Section 1 - Overview and Option Basics

Welcome to the world of investing and trading with options. The purpose of this course is to show you what options are, how they work and when they might be used to enhance your investment activities. Options can add value to what you are already doing whether conservative or aggressive, income-oriented or capital gains-oriented.

Like many people new to options, you may be feeling a little trepidation. In some circles the word "options" conveys the notions of high risk and speculation. While it

is true that options can be used to speculate, the same can be said for other investment products. Day trading or short-term trading with stocks is a popular method of speculating, but, as you undoubtedly are aware, stocks do not have to be traded in this fashion. The same is true of options. Options can be used in a variety of ways from conservative to speculative.

If you have some experience with options you may want to reinforce and expand your knowledge of options or increase the strategies you use. This course will review basic option concepts, analyze the profit & loss potential of several strategies, and concentrate on using options to implement investment oriented strategies.

Regardless of your investing goals, risk tolerance, or experience, be aware of two keys to using options.

- First, gaining an understanding of their unique attributes.
- Second, adapting to the different thinking process that using options requires.

Simply stated, investing or trading with options is different than investing or trading with stocks. Because options have an <u>expiration date</u>, there is a need to plan for various alternatives. Consequently, investors who use options must be more pro-active than traditional buy-and-hold stock investors. Short-term traders who use options must also plan, but in a different way than investors. The unique characteristics of option price behavior must be understood and anticipated before making an option trade.

Section 2 - The Basics of Call Options

The first step in learning to use options is to familiarize yourself with some commonly-used terms. It may seem a little cumbersome at first, but these words will be used throughout this course and they will become part of your essential vocabulary.

An **option is a contract** between a buyer and a <u>writer</u> (or seller). An option is different from a share of stock which is a security that allows an owner to vote in corporate affairs and to receive dividends. Option owners do not have voting

rights, and they do not receive dividends. The option buyer, or owner, has a right, but not an obligation, to buy or to sell some underlying instrument at a specified price until an expiration date. The option writer, or seller, assumes the obligation contained in the option contract and must fulfill the terms if the option buyer exercises the right.



The strike price is the price specified in the option contract at which the underlying







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instrument is bought or sold if the option is exercised.

The **expiration date** is the date after which the option contract ceases to exist. If an option is not exercised prior to the expiration date, the right contained in the option ceases to exist. When an option is not exercised before its expiration date, that option is said to have "expired worthless." The expiration date for stock options in the United States is typically the Saturday following the third Friday of the expiration month. Note however, that the 3rd Friday of the month is the last trading day and the last day to exercise the option - hence the term "expiration Friday." For technical reasons relating to trade clearing and resolution of errors, Saturday is the official day of expiration.

Exercise means to invoke the right contained in the option contract. **Assignment** means that an option writer has been selected in an impartial manner and must fulfill the terms of the contract.

Option owners can exercise an option by calling their broker before established deadlines and giving instructions to exercise. The broker will then relay the option owner's instructions to the **Options Clearing Corporation (OCC)**, the central clearing house for all listed options in the United States. In a random process, the OCC will then



assign a brokerage firm with the responsibility fulfilling the requirements of the exercised option. That firm must have one or more customers with a corresponding written option to the one being exercised, and that firm, in an impartial manner, will assign an option writer to fulfill the obligation of the option being exercised.

There are two types of options - call & put. A **call option on XYZ stock** gives the buyer the right, but not the obligation, to buy 100 shares of XYZ stock at a strike price until the expiration date. In order to obtain this right, the buyer must pay a price, or <u>premium</u>. The writer, or seller, of a call option is obligated to deliver the 100 shares upon notification from the buyer. In return for assuming this obligation, the writer receives the premium.

An example of a real call option is a General Electric January 2002 110 Call which is trading for 5 .



The "<u>underlying instrument</u>" is 100 shares of General Electric common stock. The "strike price" is \$110 per share, and the "expiration date" is the Saturday following the third Friday of January, 2002. The price, or premium, of this call is \$5 per share, or \$500 not including commissions. The purchaser of this call pays \$5 per share and obtains the right, but not the obligation, to buy 100 shares of General Electric stock at a price of \$110 per share at

any time until the third Friday of January, 2002. The writer, or seller, of this call receives \$5 per share and assumes the obligation of delivering 100 shares if the owner exercises the right to buy. When notified that the call has been <u>exercised</u>, the call writer must deliver the shares. Upon receipt of the shares, the exerciser of the call pays the amount of the <u>strike price</u> to the call writer.

What does it mean to buy? Purchase? Own?

Section 2 - The Basics of Call Options

Why would anyone buy a call?

Consider the case of Michelle who is pondering an investment in LTR stock that is currently trading at \$36 per share on the New York Stock exchange. 100 shares would cost \$3,600 plus commissions, and Michelle has this amount to invest. If the stock price rises to \$45 per share, then Michelle would make \$900 on the purchase of 100 shares, but the risk is substantial. The maximum risk of purchasing 100 shares is the total amount of the purchase price including commissions. While a total loss may be unlikely, it is not unlikely that an earnings report or other news could cause the price could drop to \$25 or lower. Such a price decline would amount to a loss of \$11 per share, or \$1,100, on 100 shares.



Assuming that today is June 25 and that the LTR September 35 Call is trading for \$3 per share, or

\$300 plus commissions, then Michelle has a lower-risk alternative than simply purchasing the LTR common stock. If Michelle purchases this call for \$300 plus commissions, then she will have the right, but not the obligation, to purchase 100 shares of LTR stock at \$35 per share at any time until the September expiration date. If she buys the call, Michelle's maximum risk will be the \$300 plus commissions that she pays for the call.

If the stock price declines to \$25 at the September expiration date, then Michelle will let her call expire. She simply will *not exercise* her right to purchase LTR stock at \$35 per share, and she will lose the \$300 plus commissions that she paid.



If, however, the price rises to \$45, then Michelle can exercise her call and purchase 100 shares of LTR stock at \$35 per share, or \$3,500 plus commissions. At that point she will own the 100 shares, and she can follow through on her original plan. If she had planned to sell the stock when it reached \$45 per share, then she can sell it. If she planned to hold the stock in her portfolio for the long term, then she can continue to hold it.

In this example, the LTR September 35 Call gave Michelle two advantages over the straight-forward purchase of LTR stock. First, the call limited her risk to \$3 per share in this example, and, second, she locked in a known purchase price.

So what is the negative?

Consider the total cost of LTR stock to Michelle if the price rises and she <u>exercises</u> her call. First, Michelle will pay \$3 per share, or \$300 plus commissions to purchase the LTR September 35 Call. Second, she will pay \$35 per share, or \$3,500, to purchase the 100 shares when she exercises the call. Her total cost will then be \$38 per share, or \$3,800 on 100 shares, plus commissions. If Michelle simply purchased 100 shares today at \$36 per share, her total cost would be \$3,600 plus commissions.

Looking at Michelle's situation, we see that the <u>call option</u> has given her a second choice. Purchasing the call limits her risk to \$3 per share plus commissions, but it potentially raises the total cost to \$38 per share. Purchasing the stock now guarantees a price of \$36 per share plus commissions, but it involves risk that is substantially greater than \$3 per share.

Section 3 - The Basics of Put Options

A **put option** gives the buyer the right, but not the obligation, to sell 100 shares of the underlying stock at a strike price until the expiration date. The writer of a put option is obligated to buy the 100 shares upon notification from the buyer.

An example of a real put option is a Ford June 2002 60 Put .



price " is \$60 per share, and the "<u>expiration date</u> " is the Saturday following the third Friday in June, 2002. The purchaser of this put has the right, but not the obligation, to sell 100 shares of Ford stock at \$60 per share at any time until the third Friday of June, 2002. The seller of this put is obligated to purchase 100 shares if the owner exercises the right to sell. Upon notification that the put has been exercised, the writer of the put must accept delivery of the stock and pay the amount of the strike price to the exerciser of the put.



There are two reasons that someone might buy a put. First, consider the case of Eric who is worried about the 100 shares of IQY stock that he owns. The stock has risen from \$40 to \$85 in the last year, and a "60-90 day pull back to \$70" is forecasted by a leading analyst. Eric is worried that, if the analyst's forecast is correct, then he will lose \$15 of his









gains. However he is also worried that, if he sells and the analyst is wrong, then he will miss out on a continued price rise.

Assuming that today is January 20 and that the **IQY March 85 Put** is trading for **3.50**, then, instead of simply selling his IQY stock, Eric has an "insurance alternative." If Eric purchases the March 85 Put for \$3.50 per share, or \$350 not including commissions, then he will have the right, but not the obligation, to sell 100 shares of IQY stock at \$85 per share at any time until the March expiration date. The maximum risk of purchasing the put is the price of \$350 plus commissions, but, as we will see, purchasing the put reduces the risk of owning the IQY stock.

If the stock price rises above \$85 at the March expiration date as Eric hopes, then he will let his put expire. He simply will **not exercise** his right to sell IQY stock at \$85 per share, and he will lose the \$350 plus commissions that he paid.

If, however, the price falls to \$70 as the analyst predicts, or any price below \$85, then Eric can do one of two things. Either he can exercise his put, or he can sell the put. If Eric exercises the put, then he will sell the stock at \$85 per share and receive \$8,500 less commissions. He will also have paid \$350 for the put which he will not get back.



If Eric chooses to sell the put rather than exercise it, then he will receive cash for selling the put and still own the stock. If IQY stock is trading at \$70, then the 85 Put is likely to be trading at or above \$15 per share, or \$1,500. The put's price of \$15 per share is calculated as follows: with a stock price of \$70 per share, the right to sell at \$85 per share is worth at least \$15 per share. If Eric purchases the IQY 85 Put for 3.50 and sells it at 15, then he will earn a profit of 11.50, or \$1,150, not including commissions. Such a profit on this put option will largely offset the price decline of \$15 per share from \$85 to \$70 in his IQY stock. And Eric will still own the stock with all the profit potential - and risk - that stock ownership entails.



In this example, the put gave Eric two advantages over the straight-forward sale of his IQY stock. First, purchasing the put enabled him to continue owning his IQY stock which enabled him to profit if the price rose, and second, it limited the risk of owning that stock at the same time. As discussed earlier, selling the stock had the advantage of eliminating risk, but it also eliminated the opportunity for profit.

So what is the disadvantage of purchasing a put to protect one's stock holdings? Like any insurance policy, there is a cost. In this example, the approximately 90-day protection provided by the 85 Put cost 3.50 per share plus commissions. Whether the stock price rises, falls or remains constant, the put has a price that must be paid.

Reflecting on Eric's choices, we see that purchasing a put offered different a trade-off than selling stock. Purchasing the put limits the risk of Eric's IQY stock, but that protection has a cost which could, potentially, reduce profits if the stock continues to rise. Selling the stock outright, in this example, guarantees a selling price of \$85 per



share less commissions, but selling the stock also eliminates the potential for profit if the stock price continues to rise.

Section 3 - The Basics of Put Options

The second reason someone might purchase a put is for speculation. Assume that Felecia is <u>bearish</u> on SOR stock, believing that a price decline from \$41 to \$35 is likely in 60 days. Assume also that an August SOR 40 Put has 60 days until expiration and is trading at 0.75, or \$75.



One traditional approach to speculating on a bearish opinion is selling stock short, or "shorting SOR." To short a stock, a speculator borrows some shares and then sells them. If the market prediction materializes and the stock price falls, then the same number of shares are purchased at a lower price, a profit is realized, and the purchased shares are given to the person from whom the original shares were borrowed. If, however, the market forecast is incorrect and the stock price rises, then a loss results, because the shares are purchased at a price higher than the price at which they were sold. A broker handles the details of borrowing stock and selling and returning shares.



If Felecia, for example, shorted SOR shares at \$41 and repurchased them at \$35, then she would earn a profit of \$6 per share not including commissions. If, however, the price rose and Felecia repurchased the shares at \$45, then she would incur a loss of \$4 per share not including commissions. Remember, the risk of shorting stock is unlimited, because stock prices can rise indefinitely.

So why might Felecia purchase a put instead of shorting SOR? The maximum risk of purchasing a put is limited to the <u>premium</u> paid plus commissions. If Felecia purchases the **August SOR 40 Put for 0.75** per share, or \$75 not including commissions, then she will have the right, but not the obligation, to sell 100 shares of SOR stock at \$40 per share at any time until the August expiration date. If she buys this put, Felecia's maximum risk will be the \$75 plus the commissions she pays for the put.

If the price declines to \$35 as Felecia predicts, then Felecia can sell her put and realize a profit. With a stock price of \$35, a 40 Put will likely be trading at or above \$5 per share or \$500. The right to sell at \$40 has a minimum value of \$5 per share if the stock price is \$35. Purchasing a put at \$75 and selling it for \$500 results in a profit of \$425 not including commissions.



If, however, Felecia's forecast is incorrect, and the stock price is above \$40 on the August expiration date, then Felecia will let her put expire, and she will lose the \$75 plus commissions that she paid. But Felecia does not have to wait until the expiration date to realize her profit or loss. At any time during market hours, her option will be trading, and she can choose to sell it.



In this example, the put gave Felecia the advantage of limited risk, whereas shorting stock has unlimited risk. And what is the disadvantage? Purchasing the put has a lower profit potential than selling the stock short. In this example, shorting stock at \$41 and repurchasing it at \$35 would result in a profit of \$6 per share, or \$600 on 100 shares, not including commissions. Purchasing a 40 Put at 0.75 and selling it at 5, however, results in

a profit of 4.25, or \$425 per put not including commissions. The put offers the advantage of limited risk and the disadvantage of lower profit potential.

More about Premium

Section 4 - Open Interest and Long and Short Positions

Another attribute of options that is different from stocks is the concept of <u>open</u> <u>interest</u> which is the number of contracts in existence.

The number of outstanding shares in a corporation usually remains constant. If a corporation, for example, raises equity capital by selling 100,000 shares, then those shares will stay in existence until the Board of Directors issues more shares or repurchases some shares and retires them. The price of the shares, of course, may fluctuate, but the number of shares remains constant.



In contrast, the number of option contracts in existence is determined by the mutual consent of buyers and sellers. In order to explain this concept, it is necessary first to define some important terms.



The term **long option position** means that an option is owned and the owner has some kind of right. The owner of a call, for example, is described as having a **long call position**. If you have "6 long calls," then you have the right to buy 600 shares of some underlying stock at the strike price until the expiration date. A put owner is described as having a **long put position**. If you have "3 long puts," then you have the right to sell 300 shares of some underlying stock at the strike price until the expiration date.



The term **short option position** means that an option was written, and the writer has some kind of obligation. A call writer, for example, is described as having a **short call position**. If you have "5 short calls," then you are obligated to sell 500 shares of some underlying stock at the strike price until the expiration date. A put writer is described as having a **short put position**. If you have "7 short puts," then you are obligated to purchase 700 shares of some underlying stock at the strike price until the expiration

date.

(Covering a Short Position

The terms long position and short position will now be used to explain the concept of open interest.



When an option is first listed for trading, there are no options in existence. Consequently, the open interest is zero. When an option buyer and an option writer agree upon a price, then an option contract is created. At that point the number of contracts in existence, the open interest, is one contract. The option buyer, in this case, created a long position that did not exist before the transaction. This is known as an **opening purchase transaction**. The option writer, in this case, created a <u>short position</u> that did not exist before the transaction. This is known as an **opening writing transaction**.

If another option buyer makes another opening purchase transaction and another option seller makes another opening writing transaction, then a second contract is created. At that point, the open interest rises to two contracts. More and more contracts can be opened as long as buyers are making opening purchase transactions and sellers are making opening writing transactions.



The number of open option contracts decreases when buyers are purchasing options to close their short positions and sellers are selling options to close their long positions. The option seller, in this case, is selling an option that is owned and is, thereby, eliminating the right that the option contains. This is known as a **closing writing**

transaction. The option buyer, in this case, is buying an option that offsets an existing short position and, thereby, is eliminating an obligation that existed before the transaction. This is known as a **closing purchase transaction**. An example involving Debra, Sue and Linda may help to clarify these concepts.

Section 4 - Open Interest and Long and Short Positions

Assume that Day 1 starts with there being no <u>open interest</u> in QRS October 25 Calls. If Debra purchases one of these calls from Sue, then the open interest rises to one contract. Debra has one long call position in the QRS October 25 Calls, and Sue has one short call position in these calls. The price of the transaction is irrelevant for the sake of this example, because no attempt will be made to calculate profit or loss. The transactions and positions are summarized below:

	Buyer	Seller	Open Interest
Day 1	Debra buys 1 to open	Sue sells 1 to open	1 Contract

Position Summary			
	Long Positions Short Position		
Debra	1	0	

Sue	0	1
Linda	0	0
Total Open Interest	1	1

On Day 2, if Debra buys a second call, this time from Linda, then the open interest rises to two contracts.

	Buyer	Seller	Open Interest
Day 1	Debra buys 1 to open	Sue sells 1 to open	1 Contract
Day 2	Debra buys 1 to open	Linda sells 1 to open	2 Contracts

Position Summary				
	Long Positions	Short Positions		
Debra	2	0		
Sue	0	1		
Linda	0	1		
Total Open Interest	2	2		

On Day 3, if Sue decides to close her short call position by purchasing it in the market, and if she buys it from Linda who is establishing a new short position, then total open interest is unchanged.

	Buyer	Seller	Open Interest
Day 1	Debra buys 1 to open	Sue sells 1 to open	1 Contract
Day 2	Debra buys 1 to open	Linda sells 1 to open	2 Contracts
Day 3	Sue buys 1 to close	Linda sells 1 to open	2 Contracts

Position Summary				
	Long Positions	Short Positions		
Debra	2	0		
Sue	0	0		
Linda	0	2		
Total Open Interest	2	2		

Finally, on Day 4, if Debra sells both of her 2 long calls to close her position, and if Linda purchases these two calls to close her short position, then the open interest in this option declines to zero:

	Seller	Interest
Debra buys 1 to open	Sue sells 1 to open	1 Contract
Debra buys 1 to open	Linda sells 1 to open	2 Contracts
Sue buys 1 to close	Linda sells 1 to open	2 Contracts
Linda buys 2 to close	Debra sells 2 to close	0 Contracts
	Debra buys 1 to open Debra buys 1 to open Sue buys 1 to close Linda buys 2 to close	Debra buys 1 to openSue sells 1 to openDebra buys 1 to openLinda sells 1 to openDebra buys 1 to openLinda sells 1 to openSue buys 1 to closeLinda sells 1 to openLinda buys 2 to closeDebra sells 2 to close

Position Summary			
	Long Positions	Short Positions	
Debra	0	0	
Sue	0	0	
Linda	0	0	
Total Open Interest	0	0	

This example with Debra, Sue and Linda shows that an option's open interest increases when both new long positions and new short positions are opened, and decreases when both existing long positions and existing short positions are closed. The rise and fall in option open interest depends purely on the interaction of option market participants.

Section 5 - Communicating an Option Order

Communication is important in all walks of life, but it is especially important when initiating a transaction involving options -- there is much to communicate so that any transaction can be processed properly.

When entering an option order, you must specify all of the following items:

- Whether you are buying or selling
- Whether this is an opening or closing transaction
- The quantity of options
- The underlying instrument
- The expiration date
- The strike price
- The type of option (call or put)
- The option price

Examples of complete option orders are the following:

• Buy, to open, 5 GM June 60 Calls at the market

This is an <u>opening purchase</u> transaction in which 5 General Motors (GM) 60-strike calls are being purchased to create a new position. The buyer of these calls is establishing the right to buy 500 shares of General Motors stock at \$60 per share until the expiration date in June. To get this right, the buyer is willing to pay the prevailing market price.

• Sell, to open, 10 HWP September 45 Calls at 4.10



This is an <u>opening writing</u> transaction. The writer of these calls is establishing the obligation to deliver 1,000 shares of Hewlett-Packard stock (HWP) at \$45 per share at any time until the expiration date in September. In return for assuming this obligation, the call writer receives the premium of 4.10 per share.

• Buy, to close, 10 IBM April 110 Calls at 2.60

This is a <u>closing purchase</u> transaction in which the buyer of these calls is closing an existing short call position which was an obligation to deliver 1,000 shares of IBM stock at \$110 per share until the expiration date in April. In order to close out this obligation, the buyer paid the premium of 2.60 per share.

• Sell, to close, 7 AOL November 90 Puts at 5.75

This is a <u>closing writing</u> transaction in which the seller is closing an existing long put position which had the right to sell 700 shares of AOL stock at 90 per share until the expiration date. This sale eliminated, or closed out, that right. In return for closing out this right, the seller received the premium of 5.75 per share.

Discrete Sell vs. Write

Section 6 - In-the-money, At-the-money and Out-of-the-money

In-the-money, **at-the-money** and **out-of-the-money** are terms which describe the relationship of an option's strike price to the price of the underlying stock. These are important terms, because they are used frequently when discussing strategies and option price behavior.

A call is **in-the-money** when the stock price is above the <u>strike price</u> of the call. A call is **at-the-money** when the stock price is at the strike price, and a call is **out-of-the-money** when the stock price is below strike price.

For example, if the stock price is \$55, then the \$50 Call is in-the-money. In fact, since the stock price is \$5 above the strike price of the call, this call is referred to as being "\$5 in-the-money." The \$55 Call, however, is at-the-money, because the stock price is equal to the strike price of this call. Finally, the \$60 Call is out-of-the-money, because the stock price is below the strike price of this call.



With put options, in-the-money, at-the-money and out-of-the-money have similar meanings, but the relationship of strike price and stock price is opposite that for calls.

A put is **in-the-money** when the stock price is below the strike price of the put. A put is **at-the-money** when the stock price is at the strike price, and a put is **out-of-the-money** when the stock price is above the strike price.

For example, if the stock price is \$35, then the \$40 Put is in-the-money. In fact, since the stock price is \$5 below the strike price of the put, this put is referred to as being "\$5 in-the-money." The \$35 Put, however, is at-the-money, because the stock price is equal to the strike price of this put. Finally, the \$30 Put is out-of-the-money, because the stock price is above the strike price of this put.

Section 7 - Intrinsic Value, Time Value and Parity

An option price has two parts, the intrinsic value and the time value .

The intrinsic value is equal to the amount by which an option is in-the-money. The portion of an option's price in excess of intrinsic value is its time value. As an





example, consider a 40-strike call which has a price of \$3.25 when the stock price is \$42. This call is in-the-money by \$2, so its intrinsic value is \$2 (per share). The remaining 1.25 if this call's price is its time value.



The <u>in-the-money</u> portion of a put option's price is also its intrinsic value, and any amount in excess of intrinsic value is time value.

More About Time Value



With a 75 Put price of \$4.25 and a stock price of \$72.50, for example, the intrinsic value is 2.50, because the stock price is 2.50 below the strike price of the put. Another way of saying the same thing is that this put is 2.50 in-the-money. The remaining 1.75 of this put's price is its time value.

Next, consider a situation in which a stock is trading at a price of \$32 and a 30-strike Call is trading at \$2. This call is said to be trading "<u>at parity</u>," because the option premium is equal to the intrinsic value and there is no time value. Essentially, a buyer of this call could exercise the call, pay the amount of the strike price - \$30 per share in this example - and end up owning the stock for the same \$32 per share as the outright purchaser of stock. (Commissions are not included for the sake of simplicity.)

An example of a put trading at parity is when a stock is trading at \$47 and the 50 Put is trading at 3. The price of the put, in this example, equals its intrinsic value, and there is no time value. Essentially, a buyer of this put could exercise it and establish a short stock position at the same price as if stock where sold short at the current price. Again, commissions have not been included.

