# Language and Logic
**Philosophy 1504 – Summer I 2012**

**Instructor Information**

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**Course Description**

The purpose of this course is to improve on a very important skill: how to think more clearly and critically. In our daily lives, we encounter all sorts of claims from a variety of sources: from our teachers, from the media, the government, our parents and pretty much everyone. But how do we know what we should believe? What constitutes relevant evidence for believing a claim?

The study of logic (at least as we'll characterize it here) involves the study of assessing how well the reasons presented for a conclusion actually support the conclusion, and how some supposed reasons are intended to fool people into believing the conclusion when in fact you shouldn't.

This course comprises an overview of informal logic and a more in depth treatment of formal logic and the basics of probabilistic reasoning. By the end of the course, you should be able to:
1. Evaluate the structure of English language arguments.
2. Identify fallacious argumentative techniques.
3. Symbolize English sentences into propositional form.
4. Determine the validity or invalidity of arguments in propositional logic using truth tables.
5. Prove valid arguments in propositional logic in a system of natural deduction.

**Course Materials**     (Both sold as a bundle at the VT bookstore; REQUIRED)

*Textbook*:     Hurley, Patrick J. *A Concise Introduction to Logic* (11th Edition). Belmont, CA: Thomson Wadsworth, 2011.
ISBN: 9781285151878

*Aplia Account*:     Register for a student account at www.aplia.com. See "How to access your Aplia course" under 'Resources' tab on Scholar.
Course Key: **HV56-MWCX-U8KX**

**Assignments and Grades**

*Homework*:     40%
Homework assignments are completed in Aplia. Every student may attempt each homework question as many as 3 times. The highest score is kept.

*Exams*:     60%
Five exams. Exams are completed in Aplia. No exam will be dropped. Each student has only one attempt on every exam.

**Course Organization**

*Aplia*:          Students will complete the homework and the exams for this course in Aplia.

*Scholar*:        Students will download the lectures and (occasionally) other course material from Scholar. I will post the lectures to Scholar (see the **'Resources' tab**), and I will do so almost every day. A lecture will consist of **one or both** of these items:

> (1) an Adobe Reader file (.pdf), a Microsoft Powerpoint file (.ppt or .pptx), or a Microsoft Word file (.doc or .docx)
>
> (2) an audio file (.mp3).

That is, a lecture will definitely take the form of an Adobe Reader file, a Powerpoint presentation, or a Word document. And at *some* points during the semester (likely toward the end), I may include an audio file for students to listen to while viewing the first document.

*Textbook*:       Students will read the relevant sections of the Hurley textbook *before* attending to lectures. For example, if the next lecture is on Fallacies of Weak Induction (Section 3.3), students will read Section 3.3 in the textbook, prior to viewing the lecture.

*Homework*:       Students will complete a number of homework assignments each week. Homework assignments are **untimed**, and every question may be attempted **up to 3 times.** Pay close attention to the explanations. Your final score for each homework will be computed using the **'Do Not Harm'** method, which averages the total scores, but does not takes into account any attempt that negatively affects your overall average. In other words, your first attempt is your base grade. The second attempt counts only if it is higher than the first. And the third attempt counts (as an equal part) only if it is higher than the average of the first and second attempts. Homework assignments will be posted up to one week in advance. **All homework in a given week is due Friday at 11:45 p.m., unless otherwise indicated.** No late homework will be accepted.*

*Exams*:          **Exams will be due each Friday after Week 1, unless otherwise indicated.** Every exam will be posted Friday at 8:00 a.m. One must complete an exam *on one's own* by 11:45 p.m. that Friday. Students will have between 1 and 2 hours to complete an exam, and only 1 attempt; the time will depend on the length of the exam. The contents of each exam will reflect the material covered that week. So **the final exam will not be cumulative**.

*Questions*:      If encountering *technical difficulties* (e.g., one's browser does not load Aplia), please contact the support services at Aplia at (888) 858-2820. They are very, very helpful. Otherwise, check the course's Forum section on Scholar for my

answers to students' commonly asked questions about course-related matters, e.g., assignments, homework problems. If I notice or anticipate students asking the same or similar question, I will start a Forum thread on the course's Scholar page.

If the answer to one's question is not on the Forum, one should send me an e-mail message. I reserve the right to take 24 hours to respond. When sending an e-mail message, **include relevant information in the subject line** so I can sort through questions. Here is the sort of information to include: type of question, issue, chapter and section of the book, page number. Two examples: "Administrative question, final exam," or "Content question, Lecture 5, 6.3, p. 167."

*Late Work*: If you have a legitimate, documented excuse for not completing a homework assignment or an exam, you must send me a copy of the documentation. Scan it into your computer and send as a .pdf or .jpg file. The relevant signatures (e.g., the signature of the doctor or nurse at the health center) must be easily viewable.

## How to Succeed in the Course

Anyone can 'do' logic. 'Doing' logic is a skill much like playing basketball is a skill: one improves and succeeds by practicing. It is important to keep up with the readings and the homework. **And it is very important to practice 'doing' logic every day during Summer Session 1.** Read each section at least twice; you might not understand the material the first time through. And take advantage of the three chances to complete each homework problem. Students are likely to do well on the exams if they have (a) read the textbook and (b) scored high on the homework assignments.

## Honor Code

Every student at Virginia Tech lives under the honor pledge, "I have neither given nor receive unauthorized assistance on this assignment." By applying to Virginia Tech, you have agreed to live under the honor pledge as well. Make sure you familiarize yourself with the code available at http://www.honorsystem.vt.edu.

# Course Schedule^

| Week 1 – Chapters 1: Basic Concepts | | |
|---|---|---|
| *Date* | *Agenda, Topics* | *Hurley Text* |
| 05.21.12 | Course Introduction (First class) | |
| 05.22.12 | Arguments, Premises, Conclusions<br>Recognizing Arguments | 1.1 – 1.2 |
| 05.23.12 | Deduction/Induction<br>***Homework due at 11:45 p.m.*** | 1.3 |
| 05.24.12 | Validity, Truth, Soundness, Strength, Cogency | 1.4 |
| 05.25.12 | ***Homework due at 11:45 p.m.*** | |

| Week 2 – Chapter 3: Informal Fallacies | | |
|---|---|---|
| *Date* | *Agenda, Topics* | *Hurley Text* |
| 05.28.12 | Memorial Day (No Assignment) | |
| 05.29.12 | Argument Forms: Proving Invalidity | 1.5 |
| 05.30.12 | Extended Arguments | 1.6 |
| 05.31.12 | Extended Arguments (cont.) | 1.6 |
| 06.01.12 | *Homework due at 11:45 p.m.* *Exam I due at 11:45 p.m.* | |

| Week 3 – Chapter | | |
|---|---|---|
| *Date* | *Agenda, Topics* | *Hurley Text* |
| 06.04.12 | Fallacies in General Fallacies of Relevance | 3.1—3.2 |
| 06.05.12 | Fallacies of Weak Induction | 3.3 |
| 06.06.12 | Fallacies of Presumption, Ambiguity and Grammatical Analogy | 3.4 |
| 06.07.12 | Fallacies in Ordinary Language | 3.5 |
| 06.08.12 | *Homework due at 11:45 p.m.* *Exam II due at 11:45 p.m.* | |

| Week 4 – Chapter 6: Propositional Logic | | |
|---|---|---|
| *Date* | *Agenda, Topics* | *Hurley Text* |
| 06.11.12 | Symbols and Translation | 6.1 |
| 06.12.12 | Truth Functions, Truth Tables for Propositions | 6.2—6.3 |
| 06.13.12 | Truth Tables for Arguments | 6.4 |
| 06.14.12 | Argument Forms and Fallacies | 6.6 |
| 06.15.12 | *Homework due at 11:45 p.m.* *Exam III due at 11:45 p.m.* | |

| Week 5 – Chapter 7: Natural Deduction in Propositional Logic | | |
|---|---|---|
| *Date* | *Agenda, Topics* | *Hurley Text* |
| 06.18.12 | Rules of Implication I | 7.1 |
| 06.19.12 | Rules of Implication II | 7.2 |
| 06.20.12 | Rules of Replacement I | 7.3 |
| 06.21.12 | Rules of Replacement II | 7.4 |
| 06.22.12 | *Homework due at 11:45 p.m.* *Exam IV due at 11:45 p.m.* | |

| Week 6 – Chapter 7: Natural Deduction in Propositional Logic (cont.) | | |
|---|---|---|
| *Date* | *Agenda, Topics* | *Hurley Text* |
| 06.25.12 | Conditional Proof | 7.5 |

| 06.26.12 | Conditional Proof (cont.) | 7.5 |
|----------|---------------------------|-----|
| 06.27.12 | Indirect Proof | 7.6 |
| 06.28.12 | Indirect Proof (cont.) | 7.6 |
| 06.29.12 | ***Homework due at 11:45 p.m.***<br>***Exam V due at 11:45 p.m.***     [the Final Exam—*not* cumulative] | |

^The Schedule is tentative and always subject to revision. Please be aware of changes made to the schedule (and to the syllabus), as announced on Scholar. I will post an updated schedule to Scholar each time a change is made.