

# Course 5B Investment Management and Finance

## Syllabus

The aim of the Investment Management and Finance Modules is to provide the actuary with the knowledge, skills and judgement necessary to tackle a broad range of investment and finance related problems. This Module builds on the skills and techniques developed in the subjects of Part I and II of the IAAust education program. In particular it involves a practical approach to the issues faced when advising clients on related matters.

This syllabus describes what students are expected to be able to demonstrate for successful completion of this Module.

To be fully competent in any area of actuarial endeavour requires a certain degree of practical experience. While the Investment and Finance Module cannot provide this directly, it attempts to approach the subject from a practical perspective, with the selected reading including material written by both practitioners and academics.

Item	Unit/Key Performance Objective/Learning Objective
<b>1</b>	<b>The Use of Derivatives</b>
<b>1.1</b>	<b>Describe the primary motivations of the various users of derivatives, and the circumstances in which they use these instruments.</b>
1.1.1	To describe the primary objectives of corporate treasuries in using derivatives.
1.1.2	To identify the primary objectives of institutional investors in using derivatives. In particular, to describe the issues facing banks in respect to dealing in derivatives.
1.1.3	To describe the main forms of derivatives and outline the mechanics of transacting derivatives.
1.1.4	To describe the principal strategies employed by users of derivatives.
<b>2</b>	<b>A Modelling Framework for Derivatives Pricing and Management</b>
<b>2.2</b>	<b>Apply the mathematics underlying the valuation of derivative contracts.</b>
2.2.1	To apply the mathematics underlying the Binomial model to the valuation of derivative contracts in discrete time. The valuation process requires modelling the process for an asset price, making appropriate adjustments, applying the martingale approach and demonstrating the relationship between pricing and hedging by means of self financing portfolios.

Item	Unit/Key Performance Objective/Learning Objective
2.2.2	To apply the mathematics underlying stochastic models to the valuation of derivative contracts in continuous time. The valuation process requires modelling the process for an asset price, making appropriate adjustments, applying the martingale approach and demonstrating the relationship between pricing and hedging by means of self financing portfolios.
2.2.3	To apply the partial differential equation approach in derivative valuation and hedging.
<b>3</b>	<b>Applying the Modelling Framework</b>
<b>3.3</b>	<b>Apply the appropriate principal methods (i.e. the standard Black-Scholes model and its variations), other models of a stochastic nature and numerical procedures in the valuation of equity, currency and commodity related derivatives.</b>
3.3.1	To value equity derivatives using the framework of Unit 2.
3.3.2	To value currency related derivatives using the framework of Unit 2.
3.3.3	To value commodity related derivatives using the framework of Unit 2.
3.3.4	To implement calculation of risk statistics for derivative contracts.
3.3.5	To describe models of a stochastic nature in the valuation of equity, currency and commodity related derivatives.
3.3.6	To implement numerical procedures in the valuation of equity, currency and commodity related derivatives.
<b>4</b>	<b>Exotic Options</b>
<b>4.4</b>	<b>Implement standard option valuation techniques in the context of exotic options.</b>
4.4.1	To describe the features of the main exotic options including range forwards, Bermudan options, compound options, barrier options, binary options, lookback options, Asian options, exchange options and multi-asset options
4.4.2	To explain how product ranges differ by jurisdiction and market.
4.4.3	To explain the reasons why derivative users employ exotic derivatives.
4.4.4	To explain how to adapt and to apply the standard valuation techniques to the various exotics including modifications to Black-Scholes, simulation and lattices.
4.4.5	To modify and apply the lattice approach for valuing options on correlated assets and exchange options
4.4.6	To value equity linked foreign exchange options ("quantos").

Item	Unit/Key Performance Objective/Learning Objective
5	<b>Interest Rate Derivatives</b>
5.5	<b>To apply the valuation framework from Unit 2 in the valuation of interest rate derivatives. This may involve implementing term structure modelling in some cases.</b>
5.5.1	To describe the dynamics of the yield curve and how this affects derivative pricing
5.5.2	To price the principal interest rate derivatives, namely forwards, swaps and options, including their more exotic forms
5.5.3	To describe the primary interest rate / yield curve models used to price interest rate sensitive derivatives, including the advantages and shortcomings of each
6	<b>Managing Risk, Capital, Accounting and Taxation for Derivatives</b>
6.6	<b>Describe the principles underlying the risk management to a portfolio of derivatives.</b>
6.6.1	To describe the principles of hedging and managing a derivatives portfolio on a daily basis.
6.6.2	To be able to quantify and manage credit, market and operational risks for derivative securities and how these relate to bank capital adequacy requirements
6.6.3	To describe the main features of the tax and accounting treatment for derivative instruments in Australia.
7	<b>Professionalism</b>
7.7	<b>To apply professional behaviour in the investment and finance field</b>
7.7.1	To identify situations where other expertise is required and when the IAA Code of Conduct is applicable.
7.7.2	To recognise the key features of the IAA Professional Standards relating to investment management and finance.
7.7.3	To explain the implications of the main sections of the relevant Australian law which relate to professionalism and ethical behaviour within the investment management and finance industry.