



The new ACI Diploma

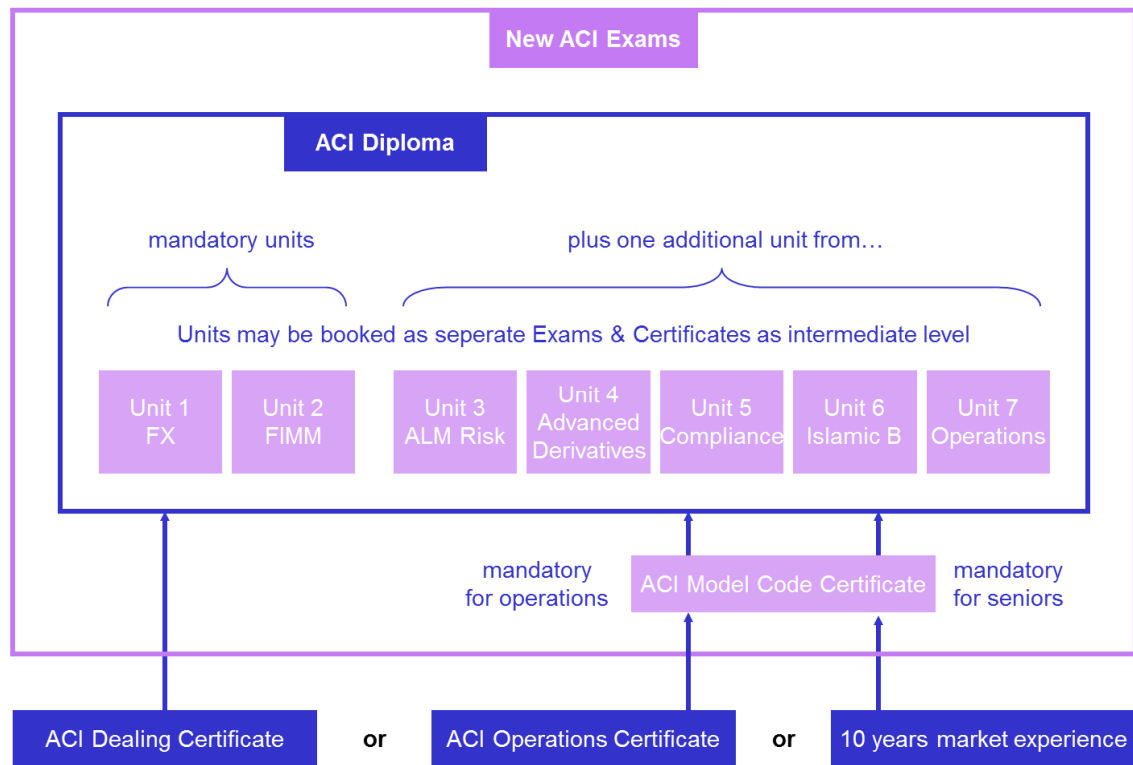
Unit 1 Foreign Exchange & FX Options

Effective October 2014

*“Setting the benchmark in
certifying the financial
industry globally”*

8 Rue du Mail, 75002 Paris - France
T: +33 1 42975115 - F: +33 1 42975116 - www.aciforex.org

The new ACI Diploma



Objective of the new ACI Diploma

The new ACI Diploma builds on the ACI Dealing Certificate and the ACI Operations Certificate and is designed to ensure that candidates acquire a superior theoretical and practical knowledge of the foreign exchange and money markets, their related instruments, and the linkages that exist between those markets and the practice of risk management. Candidates are expected to have acquired a solid grounding in the core subject areas and have the requisite skills in financial mathematics prior to matriculating for the Diploma.

The course is designed for the following groups:

- Senior foreign exchange and money market dealers
- Corporate and bank treasurers
- Senior operations staff

Eligibility

Learning Objectives

- **Know:** Candidates should be able to recall what they have learned
- **Understand:** Candidates should be able to demonstrate comprehension on what they have learned
- **Apply:** Candidates should be able to use what they have learned to achieve an accurate result
- **Analyse:** Candidates should be able to review content and make an informed decision and draw conclusions
- **Evaluate:** Candidates should be able to extract meaning from what they have learned

Objective of Unit 1

Foreign Exchange & FX Options

Candidates confidently deal with FX spot, swap and forward transactions, currency options, using bid-offer spreads, recognize arbitrage-relationships, collateralization, structure and price simple strategies and understand the basics of standardized exotic options (in the sense of the ISDA Definitions).

Topic Basket 1

FX Spot, FX Forward Outright and Swaps, Cross Rates, Forward-Forwards, NDF, Time Options

The candidate should:

- Understand **basis FX principles** like
 - currencies, currency pairs, FX spot, market liquidity, and currency trading constraints;
 - tom-next, forward and swap transactions and relationships to interest rates.
- Understand the **fundamental FX products** and explain the **strategies** underlying their use:
 - Know the difference between matched-principal and unmatched-principal FX swaps with respect to having an open position or not;
 - Understand forward-forward FX swaps and explain the strategies underlying their use;
 - Understand how FX swap traders can take a position;
 - Understand an NDF and explain its rationale.
- Apply **principles of modern FX trading**
 - Apply and calculate cross rates;
 - Apply the correct choice of spot rate in an unmatched principal swap;
 - Apply a roll over a spot FX position with tom/next FX swaps, calculate the costs or benefits involved, and identify the risks involved;
 - Analyse and calculate the impact of a change in the spot rate on the price of an FX swap;
 - Apply and calculate the price of a forward-forward swap;
 - Apply and calculate a two-way FX cross-rate spot, outright and swap quotation;
 - Apply and calculate both sides of the theoretical swap points from an FX spot rate and the bid and offer quotes for the interest rates;
 - Apply and calculate an FX swap over today and over tom for regular and odd periods including cross rates involving CAD;
 - Analyse a time option/flexi forward and price one from outright forward rates or swap rates;
 - Analyse and choose settlement rates for any short date swap and forward-forward swap.

Topic Basket 2

Valuation and Hedging of FX Positions and Arbitrage Opportunities

The candidate should:

- Show solid working knowledge in fundamental **risk management** applied to the **hedging of FX positions**:
 - Understand the mechanics of calculating the tail risk, hedge the tail risk with spot or outright for a given matched principal swap, understand how tail risk influences the FX result;
 - Apply and calculate the spot-risk hedge necessary for a forward FX position;
 - Understand the hedging of a forward-forward position using FRAs and/or futures.
- Understand and evaluate **interest arbitrage opportunities**.
- Understand and be able to apply basic **valuation concepts of FX positions**, in particular the following applications
 - Understand which yield curves are used for valuation and discounting: Money market, OIS, EURIBOR;
 - Apply, identify and calculate the effect of changes in the interest differential on the value of an FX swap position;
 - Apply and calculate the cost of borrowing or lending through FX swaps
 - Evaluate the effect on the price of an FX swap in case of a roll-over a forward FX position at a historic rate;
 - Apply and calculate profits or losses of forward-forward FX swap positions;
 - Evaluate the profit or loss on a spot FX position on T+1 for given revaluation rates;
 - Apply and calculate the profit or loss on an FX swap position for given revaluation rates;
 - Apply and calculate the profit or loss on an outright forward FX position at given revaluation rates.
- Analyse how a **synthetic FRA** can be created by using forward-forward FX swaps and another FRA; apply and calculate the profit & loss results of this strategy depending on the market swap rate at settlement.

Topic Basket 3

Fundamentals of FX Options and Pricing with Black and Scholes

The candidate should:

- Understand the meaning of and be able to define **basis FX Option principles** like
 - Understand exercise features, exercise styles (European vs. American), deemed exercise and their impact on the value of an option;
 - Understand the concept of a currency option;
 - Understand the relevance of cut-offs and fixings;
 - Understand the relevance of volatility;
 - Know: deferred delivery, cash-settlement, American and Bermudan exercise rights, cut-offs and fixings.
- Understand **basis concepts** and show **solid working knowledge** in fundamentals of **FX Options**:
 - Apply FX specific put-call parity and put-call symmetry to pricing and hedging currency options;
 - Know price quotations and conventions;
 - Understand how to convert from percentage to pips and amounts and vice versa;
 - Understand the conventions of options priced with implied volatility;
 - Understand and apply put-call parity and synthetic forwards;
 - Understand the difference between an outright forward and a synthetic forward;
 - Know the relevant dates of a currency option: trade day, premium payment day, exercise/expiration time, settlement day;
 - Know settlement types;
 - Understand and explain the impact of settlement type on counterparty risk;
 - Know how historic volatility is calculated;
 - Analyse implied and historic volatility;
 - Apply and convert volatility for different terms;
 - Understand the difference of smile format versus Brokers' quotes: risk reversal, 2-vol-strangle vs. 1-vol-strangle, vega-weighted butterfly.
- Understand and be able to apply basic **valuation concepts of FX Options**:
 - Understand the concept of Black-Scholes / Merton / Garman-Kohlhagen model in FX;
 - Understand the model assumptions and where they fail in practice.
- Show solid working knowledge in the **valuation of FX Options**
 - Analyse the impact of exercise style on the price of the option;
 - Evaluate the effect of bid-offer spreads quoted in implied volatility depending on the term and the moneyness of vanilla options;
 - Understand and quantify the risk for a trader in cash-settled options with a reference to a fixing.

Topic Basket 4

Structuring with Plain Vanilla Options

The candidate should:

- Show solid working knowledge in the **Structuring with Plain Vanilla Options**
 - Analyse the missing leg of a given structure;
 - Evaluate the building blocks of a risk reversal and participating forward;
 - Evaluate the building blocks of spreads, ratio spreads, seagulls, straddles, strangles, butterflies and condors;
 - Apply and calculate the result (final exchange rate) of these strategies at the maturity date;
 - Apply and choose between versions of these for hedgers and/or traders;
 - Evaluate the structure to use in which situation and to hedge which type of risk;
 - Understand and be able to apply basic concepts of Structuring with Plain Vanilla Options
 - Understand how to extend the concept of risk reversals and participating forwards to more general strategies;
 - Understand how the strategies of building blocks are used by corporates from an importer/exporter point of view;
 - Understand the relevance of the underlying cash-flow in structured forwards;
 - Understand the impact of the sales margin of a zero-cost structure on the strike prices of the component options;
 - Understand the difference between the bid offer spreads of structures and the bid offer spreads of the component options;
 - Understand how dual currency and other FX-linked deposits and loans are composed by their building blocks;
 - Evaluate the prices of each building block and the price of the structure;
 - Understand how to unwind a dual currency deposit;
 - Understand how structured forwards are composed by their building blocks.
- Understand the concepts and show solid working knowledge in the context of **structured products**
 - Apply delta and vega hedging of structured products;
 - Understand the impact of the smile effect on structured products;
 - Evaluate how the sales margin is derived from the value of a strategy from either the seller's or the buyer's point of view;
 - Know the risk for the sell-side and the buy-side of a dual currency deposit;
 - Evaluate sales margin in structured products;
 - Analyse the final exchange rate for all structures from a treasurer's point of view as a function and in a diagram;
 - Apply the idea and calculate the worst case exchange rates for the different hedging strategies;
 - Evaluate the final exchange rates in structured forwards.

Topic Basket 5

Greeks and Hedging

The candidate should:

- Understand **Greeks and Hedging principles** for FX products
 - Understand the importance of Greeks;
 - Know delta, gamma, theta, base currency and counter currency rho, vega;
 - Understand the relationship between gamma and theta;
 - Know Forward volatility.
- Understand the concepts and show **solid working knowledge** in the context of **Greeks and Hedging** applied to FX products
 - Apply and calculate the impact of the market value of a position using Greeks (mathematical derivatives vs. amounts) in a trading context;
 - Analyse the delta hedge required for a portfolio of bought and sold options including the currencies and amounts;
 - Evaluate examples of options for a given set of signs of Greeks;
 - Evaluate the Greeks of a portfolio of options;
 - Apply the smile quotation conventions in FX respecting the ATM and delta-conventions;
 - Understand the difference between spot and forward delta, and between premium-adjusted and premium-unadjusted delta;
 - Analyse the quotation of option prices in terms of deltas;
 - Apply volatility smile: define term-structure, skew, risk reversals and butterflies;
 - Analyse the conversion between quotations in terms of delta and quotations in terms of risk reversals and butterflies;
 - Evaluate forward volatility from spot volatilities;
 - Apply and calculate vega hedging to options for given term and deltas;
 - Evaluate the number of at-the-money straddles required to vega hedge a given option position;
 - Know the basic strategies for hedging volatility risk.

Topic Basket 6

Standardized Exotic Options

The candidate should:

- Know the **ISDA Supplements** 2005 for barrier options and 2013 for variance and volatility swaps.
- Understand the functionality of and be able to handle **Standardized Exotic Options**
 - Know exotic features: deferred payment, contingent payment;
 - Understand digital options: European and American style, single and double barrier;
 - Understand barrier options: single and double, knock-in and knock-out, transatlantic, kick-in/kick-outs, knock-in-knock-out barrier options;
 - Understand structured forwards without worst case such as knock-out forward;
 - Understand the product feature and risk of a variance swap;
 - Understand the difference between variance swaps and volatility swaps.
- Understand the concepts and show **solid working knowledge** in the context of **Exotic Options**
 - Analyse digitals paying domestic currency and digitals paying foreign currency;
 - Evaluate the risk of selling digital options;
 - Understand the relationship between digital options and spreads of vanilla options;
 - Evaluate the risk of barrier options for the buy-side and the sell-side;
 - Analyse simple structures, in particular a multi-leg vanilla strategy or a structured forward with worst case such as a forward extra using vanilla and barrier options);
 - Apply the idea of a semi-static hedge of a variance swap with a portfolio of vanilla options;
 - Analyse why other than the variance swap the volatility swap cannot be hedged with a portfolio of vanilla options.
- Understand and be able to apply basic concepts of the **valuation of Exotic Options**
 - Apply the rule of thumb of pricing American style digital options (one-touch/no-touch) based on European style digital options;
 - Evaluate the impact of jump-risk on the value of a variance swap;

Examination Procedure

Format: The examination lasts 2.5 hours (150 minutes) and consists of 90 multiple-choice questions.

Calculators: Some questions will require the use of a calculator. A basic one will be provided on the computer screen. You may also use your own hand-held calculator, provided it is neither text programmable nor capable of displaying graphics with a size more than 2 lines.

Score criteria: The overall pass level is 60% (54 correct answers), assuming that the minimum score criteria of 50% for each of the topic baskets is met.

#	Topic basket	Topic weight	Topic basket criteria		
			Number of questions	Minimum score	Correct answers
1	FX Spot, FX Forward Outright and Swaps, Cross Rates, Forward-Forwards, NDF, Time Options	24.5%	22	50%	11
2	Valuation and Hedging of FX Positions and Arbitrage Opportunities	22.3%	20	50%	10
3	Fundamentals of FX Options and Pricing with Black and Scholes	13.3%	12	50%	6
4	Structuring with Plain Vanilla Options	13.3%	12	50%	6
5	Greeks and Hedging	13.3%	12	50%	6
6	Standardized Exotic Options	13.3%	12	50%	6
Total		100%	90		

Grades

Pass 60% - 69.99% (54 – 62 correct answers)
Merit 70% - 79.99% (63 – 71 correct answers)
Distinction 80% and above (72 correct answers and more)

Examination Fee

EUR tba, all taxes included