/ I: 1-40; III: 1-10

Mon. Nov.14

6.2... Truth Functions
6.2/ I: 1-10; II: 1-10; III: 1-15, IV: 1-10

Wed. Nov.16

6.3-6.4... Truth-Tables
6.3/ I:1-5; II: 1-5; III: 2, 3
6.4/ II: 1-5

Fri. Nov.18

6.5... Indirect Truth-Tables
6.5/ I: 1-10; II: 1-5; III: 1-5

Mon. Nov.21

6.6... Argument Forms
6.6/ I: 1-20; II: 1-10; III: 2, 6, 9

Wed/Fri. Nov.23-25 — Thanksgiving

7: Natural Deduction

Mon. Nov.28

7.1... Implication Rules I
7.1/ I: 1-10; II: 1-10; III: 1-10, 14

Wed. Nov.30

7.2... Implication Rules II
7.2/ I: 1-10; II: 1-10; III: 1-10

Fri. Dec.4 — No Class

Mon. Dec.5

7.3-7.4... Replacement Rules
7.3/ I: 1-5; II: 1-10; III: 1-5, 21-25
7.4/ I: 1-10; II: 1-10; III: 1-10

Wed. Dec.7

7.5-7.6... Conditional & Indirect Proof
7.5/ I: 1-10; II: 2, 3
7.6/ I: 1-10; II: 3, 5

Fri. Dec.9

7.7... Proving Logical Truths
7.7/ I: 1-5

Finals Week

4th Exam