PHL 134

Formal Logic

S2 External 2016

Dept of Philosophy

Contents

General Information

Unit convenor and teaching staff
Unit Convenor
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Credit points
3

Prerequisites

Corequisites

Co-badged status

Unit description
Logic is concerned with the study of good reasoning. While PHL137 examines reasoning as it occurs in everyday life, this unit is a course in formal logic, where we look behind these particular contexts and consider what it is that makes a piece of reasoning good or bad: What makes one claim follow from another? People disagree about all sorts of things, but are there some claims and arguments that any rational person must accept? If so, what is special about those claims and arguments? In this unit, you will learn to use formal techniques to prove whether certain kinds of arguments are valid or invalid, and will examine some of the philosophical problems that arise in connection with the methods and assumptions of formal logic. The unit is suitable for those with an interest in the nature and philosophy of logic for its own sake, and for those who want to understand the techniques of formal logic for use in philosophy, or in other areas such as computing, mathematics and linguistics.

Important Academic Dates

Information about important academic dates including deadlines for withdrawing from units are available at https://www.mq.edu.au/study/calendar-of-dates

Learning Outcomes

On successful completion of this unit, you will be able to:

Translate between English and the language of propositional logic

Use truth tables and variants to test formulas and arguments in propositional logic

Construct proofs in propositional logic

Translate between English and the language of quantificational logic.

Construct proofs in quantificational logic

Understand and apply fundamental logical concepts

Understand and explain some central problems in the philosophy of logic arising out of the formal methods studied, and some of the main responses to those problems.

Demonstrate commitment to learning through regular engagement

General Assessment Information

This unit involves regular small assessments to provide you with regular feedback throughout the course. Feedback on each assessment will be available prior to the next assessment.

Requests for extensions for exercises or quizzes should be directed to Jenny as soon as possible, and will only be granted in cases of illness or misadventure. Exercises that are submitted late without an extension (or which are submitted after the extension date) will lose one mark for each day late, including weekends.

Anyone who misses an in-class test due to illness or misadventure should contact the convenor as soon as possible to arrange a supplementary test.

Other assessment problems should be discussed with the convenor as soon as they arise.

Assessment Tasks

Name	Weighting	Due
Online quiz 1	5%	9pm, Friday, 19/8/16
Exercise 1	10%	Friday 2/9/16
In-class test 1	30%	Saturday 17/9/16
Online quiz 2	5%	9pm, Friday 21/10/16
Exercise 2	10%	Friday 23/10/16
In-class test 2	30%	Saturday 12/11/16
Participation	10%	Weeks 2-12

Online quiz 1

Due: **9pm, Friday, 19/8/16**
Weighting: **5%**

Online quiz 1 is available from 9am Monday August 15 until 9pm on Friday August 19 (week 3). It consists of five multiple choice questions, and you will have 20 minutes to complete it. Further instructions will be given through iLearn.

The quiz covers material from weeks 1 and 2, and is designed to give you early feedback on your progress in the unit.

On successful completion you will be able to:

- Translate between English and the language of propositional logic
- Understand and apply fundamental logical concepts

Exercise 1

Due: **Friday 2/9/16**
Weighting: **10%**

A short exercise based on material from the first four weeks.The external students' exercise will be available online on Friday of week 4, and is to be submitted by Friday of week 5. It will be returned in week 6.

External students should submit their exercise directly to the convenor at jennifer.duke-yonge@mq.edu.au.

If you wish to handwrite your responses, the preferred method of submission would be to scan and email them. If this presents problems, please contact Jenny to make other arrangements.

On successful completion you will be able to:

- Translate between English and the language of propositional logic
- Use truth tables and variants to test formulas and arguments in propositional logic
- Construct proofs in propositional logic
- Understand and apply fundamental logical concepts

In-class test 1

Due: **Saturday 17/9/16**
Weighting: **30%**

The first in-class test for **external students** will be held during the first on-campus session on Saturday the 17th of September (end of Week 7). The session goes from 10am - 3pm, and the test will be held at 2pm. See the 'on-campus session' page of this guide for further information.

In-class test 'safety net'

Any student who makes a serious attempt at the first in-class test but receives a mark under 50% for it, will be given the opportunity to complete some additional work as determined by the convenor, and sit a supplementary test on a Pass/Fail basis (ie for a maximum mark of 50%) at a time to be negotiated with the convenor, no later than the end of week 9. No extensions of time will be given. This opportunity is only available for the first in-class test, and is intended to help ensure that all students meet the learning outcomes for the first part of the course required for success in the second half.

On successful completion you will be able to:

- Translate between English and the language of propositional logic
- Use truth tables and variants to test formulas and arguments in propositional logic
- Construct proofs in propositional logic
- Understand and apply fundamental logical concepts
- Understand and explain some central problems in the philosophy of logic arising out of the formal methods studied, and some of the main responses to those problems.

Online quiz 2

Due: **9pm, Friday 21/10/16**
Weighting: **5%**

Online quiz 2 is available from 9am Monday October 17 until 9pm on Friday October 21 (week 10). It consists of five multiple choice questions, covering material from weeks 8 and 9, and you will have 20 minutes to complete it. Further instructions will be given through iLearn.

On successful completion you will be able to:

- Translate between English and the language of quantificational logic.
- Understand and apply fundamental logical concepts

Exercise 2

Due: **Friday 23/10/16**
Weighting: **10%**

A short exercise based on material from weeks 8-10.The external students' exercise will be available online on Friday of week 10, and is to be submitted by Friday of week 11. It will be returned in week 12.

External students should submit their exercise directly to the convenor at jennifer.duke-yonge@mq.edu.au.

If you wish to handwrite your responses, the preferred method of submission would be to scan and email them. If this presents problems, please contact Jenny to make other arrangements.

On successful completion you will be able to:

- Translate between English and the language of quantificational logic.
- Construct proofs in quantificational logic
- Understand and apply fundamental logical concepts

In-class test 2

Due: **Saturday 12/11/16**
Weighting: **30%**

The second in-class test will be held in the second on-campus session, on Saturday 12/11 (end of Week 13). It covers material from the second half of the course (weeks 8-12). The session goes from 10am-3pm, and the test will be held at 2pm. See the 'on-campus sessions' page of this guide for more information.

The Wednesday lecture in week 13 will be used for test revision.

On successful completion you will be able to:

- Translate between English and the language of quantificational logic.
- Construct proofs in quantificational logic
- Understand and apply fundamental logical concepts
- Understand and explain some central problems in the philosophy of logic arising out of the formal methods studied, and some of the main responses to those problems.

Participation

Due: **Weeks 2-12**
Weighting: **10%**

Participation is an essential part of this unit, since you will be developing a set of skills that are formed through practice. You will therefore be assessed on your level of engagement with the content throughout the unit.

External students' participation marks will be based primarily on the weekly submission of short review exercises on which feedback will be provided by the convenor. Review questions will be provided after the Thursday lectures from week 2 onwards and will be due by the following Thursday's lecture, except in weeks 5 and 11, when there are formal homework exercises due. A schedule of external homework tasks will be available through iLearn.

These are participation exercises, rather than tests: It is important to note that your mark will depend not on whether you get the exercises right or wrong, but on your engagement with the course activities as demonstrated by your having attempted them. These exercises are designed to allow your teacher to see how you're going and provide feedback and assistance as required, to scaffold your progress through the unit. Feedback will be provided individually, and through an 'external students' forum' on the website where you can also learn from your classmates.

In most weeks your exercise will be submitted directly to the convenor, who will mark and return it within a few days, but in a few of the weeks where we are covering more philosophical material, the participation exercise will involve engaging in a discussion of a set question or topic on the discussion forum. More information about these participation exercises will be given in iLearn.

On successful completion you will be able to:

- Translate between English and the language of propositional logic
- Use truth tables and variants to test formulas and arguments in propositional logic

- Construct proofs in propositional logic
- Translate between English and the language of quantificational logic.
- Construct proofs in quantificational logic
- Understand and apply fundamental logical concepts
- Understand and explain some central problems in the philosophy of logic arising out of the formal methods studied, and some of the main responses to those problems.
- Demonstrate commitment to learning through regular engagement

Delivery and Resources

CLASSES

There are two lectures each week, at 1-2 on Wednesdays and 10-11 on Thursdays. Both of these lectures will be recorded through the Echo 360 system, and audio and video lectures will be available through the unit website shortly after delivery.

Further advice on studying this unit externally will be available through iLearn.

REQUIRED TEXT

The textbook for the unit is *Logic* by Paul Tomassi. This book will be used throughout the course and you will need a copy of it. The book is available in hard copy at the Co-op Bookshop. If you prefer, you can buy a Kindle edition.

UNIT WEBPAGE AND TECHNOLOGY USED AND REQUIRED

This unit has an online presence. Login is via: https://ilearn.mq.edu.au/ Students are required to have regular access to a computer and the internet. Mobile devices alone are not sufficient.

- For technical support go to: http://mq.edu.au/about_us/offices_and_units/informatics/help - For student quick guides on the use of iLearn go to: http://mq.edu.au/iLearn/student_info/guides.htm

Unit Schedule

Week	Main focus	Reading (from Tomassi)
1	Introduction. The language of propositional logic (PL)	Chapter 1, Chapter 2 (up to p39)
2	PL translation. Proofs in PL	Chapter 2 (p42 – end)

3	Proofs in PL (cont) ***First online quiz this week***	Chapter 3 (up to p101)
4	Proofs in PL (cont)	Chapter 3 (p101 – end)
5	Semantics : truth tables for PL ***First exercise due this week***	Chapter 4 (up to p163)
6	Philosophical extensions (I)	
7	Revision (Wednesday) and **in-class test** (Thursday)	
Mid-semester break (17/9 –3/10)		
8	Introduction to Quantificational Logic (QL) QL translation	Chapter 5 (up to p234)
9	QL translation (cont): relations and identity	Chapter 5 (p235 – end)
10	Proofs in QL ***Second online quiz this week***	Chapter 6, (up to 302)
11	Proofs in QL ***Second exercise due this week***	Chapter 6 (303 – end)
12	Philosophical extensions (II)	
13	Revision (Wednesday) and **in-class test** (Thursday)	

Learning and Teaching Activities

Lectures

There are two lectures each week, at 1-2 on Wednesdays and 10-11 on Thursdays. Both of these lectures will be recorded through the Echo 360 system, and audio and video lectures will be available through the unit website shortly after delivery. Further advice on studying this unit externally will be available through iLearn.

Reading and exercises

Each week, there will be reading set from the textbook. You can do this either before or after the

lectures: whichever you find works best for you. There are exercises at the end of each chapter. Exercise solutions will be posted online at the end of each week.

Online resources

The website will contain lecture slides, audio/video lecture recordings, summaries and a discussion forum which you are encouraged to use. Additional resources will be posted online for you to make use of as you wish.

Participation exercises

External students' participation in the unit is assessed through the submission of short weekly exercises. See the "Assessment" pages for further information. External students are also encouraged to submit any other exercises or work they would like feedback on to the convenor.

Policies and Procedures

Macquarie University policies and procedures are accessible from Policy Central. Students should be aware of the following policies in particular with regard to Learning and Teaching:

Academic Honesty Policy http://mq.edu.au/policy/docs/academic_honesty/policy.html

New Assessment Policy in effect from Session 2 2016 http://mq.edu.au/policy/docs/assessment/policy_2016.html. For more information visit http://students.mq.edu.au/events/2016/07/19/new_assessment_policy_in_place_from_session_2/

Assessment Policy prior to Session 2 2016 http://mq.edu.au/policy/docs/assessment/policy.html

Grading Policy prior to Session 2 2016 http://mq.edu.au/policy/docs/grading/policy.html

Grade Appeal Policy http://mq.edu.au/policy/docs/gradeappeal/policy.html

Complaint Management Procedure for Students and Members of the Public http://www.mq.edu.au/policy/docs/complaint_management/procedure.html

Disruption to Studies Policy http://www.mq.edu.au/policy/docs/disruption_studies/policy.html *The Disruption to Studies Policy is effective from March 3 2014 and replaces the Special Consideration Policy.*

In addition, a number of other policies can be found in the Learning and Teaching Category of Policy Central.

Student Code of Conduct

Macquarie University students have a responsibility to be familiar with the Student Code of Conduct: https://students.mq.edu.au/support/student_conduct/

Results

Results shown in *iLearn*, or released directly by your Unit Convenor, are not confirmed as they are subject to final approval by the University. Once approved, final results will be sent to your student email address and will be made available in eStudent. For more information visit ask.mq.edu.au.

Student Support

Macquarie University provides a range of support services for students. For details, visit http://students.mq.edu.au/support/

Learning Skills

Learning Skills (mq.edu.au/learningskills) provides academic writing resources and study strategies to improve your marks and take control of your study.

- Workshops
- StudyWise
- Academic Integrity Module for Students
- Ask a Learning Adviser

Student Services and Support

Students with a disability are encouraged to contact the Disability Service who can provide appropriate help with any issues that arise during their studies.

Student Enquiries

For all student enquiries, visit Student Connect at ask.mq.edu.au

IT Help

For help with University computer systems and technology, visit http://www.mq.edu.au/about_us/offices_and_units/information_technology/help/.

When using the University's IT, you must adhere to the Acceptable Use of IT Resources Policy. The policy applies to all who connect to the MQ network including students.

Graduate Capabilities

Creative and Innovative

Our graduates will also be capable of creative thinking and of creating knowledge. They will be imaginative and open to experience and capable of innovation at work and in the community. We want them to be engaged in applying their critical, creative thinking.

This graduate capability is supported by:

Learning outcome

- Understand and explain some central problems in the philosophy of logic arising out of the formal methods studied, and some of the main responses to those problems.

Assessment tasks

- In-class test 1
- In-class test 2

- Participation

Capable of Professional and Personal Judgement and Initiative

We want our graduates to have emotional intelligence and sound interpersonal skills and to demonstrate discernment and common sense in their professional and personal judgement. They will exercise initiative as needed. They will be capable of risk assessment, and be able to handle ambiguity and complexity, enabling them to be adaptable in diverse and changing environments.

This graduate capability is supported by:

Learning outcome

- Understand and apply fundamental logical concepts

Assessment task

- Participation

Commitment to Continuous Learning

Our graduates will have enquiring minds and a literate curiosity which will lead them to pursue knowledge for its own sake. They will continue to pursue learning in their careers and as they participate in the world. They will be capable of reflecting on their experiences and relationships with others and the environment, learning from them, and growing - personally, professionally and socially.

This graduate capability is supported by:

Learning outcomes

- Understand and apply fundamental logical concepts
- Understand and explain some central problems in the philosophy of logic arising out of the formal methods studied, and some of the main responses to those problems.
- Demonstrate commitment to learning through regular engagement

Assessment tasks

- In-class test 1
- In-class test 2
- Participation

Discipline Specific Knowledge and Skills

Our graduates will take with them the intellectual development, depth and breadth of knowledge, scholarly understanding, and specific subject content in their chosen fields to make them competent and confident in their subject or profession. They will be able to demonstrate, where relevant, professional technical competence and meet professional standards. They will be able to articulate the structure of knowledge of their discipline, be able to adapt discipline-specific

knowledge to novel situations, and be able to contribute from their discipline to inter-disciplinary solutions to problems.

This graduate capability is supported by:

Learning outcomes

- Translate between English and the language of propositional logic
- Use truth tables and variants to test formulas and arguments in propositional logic
- Construct proofs in propositional logic
- Translate between English and the language of quantificational logic.
- Construct proofs in quantificational logic
- Understand and apply fundamental logical concepts
- Understand and explain some central problems in the philosophy of logic arising out of the formal methods studied, and some of the main responses to those problems.

Assessment tasks

- Online quiz 1
- Exercise 1
- In-class test 1
- Online quiz 2
- Exercise 2
- In-class test 2
- Participation

Critical, Analytical and Integrative Thinking

We want our graduates to be capable of reasoning, questioning and analysing, and to integrate and synthesise learning and knowledge from a range of sources and environments; to be able to critique constraints, assumptions and limitations; to be able to think independently and systemically in relation to scholarly activity, in the workplace, and in the world. We want them to have a level of scientific and information technology literacy.

This graduate capability is supported by:

Learning outcomes

- Translate between English and the language of propositional logic
- Translate between English and the language of quantificational logic.
- Understand and apply fundamental logical concepts
- Understand and explain some central problems in the philosophy of logic arising out of the formal methods studied, and some of the main responses to those problems.

Assessment tasks

- Exercise 1
- In-class test 1
- Exercise 2
- In-class test 2
- Participation

Problem Solving and Research Capability

Our graduates should be capable of researching; of analysing, and interpreting and assessing data and information in various forms; of drawing connections across fields of knowledge; and they should be able to relate their knowledge to complex situations at work or in the world, in order to diagnose and solve problems. We want them to have the confidence to take the initiative in doing so, within an awareness of their own limitations.

This graduate capability is supported by:

Learning outcomes

- Translate between English and the language of propositional logic
- Use truth tables and variants to test formulas and arguments in propositional logic
- Construct proofs in propositional logic
- Translate between English and the language of quantificational logic.
- Construct proofs in quantificational logic
- Understand and apply fundamental logical concepts
- Understand and explain some central problems in the philosophy of logic arising out of the formal methods studied, and some of the main responses to those problems.

Assessment tasks

- Exercise 1
- In-class test 1
- Exercise 2
- In-class test 2
- Participation

Effective Communication

We want to develop in our students the ability to communicate and convey their views in forms effective with different audiences. We want our graduates to take with them the capability to read, listen, question, gather and evaluate information resources in a variety of formats, assess, write clearly, speak effectively, and to use visual communication and communication technologies as appropriate.

This graduate capability is supported by:

Learning outcomes

- Understand and apply fundamental logical concepts
- Understand and explain some central problems in the philosophy of logic arising out of the formal methods studied, and some of the main responses to those problems.

Assessment tasks

- Exercise 1
- In-class test 1
- Exercise 2
- In-class test 2
- Participation

Changes from Previous Offering

Change of text, and associated changes of content.

On-campus sessions

There will be two on-campus sessions for external students, on **Saturday 17th of September** and **Saturday 12th of November** from**10am-3pm.** Check the timetable or the external students' forum closer to those dates for confirmation of the location of the sessions.

All external students **must** attend from 2-3pm, to complete the in-class tests, each worth 30% of the assessment for the course.

On each of these days the morning sessions from 10am are optional but strongly recommended sessions for exercises, discussion, revision and test preparation.