ACTL90001 Mathematics of Finance I

Credit Points:	12.5
Level:	9 (Graduate/Postgraduate)
Dates & Locations:	2016, Parkville This subject commences in the following study period/s: Semester 1, Parkville - Taught on campus.
Time Commitment:	Contact Hours: A 2 hour seminar and a 1 hour workshop per week Total Time Commitment: Estimated total time commitment of 120 hours per semester
Prerequisites:	Students who have not previously studied probability theory must take MAST20004 Probability (may be taken concurrently with this subject).

Subject	Study Period Commencement:	Credit Points:
MAST20004 Probability	Semester 1	12.50

Corequisites:	None
Recommended Background Knowledge:	# Students should have a background in mathematics # Students should be competent in the use of Excel
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 Student Support and Engagement Policy, academic requirements for this subject are articulated in the Subject Overview, Learning Outcomes, Assessment and Generic Skills sections of this entry. It is University policy to take all reasonable steps to minimise the impact of disability upon academic study, and reasonable adjustments will be made to enhance a student's participation in the University's programs. Students who feel their disability may impact on meeting the requirements of this subject are encouraged to discuss this matter with a Faculty Student Adviser and Student Equity and Disability Support: http://services.unimelb.edu.au/disability
Coordinator:	Dr Zhuo Jin
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Subject Overview:	Topics include compound interest functions; valuation of a series of payments, including where the cash flows and/or the force of interest are continuous functions of time; equations of value; loans repayable by instalments; characteristics of major asset types; and discount valuation of fixed interest securities, ordinary shares and property, including effects of tax; discount valuation of index-linked bonds and forward contracts; term structure of interest rates; duration and convexity; discounted cash flow techniques; distributions of accumulations and present values.
Learning Outcomes:	On successful completion of this subject a student should be able to: # Apply relevant pre-requisite mathematical knowledge in the solution of a range of practical problems; # Describe and apply the main methods of finding the accumulation or present value of money under simple and compound interest and discount; # Derive and apply formulae to calculate the accumulation or present value of a series of payments, including the cases of continuous payments and variable interest rates; # Analyse and solve equations of value for rates of interest; # Calculate rates of return on investment portfolios using methods employed by actuaries; # Construct and analyse a loan schedule, including cases when terms of a loan are altered; # Analyse financial aspects of projects using discounted cash flow techniques;

	# Explain the key features of the main types of financial assets, including shares, bonds, property and derivatives; # Perform compound interest calculations relating to financial assets, including the calculation of price and yield; # Calculate the delivery price and the value of a forward contract using arbitrage free pricing methods; # Perform calculations relating to the term structure of interest rates; # Derive results for simple stochastic models for investment returns, and apply these results.
Assessment:	1000 word assignment due in week 11 (10%); A one hour mid-semester test due week 10 (20%) and A two hour end of semester exam (70%).
Prescribed Texts:	Compound Interest and its applications, Fitzherbert and Pitt, 2013.
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:	High level of development: # Written communication # Problem solving # Application of theory to practice # Synthesis of data and other information # Use of computer software
Related Course(s):	Graduate Diploma in Actuarial Science Master of Actuarial Science