

## Module 26: Derivatives

<b>Stage</b>				3			
<b>Semester</b>				1			
<b>Module Title</b>				Derivatives			
<b>Module Number</b>				26			
<b>Module Status</b>				Elective			
<b>Module ECTS Credits</b>				5			
<b>Module NFQ level</b>				8			
<b>Pre-Requisite Module Titles</b>				Finance and Wealth Management			
<b>Co-Requisite Module Titles</b>				N/A			
<b>Capstone Module?</b>				No			
<b>List of Module Teaching Personnel</b>				Edel Walsh, Alan Lynch			
<b>Contact Hours</b>				<b>Non-contact Hours</b>			<b>Total Effort (hours)</b>
46				54			100
<b>Lecture</b>	<b>Practical</b>	<b>Tutorial</b>	<b>Seminar</b>	<b>Assignment</b>	<b>Placement</b>	<b>Independent Work</b>	
36		10		15		39	100
<b>Allocation of Marks (Within the Module)</b>							
	<b>Continuous Assessment</b>	<b>Project</b>	<b>Practical</b>	<b>Final Examination</b>	<b>Total</b>		
<b>Percentage Contribution</b>	30%			70%	100%		

### Intended Module Learning Outcomes

On successful completion of this module, the learner will be able to:

1. Assess and evaluate the key features of a range of derivative instruments
2. Evaluate ways in which financial derivatives can be used for managing risk and for trading
3. Categorise appropriate models for derivative pricing and utilise such modules to price instruments
4. Evaluate contemporary theories and the empirical research evidence base in areas of financial derivatives and outline the current knowledge boundaries in this area

### Module Objectives

The aims of the module are to develop an appreciation of the key features of major derivative instruments and the principles of derivatives pricing. Learners develop a practical understanding of the possible uses of derivative instruments and the ability to apply that knowledge to explore how derivative instruments can be used in risk management.

## **Module Curriculum**

### **Introduction to derivatives**

- Overview and purpose of the derivatives market;
- Types of derivatives (forwards, futures, options and swaps);
- Exchange traded derivatives and over the counter (OTC) derivatives.

### **Futures and forwards**

- Mechanics of futures markets
- Determination of futures and forward pricing

### **Swaps**

- Interest rate and currency swaps
- Valuation of swaps

### **Interest rate markets and swaps**

- Term structures
- Yield curves
- Forward rates
- Nature of swaps

### **Introduction to Options**

- Properties of option prices
- Trading strategies including options

### **The Black Scholes Option Pricing Model (BSOPM)**

- Introduction, derivation and purpose of the BSOPM
- Properties of the model (Exercise price, value of underlying asset, risk free rate, time and volatility)
- Assumptions of the model

### **The Greek letters, risks and derivatives**

- Derivation of the Greeks (Delta, Rho, Vega, Theta and Gamma)
- Delta Hedging
- Portfolio insurance
- Value at Risk (VaR) and regulatory capital
- Calculation of VaR

### **Credit Derivatives and Credit Risk**

- Credit default swaps

### **Hedging Strategies**

### **Effects of derivative securities on the underlying market**

- Stabilisation
- Destabilisation
- Volatility

## **Reading lists and other learning materials**

Don M. Chance, (2003), *Analysis of Derivatives for the CFA® Program*. 6th ed. Charlottesville, Virginia 22903: AIMR  
Frank J. Fabozzi, (2005), *Fixed Income Analysis for the CFA® Program*. 2nd ed. Charlottesville, Virginia 22903: AIMR

Useful additional texts are:

Hull, J., (2011), *Options, Futures and other derivatives*, 8<sup>th</sup> Edition. London. Prentice Hall  
Kolb, R.W.,(2002), *Futures, Options, & Swaps*, Blackwell  
Chance, D., (1997), *Introduction to Derivatives*, Thomson Learning  
Wilmott, P., (2001), *Paul Wilmott Introduces Quantitative Finance*, 2nd edition, John Wiley  
Wilmott, P., S. Howison and J. Dewynne, (1995), *The Mathematics of Financial Derivatives: a Student Introduction*, Cambridge University Press  
Clewlow, L. and C. Strickland, (1998), *Implementing derivative models*, John Wiley

## **Module Learning Environment**

A practical and hands-on teaching and learning environment is fostered through participative lectures and individual and group-work based tutorials. Moodle is used extensively to support learners beyond the face-to-face encounters.

## **Module Teaching and Learning Strategy**

Participative lectures and tutorials form the primary teaching methods, providing learners with an understanding of concepts, principles and techniques. PowerPoint presentations and demonstrations are supplemented with recommended reading. The emphasis is on developing knowledge and understanding in context. Learners also have access to Moodle, the College's Virtual Learning Environment (VLE).

## **Module Assessment Strategy**

30% of the marks are allocated to coursework to allow learners demonstrate an understanding of the concepts and techniques presented in the lectures. The coursework could take the form of an essay and/ or a report or case study review.

The remaining 70% is allocated to an end of semester closed book examination which requires learners to complete four questions from a possible five. The questions contain both theory and practical elements.

## Constructive Alignment of Assessment

<b>Module Learning Outcomes</b>	<b>Assessment Strategy</b>	
	<b>Assignment</b>	<b>Exam</b>
Assess and evaluate the key features of a range of derivative instruments	Yes	Yes
Evaluate ways in which financial derivatives can be used for managing risk and for trading	Yes	Yes
Categorise appropriate models for derivative pricing and utilise such modules to price instruments	Yes	Yes
Evaluate contemporary theories and the empirical research evidence base in areas of financial derivatives and outline the current knowledge boundaries in this area	Yes	Yes