



# The new ACI Diploma

## Unit 2 Fixed Income & Money Markets

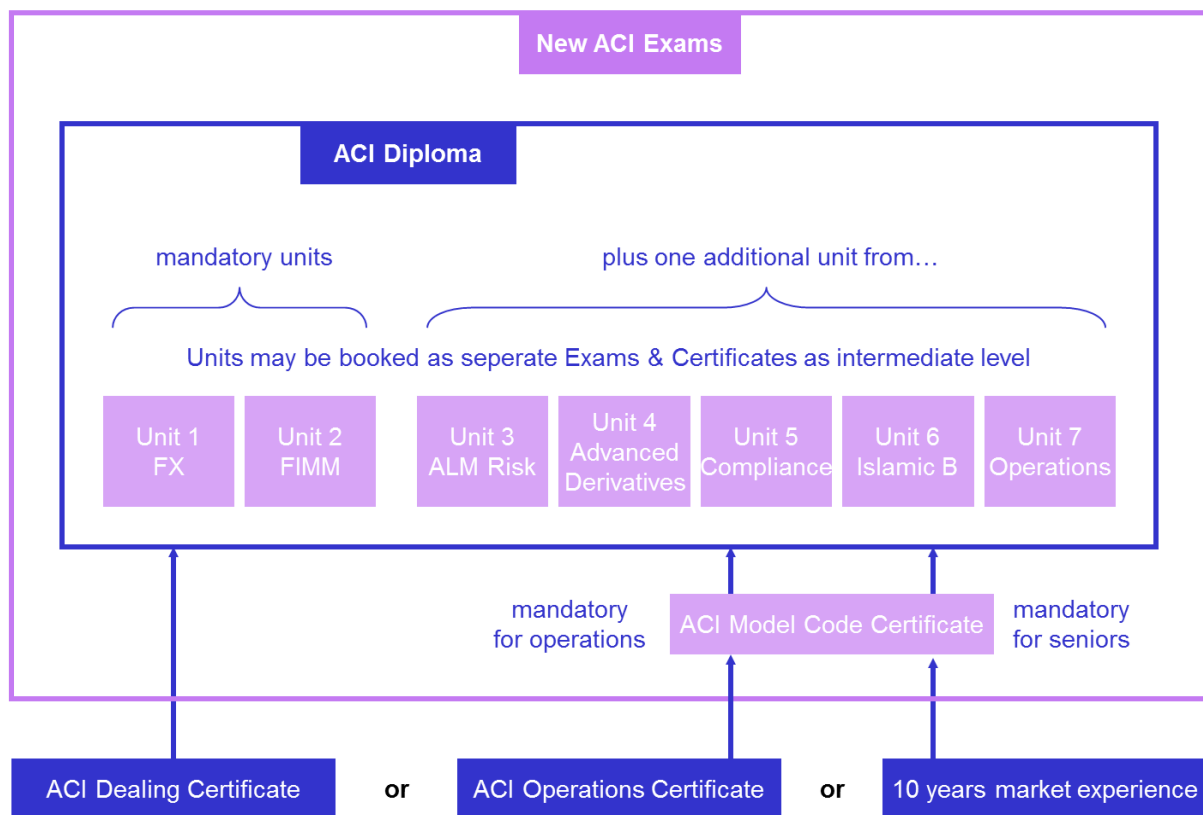
Effective October 2014

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

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## The new ACI Diploma

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## Objective of the new ACI Diploma

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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

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In order to become eligible for the new ACI Diploma examination you either need to be:

- holder of the ACI Dealing Certificate or
- holder of both the ACI Operations Certificate and the ACI Model Code Certificate examination or
- a senior practitioner with a ten years' work experience in financial markets and you need to pass the ACI Model Code Certificate examination. In this case you have to submit your CV to the ACI Board of Education which will decide on your eligibility.

## Learning Objectives

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- **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 2

### Fixed Income & Money Markets

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The objective of this unit is to understand the historical evolution and central functions of fixed income & money markets and its related financial derivatives and to acquire a broad range of practical skills such as: how to apply derivatives in Hedging and Asset & Liability Management and manage spot and forward FX positions, how to apply interest swaps in managing interest rate risk and how to value structured interest products. In addition, candidates are taught to exploit fixed income instruments and understand their interrelationships. They will learn the relevant pricing mechanisms, and display a good working knowledge and understanding of the rationale for various special kinds of interest rate contracts including interest rate options.

Candidates understand Fixed Income derivatives pricing, hedging, risk management, applications in treasury and derivatives documentation and regulation. A focus will be on Interest Rate Swaps, Swaptions, Caps and Floors, Exotic Options, structured products, and inflation related products, taking into account common pricing platforms. For this kind of derivatives candidates will be able to use risk management quantities (Sensitivities) to gauge the risk in a portfolio of Fixed Income products.

## Topic Basket 1

### Advanced Money Market

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The candidate should:

- Understand the principles of the money market
  - Understand the principal comparative advantages and disadvantages of each of the main types of cash money market instruments for typical borrowers/issuers and lenders/investors;
  - Understand the benefits of the programmed issuance of money market securities.
- Know the conventions of the money market and evaluate the fundamental financial instruments
  - Understand the features and conventions of CPs, CDs and T-Bills and perform the related calculations;
  - Evaluate the holding period yield between the purchase and the sale of a CD or a T-Bill;
  - Understand the principal reasons for the spreads between the yields on the different types of instruments;
  - Understand the credit ratings used by the main agencies for short-term instruments from longer-term ratings;
  - Understand the precise specifications of the most commonly used overnight indexes (OI);
  - Understand the main reasons why initial margin is taken in repo, define margin threshold and minimum transfer amounts;
  - Evaluate the start proceeds of a repo using the concept of the Margin Ratio in ICMA repo documentation and a variety of collateral;
  - Understand the difference between calculation using initial margin and calculation using a haircut;
  - Understand the purpose of margin maintenance and calculate the margin call on a repo;
  - Understand the 'early termination and re-pricing' method used in sell/buy backs as an alternative to margining and calculate the payments or transfers due using this method;
  - Understand why counterparty risk is the primary concern in repo and understand the risks introduced by the use of collateral;
  - Understand the working of tri-party repo;
  - Understand how rights of substitution work in repo;
  - Understand the main reasons why collateral goes on special and calculate the implied securities lending fee from the repo rate on specials;
  - Understand the importance of the GMRA and list its main features;
  - Understand how to identify GC from the ICMA list;
  - Evaluate the forward price of a sell/buy-back and recognize this as the forward price of the collateral;
  - Know an 'open' repo, 'repo-to-maturity' and 'forward' repo;

- Understand how to construct a synthetic repo and recognize the difference in price levels between real and synthetic repos;
- Evaluate the break-even on a forward interest rate position partly derived from covered interest rate arbitrage using a US T-Bill;
- Apply the conversion from the discount rate to the true yield;
- Apply the impact of negative interest rates in all cases.

## Topic Basket 2

### Fixed Income

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The candidate should:

- Understand the fundamental principles of Fixed income markets
  - Understand the characteristics and benchmarks of different Fixed Income markets;
  - Understand the syndication process and the roles of relevant relationships;
  - Understand the relevant characteristics of the global bond markets, especially government, corporate, and high yield bond markets, including the relationship between the investor base and yields.
- Understand basic concepts and show solid working knowledge in Fixed Income securities
  - Understand the differences between different types of Fixed Income securities and their characteristics, recognize their basic features and designate their main applications in managing, diversifying and hedging of classic banking book exposures;
  - Understand the basic techniques of valuation and return analysis for Fixed Income instruments from different sectors, industries and companies;
  - Analyse the structural characteristics of different debt financing alternatives and Mezzanine instruments, and characterize the common features in debt contracts, including covenants;
  - Apply the concepts of Yield to Maturity (YTM) or Internal Rate of Return (IRR);
  - Apply and calculate the inter-relationships between cash interest rates, forward rates and zero-coupon rates;
  - Apply and calculate bond pricing relative to benchmark bonds and curves;
  - Analyse bond risks based on Duration and Modification Duration, Convexity and Basis Point Value.

## Topic Basket 3

### Non-Option Interest Rate Derivatives

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The candidate should:

- Apply the pricing techniques for bond futures and forward contracts, taking into consideration
  - Contract specifications and conversion factors;
  - The expiration of futures contracts;
  - Cheapest to Deliver Bonds;
  - Gross and net basis;
  - The dynamics of rolls;
  - Bond valuations on the basis of futures;
  - Understand the following applications of Futures Contracts;
  - Applications in strategic asset allocation;
  - Interest rate risk management;
  - Relative value trading;
  - Hedging Swaps;
  - Cash and carry arbitrage;
  - Spread trading.
  
- Understand the fundamental principles of the non-option interest rate derivative market
  - Know the most important roles and functions in the derivative markets like dealer, broker, broker-dealer and interdealer brokers;
  - Understand the role of the ISDA and relevant documents like master agreements and credit support annexes;
  - Know the key elements of an ISDA Master Agreement, mechanics of collateralized deal, collateral rate, distinguish between secured vs. unsecured transactions;
  - Understand the market infrastructure, including electronic trading platforms;
  - Evaluate the impacts on Global Market Infrastructures caused by Basel III, MIFID II, EMIR, MIFIR, Dodd Franck , etc. , especially:
    - Central clearing counterparties,
    - Trade repositories,
    - Organized trading facilities.
  
- Understand basic concepts and show solid working knowledge in non-option interest rate derivatives
  - Understand important Benchmark Curves like ISDAfix;
  - Evaluate the role of swaps as primary instrument in the interest rate derivatives market, and their applications for pricing and hedging more complex instruments;
  - Evaluate the implications of the post-crisis update of the swap curve, and of multi-curve-modelling and understand overnight index swaps and their role for valuation purpose;
  - Apply and calculate the effective rate of a combination of fixed income instruments and interest rate swaps taking into account differences in day-count conventions and payment frequencies;
  - Define a forward money market yield curve and explain the relationship between forward curves and the cash yield curve;

- Apply and calculate the exact cost of borrowing or return on lending that is hedged with an FRA;
  - Evaluate the three types of basis between money market futures prices and other rates;
  - Understand how to compensate for the basis using the concept of convergence when hedging with futures;
  - Evaluate the bid and offer price of IMM FRAs and swaps from futures strips and explain how to use a strip of futures to price non-IMM periods;
  - Evaluate the hedging ratio on non-IMM periods hedged with futures using simple hedging techniques and the numbers of contracts needed;
  - Evaluate calculate the hedge ratio for futures hedges, adjusting for mismatches between the underlying term of the contract and the term of the transaction being hedged;
  - Understand the structure and purpose of strip and stack futures hedges;
  - Understand the structure and purpose of calendar spreads and other common types of futures spread strategies, and calculate the profit or loss on such trades;
  - Understand how to use futures spread trades to hedge the basis risk on futures hedges of non-IMM periods;
  - Understand the usefulness of the volume and open interest statistics on a futures contract;
  - Evaluate open interest and volume;
  - Apply techniques to identify arbitrage opportunities between FRAs, money market futures and money market swaps;
  - Evaluate the problem of the convexity bias between futures and OTC derivatives like FRAs and swaps;
  - Understand how FRAs, futures and swaps can be used to hedge and arbitrage against each other;
  - Apply the impact of negative interest rates in all cases;
  - Understand the concept of overnight index swaps;
  - Know the conventions for OIS market in USD, EUR, JPY, GBP, CHF;
  - Understand the basis between OIS curves and IRS curves as being the credit/liquidity spread for different terms;
  - Evaluate the cash and forward basis between OIS curves and IRS curves against LIBOR/EURIBOR for different terms;
  - Apply and calculate the settlement amount for terms up to one week;
  - Understand how overnight index swaps are used for valuation;
  - Apply and calculate the pricing methodology of forward starting swaps;
  - Understand the forward swap grid;
  - Understand the mechanism of basis swaps;
  - Analyse how a cross currency swap can be hedged by a basis swap and one or more interest rate swaps;
  - Know the pricing of basis swaps;
  - Understand mechanics of Overnight Indexed Swaps, relation between OIS and collateralization.
- Understand the following structures:
    - Asset swaps,
    - Libor in arrears swaps,
    - Constant maturity swaps,
    - Amortizing, accreting and rollercoaster swaps,
    - Forward start swaps.
- Analyse the impact of the yield curve on the price of these structures.

## Topic Basket 4

### Plain Vanilla Interest Rate Options

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The candidate should:

- Understand the different Plain Vanilla IR option products
  - Know Options on futures;
  - Understand the concept and conventions of swaptions;
  - Understand the role of forward starting swaps as underlying instruments of Swaptions;
  - Analyse the differences between payer and receiver Swaptions;
  - Understand the concept of cancellable Bermudan-style IRS.
- Understand basic concepts and show solid working knowledge in the valuation of Plain Vanilla IR options
  - Evaluate the role of the LIBOR-Market Model for pricing Swaptions;
  - Understand the terms and conditions of Interest Rate Guarantees caplets and floorlets;
  - Understand the composition of Caps and Floors as strips of caplets and floorlets;
  - Understand the composition of a collar including zero cost structures;
  - Evaluate the impact of the forward curve on the strike levels of a zero cost collar;
  - Understand quoting methods in the cap and floor markets;
  - Understand the Black 76 approach for pricing caps and floors;
  - Apply and calculate hedging and pricing of caps, floors and collars from options on STIR futures.



## Topic Basket 5

### Exotic Interest Options & Structured Products

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The candidate should:

- Understand the different Exotic IR options and structured products
  - Apply hedging strategies of more exotic structures based on Swaptions;
  - Analyse important Structured Products with embedded Swaptions;
  - Analyse important structured products with embedded caps and floors.
- Understand basic concepts and show solid working knowledge in the valuation of Exotic IR options and structured products
  - Analyse the relationships of dynamics of the interest rate curve, curve expectations and structured products;
  - Understand the method of Factor analysis of the interest rate curve;
  - Understand the objectives of modelling the term structure of interest rates;
  - Evaluate forward curves, curve expectations and their impact on the following structures:
    - Capped Floater,
    - Reverse Floater,
    - Callable bonds,
    - Range Accruals,
    - Libor-in-arrears,
    - CMS floater,
    - Structured Products linked to Overnight Index Swaps;
  - Understand how the above structures could be hedged;
  - Apply combining short-term interest rate swaps with barrier options;
  - Apply combining long-term interest rate swaps with series of digital options;
  - Understand the different valuation approaches for structured interest products:
    - Short Rate Models,
    - HJM-Framework,
    - Market Models.

## Topic Basket 6

### Credit Derivatives

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The candidate should:

- Understand the functionality and conventions of different Credit Derivatives
  - Understand the basic terms of a credit default swap including the relevant ISDA-definitions :
    - Credit events
    - Physical settlement versus cash Settlement
    - Reference Obligation versus Deliverable Obligations
  - Understand Credit indices (iTraxx and DJCDX) , CDOs and Basket Default Swaps.
- Understand the fundamental principles of the credit derivative market
  - Evaluate the main applications of Credit Derivatives, i.e. to
    - Reduce/hedge credit risk,
    - Actively take certain credit risks,
    - Generate extra returns,
    - Set up tailor made structured credit risk profiles,
    - Generate synthetic bonds/loans that are not available in the market in this form (time to maturity, currency, etc.).
  - Understand arbitrage relationships of Credit Default Swaps and Asset Swaps and the CDS-Basis;
  - Understand the main lessons from the credit crisis:
    - Big bang and Small Bang protocols,
    - Quoting standards and standardized pricing,
    - Standardization of CDS contracts,
    - Determination of occurrence of credit event by the Determination Committee.
- Show solid working knowledge in the field of credit derivatives
  - Understand the structuring principles of credit-linked notes;
  - Apply and calculate market implied default probabilities based on CDS curves;
  - Apply mark-to-market valuation principles for CDS contracts;
  - Apply trading strategies with CDS:
    - Curve trades,
    - Capital structure trades,
    - Long-short trades,
    - Relative value arbitrage,
    - Role of CDS in convertible arbitrage,
    - Credit versus equity arbitrage.

## Examination Procedure

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**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	Advanced Money Market	20.0%	18	50%	9
2	Fixed Income	20.0%	18	50%	9
3	Non-Option Interest Rate Derivatives	26.7%	24	50%	12
4	Plain Vanilla Interest Rate Options	11.1%	10	50%	5
5	Exotic Interest Rate Options & Structured Products	11.1%	10	50%	5
6	Credit Derivatives	11.1%	10	50%	5
<b>Total</b>		<b>100%</b>	<b>90</b>		

## Grades

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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

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250 EUR, all taxes included. Fee for unit 1 and 2 is 400 EUR if taken in one sitting.