CBN COLLABORATIVE POSTGRADUATE PROGRAMME
DEPARTMENT OF ECONOMICS, UNIVERSITY OF NIGERIA NSUKKA
FUTURES AND DERIVATIVES
MODULE SPECIFICATION

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1. **Module Title**: FUTURES AND DERIVATIVES

2. **Module Code**: ECO 516

3. **Number of credits:** 3

4. **Level:** M.Sc

5. **Semester**: 1ST

6. **Pre-requisites for admission to the module (if any)**
   None

7. **Module Coordinator**

8. **Aims**

   Upon completion of the course, students are expected to:

   1.1 Understand the fundamental and issues involved in futures and derivatives
   1.2 Understand the strategic role of futures and derivatives in the hedging and speculations
   1.3 Apply the fundamental and methods of and techniques of econometrics and statistics to bring the discussion closer to understanding of students
   1.4 Understand the contribution of future and derivatives ideas in the context of global markets, interests and market swaps in businesses.
   1.5 Understand the fundamental issues regarding forward and futures
   1.6 Understand the nature and processes involved in markets and contracts
   1.7 Apply the concept of interest rates determination to understand the forward and future pricing of derivatives
   1.8 To understand the basic principles of swaps and how it can be used to aid the marketing of derivatives
   1.9 To understand the basic principles of Black–Scholes–Merton model and how it is used to foster better understanding of derivatives and their pricing
   1.10 To understand the nature and concept of employee stock options as well as future options
   1.11 To understand Credit risk Interest rate derivatives and how they can be used to gain market advantage in derivatives
   1.12 To understand the basic principles of energy and commodity derivatives
   1.13 To understand the hedging strategies using futures and how such could be handled in marketing of derivatives

1.14 To understand the basic issues surrounding derivatives mishaps and how such can be mitigated

9. Summary of Content

This course presents and analyzes derivatives, such as forwards, futures, and options. These instruments have become extremely popular investment tools over the past several decades, as they allow one to tailor the amount and kind of risk one takes, be it risk associated with changes in interest rates, exchange rates, stock prices, commodity prices, inflation, weather, etc. They are used by institutions as well as investors, sometimes to hedge (reduce) unwanted risks, sometimes to take on additional risk motivated by views regarding future market movements.

The course defines the main kind of derivatives, shows how they are used to achieve various hedging and speculating objectives, introduces a framework for pricing derivatives, and studies several applications of derivative-pricing techniques outside derivative markets.

By its very nature a course like this involves some advanced mathematics and statistics. However, in this course the math will be kept to the minimum that is required (the higher level math will be relegated to Appendices and will be optional). The goals are to (a) understand the characteristics of various derivatives, (b) take a look at the "black box" so as to understand the pros and cons of various models that are widely used, and (c) gain some experience in applying these instruments and models for valuation, risk management and financial engineering. Specifically, the following major topics would be addressed: 1. Introduction. 2.Forwards and Futures 3. Markets and Contracts 3. Interest rates Determination of forward and futures prices .4. Swaps 5. The Black–Scholes–Merton model. 6.Employee stock options 7. Futures options, 8. Credit risk Interest rate derivatives: 9. models of the short rate 10. Energy and commodity derivatives 11. Interest rate derivatives: models of the short rate 12. Energy and commodity derivatives 13. Hedging Strategies Using Futures 14. Derivatives mishaps and what we can learn from them

10. Module Intended Learning Outcomes (MILOs)

1. Module Intended Learning Outcomes (MILOs)

Upon successful completion of this module, students will be able to:

No.	Milos	Weighting (%)
1	Explain the nature and meaning of derivatives, types of derivatives, reasons for trading derivatives as well as derivatives pricing.	**Refer to no.15**
2	Explain the meaning and nature of futures and forwards. Explain the future prices, forward versus future contracts	
3	Identify and explain the nature and meaning of derivatives markets, forward and future contracts as well as hedges	
4	Identify and explain interest rates, measuring of interest rates, types of rates as well as determining treasury zero rates.	
5	Determine and explain forward and futures pricing. Explain for price for an investment	
6	Explain the meaning and nature of swaps. Identify the mechanics of interest rates swaps, comparative advantage argument.	

7	Explain the Black-Scholes –Merton Model, outline and explain long normal property of stock prices; introduce the Black –Scholes under laying differential equations and its derivation.	
8	Outline and explain Employees stock options and contractual agreements	
9	Explain the futures options available. Outline reasons for their popularity	**Refer to no.15**
10	Explain the nature and meaning of credit risk, credit ratings and recovery rates, credit risk mitigation and credit risk under derivatives.	
11	Explain the meaning of interest rates derivatives as well as some models of the short rates	
12	Identify and explain energy and commodity derivatives as well as modeling of their prices	
13	Identify and explain hedging strategies and some mishaps	

2. Teaching and Learning Activities (TLAs)

MILO No.	TLAs	Functions	Hours/Week
1,2,3,4,5,6,7,8,9,10 ,11 & 12	Lectures and materials	Course instructors will introduce, with appropriate audio-visual materials, the critical concepts of future and derivatives through lectures.	**3hours**
1,2,3,4,5,6,7,8,9,10 ,11& 12	Tutorials (Case study, Group Discussion, Quizzes, presentations, peer review, role play)	Tutorial sessions will introduce experiential forms of learning activities such as case studies, group discussion, presentations, peer review, quizzes and role play. Emphasis placed on more in-depth learning of the processes, mechanics involved in futures and derivatives	**3 hours**

3. Assessments Tasks/Activities

MILO No.	Type of assessment tasks/activities	Weighting (if applicable)	Remarks
1,2,3,4,5,6,7,8 ,9,10,11& 12	**Examination** Students are required to participate in a three-hour examination to test their acquisitions of concepts and knowledge.	50%	
1,2,3,4,5,6,7,8 ,9,10,11& 12	**Written Test/Quizzes** 1-hour written test/Pop Quizzes	20%	Week 7/On Going basis

1,2,3,4,5,6,7,8 ,9,10,11& 12	**Assignments** Assessment is comprising group work assignment and individual assignment.	30%	Case study analysis and Report type organizational analysis Futures and Derivatives

4. Attendance Requirements

Students are required to attend all tutorials and lectures and laboratory sessions (if any). Note that only students who meet the 75% attendance will be allowed to sit for the final examination for the course at the end of the semester.

5. Contribution to Programme Learning Outcomes

No	PILOs	MILO No
1	Demonstrate understanding of futures and derivatives application in solving practical business and marketing problems	1,2,3,4,5,6,7,8,9,10,11& 12
2	Apply knowledge of acquired in futures and derivatives innovatively in solving financial and marketing problems facing organizations	2,3,4,5,6,7,8
3	Able to manage effective transition futures and derivatives as a new knowledge into technology-based solutions	2,3,4,5,6,7,8
4	Be able to demonstrate the application of the knowledge of futures and derivatives in solving markets problems	1,2,3,4,5,6,7,8,9,10,11& 12
5	Able to recognize and analyze business operations and other opportunities	1,2,3,4,5,6,7,8,9,10,11& 12
6	Demonstrate independent and life-long learning skills on futures and derivatives	1,2,3,4,5,6,7,8,9,10,11& 12
7	Able to work collaboratively and assume different roles in a team to solve problems and make decisions to achieve common goals using the acquired knowledge on future and derivatives.	1,2,3,4,5
8	Able to lead using the acquired knowledge of futures, forward as well as competitive skills	1,2,3,4,5
9	Demonstrate professional ethics and practices and moral responsibility towards the environment and the society	1,2,3,4,5
10	Demonstrate good understanding of the nature of Swaps and apply them to handle practical solutions to industry problems	5,6 & 7
11	Demonstrate good understanding of energy and commodity derivatives as well as modeling of their prices	12 & 13
12	Be able to explain hedging strategies and some mishaps	11,12 & 13

13	Be able to identify and explain energy and commodity derivatives as well as modeling of their prices	10. 11,12 & 13

6. Grading of Student Achievement

Letter Grade	% Mark	Grade Definitions	Remarks
A	70-100	**Excellent**	Demonstrate excellent understanding of the subject matters.
B	60-69	**Good**	Demonstrate a good understanding of the subject matters, though missing some of the points.
C	50-59	**Adequate**	Demonstrate an adequate and fair understanding of the subject matters.
F (Fail)	<50%	**Fail**	Exhibit a poor understanding of the subject matter

7. Resources

Suggested Primary Texts

No	Name of Author(s)	Year of Publication	Title of Book	Edition	Publisher's Name	ISBN
1	John C. Hull &	2012	Options, Futures, And Other Derivatives	8th	Prentice Hall	ISBN 978-0-13-216494-8 (hbk.)
2	R. Stafford Johnson	2017	Derivatives Markets and Analysis	2nd	ISBN 978-0-470-74937-1 (hardback),	9781118202692
3	Swain, Prafulla	2017	Fundamentals of Financial derivatives	1st	TY – Book	978-93-5097-466-7
4	Aron Gottesman	2016	Derivatives Essentials- An Introduction to Forwards, Futures, Options, and Swaps	1st	John Wiley & Sons, Inc., Hoboken, New Jersey.	ISBN 9781119163497 (hardback)
5	Patrick Boyle and Jesse McDougall	2019	Trading and Pricing Financial Derivatives- A Guide to Futures,	3rd	Walter de Gruyter Inc., Boston/Berlin Printing and binding: CPI	ISBN 978-1-5474-1730-8

			Options, and Swaps		books GmbH, Leck	

Suggested Secondary Texts

No	Name of Author(s)	Year of Publication	Title of Book	Edition	Publisher's Name	ISBN
1	R. Stafford Johnson	2017	Derivatives Markets and Analysis	2nd	ISBN 978-0-470-74937-1 (hardback),	9781118202692
2	Andrew M.C	2010	Derivatives Dymestified-A step by step to forwards,Futures, swaps and options	2nd Edition	John Wiley & Sons, Ltd	
3	Swain, Prafulla	2017	Fundamentals of Financial derivatives	1st	TY – Book	978-93-5097-466-7
4	Lovely Professional University	2013	Financial Derivates		Excel Books Private Limited A-45, Naraina, Phase-I, New Delhi-11002	
5	Lovely Professional University	2012	Derivatives and Risk Management		Excel Books Private Limited A-45, Naraina, Phase-I, New Delhi-11002	
6	Gupta, S.L.,	2005	Financial Derivatives (Theory, Concepts and Problems)	3rd	Prentice Hall of India Ltd	
7	Thomson, R	1998	Apocalypse Roulette: The Lethal World of Derivatives.	1st	London: Macmillan	
8	Aron Gottesman	2016	Derivatives Essentials-*An Introduction to Forwards, Futures,*	1st	John Wiley & Sons, Inc., Hoboken, New Jersey.	ISBN 9781119163497 (hardback)

			Options, and Swaps			
9	Scott J. Danes	2014	Options Trading Strategies	1st	Dylanna Publishing	
10	Ashwani Gujral	2016	How to make Money Trading Derivatives- An Insider's Guide	3rd Edition	Vision Books Pvt. Ltd.	978-81-7094-931-2
11	DIMITRIS, N.C	2008	Derivatives Financial Instruments- Options forwards, futures, , swaps and hedging.	2nd Edition	McGraw Hill, Copanie, New York, Chikagos	ISBN: 0-07-154663-4.
12	Jack D. Schwager Mark Etzkorn	2017	A Complete Guide to the Futures Market Technical Analysis and Trading Systems, Fundamental Analysis, Options, Spreads, and Trading Principles	First edition	John Wiley & Sons, Inc., Hoboken, New Jersey	ISBN 9781118859599 (pdf)

Suggested Journals:

Bakshi, G., C. Cao, and Z. Chen. 1997. "Empirical Performance of Alternative Option Pricing Models." *Journal of Finance*, vol. 52, no. 5 (December):2003–2049. Brennan, Brown, G.W. 2001. "Managing Foreign Exchange Risk with Derivatives." *Journal of Financial Econometrics*, vol. 60, nos. 2–3 (May):401–448.

Heston, S. 1993. "A Closed-Form Solution for Options with Stochastic Volatility with Applications to Bond and Currency Options." *Review of Financial Studies*, vol. 6, no. 2 (April):327–343.

Hull, J.C., and A. White. 1995. "The Impact of Default Risk on the Prices of Options and Other Derivative Securities." *Journal of Banking & Finance*, vol. 19, no. 2 (May):299–322.

Schwarz, Edward W., Joanne M. Hill, and Thomas Schneeweis. 1986. *Financial Futures: Fundamentals, Strategies, and Applications*. Homewood, IL: Business One Irwin.

Ahadi, Hamid Z., Peter A. Sharp, and Carl H. Walther. 1986. "The Effectiveness of Futures and Options in Hedging Currency Risk." In *Advances in Futures and Options Research*, 1, Part B. Edited by Frank Fabozzi. Oxford, United Kingdom: JAI Press. Cornell, B., and M. Reinganum. 1981.

"Forward and Futures Prices: Evidence from Foreign Exchange Markets." *Journal of Finance*, vol. 36, no. 5 (December):1035–1045.

Park, H.Y., and A.H. Chen. 1985. "Differences between Futures and Forward Prices: A Further Investigation of Marking to Market Effects." *Journal of Futures Markets*, vol. 5, no. 1 (Spring):77–88.

Shastri, Kuldeep, and Kishore Tandon. 1986. "Options on Futures Contracts: A Comparison of European and American Pricing Models." *Journal of Futures Markets*, vol. 6, no. 4 (Winter):593–618.

Beckers, S. 1981. "Standard Deviations in Option Prices as Predictors of Future Stock Price Variability." *Journal of Banking & Finance*, vol. 5, no. 3 (September):363–381.

Black, Fischer. 1988. "How to Use the Holes in Black–Scholes." *Journal of Applied Corporate Finance*, vol. 1, no. 4 (Winter):67–73. Hull, J. 1989. *Options, Futures, and Other Derivative Securities*. Prentice-Hall. Jarrow, Robert, and Andrew Rudd. 1983. *Option Pricing*. Homewood, IL: Business One Irwin.

Kane, E.J. 1980. "Market Incompleteness and Divergences between Forward and Futures Interest Rates." *Journal of Finance*, vol. 35, no. 2 (May):221–234.

Brown, G.W. 2001. "Managing Foreign Exchange Risk with Derivatives." *Journal of Financial Econometrics*, vol. 60, nos. 2–3 (May):401–448.

Hull, J.C., and A. White. 1995. "The Impact of Default Risk on the Prices of Options and Other Derivative Securities." *Journal of Banking & Finance*, vol. 19, no. 2 (May):299–322.

Jarrow, R.A., and G.S. Oldfield. 1981. "Forward Contracts and Futures Contracts." *Journal of Financial Economics*, vol. 9, no. 4 (December):373–382.

Harvard Business Review

Journal of Operations Research

Measuring Business Excellence

Facilities Requirements

A lecture room with appropriate teaching

and lab (if any)