Certified International Investment Analyst

EXAMINATION SYLLABUS

1. **Financial Accounting and Financial Statement Analysis**

2. **Corporate Finance**

3. **Equity Valuation and Analysis**

4. **Economics**

5. **Fixed Income Valuation and Analysis**

6. **Derivative Valuation and Analysis**

7. **Portfolio Management**

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1. Glossary

The CIIA International Examinations comprise two levels: a Foundation level Examination and a Final level Examination.

The Foundation Examination will examine all topic areas marked with the indication Fo in the present Syllabus. It will contain multiple choice, calculation and essay type questions which assess the basic knowledge and analytical skills of candidates.

The Final Examination concerns all the subjects described in the current Syllabus, i.e. all topic areas marked with the indication Fi. Material that is examinable at the Foundation level can also be examined at the Final level. The Final Examination will examine across all topic areas and will contain full and mini- case study questions, together with in-depth essay or discursive questions together with some structured computational questions which assess the more advanced knowledge and synthetic analytical skills of candidates.

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2. Introduction: Quantitative Analysis and Statistics

Broad Learning Objectives

This pre-requisite topic will not be examined as such, but a sufficient understanding is necessary to read the manuals and other articles or finance books without being brought to a halt at the first formula. It is necessary to understand the various mathematical concepts, statistical concepts and methods and numerical procedures and to apply these to the different modules.

Algebra: Financial mathematics language; Greek letters; Basic terminology (constants, variables, coefficients); Algebraic operations, algebraic transformations; Equations (linear, inequalities, system of equations with one unknown, with two unknowns); Indexed notations, sums, products; Simple, compounded, continuous returns.

Functions: Graphs of a function (slope, x/y-axis, intercept); Constant, linear, inverse, quadratic, power, exponential, logarithmic functions.

Derivatives and Integrals: First, second, partial derivative; Concave, convex functions, inflection point; Integrals.

Statistics and probabilities: Graphics (pie chart, histogram, diagram; quantile, quartile, percentile, mean, mode, median; skewness); Covariance, correlation coefficient; Linear regressions (simple, multiple); Concept of probability; Simple, weighted, arithmetic, geometrical means; Dispersion measures (for example, variance, standard deviation and shortfall); Expected value; Binomial and normal distribution; Statistical tests.

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3. Financial Accounting and Financial Statement Analysis

Broad Learning Objectives

The basic principles and standards that underpin the preparation of financial statements should be understood, together with the various features of the income statements and balance sheets. The usage and analysis of financial statement related information receives a particular emphasis and candidates should develop strong skills in these dimensions. A wide range of analytic tools and applications should be understood, including income versus cash flow, various ratio analyses (such as EPS, profitability, leverage), time series analyses, common size statements and Dupont analysis and their application in practical settings well known and understood. Candidates should have a good understanding of the important topics of foreign currency translation and the consolidation of financial statements. The important valuation related topic of financial projections is also covered.

1	**Principles and Standards**	
1.1	The financial reporting environment	Fo/Fi
1.1.1	The financial statements	
1.1.2	Financial reporting issues	
1.2	Framework for the preparation and presentation of financial statements	Fo/Fi
1.2.1	Objective of financial statements	
1.2.2	Accounting conventions	
1.2.3	Fundamental definitions	
1.2.4	Criteria for accounting recognition	
1.3	Statement of cash flows	Fo/Fi
1.3.1	Rationale for the statement of cash flows	
1.3.2	Relation between income flows and cash flows	
2	**Income Statement and Foreign Currency Transactions**	
2.1	Revenue recognition	Fo/Fi
2.1.1	Revenues from customers	
2.1.2	Criteria for expense recognition	
2.1.3	Accounting for stock options and similar benefits	
2.2	Foreign currency transactions	Fo/Fi
2.2.1	Foreign currency transactions	
2.2.2	The translation of financial statements into a foreign currency	
2.2.3	Hyperinflationary economies	

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3 Balance Sheet

3.1	Assets		Fo/Fi
	3.1.1	Property, plant and equipment	
	3.1.2	Investment property	
	3.1.3	Intangible assets	
	3.1.4	Inventories	
	3.1.5	Accounts receivable	
	3.1.6	Cash and cash equivalents	
	3.1.7	Impairment of assets	
	3.1.8	Financial assets	
3.2	Liabilities		Fo/Fi
	3.2.1	Bonds and other financial liabilities	
	3.2.2	Compound financial instruments	
	3.2.3	Off balance sheet financing agreements	
	3.2.4	Leases	
	3.2.5	Borrowing costs	
	3.2.6	Retirement benefits	
	3.2.7	Income taxes	
3.3	Shareholders' Equity		Fo/Fi
	3.3.1	Issuance of capital stock	
	3.3.2	Acquisition and sale of treasury shares	
	3.3.3	Accounting for dividends	
	3.3.4	Other changes in retained earnings	
3.4	Provisions		Fo/Fi
	3.4.1	Conditions for the recognition of provisions	
	3.4.2	Contingent liabilities	

4 Data Analysis

4.1	Income vs. Cash Flow		Fo/Fi
	4.1.1	Relationship between income and cash flow from operations	
	4.1.2	Income and cash flow at various stages of the life cycle	
4.2	Quality of earnings, earnings management		Fo/Fi
	4.2.1	Data issues when analysing financial statements	
	4.2.2	Significance and implications of alternative accounting policies on the financial statements	
4.3	Earnings per share		Fo/Fi
	4.3.1	Basic earnings per share	
	4.3.2	Diluted earnings per share	
	4.3.3	Using EPS to value firms	
	4.3.4	Criticism of EPS	

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4.4	Segment reporting	Fi
4.4.1	Segment identification	
4.4.2	Disclosure requirements	
4.4.3	Using segment information for the analysis	
4.5	Interim reporting	Fi
4.6	Non-GAAP financial measures	Fi
4.6.1	Adjusted net income / operating income	
4.6.2	EBITDA	
4.6.3	Free cash flow	
4.6.4	Net debt	
4.6.5	Organic sales	
4.6.6	New orders, backlog, book-to-bill	
5	**Consolidated Financial Statements**	
5.1	Mergers and acquisitions	Fi
5.1.1	Acquisitions	
5.1.2	Mergers	
5.2	Consolidated financial statements	Fi
5.2.1	The scope of consolidation	
5.2.2	The consolidation methods	
5.2.3	The nature of the difference arising from consolidation	
5.2.4	Uses of each method	
5.2.5	The consolidation procedure	
5.2.6	Analysis of the difference arising from initial consolidation	
5.2.7	Valuing minority interests	
5.2.8	The treatment of Goodwill	
6	**Major Financial Flows and Accounting Adjustments**	
6.1	Shareholder vision: net income and earnings per share	Fo/Fi
6.1.1	Basic earnings per share	
6.1.2	Diluted earnings per share	
6.2	Management vision: investments and free cash flow	Fo/Fi
6.2.1	Modigliani Miller	
6.2.2	Basic example	
6.2.3	Global analytical table	
6.2.4	Non-cash charges	
6.3	Reconciliation of the two approaches	Fo/Fi
6.3.1	General principles	
6.3.2	Operating cash flow and net income (shareholder approach)	
6.3.3	Operating cash flow (shareholder approach) and FCFF (MM approach)	
6.3.4	EBITDA and FCFF (MM approach)	

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6.4	Published figures and accounting adjustments		Fi
	6.4.1	Entries that give a false image of the company	
	6.4.2	Accounting definitions not recognised by international standards	
	6.4.3	Rewriting of entries in the case of different accounting standards	
	6.4.4	Capitalisation of research and development costs	
6.5	Presentation of historic figures		Fo/Fi
	6.5.1	Time series analysis	
	6.5.2	Common size analysis	

7 Analysis of Management Performance

7.1	Why use financial ratios?		Fo/Fi
7.2	Operating risk measurement		Fo/Fi
	7.2.1	Measurement of management efficiency over the operating cycle (gross margin, operating margin, net margin, asset turnover, inventory outstanding period, collection period, payables outstanding period)	
	7.2.2	Capital profitability ratios (ROA, ROCE, CFROI, ROE)	
7.3	Measurement of financial risk		Fo/Fi
	7.3.1	Liquidity ratios (current ratio, quick ratio, cash ratio)	
	7.3.2	Solvency ratios (average interest rate, net debt, capital structure ratio, total debt to equity ratio, long-term debt to equity ratio, interest coverage ratio, operating cash flow to cash interest cost, operating cash flow to liabilities)	
	7.3.3	Credit risk (rating agencies, credit default swaps)	Fi
7.4	Key sectorial ratios and metrics		Fi
	7.4.1	Industrial	
	7.4.2	Oil and gas	
	7.4.3	Consumer	
	7.4.4	Healthcare	
	7.4.5	Technology	
	7.4.6	Banks	
	7.4.7	Utilities	
7.5	Sensitivity analyses		Fi
	7.5.1	Operating income sensitivity	
	7.5.2	Financial leverage sensitivity	
	7.5.3	Net income sensitivity	

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7.6	Quality of earnings as a measure of accounting risk		Fi
	7.6.1	Financial warnings signs	
	7.6.2	Non-financial signs (change of accountants, sudden departure of CFO, delay in statements)	
	7.6.3	Revenue-related warning signs	
	7.6.4	Beneish M Score	
7.7	Analysis of the business environment		Fi
	7.7.1	A vision of the company beyond figures	
	7.7.2	Qualitative analysis of the industry	
	7.7.3	Qualitative analysis of the company	

8 Financial Projections

8.1	Different projection formats		Fi
	8.1.1	Comprehensive format	
	8.1.2	Common size percentage	
	8.1.3	Growth rates method	
	8.1.4	Projections based on value drivers	
8.2	Estimated value drivers of the company		Fi
	8.1.1	Sales forecast	
	8.1.2	Investment projections (net working capital and capital expenditure)	
	8.1.3	Other internal value drivers	
	8.1.4	External value drivers	
8.3	Recurring/non-recurring entries		
	8.3.1	Recurring accounting entries	
	8.3.2	Non-recurring accounting entries	
8.4	Additional information (quarterly, divisions)		Fi
	8.4.1	Projections based on interim reporting	
	8.4.2	Projections based on segment reporting	

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4. Corporate Finance

Broad Learning Objectives

Candidates should understand the fundamental component parts of corporate finance, such as objectives, valuation, discounted cash flow and capital budgeting within a corporate setting, together with decision making, both from a short term and long term perspective. The important financial decisions together with the underlying theories associated with capital structure, dividend policy and mergers and acquisitions should be understood in some detail within this topic area together with their applications to practical settings. Given the global nature of the CIIA designation, an in depth knowledge of international corporate finance should be developed and applied. The topic area concludes with a review of the organisation of value creation within a corporate setting.

1	**Corporate Finance and Value Creation**	
2	**Investment Mechanisms**	
2.1	Basics of cash flow analysis	Fo/Fi
2.2	The net initial investment (NINV)	Fo/Fi
	2.2.1 Replacement projects	
	2.2.2 Expansion project	
2.3	Operating cash flows	Fo/Fi
	2.3.1 Depreciation	
	2.3.2 Net operating cash flows	
2.4	Terminal cash flows	Fo/Fi
2.5	Future value of cash flows	Fo/Fi
	2.5.1 Perpetuity	
	2.5.2 Annuity	
	2.5.3 Constant growth model	
	2.5.4 A stream of irregular cash flow	
3	**Investment Discount Rate**	
3.1	Weighted average cost of capital (WACC)	Fo/Fi
	3.1.1 Cost of debt	
	3.1.2 The cost of equity capital	
	3.1.3 Weighted average cost of capital (WACC)	
	3.1.4 International capital budgeting	
3.2	Optimisation of weighted average cost of capital	Fo/Fi
	3.2.1 Leverage and the value of the firm	

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3.3	Dividend policy	Fo/Fi
3.3.1	Types of dividends	
3.3.2	Repurchase of stock	
3.3.3	Irrelevance theorem	
3.3.4	The clientele effect	
3.3.5	Signalling model	
3.3.6	Dividend policy in local markets	

4 Investment Decision Criteria

4.1	Major methods	Fo/Fi
4.1.1	Net present value (NPV)	
4.1.2	Internal rate of return (IRR)	
4.1.3	Payback rules	
4.2	Capital budgeting	Fo/Fi
4.2.1	Method for ranking investment proposals	
4.2.2	Capital resource rationing	
4.2.3	Common pitfalls	
4.3	The link between the value of an investment and enterprise value	Fo/Fi

5 Mergers and Acquisitions

5.1	Valuation issues	Fi
5.1.1	Valuation of the target	
5.1.2	Motives for mergers	
5.2	Forms of acquisition	Fi
5.2.1	Takeovers	
5.2.2	Approved acquisitions	
5.2.3	Creeping take-overs	
5.2.4	Eliminating minority interests	
5.2.5	Going private and capital restructuring operations	
5.2.6	Leverage buyout (LBO)	
5.2.7	Management buyout (MBO)	
5.2.8	Management buy in (MBI)	
5.3	Strategies for the acquirer	Fi
5.3.1	Aggressive or agreed	
5.4	Defensive strategies	Fi
5.4.1	Pre-emptive versus reactive	
5.4.2	Pre-emptive (long-term) strategies	
5.4.3	Pre-emptive (short-term) strategies	
5.5	Liquidation and reorganisation	Fi
5.5.1	Bankruptcy liquidation	
5.5.2	Bankruptcy reorganisation	

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6 Project Financing

6.1	Long-term financing	Fi
6.1.1	Project evaluation from the investors' perspective	
6.1.2	Project evaluation from the lenders' perspective	
6.2	Leasing	Fi
6.2.1	Fundamentals of leasing	
6.2.2	Motives for leasing	
6.2.3	Accounting and tax consequences of leasing	
6.2.4	Valuing leases from the lessee's perspective	
6.2.5	Valuing leases from the lessor's perspective	
6.3	Short-term finance decisions	Fi
6.3.1.	Short-term financing	
6.3.2	Cash management	
6.3.3	Short-term lending and borrowing	

7 The Organisation of Value Creation

7.1	The history of corporate governance	Fi
7.2	The four key players in corporate governance	Fi
7.3	The current main topics of discussion	Fi
7.3.1	Management remuneration	
7.3.2	Shareholder equality in terms of information	
7.3.3	Corporate governance: market sanctions	

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5. Equity Valuation and Analysis

Broad Learning Objectives

The features of equity shares and markets should be well understood. The valuation techniques that are employed in equity markets receive a strong emphasis with coverage of dividend discount models, the free cash flow model, ratio based valuation models and other model types, such as economic value added; a strong and in depth knowledge of these techniques should be developed. The topic syllabus concludes with a consideration of equity market equilibrium and its practical applications.

1	**Equity Market and Structure**	
1.1	Equity markets	Fo/Fi
	1.1.1 Stock indices	
	1.1.2 Uses of stock indices	
	1.1.3 Number of stocks in an index	
	1.1.4 Index calculation method	
1.2	Listing on a stock exchange	Fo/Fi
1.3	Rights of shareholders	Fo/Fi
1.4	Reporting requirements	Fo/Fi
2	**Valuation Methods**	
2.1	History	Fo/Fi
2.2	Main valuation methods	Fo/Fi
	2.2.1 Substantive or asset values	
	2.2.2 Relative evaluations: comparing ratios (earnings per share, price/book ratio, price/cash flow ratio, price/sales ratio, enterprise value ratios)	
	2.2.3 Specific case of start-up and cyclical companies	
	2.2.4 Returns or cash flow discounting	
2.3	DCF in practical detail	Fo/Fi
	2.3.1 Long-term growth	
	2.3.2 Cost of capital	
	2.3.3 Structure of liabilities	

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3 Equity Market Equilibrium

3.1 Fair value Fi

3.2 Long-term equilibrium Fi

3.3 Short-term equilibrium Fi
3.3.1 Justification for the short term
3.3.2 The rise of short-termism

4 Practical Application: Equity Market Equilibrium

4.1 Short-term processing of information Fi

4.2 Short-term valuation methods Fi

4.3 Calculating market equilibrium in the short term Fi

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6. Economics

Broad Learning Objectives

The major concepts and variables that underpin macroeconomic analyses should be known and understood. The IS-LM model features in the syllabus and should be well understood due to its linking of the real and financial markets. Important macroeconomic phenomena such as economic output, inflation, growth, labour markets, monetary policy and business cycles should be all assessable in some detail, together with their various interrelationships. Knowledge of international macroeconomic material should be developed via the coverage of foreign exchange rates, interest rates and prices etc. and applications of this material to practical settings achievable. To facilitate a broad economic perspective and understanding, a number of the important macroeconomic issues are assessed within a simple economic modelling framework.

1	**Concepts, Major Macroeconomic Variables and the IS-LM Model**	
1.1	Major macroeconomic concepts and variables	Fo/Fi
1.1.1	National income accounting: GDP and GNP	
1.1.2	Inflation	
1.1.3	Interest rates	
1.2	The basic model of the real market in a closed economy	Fo/Fi
1.2.1	The determination of demand	
1.2.2	Equilibrium in the real market: the IS relation	
1.3	The basic model of the financial market in a closed economy	Fo/Fi
1.3.1	The demand for money	
1.3.2	Equilibrium in the money market: the LM relation	
1.4	The IS-LM model	Fo/Fi
1.4.1	Equilibrium in the real and financial markets	
1.4.2	The effects of fiscal policy in a closed economy	
1.4.3	The effects of monetary policy in a closed economy	
1.4.4	Expected inflation and the IS-LM model	
2	**Economic Output and the Labour Market**	
2.1	Production	Fo/Fi
2.2	The labour market	Fo/Fi
2.3	General equilibrium in the real, financial and labour markets	Fo/Fi
2.3.1	Aggregate supply	
2.3.2	Aggregate demand	
2.3.3	Equilibrium output in the short and the medium run	
2.3.4	The dynamic effects of fiscal policy	
2.3.5	The dynamic effects of monetary policy	

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2.4	Monitoring the economy in the real world	Fo/Fi
	2.4.1 Potential output, definition and estimation	
3	**The Link between Inflation and Unemployment, Economic Growth and Business Cycles**	
3.1	Inflation versus unemployment: the great trade-off?	Fo/Fi
	3.1.1 Unemployment and inflation: the Phillips curve	
	3.1.2 The modern version of the Phillips curve	
3.2	Economic growth	Fi
	3.2.1 Growth accounting	
	3.2.2 Capital accumulation and economic growth	
	3.2.3 Technological progress and economic growth	
3.3	Business cycles	Fi
	3.3.1 The basics	
	3.3.2 The classical approach: theory of exogenous business cycles	
	3.3.3 The Keynesian approach: theory of endogenous business cycles	
	3.3.4 Fiscal policy, monetary policy and the business cycle	
3.4	Monitoring the economy in the real world	Fi
	3.4.1 Business cycle: activity	
	3.4.2 Business cycle: inflation	
4	**Balance of Payments, Exchange Rates, Prices and Interest Rates**	
4.1	The balance of payments	Fo/Fi
	4.1.1 The accounting system	
	4.1.2 Domestic savings and the current account balance	
4.2	The exchange rate	Fo/Fi
	4.2.1 Nominal and real exchange rate	
	4.2.2 Exchange rate regimes	
4.3	Exchange rate, prices and interest rates	Fo/Fi
	4.3.1 Purchasing power parity	
	4.3.2 Covered interest rate parity	
	4.3.3 Uncovered interest rate parity	

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5 Economic Issues Explained with a Simple Model

5.1 The basic model of the real and financial markets in an open economy Fi
- 5.1.1 The determination of demand in the real market
- 5.1.2 Equilibrium in the real market: the IS relation in the open economy
- 5.1.3 Equilibrium in the financial market: the LM relation in the open economy
- 5.1.4 Equilibrium in an open economy: the Mundell-Fleming model
- 5.1.5 The effects of policy in an open economy
- 5.1.6 Aggregate supply and demand in the open economy

5.2 Theories of exchange rate determination Fi
- 5.2.1 Balance of payments approach
- 5.2.2 The asset approach
- 5.2.3 Exchange rate determination: empirical evidence

5.3 Statistical behaviour of the exchange rate Fi

6 Monetary Policy

6.1 Basic concepts of monetary theory Fi
- 6.1.1 The definition of money
- 6.1.2 Money supply and the money multiplier

6.2 Monetary policy Fi
- 6.2.1 The implementation process of monetary policy
- 6.2.2 The instruments of monetary policy

6.3 The transmission mechanism of monetary policy on the real economy Fi
- 6.3.1 Interest rate channel
- 6.3.2 Credit channel
- 6.3.3 Exchange rate channel

6.4 Central bank operations in major countries Fi

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7. Fixed Income Valuation and Analysis

Broad Learning Objectives

The characteristics and features of fixed income securities, both plain vanilla and more complex, together with the associated interest rate and risk related measures that are used in fixed income markets should be known and how they are applied in practical settings understood. The important topics of credit risk and asset backed securities are covered in some detail within the module with the objective of providing a strong understanding of these phenomena. The various strategies that are available to the fixed income portfolio manager should also be understood and their application in practical settings known.

1 General Principles

1.1	The debt instrument concept	Fo/Fi
1.1.1	Economic role of bond issues	
1.1.2	Bond issuers	
1.1.3	Bond characteristics	
1.1.4	Preferred stocks	
1.2	Time value of money	Fo/Fi
1.2.1	Simple versus compound interest	
1.2.2	Present and future value	
1.2.3	Annuities	
1.2.4	Continuous discounting and compounding	
1.2.5	Bond valuation	
1.2.6	Price/yield relationship	
1.3	Bond yield measures	Fo/Fi
1.3.1	Current yield	
1.3.2	Yield to maturity	
1.3.3	Yield to call	
1.3.4	Other yields	
1.3.5	Other basic concepts	
1.3.6	Yield curves	
1.3.7	Yield spread analysis	

2 Interest Rates – Term Structures and Applications

2.1	Term structure of interest rates	Fo/Fi
2.1.1	Yield curves and shapes	
2.1.2	Theories of term structures	

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2.2	Risk measurement		Fo/Fi
	2.2.1	Risk measurement tools	
	2.2.2	Duration and modified duration	
	2.2.3	Convexity	
	2.2.4	Duration and convexity between coupon payment dates	
	2.2.5	Impact of coupon payments and time lapse on duration	
	2.2.6	Key rate duration	
	2.2.7	Portfolio duration, convexity and key rate duration	
2.3	Usage		Fo/Fi
	2.3.1	Bond yield curves	
	2.3.2	Bond curves in market usage	
	2.3.3	Curve shapes and forward rates	
	2.3.4	Curves, economic activity and monetary policy	
	2.3.5	Portfolio valuation and mark-to-market with unobserved prices	
	2.3.6	Financial engineering	
	2.3.7	Risk management	

3 Hybrid Forms

3.1	Bonds with warrants		Fo/Fi
	3.1.1	Investment characteristics	
	3.1.2	Valuation of warrants	
	3.1.3	Empirical studies and market	
	3.1.4	Exotic types of warrants	
3.2	Convertible bonds		Fo/Fi
	3.2.1	Investment characteristics	
	3.2.2	Convertible bond features	
	3.2.3	Valuation of convertible bonds	
	3.2.4	Investment strategies	
	3.2.5	Risk management of convertible bonds	
	3.2.6	Empirical studies	
	3.2.7	Contigent convertibles	
3.3	Callable bonds		Fo/Fi
	3.3.1	Investment characteristics	
	3.3.2	Valuation and duration	
3.4	Floating rate notes		Fo/Fi
	3.4.1	Investment characteristics and types	
	3.4.2	Yield measures for floating rate notes	
	3.4.3	Risk measures – interest rate versus credit duration	
	3.4.4	Complex FRN’s	
3.5	Inflation-linked bonds		Fo/Fi
	3.5.1	Real and break-even rates	
	3.5.2	Investment characteristics	
	3.5.3	Market situation	

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4 Credit Risk and Mortgage Securitisation

4.1	Credit risk	Fi
4.1.1	Relevance of the corporate bond market	
4.1.2	Fundamental credit analysis	
4.1.3	Credit rating and rating agencies	
4.1.4	Curves and credit	
4.2	Mortgage-backed securities	Fi
4.2.1	Mortgage-backed bond market	
4.2.2	Types of mortgages	
4.2.3	Mortgage securitisation	

5 Asset-Backed Securities

5.1	Structures	Fi
5.2	Types of underlying assets	Fi
5.2.1	Instalment contracts	
5.2.2	Revolving lines of credit	
5.3	Credit enhancement	Fi
5.3.1	Excess spread	
5.3.2	Subordination	
5.3.3	Guaranty	
5.3.4	Reserve fund	
5.3.5	Recourse	
5.3.6	Over-collateralisation	
5.4	Major risks of ABS	Fi
5.4.1	Interest rate risks	
5.4.2	Prepayment risks	
5.4.3	Credit risk	
5.4.4	Liquidity risk	
5.4.5	Counterparty risks	
5.5	Valuation methodologies	Fi

6 Fixed Income Portfolio Management Strategies

6.1	Passive management	Fo/Fi
6.1.1	Buy and hold	
6.1.2	Indexation	
6.1.3	Interest rate immunisation	
6.1.4	Asset-liability management	
6.2	Active management	Fo/Fi
6.2.1	Forecasting and portfolio construction	
6.2.2	Active management in practice	

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6.3 Portfolio construction based on a factor model Fi
6.3.1 Model specification
6.3.2 Interest rate anticipation strategies

6.4 Computing the hedge ratio: the modified duration method Fi
6.4.1 Hedging strategies using longer bond futures

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8. Derivative Valuation and Analysis

Broad Learning Objectives

The basic characteristics and types of futures and options (including exotic options) should be understood, together with various important features associated with these instruments, such as valuation and pricing, risk management and other investment strategies. The option sensitivities (the "Greeks") such as delta, gamma etc., together with volatility related issues should also be fully understood and capable of being applied to various investment problems. Swaps and credit derivatives should be similarly understood, with the material on credit derivatives reflecting their growing importance and impacts in recent times.

1	**Futures**	
1.1	Basic characteristics of forward and futures contracts	Fo/Fi
1.2	Mechanics of trading in futures markets	Fo/Fi
1.2.1	Long and short positions	
1.2.2	Profit and loss at expiration	
1.2.3	Closing positions	
1.2.4	Delivery procedures	
1.2.5	The marking to market of futures contracts	
1.2.6	The leverage effect	
1.2.7	Futures quotes	
1.2.8	World major futures markets	
1.3	Futures valuation and analysis	Fo/Fi
1.3.1	The basis	
1.3.2	Theoretical price of futures	
1.4	Examples of various futures contracts	Fo/Fi
1.4.1	Stock futures	
1.4.2	Foreign exchange futures	
1.4.3	Commodity futures	
1.4.4	Interest rate futures	
1.4.5	Other futures contracts	
1.4.6	Further considerations	

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1.5	Introduction to hedging strategies using futures	Fo/Fi
1.5.1	The hedge ratio	
1.5.2	The perfect hedge	
1.5.3	Basis risk and correlation risk	
1.5.4	The minimum variance hedge ratio	
1.5.5	Hedging with several futures contracts	
1.5.6	Examples of hedging	
1.5.7	Simple answers to questions about hedging with futures	

2 Options

2.1	Introduction	Fo/Fi
2.2	Definitions and basic characteristics of options	Fo/Fi
2.2.1	Option main characteristics	
2.2.2	Call and put options	
2.2.3	Call and put options vs. forward and futures contracts	
2.2.4	The example of equity options	
2.3	Basic option strategies	Fi
2.3.1	Spreads	
2.3.2	Strangles and straddles	
2.4	Arbitrage relationships	Fo/Fi
2.4.1	Introduction: principle of no-arbitrage	
2.4.2	Value of an option at expiration	
2.4.3	General arbitrage relationships	
2.4.4	A fundamental relationship: the put-call parity	
2.5	B&S option pricing model	Fo/Fi
2.5.1	Risk-neutral pricing	
2.5.2	European options on stocks paying no dividends	
2.5.3	European options on stocks paying constant known dividends	
2.5.4	American options	
2.5.5	Limitations of the Black-Scholes model	
2.6	Sensitivity analysis of options premiums	Fo/Fi
2.6.1	Delta	
2.6.2	Gamma	
2.6.3	Lambda/Omega	
2.6.4	Theta	
2.6.5	Rho	
2.6.6	Vega	
2.7	Volatility and related topics	Fi
2.7.1	Estimating volatility from historical data	
2.7.2	Implied volatility and volatility smile	
2.7.3	The volatility index (VIX)	

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2.8	Options on other underlying asses		Fo/Fi
	2.8.1	Equity index options	
	2.8.2	Options on Futures	
	2.8.3	Warrants	
	2.8.4	Foreign exchange options	
	2.8.5	Caps, floors, collars	
2.9	Exotic options		Fi
	2.9.1	Path-independent options	
	2.9.2	Path-dependent options	
	2.9.3	Pricing exotic options with numerical methods	
2.10	Appendix: binominal option pricing model		Fo/Fi
	2.10.1	One-period binominal model	
	2.10.2	Multi-period binominal model	
	2.10.3	American puts and calls	
	2.10.4	Limiting results of the binominal model	
3	**Swaps and Credit derivatives**		
3.1	Introduction		Fi
3.2	Swaps		Fi
	3.2.1	Definition and characteristics	
	3.2.2	Strategies using swaps	
	3.2.3	Pricing and valuing swaps	
	3.2.4	Other types of swaps	
3.3	Credit Derivatives		Fi
	3.3.1	The mechanisms of Credit Derivatives market	
	3.3.2	Market participants	
	3.3.3	Institutional framework	
	3.3.4	Credit default swaps (CDS)	
	3.3.5	Credit linked notes (CLN)	
	3.3.6	Other credit default swap products	
	3.3.7	Spread volatility of credit default swaps	
	3.3.8	Credit derivatives: valuation of credit default swaps	
	3.3.9	The role of credit dervivatives	
	3.3.10	The aftermath of the 2008 financial crisis	

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9. Portfolio Management

Broad Learning Objectives

An understanding of the important building blocks associated with portfolio management, such as the risk/return relationship, diversification, pricing models, market efficiency and risk measures should be obtained. The various features of investment strategies (including international assets) and hedging strategies (including dynamic and insurance strategies) and Asset-Liability Management should be understood together with their applications. An understanding of the importance and features of performance measurement and evaluation, together with the choice of investment manager, should be developed, together with a knowledge of the features and benefits associated with the alternative investment asset class.

1 Modern Portfolio Theory

1.1	The risk / return framework		Fo/Fi
	1.1.1	Return and measures of return	
	1.1.2	Risk	
1.2	Portfolio theory		Fo/Fi
	1.2.1	Diversification and portfolio risk	
	1.2.2	Markowitz model and efficient frontier	
1.3	Capital Asset Pricing Model (CAPM)		Fo/Fi
	1.3.1	Major assumptions	
	1.3.2	Capital market line (CML)	
	1.3.3	Security market line (SML)	
	1.3.4	The zero-beta CAPM	
1.4	Index and market models		Fo/Fi
	1.4.1	The single-index model and its hypothesis	
	1.4.2	Decomposing variance into systematic and diversifiable risk	
	1.4.3	The link with the CAPM	
	1.4.4	Applications of the market model	
	1.4.5	Multi-index models	
1.5	Efficient Markets		Fi
	1.5.1	Information efficient markets	
	1.5.2	Efficient market hypothesis	
	1.5.3	Are markets efficient?	
	1.5.4	Market efficiency and investment policy	
	1.5.5	Lessons from market efficiency	

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1.6	Arbitrage Pricing Theory (APT)		Fi
	1.6.1	Assumptions underlying the APT	
	1.6.2	The APT and its derivation	
	1.6.3	The link between the APT and the CAPM	
	1.6.4	Empirical tests of the APT	
	1.6.5	Pre-specifying factors	
	1.6.6	Applications of the APT	

2 Investment Strategies

2.1	Investment policy		Fo/Fi
	2.1.1	Individual investors	
	2.1.2	Institutional investors	
2.2	Asset allocation		Fo/Fi
	2.2.1	Asset allocation overview	
	2.2.2	Types of asset allocations	

3 Hedging Strategies

3.1	Combining options and traditional assets		Fo/Fi
	3.1.1	Covered call strategy	
	3.1.2	Enhanced indexing	
	3.1.3	130/30 funds	
	3.1.4	Using interest rates OTC products	
3.2	Portfolio insurance		Fo/Fi
	3.2.1	Stop-loss approach	
	3.2.2	Static portfolio insurance	
	3.2.3	Dynamic portfolio insurance	
	3.2.4	Constant proportion portfolio insurance	
3.3	Hedging with stock index futures		Fo/Fi
	3.3.1	Long hedge	
	3.3.2	Short hedge	
	3.3.3	A complete hedging analysis	
	3.3.4	Adjusting the beta of a stock portfolio	
3.4	Hedging with foreign exchange futures		Fo/Fi
	3.4.1	Hedging against a rise of the foreign currency	
	3.4.2	Hedging against a drop of the foreign currency	
	3.4.3	Hedging with cross-currency rates	
3.5	Hedging with interest rate futures		Fo/Fi
	3.5.1	Hedging using short term interest rate futures	
	3.5.2	Hedging using long term interest rate futures	
	3.5.3	Hedging against decreasing rates (long hedge)	
	3.5.4	Hedging against increasing rates (short hedge)	
	3.5.5	Moving to a preferred duration	

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3.6	Use of swaps in portfolio management	Fo/Fi
3.7	Asset allocation with futures	Fo/Fi
4	**Asset / Liability Management**	
4.1	Introduction to ALM	Fo/Fi
4.1.1	Background of ALM	
4.1.2	ALM with pension funds	
4.1.3	Types of ALM models	
4.2	Modelling liabilities	Fo/Fi
4.2.1	Types of liabilities	
4.2.2	Valuation of pension liabilities	
4.2.3	Annuity factors and discount rates	
4.3	Modelling assets	Fo/Fi
4.3.1	Types of asset classes	
4.3.2	Risk and return characteristics	
4.4	Surplus and funding ratios	Fo/Fi
4.5	Integrated optimisation	Fo/Fi
4.5.1	Target functions and tradoffs	
4.5.2	Surplus risk management	
4.5.3	Pension fund management	
4.6	Implementation of strategies	Fo/Fi
4.6.1	Stochastic simulations	
4.6.2	Active versus passive ALM strategies	
4.6.3	Dynamic adjustment of assets and liabilities	
5	**International Investments**	
5.1	International diversification	Fo/Fi
5.1.1	Computing foreign currency return and variance	
5.1.2	Cross-correlation	
5.1.3	Country risk	
5.1.4	Emerging markets	
5.2	Hedging foreign exchange risk	Fo/Fi
5.2.1	Effective management of currency risk	
5.2.2	Behaviour of currency returns	
5.2.3	Is it a separate asset class / zero sum game?	
5.2.4	Treatment of currency within a global portfolio / optimal level of hedge	
5.2.5	Black's paper on universal currency hedge	
5.2.6	Use of overlay strategies	
5.3	International equities	Fo/Fi

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5.4	International fixed income	Fo/Fi
5.5	Managing a portfolio of international assets	Fo/Fi
6	**Value at Risk (VaR)**	
6.2	Definition	Fo/Fi
6.2.1	Confidence level	
6.2.2	Target horizon	
6.2.3	Main assumptions of value at risk	
6.3	Interpretation of value at risk	Fo/Fi
6.4	Calculation of value at risk	Fo/Fi
6.4.1	VaR of normally distributed asset returns	
6.4.2	Local-valuation approaches	
6.4.3	Full-valuation approaches	
6.4.4	Comparison of local versus full-valuation approaches	
6.5	Dangers and pitfalls	Fo/Fi
7	**Performance Measurement and Evaluation**	
7.1	Performance measurement	Fo/Fi
7.1.1	Return measurement	
7.1.2	Benchmarks	
7.1.3	Risk measurement	
7.2	Performance attribution	Fi
7.2.1	Return attribution	
7.2.2	Risk attribution	
7.3	Performance presentation	Fi
7.3.1	Types of performance presentation	
7.3.2	Best practice for performance presentation	
7.4	Investment controlling	Fi
7.4.1	Definition and outline of investment controlling	
7.4.2	Generic performance evaluation process	
7.4.3	Pitfalls in performance evaluation	
8	**Choice of the Investment Manager**	
8.1	Choice of the investment manager	Fi
8.1.1	Assessing and choosing managers	
8.1.2	Style analysis	
8.1.3	Means of style analysis	
8.1.4	Style analysis: application to different asset classes	
8.1.5	Risks, controls and prudential issues: organisational issues	
8.1.6	Risks, controls and prudential issues: fee structures	

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9 Equity Management

9.1	Principles of equity management	Fi
9.1.1	Risk in operational terms	
9.1.2	Risk control	
9.1.3	Active and passive management	
9.2	Managing an equity portfolio	Fi
9.2.1	Active management	
9.2.2	Passive management	

10 Alternative Investments

10.1	Managing a property portfolio	Fi
10.1.1	Real estate indices	
10.1.2	Return and risk of real estate	
10.1.3	Correlation between the returns on various asset classes	
10.1.4	Determining the share of real estate in optimal portfolios	
10.2	Alternative assets / private capital	Fi
10.2.1	Unlisted non-property securities and private capital	
10.2.2	Hedge funds	

11 Sustainable Investment

11.1	Motivation and objectives	Fo/Fi
11.2	Fundamentals	Fo/Fi
11.2.1	Understanding sustainability	
11.2.2	Sustainability in an investment context	
11.3	Sustainable investment strategies	Fo/Fi
11.3.1	Historical development	
11.3.2	Market drivers	
11.3.3	Sustainable investment strategies: an overview	
11.4	Integrating ESG into the investment process	Fo/Fi
11.4.1	ESG data and principles in an investment process	
11.4.2	Performance observations	
11.4.3	Mainstreaming and the case for integrated valuation	

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