



SCHOOL OF HISTORY, PHILOSOPHY, POLITICAL SCIENCE AND INTERNATIONAL RELATIONS

PHILOSOPHY PROGRAMME
PHIL 334: Logic and Computation

TRIMESTER 2 2011
11 July to 12 November 2011

Trimester dates

Teaching dates: 11 July to 14 October 2011

Mid-trimester break: 22 August to 4 September 2011

Study week: 17–21 October 2011

Examination/Assessment period: 21 October to 12 November 2011

Students who enrol in this course must be able to attend an examination at the University at any time during the formal examination period.

Withdrawal dates

Information on withdrawals and refunds may be found at

<http://www.victoria.ac.nz/home/admisenrol/payments/withdrawalsrefunds.aspx>

Names and contact details

LECTURER AND COURSE COORDINATOR

Edwin Mares

MY 618

(04) 463-5234

Ed.Mares@vuw.ac.nz

Office Hours: By appointment

Class times and locations

Lecture time: Monday and Friday 9:00-10:50

Lecture venue: Hugh Mackenzie 003

Course delivery

This course will involve two two-hour lectures per week. Monday lectures will usually involve a tutorial (of about 50 minutes) on material assigned the previous Friday (but not graded). Lectures and tutorials will run for 1 hr and 50 minutes including a 10 minute break at about 10am. Attendance is strongly encouraged but not mandatory.

Communication of additional information

Additional information will be conveyed to students, for example via Blackboard.

Course Prescription

This course covers central results about the nature of logic, the nature of computation, and the relationships between the two. Topics treated may include basic set theory, proof theory and model theory of first order logic, Turing machines and the theory of computation, and the decision problem for first order logic.

Course Content

This course provides an introduction to the theory of computation from a logical point of view. The first three weeks of lectures are about set theory, which forms the basis of modern mathematics, including the basis of logic and of the theory of computation. Students will learn basic concepts of set theory and computation theory, including the concept of a Turing machine and of a computable function. Students will learn how to use these concepts in simple proofs and will be given an understanding of why no computer program can be designed that will decide with perfect reliability whether a formula of predicate logic is or is not valid.

Learning objectives

Students passing the course should be able to:

1. prove simple facts about the theory of sets;
2. design and understand the design of simple Turing machines;
3. prove simple facts about computable functions.

Expected workload

In accordance with University guidelines, the overall workload for a 20 point course is 200 hours spread over the entire trimester.

During the twelve teaching weeks of trimester, there will be four contact hours a week. Independent working hours during teaching weeks should average about nine hours per week. Independent work during other periods (preparing for the tests and exam, and writing up the assignments) should equal roughly 50 hours in total.

Readings

Required readings are from Richard Jeffrey, George Boolos, and John Burgess, *Computability and Logic*, Cambridge University Press, 2007 (fifth edition). It is available from Vic Books.

All undergraduate textbooks and student notes will be sold from the Memorial Theatre foyer from 4 to 22 July 2011, while postgraduate textbooks and student notes will be available from the top floor of vicbooks in the Student Union Building, Kelburn Campus. After week two of the trimester all undergraduate textbooks and student notes will be sold from vicbooks on Level 4 of the Student Union Building.

Customers can order student notes online at www.vicbooks.co.nz or can email an order or enquiry to enquiries@vicbooks.co.nz. Books can be couriered to customers or they can be picked up from nominated collection points at each campus. Customers will be contacted

when they are available. Opening hours are 8.00 am – 6.00 pm, Monday – Friday during term time (closing at 5.00 pm in the holidays). Phone: 463 5515.

Additional Required Materials

Other readings (mainly handouts written by the instructor) will be made available on blackboard.

Assessment requirements

The assessment will be based on the following: two assignments (each worth 10%); two tests (each worth 20%); and one final exam (worth 40%).

TESTS: The tests will be on 12 August (largely on set theory) and on 26 September.

ASSIGNMENTS: The first assignment is due on 9 September and the second assignment is due on 7 October. The assignment questions will be made available on Blackboard. For the second assignment the students will be given a choice between answering a set of questions or writing an essay on the following topic: Is thinking the same as computation? (Readings: J.R. Lucas "Minds, Machines, and Goedel" and Penrose, selections from *The Emperor's New Mind*).

FINAL EXAM: After completing the course, students should sit a three-hour closed-book exam on all of the material covered in the course. The exam is designed to assess how well students have met both of the course learning objectives. The exam will be composed of true/false, short answer, and problem questions. More details about the exam are posted on blackboard. Information about the examination rules and timetable can be found at the following web address: <http://www.victoria.ac.nz/timetables/exam-timetable.aspx>. The examination period for second trimester 2011 runs from 21 October to 12 November. Students who enrol in this course must be able to attend an examination at the University at any time during this period.

Return of assignments

After grading, all assignments will be available from the Programme office Monday - Friday between 2-3pm.

Penalties

Late assignments will not be accepted and there will be no make-up tests for those who miss the in-class tests unless the student has a legitimate excuse.

Mandatory course requirements

There are no mandatory course requirements for PHIL 334.

Class Representative

A class representative will be elected in the first week and that person's name and contact details will be made available to VUWSA, the Course Coordinator and the class via blackboard. The class representative provides a communication channel to liaise with the Course Coordinator on behalf of students.

Academic Integrity and Plagiarism

Academic integrity means that university staff and students, in their teaching and learning are expected to treat others honestly, fairly and with respect at all times. It is not acceptable to mistreat academic, intellectual or creative work that has been done by other people by representing it as your own original work.

Academic integrity is important because it is the core value on which the University's learning, teaching and research activities are based. Victoria University's reputation for academic integrity adds value to your qualification.

The University defines plagiarism as presenting someone else's work as if it were your own, whether you mean to or not. 'Someone else's work' means anything that is not your own idea. Even if it is presented in your own style, you must acknowledge your sources fully and appropriately. This includes:

- Material from books, journals or any other printed source
- The work of other students or staff
- Information from the internet
- Software programs and other electronic material
- Designs and ideas
- The organisation or structuring of any such material

Find out more about plagiarism, how to avoid it and penalties, on the University's website: <http://www.victoria.ac.nz/home/study/plagiarism.aspx>

WHERE TO FIND MORE DETAILED INFORMATION

Find key dates, explanations of grades and other useful information at www.victoria.ac.nz/home/study. Find out how academic progress is monitored and how enrolment can be restricted at www.victoria.ac.nz/home/study/academic-progress. Most statutes and policies are available at www.victoria.ac.nz/home/about/policy, except qualification statutes, which are available via the *Calendar* webpage at www.victoria.ac.nz/home/study/calendar.aspx (See Section C).

Other useful information for students may be found at the website of the Assistant Vice-Chancellor (Academic), at www.victoria.ac.nz/home/about_victoria/avcacademic.