



TEACHING PLAN: DERIVATIVES ANALYSIS AND VALUATION

SCHOOL: ASOM		ACADEMIC SESSION: 2021 – 2022		MBA 4 TH SEMESTER FOR STUDENTS' BATCH: 2020	
1	Course code	MGTM- 404 F			
2	Course Title	DERIVATIVES ANALYSIS AND VALUATION			
3	Credits	4			
4	Learning Hours	Contact Hours		60	
		Assessment		20	
		Guided Study		20	
		Total hours		100	
5	Course Objective	<p>(1) This course provides inputs that cater to the requirement of a reader intending to gain expertise in the area. the contents are divided into five chapters.</p> <p>(2) These cover various features, dynamics and impact of Derivative markets and instruments, Forward markets and instrument futures markets options, markets.</p> <p>(3) It is to explain the Structure of Global Derivative Market vis-a-vis the Indian Market .</p> <p>(4) It Include Fundamental Concepts of Instruments ,their Characteristics, Mechanics of their Trading, Pricing Principles, Hedging and various applications of Derivative Instruments.</p>			
6	Course Outcomes	<p>1. Understand the development and growth of derivative markets, types and uses of derivatives.</p> <p>2. Examine the fundamental linkages between spot and derivatives market and role of derivative market</p> <p>3. Ability to gain the knowledge in different types of commodity futures and options.</p> <p>4. Differentiate major types of swaps like interest rate swaps, equity index swaps, credit risk in swaps credit swaps pricing and valuing swaps.</p> <p>5. Analyze the concept, structure and principles of option pricing and know the differences between options market and future market.</p>			
7	Outline syllabus:				
7.01	Unit	Section	Introduction	Reference Number	Teaching methods
7.02	Unit - I	(a)	Global scenario, Indian scenario, Types of risk, https://www.udemy.com/course/applied-financial-derivatives/	TB1 3- 13	White Board & PPT
		(b)	Types of Derivative Instruments, International Derivative market https://www.udemy.com/course/applied-financial-derivatives/	TB1 13-34	White Board & PPT
		(c)	Elementary pricing principles, purpose of Derivatives. https://www.udemy.com/course/applied-financial-derivatives/	TB1 52-63,	White Board & PPT

7.03	Unit - II	(a)	The Structure of Global Forward Markets types https://www.udemy.com/course/applied-financial-derivatives/	TB1 73-76	White Board & PPT
		(b)	Features of Forward Contracts, Valuing https://www.udemy.com/course/applied-financial-derivatives/	TB1 77- 78	White Board & PPT
		(c)	Forward Contracts ,Forward contracts strategies https://unctad.org/topic/commodities https://www.udemy.com/course/applied-financial-derivatives/	TB1 78-92	White Board & PPT
7.04	Unit - III	(a)	Structure of Global Futures Markets, Types of Contracts https://www.udemy.com/course/applied-financial-derivatives/	TB1 93-98	White Board & PPT
		(b)	Characteristics, The Mechanics of Future Trading, https://www.udemy.com/course/applied-financial-derivatives/	TB1 99-102	White Board & PPT
		(c)	Valuation of Future Contracts, Applications of Futures(Hedging) https://www.udemy.com/course/applied-financial-derivatives/	TB1 102-116	White Board & PPT
7.05	Unit - IV	(a)	Introduction to options: srtucture of global option market option trading, option pricing -principle and models https://www.udemy.com/course/applied-financial-derivatives/	TB1 116-132	White Board & PPT
		(b)	Factors Influencing Option prices Intrinsic and time value of an Option. valuation of option(call and put). https://www.udemy.com/course/applied-financial-derivatives/	TB1 539-564	White Board & PPT
		(c)	option pricing models-(Binomial option pricing model and Black -scholes model).sensitivity of option premium https://www.udemy.com/course/applied-financial-derivatives/	TB1 565-588	White Board & PPT
7.06	Unit - V	(a)	The structure of Global Swaps Markets. https://www.udemy.com/course/applied-financial-derivatives/	TB1 407-410	White Board & PPT

	(b)	Types and characteristics of swaps , Valuing swaps https://www.udemy.com/course/applied-financial-derivatives/	TB1 410-438	White Board & PPT
	(c)	Swap strategies, Forward swap and Swaptions https://www.udemy.com/course/applied-financial-derivatives/	TB1 440-456	White Board & PPT
8	Course Evaluation			
8.1	CA: 40%			
8.11	Attendance	5%		
8.12	Assignment & Presentation	20%		
8.13	Class test	15%		
8.16	Any other	--		
8.2	MTE	20%		
8.3	End-term examination: 40%			
9	Text Books & References			
9.1	Text book	TB1: Financial Derivatives: S L Gupta:PHI learning pvt limited.		
9.2	References	RB1: Option Future and Other Derivatives :John.C.Hull: Pearson RB2: Fixed Income Securities and Derivatives Handbook: Moorad Choudhary RB3: Derivatives Market Valuation and Risk Management: Robert. E. Whaley		
9.3	Video References	https://www.youtube.com/watch?v=OwWNQqaYq40 https://www.youtube.com/watch?v=kVM6IHvcT5o https://www.youtube.com/watch?v=Q0Qe352nhxU https://www.youtube.com/watch?v=_77kXgo9r7o https://www.youtube.com/watch?v=dNXRZlbKtiY https://www.youtube.com/watch?v=1t7j1sM__48		

Mapping of Outcomes v. Topics

Outcome no. →	1	2	3	4	5
Syllabus topic↓					
Paper Code. Unit I (a)	✓				
Paper Code. Unit I (b)	✓				
Paper Code. Unit I (c)	✓				
Paper Code. Unit II (a)		✓			
Paper Code. Unit II(b)		✓			
Paper Code. Unit II(c)		✓			
Paper Code. Unit III (a)			✓		
Paper Code. Unit III(b)			✓		
Paper Code. Unit III(c)			✓		
Paper Code. Unit IV (a)				✓	

Paper Code. Unit IV(b)				✓	
Paper Code. Unit IV(c)				✓	
Paper Code. Unit V (a)					✓
Paper Code. Unit V(b)					✓
Paper Code. Unit V(c)					✓

QUESTION BANK

1. How would you describe the modern challenges in international Business domain along with their possible solutions in international business management?
 2. Furnish the classification of derivatives based on the nature of i) Derivative instruments ii) Underlying asset iii) markets b) Who are traders in derivatives markets? How do they differ from the participants in the derivatives market while trading?
 3. Explain the role of derivative market in economic development of a nation in general with regard to price discovery in particular. b) Compare and contrast over the counter contracts and exchange traded derivatives in derivatives market?
 4. Determine the pay off in a forward contract in derivatives market for long and short position? Explain with the help on a diagram.
 5. The current price of wheat is Rs. 3.4 per bushel and interest rates are at 4%. The storage cost per one year runs at about 0.1 per bushel, which is to be paid up front. What is the 1 year forward price of wheat.
 6. Discuss briefly about the pricing model for index futures and commodity futures in derivative contract?
 7. The current price of NIFTY is Rs.1500. the stock underlying this index provides an yield of 3% P.A. the continuously compounding rate of interest is 6%. What will be the price of 4 months NIFTY?
 8. Write a note on i) American option ii) European option b) The stock value of GMR industries in spot market is Rs.350 and 3 months option contract is of Rs.350. the price of an option is 12% share. At what price the option will be at the money, out of money and in the money, if the option is both call as well as put option?
 9. State any two methods of the neutral strategies in advanced option strategies in options under derivatives market? b) A stock price is currently Rs.80. it is known that at the end of four months it will be either Rs.75 or Rs.85. the risk free interest rate is 5% P.A with continuous compounding. What is the value of four –month European put option with a strike price of Rs.80?
 10. Write about the trading of commodity options in exchanges? What do you mean by call option hedge, put option hedge and long combo hedge? b) Design Write a note on i) Energy swap hedges ii) Agro swap hedges
 11. Define derivatives. Explain the different types of bullion products and metal products in detail. b) What steps are generally taken by the commodities exchanges to protect the interests of the genuine traders against the misuse by unscrupulous speculators?
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12. Plain vanilla swap is simplest form of interest rate swap contract available in interest rate swap market” discuss with the help of an example explaining its structure and mechanism
 b) On October 01, 2016, the spot term structure is as follows
 12 months 24 months 36 months 48 months 2.52 5.08 7.73 10.4 Determine the fixed rate on a 4 year swap for the pay fixed part?
13. When do we use swaps as a hedging tool? Explain the salient features of currency and interest rate swaps with an example. b) Companies A and B have been offered the following rates per annum on a Rs.20 million 5 year loan
 Fixed rate Floating rate
 Company A 5% LIBOR+0.1%
 Company B 6.4% LIBOR+0.6%
 Company A requires a floating rate loan, company B requires a fixed rate loan. Design a swap that will net a bank, acting as intermediary, 0.1% per annum and that will appear equally attractive to both companies.
14. A long stock position can be created by investing in a pure discount bond with face value equal to the forward price of the stock along with
 (a) A short position in a forward contract for one stock
 (b) A short position in a futures contract for one stock
 (c) A short position in a call option contract for one stock
 (d) A long position in put option contract for one stock
 (e) A long position in a forward contract for one stock.
15. Basis risk can be reduced by
 I. Netting the receivables.
 II. Matching cash and futures obligations.
 III. Using near month futures contract.
 IV. Hedging with a futures contract that has a high price correlation.
 (a) Both (I) and (II) above
 (b) Both (II) and (III) above
 (c) (I), (II) and (III) above
 (d) (II), (III) and (IV) above
 (e) All (I), (II), (III) and (IV) above.
16. How many Eurodollar futures contracts are needed to hedge a long \$100 million position in 6-month US T-Bills? (size of each Eurodollar futures contract = \$1 million)
 (a) Short 50
 (b) Short 100
 (c) Short 200
 (d) Long 100
 (e) Long 200
17. Currently the stock index is at 14,250 and the annualized risk free rate is 9%. If the annualized dividend yield on the index is 4%, the theoretical price of the current 3-month stock index futures is
 (a) 14,285.14
 (b) 14,302.50
 (c) 14,404.45
 (d) 14,425.68
 (e) 14,450.29
18. Equity shares of Cygnus Ltd. are currently trading at a price of Rs.265 each; the April option series has exactly three months until expiration. Currently, the April 270 call sells for Rs.5, and the April 270 put sells for Rs.2.25. The annual interest rate implied in the option prices is approximately
 (a) 12.36%
 (b) 11.10%
 (c) 10.25%
 (d) 9.58%
 (e) 8.81%
19. For Paramount Airlines, the various alternatives available to hedge against increase in Aviation Turbine Fuel (ATF) prices are
 I. Taking short position in put options on ATF.
 II. Taking long position in call options on ATF.
 III. Taking long position in put options on

ATF. IV. Taking long position in ATF futures contract. (a) Both (I) and (IV) above
(b) Both (II) and (III) above (c) Both (III) and (IV) above (d) (I), (II) and (IV)
above (e) (II), (III) and (IV) above.

19. In a derivative exchange, scalpers are (a) Brokers who execute orders on others' account (b) Traders who are ready both to buy and sell (c) Traders who execute trade on their own account (d) Traders who execute trade on account of others only (e) Traders who execute trade on their own account and on account of others
20. With respect to a particular futures contract, the initial margin requirement is Rs.25,000 and maintenance margin requirement is Rs.13,500. If the balance in margin account is Rs.13,000, the amount to be deposited to meet the margin call is (a) Nil (b) Rs. 500 (c) Rs. 5,000 (d) Rs.11,500 (e) Rs.12,000.
21. The value of an American put option is positively related to the following factors except (a) Dividends (b) Time to expiration (c) Strike price (d) Volatility (e) Risk-free rate
22. Mr. Singh, CFO of National Textiles Ltd., has covered dollar receivable by purchasing put options on dollar at Rs.48.85 by paying a premium of 50 paise per dollar. If on the date of realization, the spot price turned out to be Rs.48.75/\$, the net rupee amount realized per dollar is (a) Rs.48.25 (b) Rs.48.35 (c) Rs.48.55 (d) Rs.48.75 (e) Rs.48.85.
23. The standard deviation of change in spot rupee-dollar exchange rate is 11.75% and standard deviation of change in rupee-dollar futures contract is 6.65%. The coefficient of correlation between the returns from spot and futures is 0.77. The minimum variance hedge-ratio for hedging through futures contract is (a) 0.44 (b) 0.63 (c) 1.36 (d) 1.87 (e) 2.56.
24. Mr. Anil is managing a portfolio of stock worth Rs.2.8 million with a beta of 1.25. On January 1, 2009, he writes fifteen call option contracts on NIFTY 3650 expiring in the month of February, at a premium of Rs.50 each, when the index was trading at 3600. The size of each contract is 50. If at expiration, NIFTY turns out to be 3680, the value of total portfolio is approximately (a) Rs.2.800 million (b) Rs.2.812 million (c) Rs.2.862 million (d) Rs.2.893 million (e) Rs.2.996 million.
25. Which of the following statements is not true with respect to delta? (a) Delta approaches -1 when the put option is deep-in-the-money (b) Delta approaches 0 when the put option is deep-out-of-the-money (c) Delta approaches -1 when the call option is deep-out-of-the-money (d) Delta tends to approach 1 when the call option is deep-in-the-money (e) Delta of a call will be most sensitive to change in the stock prices, when the underlying stock price approaches the exercise price
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26. Mr. Alan has gone short on T-bond futures. In order to make delivery, he has identified the following five bonds to choose one among them: Bond Quoted Price Conversion factor A 115-06 1.144 B 119-25 1.1875 C 115-02 1.143 D 117-15 1.166 E 114-24 1.141 Assuming that the current futures settlement price is 100-16, the Cheapest-to-Deliver bond (CTD) to be selected by Mr. Alan for delivery is (a) A (b) B (c) C (d) D (e) E
27. Which of the following is not an assumption underlying the Black-Scholes model? (a) No dividend payments during the life of the option (b) Security trading is continuous (c) The risk-free rate is same for all maturities (d) Short selling of securities is not permitted (e) Absence of transaction costs and taxes.
28. Mr. Nicholas, a portfolio manager of an asset management company based in US, keeps track of major developments in Power Industry. According to him, the signing of nuclear deal between US and India appears to be a positive sign and is likely to benefit the major players in this sector, especially in India. However, in an environment where economic growth is slowing down and many Indian companies are cutting production, NTPC as an investment, appears to be a good investment opportunity and offers decent growth that could boost overall returns of the portfolio on a long term basis. As such, he is planning to buy 50,000 shares of NTPC. The current price of the stock quoted in Bombay Stock Exchange (BSE) is Rs.140. However, Mr. Nicholas is concerned about recent volatility in Rs./\$ exchange rates. The current exchange rate is Rs.47.70/\$. In case, Indian currency continues to depreciate against dollar, this would negatively affect the portfolio returns. As such, he is contemplating of taking position in \$ futures in India to hedge his return. The appropriate \$ futures contract is currently trading at Rs.48.25. The contract size of each \$ futures contract is \$1000. You are required to construct a position using \$ futures contracts and evaluate how the investment will perform if after second month, the stock price turns out to be Rs.165, the spot exchange rate is Rs.48.10/\$ and the futures price is Rs.48.44/\$. Also determine the rate of return available to Mr. Nicholas from the combined position at the end of second month
29. Compare the construction and payoff of covered call strategy with covered put strategy. Also state the expectations underlying the two strategies.
30. .Discuss the benefits of using covered call strategy and covered put strategy.

Options are financial derivatives traded on organized exchanges. Option is a derivative financial instrument whose market is growing fast. It is a contract between a buyer and a seller. Option gives a buyer the right (but not the obligation to buy or sell the contract) while the seller has an obligation to honor the contract. Calls are called covered by owning the underlying security and puts are called covered with a short position in the underlying

security while owning the asset. In other words, it is called covered position when option position is opened by selling an option and at the same time owning an equivalent position in the underlying security. Covered call and covered put are the main types of covered options. A 'Covered Call' is an option contract, where an investor owns a security and sells call options on the same security. They are covered calls as long as the investor owns sufficient number of shares of the security for each call that is sold. The sold calls are covered because they can be exercised by selling the security to the covered call option holder at the strike price of call options. Under the covered call option strategy, an investor writes a call option contract while at the same time owns the same number of shares of the underlying stock. Covered call option is the most essential and commonly used strategy combining the flexibility of listed options with stock ownership and ensuring pre-decided price for the sold shares. A covered call option is a combination of owning shares of a stock or other securities and selling (or writing) a call option on those shares in corresponding amounts. Mostly, covered call option has same payoffs as a short put option on the stock, and thus it should essentially have the same price (or premium) as that of a short put option. A 'Covered Put' is an option contract where an investor has a short position in a security and sells puts on that short security; they are covered puts as long as the investor is short on sufficient number of shares of the security for each put that is sold. The sold puts are covered because they can be exercised by buying the security to close out the short position to the covered put option holder at the strike price of the put options. Under cover put strategy an investor writes a put option contract while simultaneously owning an equivalent number of shares of the underlying stock. Strategy for covered call provides some income, but it does not eliminate the downside risk of stock ownership. Unfortunately, this strategy sometimes is marketed as being 'safe' or 'conservative', even though the flaws in this marketing logic have been well-known. The covered put strategy and covered call strategy are opposite to each other. Investors sell short the stock to cover the put which is written. Strategy for covered put is a neutral to bearish strategy because the investor is expecting the stock to go down or stay constant. When the stock decreases, the investor will have the stock put to them at the short put strike price. This covers the obligation of the shares of stock which were shorted. It is important that the investor should have a negative opinion of the stock's short-term potential and to select stocks that are going down

31. What factors distinguish a forward contract from a futures contract? What do forward and futures contract have in common? What advantages each have over the other? b. Explain how the option on the futures becomes the same as an option on the asset
32. A swap bank has to entail certain risks, which are inherent to the swap business and are interrelated.' Explain the risks involved in the swap business.

PROJECTS (To be given to group of students)

1. A project on derivatives market in India
2. A study on financial derivatives with reference to Tata motors limited
3. Impact of Derivatives trading on financial markets.
4. A project on importance of the Financial derivatives market.