PH1017: REASON AND ARGUMENT
Winter Term 2010
15 Credits; 12 Weeks

LECTURES: TIME, PLACE
Mondays   14:00 – 15:00, NK6 (300)
Fridays   14:00 – 15:00, Arts Lecture Theatre (600)

Instructors

Aaron Cotnoir   **Dylan Dodd**
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Office Hours: Office Hours: Mondays, 11:15-12 & 17-18:30
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Tutors

Dylan Dodd   **Nathan Jezzi**   **Andrews Woodhall**
(see above)   Office: Office:
                             Office Hours: Office Hours:
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What This Course is About

This course isn't really about reasoning or arguing. Rather, it's about *logic* and *probability*. But with both logic and probability, we are studying *arguments* – a series of statements where one statement (the conclusion) is inferred from others (the premises). And in both reasoning and making arguments in daily life, we do infer conclusions from other things we believe. For this reason, knowing something about these two things will enable you to reason and argue more clearly and better.

We'll have two lectures per week. You also must sign up for one tutorial a week. Attendance at both the lectures and tutorials is crucial if you want to succeed in this course. We'll also assign problems for you to work through. Although they won't be assessed, if you don't do them you'll do poorly in this course. Mastering the material in this course requires practice.

The course divides into two parts. The first six weeks will be about logic, and Aaron Cotnoir will give all the lectures. The second six weeks will be about probability, and Dylan Dodd will give the lectures. You'll need to buy two books, one for the first part and one for the second part of the course. There will also be two class handouts you'll need to study.

Books to be purchased at Blackwell's

Greg Restall, *Logic: An Introduction*. Routledge.
Ian Hacking, *An Introduction to Probability and Inductive Logic*. Cambridge University Press.

Assessment
There will be one two hour cumulative final examination for this course, which will determine 100% of your mark.

COURSE SCHEDULE BY WEEK

Wk#	date	subject	readings
1	27/9	Propositions and arguments, part 1	Restall, ch. 1
1	1/10	Propositions and arguments, part 2	Handout 1
2	4/10	Logical connectives: conjunction, disjunction, negation	Restall, ch. 2
2	8/10	Logical connectives: material conditional	
3	11/10	Connective tables and compounds	Ch. 3
3	15/10	Checking for truth and validity	
4	18/10	Full semantics for CPL	Handout 2
4	22/10	Venn diagrams	
5	25/10	Connective rules and scope	Ch. 4
5	29/10	Checking for truth and validity	
6	1/11	Rules for connectives	Ch. 7
6	5/11	Proof Strategies	
7	8/11	Probability/Inductive logic: introduction, part 1	Hacking, chs. 1-3
7	12/11	Probability/Inductive logic: introduction, part 2	Ch. 4
8	15/11	Conditional probability and "learning from experience"	Ch. 5
8	19/11	Review	Ch. 6
9	22/11	Bayes Rule and "learning from experience", part 1	Ch. 7
9	26/11	Bayes Rule and "learning from experience", part 2	Review; do problems
10	29/11	Probability and decision making, part 1	Ch. 8
10	3/12	Probability and decision making, part 2	Ch. 9
11	6/12	Probability and decision making, part 3	Ch. 10
11	10/12	Review material on probability and decision making	Review; do problems
12	13/12	Different kinds of probabilities	Ch. 11
12	17/12	Review	Review; do problems

Learning Outcomes (this applies to the first half of the course, not so much the second)
Knowledge and Understanding of:
Key notions in formal and informal reasoning.

Intellectual skills – be able to
Reconstruct arguments and recognize defects arising out of their logical structure (invalidity). Provide counterexamples.
Identify common logical fallacies
Demonstrate knowledge and understanding of the nature of valid and invalid reasoning
Demonstrate understanding of some key issues and arguments in formal and philosophical logic
Exploit and appropriately apply logico-philosophical terminology
Translate arguments in natural language into the language of propositional logic, construct formal proofs of sequents of propositional logic
Conduct comparative truth-table tests to determine the validity/invalidity of sequents of propositional logic.

Practical Skills – be able to
Engage in disciplined discussion with others
Marshall complex information
Engage in autonomous and self-motivated learning
Think creatively, self-critically and independently
Use the library and relevant C&IT software/hardware

Transferable Skills – be able to
Recognize argumentative flaws in natural language discourse (both oral and written)
Identify and construct rigorous arguments
In recognizing the form of arguments, think critically about a range of topics regardless of subject matter.
Propose counterexamples to invalid reasoning patterns.