LOGIC

PHIL 230 (3 hrs) MWF 12:00-12:50 PM, Academic Center 236 — Manchester University, Fall 2019

Instructor: Dr. Steve Naragon, Office: Academic Center 233 (Phone — *office*: 982-5041; *home*: 982-6033)

Office Hours: Any hour that I'm in my office. And if you see me on the sidewalk, or in the library, or in a café — that's also a good time to talk. And you can always send me an email at ssnaragon@manchester.edu

Web Syllabus: http://users.manchester.edu/Facstaff/SSNaragon/Online/230-F19/Welcome.html

——— You will need to consult the web syllabus for every class session. ———

Required Text: Hurley, *A Concise Introduction to Logic*, 10th ed. (Wadsworth Publ., 2008). [many copies available on Amazon.com for around $10]

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, 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 or drawn from the homework for the current 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 exams. See the web syllabus ("Course Requirements") for more details.

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

Argument Analysis and Evaluation. About once each week you will need to find what you take to be a "bad" argument somewhere in the literature (book, magazine, newspaper, website). (Do **not** simply run a search for "logically flawed arguments" – or something to that effect – and then copy out the argument from a website devoted to such matters; this needs to be something you locate on your own.) See the web syllabus ("Argument Analysis") for more details. [Submit on **Canvas**.]

Homework. I assign homework for each day. This will not be collected, but the daily quiz will draw from it, and we will be working through it on the board during class. You must get in the habit of working through your homework before class, or else you will fall behind, you will be unable to participate easily in class, you will be under-prepared for the exams, and you will either fail the course or withdraw.

I've tried to assign just enough homework for you to 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've 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 homework exercises, and participate in class, you will almost certainly do well in this class and become a much stronger and more agile thinker.

LogicCoach: On **Canvas** (under "Modules") is a link to a page to download the homework program **LogicCoach** (available for both Macs and Windows systems). You can do your homework here and have it instantly checked. It's no-frills, but it's also free and it works.

Grading. The four exams are worth a total of 60% (15% each); the set of argument analyses is worth 20%; and 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).

Cell Phones. All cell phones must be silenced and put away. Thank you.

Cheating and Plagiarism. See the "Course Requirements" page of the web syllabus.

Title IX reporting requirements / Student disability and reasonable accommodation statement / Medical emergency evacuation schedule: See the "Course Requirements" page of the web syllabus.

Weekly Work Schedule

Wed, Aug 28
Overview of Logic

Ch. 1: Basic Concepts

Fri, Aug 30
1.1… Premise/Inference/Conclusion
1.1/ I: 1-15; II: 2, 3, 5, 6; III: 1-10 (definitions); IV: 1-10

Mon, Sep 2
1.2... Recognizing Arguments
1.2/ I: 1-15; IV: 1-11; V: 1-10; VI: 1-10

Wed, Sep 4
1.3… Deduction and Induction
1.3/ I: 1-20; III: 1-15

Fri, Sep 6
1.4-1.5… Validity and Invalidity
1.4/ I: 1-10; II: 1-10; III: 1-10; IV; V: 1-15
1.5/ I: 1-5

Mon, Sep 9
1.6… Extended Arguments
1.6/ I: 1-10

Wed, Sep 11
1.6… Extended Arguments (cont.)
1.6/ II: 1-12

Fri, Sep 13
(Camp Mack make-up day)

Ch. 2: Language

Mon, 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

Wed, Sep 18
2.3-2.4… Defining our Terms
2.3/ I: 1-20; II.1; III: 1-10
2.4/ I: 1-20; II.1e, 2b, 3c, 5e, 7b; III: 1-10

Fri, Sep 20 — 1st Exam

Ch. 3: Informal Fallacies

Mon, Sep 23
3.1-3.2… of Relevance
3.1/ 1-10
3.2/ I: 1-15; II: 1-10

Wed, Sep 25
3.3… of Weak Induction
3.3/ I: 1-15; II: 1-10, III: 1-15

Fri, Sep 27
3.4… of Presumption, etc.
3.4/ I: 1-15; II: 1-15; III: 1-20

Chs. 9-12: Inductive Logic

Mon, Sep 30
9.1-9.3… Analogical Reasoning
9/ II: 2, 3, 5, 9, 12

Wed, Oct 2
11.1-11.2… Probability
11/ I: 1-10; II: 1-10, 15

Fri, Oct 4
11.2… Probability: Bayes's Theorem
11/ II: 17, 20

Mon, Oct 7 — Fall Break

Wed, Oct 9
12.1-12.6… Statistical Reasoning
12/ I: 1-10, 15, 17; II: 2, 3; III: 1-20.
13/I: 1-5; IV: 1-20.

Fri, Oct 11 — 2nd Exam

Ch. 4: Categorical Propositions

Mon, Oct 14
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

Wed, Oct 16
4.3… Venn Diagrams
4.3/ I: 1-8; II: 1-15; III: 1-15

Fri, Oct 18
4.4… Licit Inferences
4.4/ I: 1-12, II: 1-3, III: 1-10

Mon, Oct 21
4.5… Square of Opposition
4.5/ I: 1-5; II: 1-5; III: 1-10; IV: 1-20; VI: 1-10

Wed, Oct 23
4.6-4.7… Translation
4.6/ I: 1-10; II: 1-10;
4.7/ I: 1-30

Ch. 5: Syllogisms

Fri, Oct 25
5.1… Standard Form, Mood & Figure
5.1/ I: 1-5; II: 1-5; III: 1-5; V: 1-10

Mon, Oct 28
5.2… Venn Diagrams
5.2/ I: 1-10; II: 1-5; III: 1-10

Wed, Oct 30
5.3-5.4… Rules
5.3/ I: 1-10; II: 1-5; III: 1-10
5.4/ I: 1-5

Fri, Nov 1
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

Mon, Nov 4 — 3rd Exam

Ch. 6: Propositional Logic

Wed, Nov 6
6.1… Symbols & Translations
6.1/ I: 1-40; III: 1-10

Fri, Nov 8
6.2… Truth Functions
6.2/ I: 1-10; II: 1-10; III: 1-15, IV: 1-10

Mon/Wed, Nov 11-13 – No Class

Fri, Nov 15
6.3-6.4… Truth-Tables
6.3/ I:1-5; II: 1-5; III: 2, 3
6.4/ II: 1-5

Mon, Nov 18
6.5… Indirect Truth-Tables
6.5/ I: 1-10; II: 1-5; III: 1-5

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

Ch. 7: Natural Deduction

Fri, Nov 22
7.1… Implication Rules I
7.1/ I: 1-10; II: 1-10; III: 1-10, 14

Mon, Nov 25
7.2… Implication Rules II
7.2/ I: 1-10; II: 1-10; III: 1-10

Wed/Fri, Nov 27-29 — Thanksgiving

Mon, Dec 2
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 4
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 6
7.7… Proving Logical Truths
7.7/ I: 1-5

Finals Week — 4th Exam