80-212 Arguments and Logical Analysis
Summer 2 2014

1 Instructor Information

Instructor: Rebecca Morris
Office: Doherty Hall 4301-E
Phone (Office): 412.268.8148
E-mail: rebeccam@andrew.cmu.edu
Office hours: Mondays 1pm–2pm, Wednesdays 3pm–4pm and by appointment.

2 Course Information

Time and Location

Mondays through Fridays, 10:30am – 11:50am
Baker Hall 150

Required Texts

Introduction to Logic, Second Edition, Harry J. Gensler, Routledge, 2010. Please obtain a copy of this book in the first week of class. If you have difficulties, please let me know and I can help you.

3 Course Description

Suppose you're a juror in a murder trial. The defense and prosecution present arguments for very different conclusions: the defendant's innocence or guilt. Your job is to decide who is right. But how should you do this? This course will help you answer that question! In particular, we'll learn how to evaluate arguments, determine whether they justify their conclusion, and spot subtle argumentative flaws. As part of this, we'll learn some logic, which will give us powerful tools for analyzing arguments. The skills that we learn can be applied to any discipline-for example, politics (which politician should I vote for?), ethics (is abortion morally permissible?), and science (do video games cause violence?). Ultimately, the skills that we learn to help us evaluate arguments will also help us to create compelling arguments of our own.

4 Course Objectives

By the end of the semester you should be able to:

- Define important terms such as *validity*, *soundness*, *strength*, *reliability*, and apply them appropriately.
- Determine whether an argument is deductive or non-deductive.
- Determine whether a non-deductive argument is an *inductive argument*, an *argument by analogy*, or an *abductive argument*.
- Identify various argumentative flaws called fallacies, including: the *genetic fallacy*, the *ad hominem fallacy*, *appeal to ignorance*, *post hoc ergo propter hoc*, *appeal to authority*.
- Translate English statements into formal statements of propositional or predicate logic and translate formal statements back into English.
- Use the tools of propositional and predicate logic to determine if an argument is valid.

- Develop compelling arguments of your own and communicate them effectively, both verbally and in writing.

5 Pre-requisites

There are no pre-requisites for this course.

6 Course Requirements

Attendance. Please attend all of the classes and be ready to discuss the course material!

Problem Sheets. There will be a total of 6 problem sheets set in this course. These assignments will help you practice the material we're learning in class. Please submit a hard copy of your solutions to the problem sheets at the start of class on the day they are due. A reading schedule for the up-coming week will be included in problem sheets set on Fridays, or, in cases where there are no problem sheets set, posted separately on Blackboard.

Paper. For this assignment, you should write a 3–5 page paper analyzing and evaluating an argument. The paper will be due on **Friday 25th July**. More details about this will be posted on Blackboard.

Exams. There will be two exams for the class: a mid-term exam and a final exam. The mid-term will be held in class on **Friday 18th July**. The final will be held in class on **Friday August 8th**. If you cannot take the exams on the scheduled day/time, please let me know as soon as possible and we can make alternative arrangements.

7 Evaluation and Grading Policy

Component	Contribution to Final Grade
Final Exam	25%
Midterm Exam	25%
Problem Sheets	25%
Paper	20%
Attendance	5%

8 Course Policies and Expectations

Attendance

Your attendance and preparedness for class will form part of your grade, so please attend all of the classes. If you have a documented reason for missing class, please let me know as soon as possible and this will be counted as an excused absence (which will not affect your attendance grade). If you do miss a class, it will be your responsibility to find out and catch up on the material you missed, what assignments were set etc. Additionally, if you miss a class when an assignment is due, you will need to make arrangements in advance to hand in the assignment.

Late Assignments

Short extensions may be granted if you contact me no later than the day before the assignment is due and have a documented reason for requesting an extension. Late assignments will only be accepted when there are documented exceptional circumstances.

Collaboration

Collaboration and discussion with your fellow students is encouraged! However, please make sure that the work you submit is your own and reflects your own understanding of the material. In addition, if you work with another student, please indicate who you collaborated with on your work.

Use of Technology

Please make sure to turn off or silence your cell phone during class. You are welcome to use laptops, tablets etc for class purposes, such as referring to the readings or taking notes, but please do not use them to check your e-mail, Facebook etc. If you wish to make an audio or video recording of class, please talk to me in advance.

Religious Observance

If classes or assignments for this course conflict with a religious holiday, please contact me in advance so that we can make alternative arrangements.

Learning Disabilities

If you have a learning disability, please contact Equal Opportunity Services (http://www.cmu.edu/hr/eos/) and let me know of your needs at the start of the semester. We can then tailor the class to fit your learning style.

Plagiarism and Cheating

Please make sure that the work you submit is your own. In general, you should include a reference in your work if: you quote someone directly, you paraphrase someone, you use someone else's idea(s), figure(s), diagram(s), proof(s) etc. As mentioned above, collaboration is allowed, but you must indicate who you collaborated with and you must not simply copy another student's work or allow another student to copy your work. For tips on avoiding plagiarism, please see: www.cmu.edu/academic-integrity/preventing/students.html

If I find out that you have plagiarized or cheated in any way, you will receive a grade of 0 for that assignment, and other appropriate measures, such as sending a letter to the Dean of Students, will be taken. Please see http://www.cmu.edu/academic-integrity/index.html for more detailed information about CMU's policies regarding academic integrity.

9 Course Calendar

Below is a tentative weekly outline of the topics to be covered in the course, along with an assignment and exam schedule. These are subject to revision so please let me know if you think the course is going too fast or too slow, or if you think there is too much or too little work, and I can make changes accordingly. Any changes will be discussed with the class and posted on Blackboard.

Weekly Outline

Date	Summary
Week 1	**Introduction to Arguments** We'll introduce terminology to describe arguments and learn some syllogistic logic.
Week 2	**Evaluating Arguments** We'll examine the ways in which language can impact our arguments and consider how arguments can be flawed.
Week 3	**Arguments in Science** We'll consider some issues that are particularly important to scientific reasoning.
Week 4	**Propositional Logic** We'll start learning some formal tools to help us analyze and evaluate arguments. This week, we'll learn propositional logic.
Week 5	**Predicate Logic** We'll continue our study of formal tools by learning predicate logic, an extension of propositional logic.
Week 6	**Metalogic** We'll consider the limits of the formal tools that we have learnt over the past two weeks.

Assignment and Exam Schedule

Please submit a hard copy of your solutions to the problem sheets at the start of class on the day they are due.

Week 1	Thursday 3th July: **Problem sheet 1 set**. Friday 4th July: **Independence Day. No class.**
Week 2	Monday 7th July: **Problem sheet 1 due**. Tuesday 8th July: **Problem sheet 2 set**. Friday 11th July: **Problem sheet 2 due**. Friday 11th July: **Problem sheet 3 set**.
Week 3	Tuesday 15th July: **Problem sheet 3 due**. Thursday 17th July: **Review session for mid-term exam**. Friday 18th July: **In class mid-term exam**. Friday 18th July: **Paper topics available**
Week 4	Friday 25th July: **Paper due** Friday 25th July: **Problem sheet 4 set**.
Week 5	Tuesday 29th July: **Problem sheet 4 due**. Tuesday 29th July: **Problem sheet 5 set** Friday 1st August: **Problem sheet 5 due**. Friday 1st August: **Problem sheet 6 set**.
Week 6	Tuesday 5th August: **Problem sheet 6 due**. Thursday 7th August: **Review session for final exam**. Friday 8th August: **In class final exam**.