620-645 Measure Theory

Credit Points:	12.50
Level:	9 (Graduate/Postgraduate)
Dates & Locations:	2009, This subject commences in the following study period/s: Semester 1, - Taught on campus.
Time Commitment:	Contact Hours: 36 hours comprising one two-hour lecture per week and one one-hour practical class per week. Total Time Commitment: Not available
Prerequisites:	None
Corequisites:	None
Recommended Background Knowledge:	It is recommended that students have completed a third year subject in metric spaces, measure and integral (equivalent to 620-311 [2008] Metric Spaces and 620-312 [2008] Linear Analysis).
Non Allowed Subjects:	None
Core Participation Requirements:	It is University policy to take all reasonable steps to minimise the impact of disability upon academic study and reasonable steps will be made to enhance a student's participation in the University's programs. Students who feel their disability may impact upon their participation are encouraged to discuss this with the subject coordinator and the Disability Liaison Unit.
Coordinator:	Prof Greg Hjorth
Subject Overview:	Measure Theory formalises and generalises the notion of integration. It is fundamental to many areas of mathematics and probability and has applications in other fields such as physics and economics. Students will be introduced to Lebesgue measure and integration. Signed measures. Hahn-Jordan decomposition. Radon-Nikodym derivative. Conditional expectation. Borel sets and standard Borel spaces. Product measures. The Riesz representation theorem. The Krein-Milman theorem. The Stone-Weierstrass theorem. The measure disintegration theorem. Ergodic theory.
Objectives:	After completing this subject, students will: # understand the fundamentals of measure theory and have an understanding of how these; # underpin the use of mathematical concepts such as volume, area, and integration; # learn an advanced description of the basic notion of integration; # develop a perspective on the broader impact of measure theory in ergodic theory; and # have the ability to pursue further studies in this and related areas.
Assessment:	Up to 40 pages of written assignments (40%: two assignments worth 20% each, due mid and late in semester), a 3 hour written examination (60%, in the examination period).
Prescribed Texts:	TBA.
Recommended Texts:	TBA.
Breadth Options:	This subject is not available as a breadth subject.
Fees Information:	Subject EFTSL, Level, Discipline & Census Date, http://enrolment.unimelb.edu.au/fees
Generic Skills:	Upon completion of this subject, students should gain the following generic skills: # the ability to think abstractly; # problem-solving skills including engaging with unfamiliar problems and identifying relevant strategies;

	# analytical skills including the ability to construct and express logical arguments and to work in abstract or general terms to increase the clarity and efficiency of an analysis; and # through interactions with other students, the ability to work in a team.
Related Majors/Minors/ Specialisations:	R05 RM Master of Science - Mathematics and Statistics