**CFA Level 1 :**

* 01 Quantitative Methods
  + 1. Rates and Returns
  + 2. The Time Value of Money in Finance
  + 3. Statistical Measures of Asset Returns
  + 4. Probability Trees and Conditional Expectations
  + 5. Portfolio Mathematics
  + 6. Simulation Methods
  + 7. Estimation and Inference
  + 8. Hypothesis Testing
  + 9. Parametric and Non-Parametric Tests of Independence
  + 10. Simple Linear Regression
  + 11. Introduction to Big Data Techniques
* 02 Economics
  + 1. Firms and Market Structures
  + 2. Understanding Business Cycles
  + 3. Fiscal Policy
  + 4. Monetary Policy
  + 5. Introduction to Geopolitics
  + 6. International Trade
  + 7. Capital Flows and the FX Market
  + 8. Exchange Rate Calculations
* 03 Financial Statement Analysis
  + 1. Introduction to Financial Statement Analysis
  + 2. Analyzing Income Statements
  + 3. Analyzing Balance Sheets
  + 4. Analyzing Statements of Cash Flows I
  + 5. Analyzing Statements of Cash Flows II
  + 6. Analysis of Inventories
  + 7. Analysis of Long-Term Assets
  + 8. Topics in Long-Term Liabilities and Equity
  + 9. Analysis of Income Taxes
  + 10. Financial Reporting Quality
  + 11. Financial Analysis Techniques
  + 12. Introduction to Financial Statement Modeling
* 04 Corporate Issuers
  + 1. Organizational Forms, Corporate Issuer Features, and Ownership
  + 2. Investors and Other Stakeholders
  + 3. Corporate Governance - Conflicts, Mechanisms, Risks, and Benefits
  + 4. Working Capital and Liquidity
  + 5. Capital Investments and Capital Allocation
  + 6. Capital Structure
  + 7. Business Models
* 05 Equity Investments
  + 1. Market Organization and Structure
  + 2. Security Market Indexes
  + 3. Market Efficiency
  + 4. Overview of Equity Securities
  + 5. Company Analysis - Past and Present
  + 6. Industry and Competitive Analysis
  + 7. Company Analysis – Forecasting
  + 8. Equity Valuation Concepts and Basic Tools
* 06 Fixed Income
  + 1. Fixed-Income Instrument Features
  + 2. Fixed-Income Cash Flows and Types
  + 3. Fixed-Income Issuance and Trading
  + 4. Fixed-Income Markets for Corporate Issuers
  + 5. Fixed-Income Markets for Government Issuers
  + 6. Fixed-Income Bond Valuation - Prices and Yields
  + 7. Yield and Yield Spread Measures for Fixed-Rate Bonds
  + 8. Yield and Yield Spread Measures for Floating-Rate Instruments
  + 9. The Term Structure of Interest Rates- Spot, Par, and Forward Curves
  + 10. Interest Rate Risk and Return
  + 11. Yield-Based Bond Duration Measures and Properties
  + 12. Yield-Based Bond Convexity and Portfolio Properties
  + 13 Curve-Based and Empirical Fixed-Income Risk Measures
  + 14. Credit Risk
  + 15. Credit Analysis for Government Issuers
  + 16. Credit Analysis for Corporate Issuers
  + 17. Fixed-Income Securitization
  + 18. Asset-Backed Security (ABS) Instrument and Market Features
  + 19. Mortgage-Backed Security (MBS) Instrument and Market Features
* 07 Derivatives
  + 1. Derivative Instrument and Derivative Market Features
  + 2. Forward Commitment and Contingent Claim Features and Instruments
  + 3. Derivative Benefits, Risks, and Issuer and Investor Uses
  + 4. Arbitrage, Replication, and the Cost of Carry in Pricing Derivatives
  + 5. Pricing and Valuation of Forward Contracts
  + 6. Pricing and Valuation of Futures Contracts
  + 7. Pricing and Valuation of Interest Rates and Other Swaps
  + 8. Pricing and Valuation of Options
  + 9. Option Replication Using Put–Call Parity
  + 10. Valuing a Derivative Using a One-Period Binomial Model
* 08 Alternative Investments
  + 1. Alternative Investment Features, Methods, and Structures
  + 2. Alternative Investment Performance and Returns
  + 3. Investments in Private Capital - Equity and Debt
  + 4. Real Estate and Infrastructure
  + 5. Natural Resources
  + 6. Hedge Funds
  + 7. Introduction to Digital Assets
* 09 Portfolio Management
  + 1. Portfolio Management An Overview
  + 2. Portfolio Risk and Return Part I
  + 3. Portfolio Risk and Return Part II
  + 4. Basics of Portfolio Planning and Construction
  + 5 The Behavioral Biases of Individuals
  + 6. Introduction to Risk Management
* 10 Ethical and Professional Standards
  + 1. Ethics and Trust in the Investment Profession
  + 2. Code of Ethics and Standards of Professional Conduct
  + 3. Guidance for Standards I-VII
  + 4. Introduction to GIPS
  + 5. Ethics Application

**CFA Level 2:**

* 01 Quantitative Methods
  + 1. Basics of Multiple Regression and Underlying Assumptions
  + 2. Evaluating Regression Model Fit and Interpreting Model Results
  + 3. Model Misspecification
  + 4. Big Data Projects
  + 5. Time-Series Analysis
  + 6. Machine Learning
  + 7. Extensions of Multiple Regression
* 02 Economics
  + 1. Currency Exchange Rates\_ Understanding Equilibrium Value
  + 2. Economic Growth
  + 3. Economics of Regulation
* 03 Financial Statement Analysis
  + 1. Intercorporate Investments
  + 2. Employee Compensation\_ Post-Employment and Share-Based
  + 3. Multinational Operations
  + 4. Analysis of Financial Institutions
  + 5. Evaluating Quality of Financial Reports
  + 6. Integration of Financial Statement Analysis Techniques
  + 7. Financial Statement Modeling
* 04 Corporate Issuers
  + 1. Analysis of Dividends and Share Repurchases
  + 2. Environmental, Social, and Governance (ESG) Considerations in Investment Analysis
  + 3. Cost of Capital\_ Advanced Topics
  + 4. Corporate Restructuring
* 05 Equity Valuation
  + 1. Equity Valuation\_ Applications and Processes
  + 2. Discounted Dividend Valuation
  + 3. Free Cash Flow Valuation
  + 4. Market-Based Valuation\_ Price and Enterprise Value Multiples
  + 5. Residual Income Valuation
  + 6. Private Company Valuation
* 06 Fixed Income
  + 1. The Term Structure and Interest Rate Dynamics
  + 2. The Arbitrage-Free Valuation Framework
  + 3. Valuation and Analysis of Bonds with Embedded Options
  + 4. Credit Analysis Models
  + 5. Credit Default Swaps
* 07 Derivatives
  + 1. Pricing and Valuation of Forward Commitments
  + 2. Valuation of Contingent Claims
* 08 Alternative Investments
  + 1. Introduction to Commodities and Commodity Derivatives
  + 2. Overview of Types of Real Estate Investment
  + 3. Investments in Real Estate Through Publicly Traded Securities
  + 4. Hedge fund Strategies
* 09 Portfolio Managament
  + 1. Exchange-Traded Funds\_ Mechanics and Applications
  + 2. Using Multifactor Models
  + 3. Measuring and Managing Market Risk
  + 4. Backtesting and Simulation
  + 5. Economics and Investment Markets
  + 6. Analysis of Active Portfolio Management
* 10 Ethics and Professional Standards
  + 1. Code of Ethics and Standards of Professional Conduct
  + 2. Guidance for Standards I–VII
  + 3. Application of the Code and Standards\_ Level II

**CFA Level 3:**

* 01 Economics
  + 1. Capital Market Expectations, Part 1\_Framework and Macro Considerations
  + 2. Capital Market Expectations, Part 2\_Forecasting Asset Class Returns
  + 3. Currency Management An Introduction
* 02 Portfolio Management
  + 1. Overview of Asset Allocation
  + 2. Principles of Asset Allocation
  + 3. Asset Allocation with Real-World Constraints
  + 4. Overview of Private Wealth Management
  + 5. Topics in Private Wealth Management
  + 6. Risk Management for Individuals
  + 7. Portfolio Management for Institutional Investors
  + 8. Trade Strategy and Execution
  + 9. Portfolio Performance Evaluation
  + 10. Investment Manager Selection
  + 11. Case Study in Portfolio Management Institutional
  + 12. Case Study in Risk Management Private Wealth
  + 13. Case Study in Risk Management Institutional
* 03 Derivatives
  + 1. Options Strategies
  + 2. Swaps, Forwards, and Futures Strategies
* 05 Equity Investments
  + 1. Overview of Equity Portfolio Management
  + 2. Passive Equity Investing
  + 3. Active Equity Investing Strategies
  + 4. Active Equity Investing Portfolio Construction
* 04 Fixed Income
  + 1. Overview of Fixed-Income Portfolio Management
  + 2. Liability-Driven and Index-Based Strategies
  + 3. Yield Curve Strategies
  + 4. Fixed-Income Active Management Credit Strategies
* 06 Alternative Investments
  + 1. Hedge Fund Strategies
  + 2. Asset Allocation to Alternative Investments
* 07 Ethical and Professional Standards
  + 1. Code of Ethics and Standards of Professional Conduct
  + 2. Guidance for Standards I-VII
  + 3. Application of the Code and Standards Level III
  + 4. Asset Manager Code of Professional Conduct
  + 5. Overview of the Global Investment Performance Standards

**CAIA Level 1:**

* Professional Standards and Ethics
* Introduction to Alternative Investments
  + 2.1 What is an Alternative Investment
    - A History of Alternative Investing\_ The U.S. Case
    - Alternative Investments by Exclusion
    - Alternative Investments by Inclusion
    - Eight Other Characteristics that Distinguish Alternative and Traditio
    - Five Goals of Alternative Investing
    - Investments are Distinguished by Methods of Analysis
    - Investments are Distinguished by Return Characteristics
    - The Blurred Lines between Traditional and Alternative Investments
    - Two Pillars of Alternative Investment Management
  + 2.2 The Environment of Alternative Investment
    - Alternative Investment Structures
    - Financial Markets
    - Key Features of Fund Structures
    - Liquid Alternative Investments
    - Regulatory Environment
    - Short Selling
    - Taxation
    - The Participants
  + 2.3 Quantitative Foundation
    - Distribution of Cash Waterfall
    - Illiquidity, Accounting Conservatism, IRR, and the J-Curve
    - Internal Rate of Return
    - Other Performance Measures
    - Problems with Internal Rate of Return
    - Return and Rate Mathematics
    - Returns Based on Notional Principal
  + 2.4 Statistical Foundations
    - Covariance, Correlation, Beta, and Autocorrelation
    - Interpreting Standard Deviation and Variance
    - Moments of the Distribution\_ Mean, Variance, Skewness, and Kurtosis
    - Return Distributions
    - Testing for Normality
    - Time-Series Return Volatility Models
  + 2.5 Financial Economics Foundation
    - Arbitrage-Free Models
    - Binomial Tree Models
    - Forward Interest Rates
    - Informational Market Efficiency
    - Single-Factor Default–Free Bond Models
    - Single-Factor Equity Pricing Models
    - The Three Primary Theories of the Term Structure of Interest Rates
    - The Time Value of Money, Prices, and Rates
  + 2.6 Derivative and Risk-Neutral Valuation
    - Forward Contracts on Assets with Benefits and Costs of Carry
    - Forward Contracts on Equities
    - Forward Contracts on Rates
    - Forward Contracts Versus Futures Contracts
    - Foundations of Forward Contracts
    - Managing Long-Term Futures Exposures
    - Option Exposures
    - Option Pricing Models
    - Option Sensitivities
  + 2.7 Measures of Risk and Performance
    - Benchmarking and Performance Attribution
    - Estimating Value at Risk (VaR)
    - Measures of Risk
    - Ratio-Based Performance Measures
    - Risk-Adjusted Return Measures
  + 2.8 Alpha, Beta, and Hypothesis Testing
    - Ex Ante Alpha Estimation and Return Persistence
    - Ex Ante Versus Ex Post Alpha
    - Inferring Ex Ante Alpha From Ex Post Alpha
    - Overview of Beta and Alpha
    - Return Attribution, Alpha, and Beta
    - Return Drivers
    - Sampling and Testing Problems
    - Single-Factor Models and Regression
    - Statistical Issues in Analyzing Alpha and Beta
    - Using Statistical Methods to Locate Alpha
* Real Assets
  + 3.1 Natural Resources and Land
    - Contagion, Price Indices, and Biases
    - Farmland
    - Key Observations Regarding Historical Returns of Farmland
    - Key Observations Regarding Historical Returns of Timberland
    - Land
    - Natural Resources Other Than Land
    - Pricing and Historic Data Analysis
    - Timber and Timberland
    - Valuation and Volatility of Real Assets
  + 3.2 Commodities
    - Commodity Exposure and Diversification
    - Commodity Futures Indices
    - Commodity Risk Attributes
    - Expected Returns on Commodities
    - Investing in Commodities Without Futures
    - Normal Backwardation and Normal Contango
    - Observations Based on Historical Returns
    - Rolling of Forward and Futures Contracts
    - The Term Structure of Forward Prices on Commodities
  + 3.3 Other Real Assets
    - Cash Flows of Intellectual Property
    - Commodity Producers
    - Infrastructure
    - Intellectual Property Overview
    - Liquid Alternative Real Assets
    - R&D and Patents as Unbundled Intellectual Property
    - Visual Works of Art and Historical Performance Data
  + 3.4 Real Estate Assets and Debt
    - Advantages, Disadvantages, and Styles of Real Estate Investments
    - Categories of Real Estate
    - Commercial Mortgages
    - Key Observations Regarding Historical Returns of Mortgage REITs
    - Liquid Alternatives\_ Real Estate Investment Trusts
    - Mortgage-Backed Securities Market
    - Real Estate Style Boxes
    - Residential Mortgages
  + 3.5 Real Estate Equity
    - Alternative Real Estate Investment Vehicles
    - Commercial Real Estate Valuation
    - Details of the Income Approach to Real Estate Valuation
    - Equity REIT Returns
    - Illustration of the Income Method of Real Estate Valuation
    - Key Observations Regarding Historical Risks and Returns of Equity REITs
    - Real Estate Development
* Private Securities
  + 4.1 Private Equity Assets
    - Buyouts and Leveraged Buyouts
    - Buyouts of Private Companies
    - Dynamics of Private Equity Opportunities
    - Exit Strategies for Private Equity Investments
    - Growth Equity
    - Introduction to Private Equity Terms and Background
    - Leveraged Buyouts (LBOs)
    - Merchant Banking
    - Overview of Three Forms of Pre-IPO Private Equity Investing
    - Venture Capital
    - Venture Capital as a Compound Option
  + 4.2 Private Equity Funds
    - Key Determinants of Venture Capital Fund Risks and Returns
    - Leveraged Buyout Funds
    - Long-hold Buyout Funds
    - Overview of Private Equity Funds
    - Private Equity Fund Fees and Terms
    - Private Equity Funds as Intermediaries
    - Private Equity Liquid Alternatives
    - Private Equity Secondary Markets and Structures
    - Private Investments in Public Equity
    - Roles and Three Key Distinctions of Venture Capital and Buyout Managers
    - Subscription Lines in Private Equity
    - The LP and GP Relationship Life Cycle
  + 4.3 Private Equity Funds of Funds
    - Private Equity Funds of Funds
    - Private Equity Funds of Funds Historical Returns
    - Private Equity Funds of Funds Investment
    - Private Equity Funds of Funds Investment Process
  + 4.4 Evolution of Investing in Private Equity
    - Challenges in Co-Investing
    - Co-Investments
    - Historical Returns of Co-investment
    - Trend of LP Preference for Direct Investment
  + 4.5 Private Credit and Distressed Debt
    - Credit Risk Analysis and the Bankruptcy Process
    - Direct Lending
    - Distressed Debt
    - Fixed-Income Analysis
    - Leveraged Loans
    - Mezzanine Debt
    - Private Credit Performance and Diversification
    - Types of Fund Private Credit Vehicles
    - Venture Debt
* Hedge Funds
  + 5.1 Structure of the Hedge Fund Industry
    - Distinguishing Hedge Funds
    - Evaluating a Hedge Fund Investment Program
    - Hedge Fund Classification
    - Hedge Fund Fees
    - Hedge Fund Indices
    - Hedge Fund Returns and Asset Allocation
    - Three Research Studies on Whether Hedge Funds Adversely Affect the Financial Markets
  + 5.2 Macro and Managed Futures Funds
    - Benefits of Managed Futures Funds
    - Eight Core Benefits of Managed Futures for Investors
    - Evidence on Managed Futures Returns
    - Four Core Dimensions of Managed Futures Investment Strategies
    - Global Macro
    - Macro and Managed Futures Strategies
    - Managed Futures
    - Systematic Futures Portfolio Construction
    - Systematic Trading
  + 5.3 Event Driven and Relative Value Hedge Funds
    - Activist Investing
    - Convertible Bond Arbitrage
    - Distressed Securities Funds
    - Event-Driven Multistrategy Funds
    - Fixed-Income Arbitrage
    - Merger Arbitrage
    - Overview of Relative Value Strategies
    - Relative Value Multistrategy Funds
    - The Sources of Most Event Strategy Returns
    - Volatility Arbitrage
  + 5.4 Equity Hedge Funds
    - Commonalities of Equity Hedge Funds
    - Implementing Anomaly Strategies
    - Market Anomalies
    - Sources of Return
    - The Three Equity Strategies
  + 5.5 Funds of Hedge Funds
    - Investing in Funds of Hedge Funds
    - Investing in Multistrategy Funds
    - Investing in Portfolios of Single Hedge Funds
    - Key Observations Regarding Historical Returns of Funds of Funds
    - Multialternatives and Other Hedge Fund Liquid Alternatives
    - Overview of Funds of Hedge Funds
* Structured Products
  + 6.1 Introduction to Structuring
    - Collateralized Mortgage Obligations
    - Interest Rate Options
    - Introduction to Collateralized Debt Obligations
    - Major Types of Structuring
    - Overview of Financial Structuring
    - Structural Model Approach to Credit Risk
    - The Primary Economic Role of Structuring
  + 6.2 Credit Risk and Credit Derivatives
    - An Overview of Credit Risk
    - CDS Index Products
    - Credit Default Swaps
    - Credit Derivatives Markets
    - Five Key Risks of Credit Derivatives
    - Interest Rate Swaps
    - Other Credit Derivatives
    - Reduced-Form Modeling of Credit Risk
  + 6.3 CDO Structuring of Credit Risk
    - Balance Sheet CDOs and Arbitrage CDOs
    - Cash Flow CDOs Versus Market Value CDOs
    - Cash-Funded CDOs Versus Synthetic CDOs
    - Credit Enhancements
    - Mechanics of and Motivations for an Arbitrage CDO
    - Other Types of CDOs
    - Overview of CDO Variations
    - Risks of CDOs
  + 6.4 Equity Linked Structured Products
    - Four Potential Tax Effects of Wrappers
    - Global Structured Product Cases
    - Motivations of Structured Products
    - Popular Structured Product Types
    - Structured Product Valuation
    - Structured Products and Six Types of Wrappers
    - Structured Products with Exotic Option Features
    - The EUSIPA Classification

**CAIA Level 2:**

* 01 - Emerging topicc
  + 1.1 Decentralized Finance\_ On Blockchain- and Smart Contract-Based Financial Markets
  + 1.2 Technical Guide for Limited Partners\_ Responsible Investing in Private Equity
  + 1.3 Channels for Exposure to Bitcoin
  + 1.4 Assessing Long-Term Investor Performance\_ Principles, Policies and Metrics
  + 1.5 Demystifying Illiquid Assets\_ Expected Returns for Private Equity
  + 1.6 An Introduction to Portfolio Rebalancing Strategies
  + 1.7 Longevity and Liabilities\_ Bridging the Gap
  + 1.8 A Short Introduction to the World of Cryptocurrencies
* 02 - Ethics, Regulation, and ESGG
  + 2.1 Asset Manager Code
  + 2.2 Asset Manager Code - Recommendations and Guidance
    - Asset Manager Code of Professional Conduct - Investment Process and Actions
    - Asset Manager Code of Professional Conduct - Loyalty to Clients
    - Asset Manager Code of Professional Conduct - Performance and Valuation
    - Asset Manager Code of Professional Conduct - Risk Management, Compliance, and Support
    - Asset Manager Code of Professional Conduct – Trading
    - Disclosures
  + 2.3 Global Regulation
    - Alternative Investment Regulation in Asia
    - Alternative Investment Regulation in Europe
    - Background on ESG and Alternative Investing
    - Overview of Financial Market Regulation
    - Regulation of Alternative Investments within the United States
  + 2.4 ESG and Alternative Investments
    - Background on ESG and Alternative Investing
    - ESG and Hedge Funds
    - ESG and Private Equity
    - ESG and Real Assets\_ Commodities
    - ESG and Real Assets\_ Natural Resources
    - ESG and Real Assets\_ Real Estate
  + 2.5 ESG Analysis and Application
    - Background on ESG
    - ESG and Special Investment Consideration
    - ESG Fiduciary Responsibilities and Regulations
    - ESG Materiality and Disclosure
    - ESG Ratings and Scores
    - Market-Based Methods of Addressing ESG Issues
    - Methods of ESG Investing
    - The United Nations Role in ESG Issues
* 03 - Models
  + 3.1 Modeling Overview and Interest Rate Models
    - Arbitrage-Free Models of the Term Structure
    - Equilibrium Fixed Income Models
    - P-Measures and Q-Measures
    - The Black-Derman-Toy Model
    - Types of Models Underlying Investment Strategies
  + 3.2 Credit Risk Models
    - Empirical Credit Models
    - Other Structural Models—KMV
    - Overview of Credit Risk Modeling
    - Reduced-Form Models
    - The Economics of Credit Risk
    - The Merton Model
  + 3.3 Multi Factor Equity Pricing Models
    - Factor Investing
    - Fama-French Models
    - Multifactor Asset Pricing Models
    - Stochastic Discount Factors
    - The Adaptive Markets Hypothesis
    - Three Challenges of Empirical Multifactor Models
    - Time-Varying Volatility
  + 3.4 Asset Allocation Processes and the Mean Variance Model
    - Adjustment of the Mean-Variance Approach for Factor Exposure
    - Adjustment of the Mean-Variance Approach for Illiquidity
    - Asset Allocation Processes and the Mean-Variance Model
    - Implementation of Mean-Variance Optimization
    - Issues in Using Optimization for Portfolio Selection
    - Mean-Variance Optimization and Hurdle Rates
    - Mean-Variance Optimization with Multiple Risky Assets
    - Mitigating Estimation Error Risk in Mean-Variance Optimization
  + 3.5 Other Asset Allocation
    - A Factor-Based Example of Implementing a Risk Budgeting Approach
    - Other Quantitative Portfolio Allocation Strategies
    - Risk Budgeting
    - Risk Parity
    - The Core-Satellite Approach
    - The New Investment Model
    - Top-Down and Bottom-Up Asset Allocation Approaches
* 04 - Institutional Asset Owners and Investment Policies
  + 4.1 Types of Asset Owners and the Investment Policy Statement
    - Asset Allocation Objectives
    - Endowments and Foundations
    - Family Offices
    - Investment Policy Constraints
    - Investment Policy Statements for
    - Pension Funds
    - Sovereign Wealth Funds
    - Strategic Asset Allocation\_ Risk
  + 4.2 Foundations and the Endowment Model
    - Defining Endowments and Foundations
    - Intergenerational Equity, Inflation, and Spending Chall
    - Liquidity Rebalancing and Tactical Asset Allocation
    - Risks of the Endowment Model
    - Tail Risk
    - The Endowment Model
    - Why Might Large Endowments Outperform
  + 4.3 Pension Fund Portfolio Management
    - Annuities for Retirement Income
    - Contrasting Defined Benefit and Contribution Plans
    - Defined Benefit Plans
    - Development, Motivations, and Types of Pension Plans
    - Governmental Social Security Plans
    - Risk Tolerance and Asset Allocation
  + 4.4 Sovereign Wealth Funds
    - Analysis of Three Sovereign Wealth Funds
    - Sources of Sovereign Wealth
    - Establishment and Management of Sovereign Wealth Funds
    - Four Types of Sovereign Wealth Funds
    - Governance and Political Risks of SWFs
  + 4.5 Family Offices and the Family Office Model
    - Charity, Philanthropy, and Impact Investing
    - Family Office Goals by Generations
    - Family Office Governance
    - Goals, Benefits, and Business Models of Family O
    - Goals-Based Investing and Private Wealth Portfol
    - Identifying Family Offices
    - Identifying Private Wealth Management Firms
    - Income Taxes of Family Offices
    - Lifestyle Assets of Family Offices
    - Macroeconomic Exposures of Family Offices
    - Ten Competitive Advantages of Family Offices
* 05 - Risk and Risk Management
  + 5.1 Cases in Tail Risk
    - Failures Driven by Fraud
    - Four Major Lessons from Cases in Tail Events
    - Problems Driven by Market Losses
    - Trading Technology and Financial Crises
  + 5.2 Benchmarking and Performance Attribution
    - Benchmarking and Performance Attribution Overview
    - Benchmarking of Commodities
    - Benchmarking Private Equity Funds
    - Benchmarking Real Estate
    - Distinctions Regarding Alternative Asset Benchmarking
    - Group Peer Returns As Benchmarks
    - Multifactor Benchmarking
    - Single-Factor Benchmarking and Performance Attribution
    - Three Approaches to Benchmarking Managed Futures Funds
  + 5.3 Liquidity and Funding Risks
    - Margin Accounts and Collateral Management
    - Modeling Price and Return Smoothing
    - Other Methods of Estimating Liquidity Needs
    - Smoothed Returns on Illiquid Funds
    - Unsmoothing a Hypothetical Return Series
    - Unsmoothing Actual Real Estate Return Data
    - Value at Risk for Managed Futures
  + 5.4 Hedging, Rebalancing and Monitoring
    - Delta Hedging of Option Positions
    - Investment Monitoring
    - Managing Alpha and Systematic Risk
    - Managing the Risk of a Portfolio with Options
    - Mean Reversion and Diversification Return
    - Rebalancing Portfolios with Directional Exposures
    - Three Key Observations on Delta-Hedging
    - Three Observations on Rebalancing Delta-Neutral Option Portfolios
  + 5.5 Risk Measurement, Risk Management, and Risk Systems
    - Categories of Information To Be Considered
    - Cybersecurity for Fund Managers
    - Overview of Risk Measurement and Aggregation
    - Risk Management Structure and Process
    - Risk Measurement with Annual Frequency of Data Collection or Roll
    - Risk Measurement with Daily Frequency of Data Collection
    - Risk Measurement with Monthly Frequency of Data Collection
    - Risk Measurement with Quarterly Frequency of Data Collection
    - Risk Measurement with Weekly Frequency of Data Collection
* 06 - Methods for Alternative Investments
  + 6.1 Valuation and Hedging Using Binomial Trees
    - A One-Period Binomial Tree and Risk-Neutral Modeling
    - Multi-Period Binomial Trees, Values, and Mean Rates
    - Tree Models, Visualization, and Two Benefits to Spreadsheets
    - Valuation of Convertible Securities with a Binomial Tree Model
    - Valuing Callable Bonds with a Tree Model
  + 6.2 Directional Strategies and Methods
    - Directional Strategies and Behavioral Finance
    - Directional Trading and Factors
    - Efficiently Inefficient Markets
    - Fundamental Directional Strategies
    - Technical Directional Strategies Overview
  + 6.3 Multivariate Empirical Methods and Performance Persistence
    - Evidence on Fund Performance Persistence
    - Four Multifactor Approaches to Understanding Re
    - Multifactor Models and Regression
    - Partial Autocorrelations and Regression
    - Statistical Factors and Principal Component Ana
    - Three Dynamic Risk Exposure Models
    - Two Approaches to Modeling Changing Correlation
  + 6.4 Relative Value Methods
    - Overview of Relative Value Methods
    - Pairs Trading in Commodity Markets Based on Spreads
    - Pairs Trading in Rates from Fixed Income and Currency Markets
    - Relative Value Market-Neutral Strategies and Portfolio Risks
    - Statistical Pairs Trading of Equities
    - Types of Pairs Trading and the Four Typical Steps
  + 6.5 Valuation Methods for Private Assets The case of Real Estate
    - Appraisal-Based Indices
    - Comparing After-Tax Returns for Various Taxa
    - Deferral of Taxation of Gains
    - Depreciation Tax Shields
    - Noisy Pricing
    - Sample Bias and the Repeat-Sales and Hedonic
    - Transaction-Based Indices\_ Hedonic
    - Transaction-Based Indices\_ Repeat-Sales
* 07 - Accessing Alternative Investments
  + 7.1 Hedge Fund Replication
    - An Overview of Replication Products
    - Dashboard - The Algorithmic (Bottom-Up) Approach
    - Factor-Based Approach to Replication
    - Potential Benefits of Replication Products
    - The Case for Hedge Fund Replication
    - Three Illustrations of the Algorithmic (Bottom-Up) Approach
    - Unique Benefits of Replication Products
  + 7.2 Diversified Access to Hedge Funds
    - Alternative Mutual Funds
    - Approaches to Accessing Hedge Funds
    - Characteristics of Funds of Hedge Funds
    - Evidence Regarding Hedge Fund Risk and Returns
    - Fund of Hedge Funds Portfolio Construction
    - Investable Hedge Fund Indices
    - Ways That Funds of Hedge Funds Can Add Value
  + 7.3 Access to Real Estates and Commodities
    - Commodities
    - Commodity Trade Financing and Production Financing
    - Key Concepts in Managing Commodity Exposure
    - Leveraged and Option-Based Structured Commodity Exposures
    - Listed Real Estate Funds
    - Private Equity Real Estate Performance Drivers
    - Unlisted Real Estate Funds
  + 7.4 Access through Private Structures
    - Cash Commitments and Illiquidity
    - Overview of Issues in Private versus Listed Investment Access
    - Side Letters to Limited Partnership Agreements
    - The Secondary Market for PE Partnerships
    - Unlisted Manager-Investor Relationships
  + 7.5 The Risk and Performance of Private and Listed Assets
    - Challenges with the PME Method to Evaluating Private A
    - Evidence on an Illiquidity Premium from Listed Assets
    - IRR Aggregation Problems for Portfolios
    - Multiple Evaluation Tools
    - Private versus Listed Real Performance\_ The Case of Re
    - The Case Against Private Equity
    - Two Propositions Regarding Access through Private vers
* 08 - Due Diligence and Selecting Managers
  + 8.1 Active Management and New Investments
    - Adjusting Exposures to Illiquid Partnerships
    - Costs of Actively Reallocating across Alternative Investments
    - Keys to a Successful Tactical Asset Allocation Process
    - Tactical Asset Allocation
    - The Fundamental Law of Active Management
  + 8.2 Selection of a Fund Manager
    - Decision-Making and Commitment and Manager Selection
    - Fund Culture
    - Fund Return Persistence
    - Historical Performance Review
    - Manager Selection and Deal Sourcing
    - Moral Hazard, Adverse Selection, and the Holdup Problem in Fund Management
    - Screening with Fundamental Questions
    - The Importance of Fund Selection across Managers through Time
    - The Relationship Life Cycle between LPs and GPs
  + 8.3 Investment Pricess Due Dilligence
    - Asset Custody and Valuation
    - Four Warning Indicators and Awareness Signals Regarding Investments
    - Four Warning Indicators and Awareness Signals Regarding Risk Management
    - Overview of Investment Due Diligence
    - Portfolio Risk Review
    - Risk Alert’s One Advantage and Six Observations on Third-Party Informat
    - The Investment Implementation Process and Its Risks
    - The Investment Strategy or Mandate
  + 8.4 Operational Due Diligence
    - Analyzing External Parties and Checking Principals
    - Analyzing Fund Cash Management and Movement
    - Analyzing Fund Compliance
    - Elements and Key Concerns of the ODD Process
    - Emerging Managers
    - Four Key Operational Activities
    - Funding, Applying, and Concluding ODD
    - Information Technology and Meta Risks
    - Onsite Manager Visits
    - Operations\_ Overview, Risks, and Remedies
  + 8.5 Due Diligence of Term and Business Activities
    - Business Activities, Continuity Planning, Disaster Recovery
    - Due Diligence Document Collection Process
    - Fund Fees and Expenses
    - Fund Governance
    - General Terms for Private Funds
    - Private Fund Audited Financial Statement Review
    - Private Placement Memorandum (PPM)
    - Structural Review of the Fund and Fund Manager
    - Terms for Illiquid Private Funds
    - Terms for Liquid Private Funds
* 09 - Volatility and Complex Strategies
  + 9.1 Volatility as a Factor Exposure
    - Exposures to Volatility as a Factor
    - Implied Volatility Structures
    - Measures of Volatility
    - Modeling Volatility Processes
    - Volatility and the Vegas, Gammas, and Thetas of Options
  + 9.2 Volatility, Correlation, and Dispersion Products and Strategies
    - Advanced Option-Based Volatility Strategies
    - Common Option Strategies and Their Volatilit
    - Correlation Swaps
    - Dispersion Trades
    - Summary and Common Themes of Volatility, Cor
    - Variance-Based and Volatility-Based Derivati
    - Volatility and Delta-Neutral Portfolios with
    - Volatility Hedge Funds and Their Strategies
  + 9.3 Complexity and Structured Products
    - Asset and Strategy Complexity
    - Asset-Backed Securities
    - Asset-Based Lending
    - Cases in Complexity and Perverse Incentives
    - Risks of Asset-Based Loans
    - Uncertainty, Ambiguity, and Opacity
  + 9.4 Insurance Linked and Hybrid Securities
    - Cat Bond Valuation, Performance, and Drawbacks
    - Four Trigger Types of Cat Bonds
    - Hybrid Products\_ Mezzanine Debt
    - Life Insurance Settlements
    - Longevity and Mortality Risk-Related Products
    - Nonlife ILS\_ Catastrophe Bonds
    - Overview of Viatical Settlements
  + 9.5 Complexity and the Case of Cross- Border Real Estate Investing
    - Accessing Foreign Assets with Futures and Qua
    - Challenges to International Real Estate Inves
    - Currency Risk and Hedging of Alternative Inve
    - Fundamentals of Currency Risk and Hedging in
    - Heterogenous Investment Taxation Across Juris
    - Overview of International Real Estate Investi
    - Traditional View of Currency Hedging for Cros

**CFA ESG Investing:**

* 01 - Introduction to ESG Investing
* 02 - The ESG Market
* 03 - Environmental Factors
* 04 - Social Factors
* 05 - Governance Factors
* 06 - Engagement and Stewardship
* 07 - ESG Analysis, Valuation, Integration
* 08 - Integrated Portfolio Construction and Management
* 09 - Investment Mandates, Portfolio Analytics, and Client Reporting

**GARP SCR:**

* 01 Foundations of Climate Change What Is Climate Change
* 02 Sustainability
* 03 Climate Change Risk
* 04 Sustainability and Climate Policy, Culture, and Governance
* 05 Green and Sustainable Finance Markets and Instruments
* 06 Climate Risk Measurement and Management
* 07 Climate Models and Scenario Analysis
* 08 Net Zero
* Additional Reading
  + 02 Principles for Responsible Banking
  + 02 Principles for Responsible Investments
  + 03 Risk-Management Fundamentals
  + 03 TCFD Implementing Guidance
  + 04 Network for Greening the Financial System (NGFS)
  + 04 The GHG Protocol A corporate reporting and accounting standard
  + 06 TCFD Implementing Guidance