PHIL30043 The Power and Limits of Logic

Credit Points:	12.50
Level:	3 (Undergraduate)
Dates & Locations:	This subject is not offered in 2014.
Time Commitment:	Contact Hours: 2x 1-hour lectures each week and 1x 1-hour tutorial (weeks 2-12) Total Time Commitment: An average of 8.5 hours per week; total 120 hours
Prerequisites:	None
Corequisites:	None
Recommended Background Knowledge:	Completion of at least one of the following is helpful, but is not required:

Subject	Study Period Commencement:	Credit Points:
UNIB10002 Logic: Language and Information	Semester 1	12.50
PHIL20030 Meaning, Possibility and Paradox	Semester 1	12.50
MAST10012 Introduction to Mathematics	Semester 1	12.50

Non Allowed Subjects:	None
Core Participation Requirements:	For the purposes of considering request for Reasonable Adjustments under the disability Standards for Education (Cwth 2005), and Students Experiencing Academic Disadvantage Policy, academic requirements for this subject are articulated in the Subject Description, Subject Objectives, Generic Skills and Assessment Requirements of this entry.The University is dedicated to provide support to those with special requirements. Further details on the disability support scheme can be found at the Disability Liaison Unit website: http://www.services.unimelb.edu.au/disability/
Contact:	**Professor Greg Restall (http://www.findanexpert.unimelb.edu.au/display/person8019)** **restall@unimelb.edu.au (mailto:restall@unimelb.edu.au)**
Subject Overview:	This subject deals with the power and limits of logic. We will cover some of the great conceptual advances in logic in the 20th Century, which have revolutionised our understanding of logic and language, of models and meaning, and of concepts and computation. We will examine the conceptual foundations of logic and the way it can be applied, not only to develop theories in other domains, but how we can learn the limits of logic when we attempt to apply its power to logic itself. In the course, we will examine fundamental results such as (1) the soundness and completeness of different proof systems of first-order predicate logic, (2) the boundary between the countably infinite and the uncountably infinite (3) the boundary between the computable and the uncomputable, and (4) Gödel's incompleteness theorem and its consequences. Concepts and results will be approached via both practical exposure to formal techniques and proofs and theoretical and philosophical reflection on those techniques. Students will be able to to appreciate the philosophical importance of the major logical results and equipping them for further work in logic in philosophy, mathematics, linguistics, computer science and related fields.
Learning Outcomes:	Students who sucessfully complete this class should: # develop an overview of core features of formal logic, its scope and its limits. # demonstrate an ability to prove results in and about formal logics.

	# develop a command of the connections between proof, computation, decidability, incompleteness and completeness. # critically reflect on the strengths and weaknesses of formal logic and its appropriateness for different applications.
Assessment:	Tutorial exercises 50% (throughout semester), and a 2 hr written examination (not open-book) 50% (during the end of semester examination period). This subject has a minimum hurdle requirement of 75% tutorial attendance. Regular participation in tutorials is required. Assessment submitted late without an approved extension will be penalised at 10% per day. In-class tasks missed without approval will not be marked. All pieces of written work must be submitted to pass this subject.
Prescribed Texts:	To be advised.
Breadth Options:	This subject potentially can be taken as a breadth subject component for the following courses: # **Bachelor of Biomedicine (https://handbook.unimelb.edu.au/view/2014/B-BMED)** # **Bachelor of Commerce (https://handbook.unimelb.edu.au/view/2014/B-COM)** # **Bachelor of Environments (https://handbook.unimelb.edu.au/view/2014/B-ENVS)** # **Bachelor of Music (https://handbook.unimelb.edu.au/view/2014/B-MUS)** # **Bachelor of Science (https://handbook.unimelb.edu.au/view/2014/B-SCI)** # **Bachelor of Engineering (https://handbook.unimelb.edu.au/view/2014/B-ENG)** You should visit **learn more about breadth subjects (http://breadth.unimelb.edu.au/ breadth/info/index.html)** and read the breadth requirements for your degree, and should discuss your choice with your student adviser, before deciding on your subjects.
Fees Information:	Subject EFTSL, Level, Discipline & Census Date, http://enrolment.unimelb.edu.au/fees
Generic Skills:	Students who successfully complete this subject will hone the following skills: # Critical, creative thinking. # Persuasive and balanced assessment. # Reading with attention to detail. # Analysis and clarification of unclear concepts. # Simplicity and precision in written and oral presentations. # Rigorous reasoning about fundamental issues.
Links to further information:	http://www.philosophy.unimelb.edu.au/
Related Majors/Minors/ Specialisations:	History and Philosophy of Science History and Philosophy of Science History and Philosophy of Science Major Philosophy Philosophy Philosophy Philosophy Major