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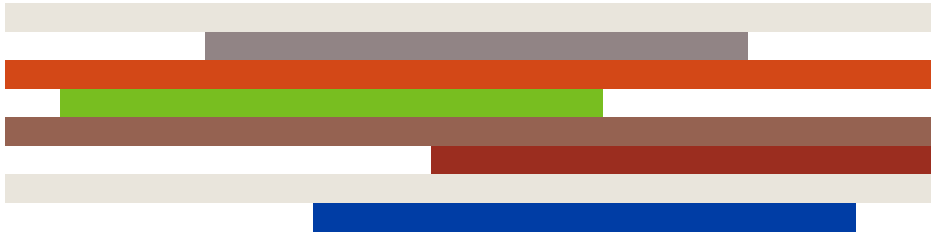
UNIVERSIDADE DE LISBOA

CFA Institute

INVESTMENTS AND PORTFOLIO MANAGEMENT

Raquel M. Gaspar



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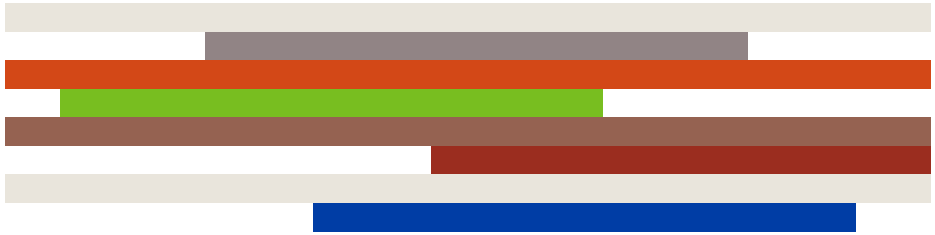
CURRICULAR UNIT PRESENTATION



CURRICULAR UNIT PRESENTATION

1. Motivation
2. Syllabus
3. Bibliography
4. CFA Coverage
5. Assessment Method
6. Workload

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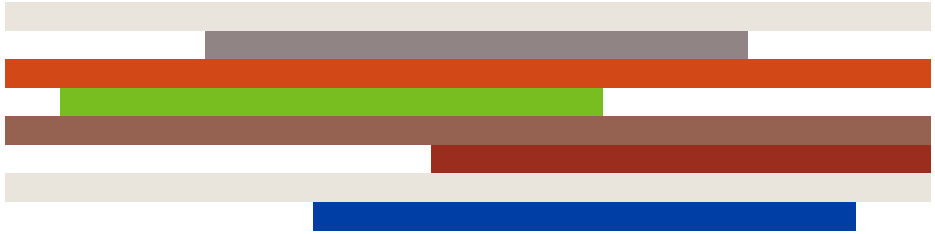
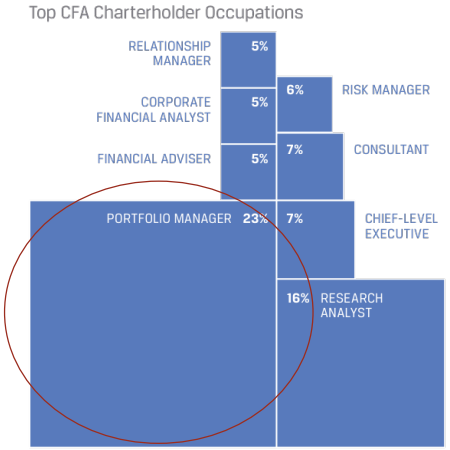
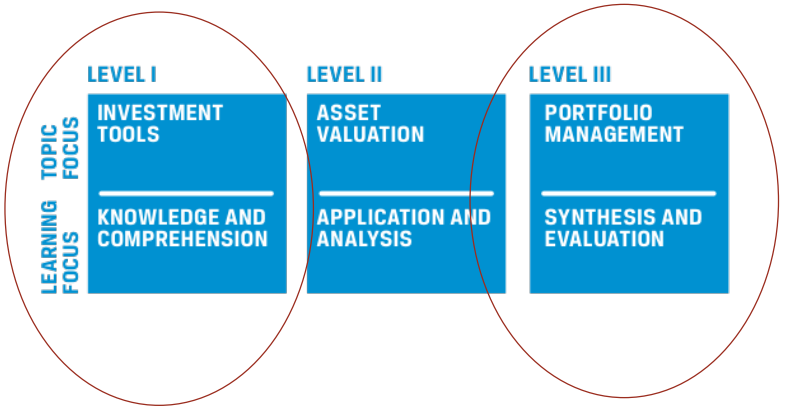
1. MOTIVATION



CFA AND PORTFOLIO MANAGEMENT



CFA
INVESTMENT AND PORTFOLIO MANAGEMENT



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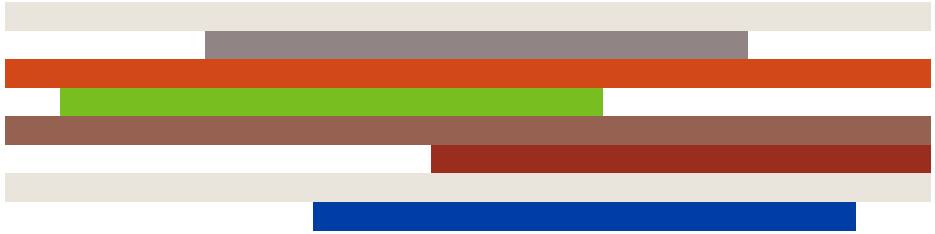
2.
SYLLABUS



SYLLABUS

PART I – FINANCIAL MARKET STRUCTURE AND INSTRUMENTS

1. Market Organization and Structure
   - Functions of the financial system
   - Market Classification
   - Financial Instruments
   - Trading in financial markets
   - Security Market Indices

2. Pooled Investments
   - Investment Funds
   - The process of portfolio management

SYLLABUS

PART II – THEORY OF PORTFOLIO MANAGEMENT

1. Portfolio Concepts
   - Return Measures: individual assets and portfolios
   - Risk Measures: individual assets and portfolios
   - Risk diversification
2. Mean – Variance Theory (MVT)
   - Assumptions of MVT
   - Combination of two assets
   - Including the risk-free asset
   - Three or more assets
   - Allowing for short selling
   - Investment Opportunity sets
   - Minimum variance portfolios
   - Efficient Frontiers and Tangent Portfolios
   - Safety Criteria in MVT
3. Internationally diversified portfolios
4. Return Generating Models
   - Estimating MVT inputs
   - Constant correlation model (CCM)
   - Single Index Model (SIM)
   - Multi-factor Models (MFM)
   - Estimation risk versus model risk

SYLLABUS

PART III – SELECTING OF OPTIMAL PORTFOLIOS

1. Investors
   - Individual investors: pooled investments vs wealth management
   - Wealth management principles
   - Institutional Investors
   - Investor classification and risk-return investment profiling
   - Reasons for Investment Policy Statements (IPS)
2. Expected Utility Theory (EUT)
   - Issues of utility theory under uncertainty
   - Principle of expected utility
   - Risk Tolerance functions
   - Optimal Portfolios
   - Basics on prospect theory
3. Alternatives to Utility
   - Maximizing long-term growth
   - Stochastic Dominance
   - Revisiting Safety Criteria from the investor's perspective

SYLLABUS

PART IV – MODELS OF EQUILIBRUM IN CAPITAL MARKETSS

1. The Capital Asset Pricing Model (CAPM)
   - Assumptions of standard CAPM
   - Market portfolio, CML and SML
   - Limitations of CAPM
   - Non-standards forms of CAPM
   - Empirically testing CAPM
2. The Arbitrage Pricing Theory (APT)
   - Assumptions of APT
   - Estimating and testing APT
   - APT versus CAPM
3. Market Efficiency
   - Forms of efficiency
   - Testing market's efficiency
   - Week versus strong arbitrage
4. Behavioral Finance
   - Anomalies in financial markets
   - Behavioral issues and APT

SYLLABUS

PART V – EVALUATING THE INVESTMENT PROCESS

1. Portfolio Performance Evaluation
   - Issues of performance evaluation
   - Evaluating performance using CAPM
   - Other measures of performance
   - Problems with performance evaluation
2. Issues in Portfolio Management
   - Portfolio management revisited
   - Styles of portfolio management: Active vs. Passive Management
   - Contemporary issues of Portfolio Management

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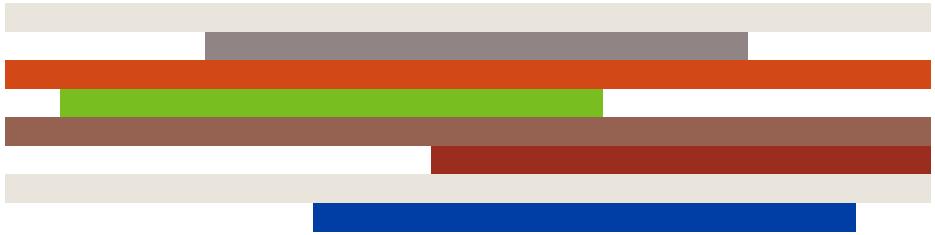
3.
BIBLIOGRAPHY



BIBLIOGRAPHY

Mandatory

Textbooks

Joshi, M. S., and J. M. Paterson (2013). *Introduction to mathematical portfolio theory*. Cambridge University Press.

Elton E.J., M. J. Gruber, S. J. Brown and W. N. Goetzmann (2014), Modern Portfolio Theory and Investment Analysis, 9th Edition, Wiley.

Lecture Notes

Gaspar R.M. (2020), *Investments and Portfolio Management*, preprint.

BIBLIOGRAPHY

Optional (recommended) readings

Textbooks

Maginn, J. L., Tuttle, D. L., McLeavey, D. W., & Pinto, J. E. (Eds.). (2007). Managing investment portfolios: a dynamic process, 3rd edition, John Wiley & Sons.

CFA 2017 readings

Level I

Reading # 40 – Portfolio management: an overview
Reading # 41 – Risk management: an introduction
Reading # 42 – Portfolio risk and return: part I
Reading # 43 – Portfolio risk and return: part II
Reading # 44 – Basics of portfolio planning and construction
Reading # 45 – Market Organization and Structure
Reading # 46 – Security Market Indices
Reading # 47 – Market Efficiency
Reading # 48 – Overview of equity securities
Reading # 51 – Fixed income securities: defining elements
Reading # 57 – Derivative markets and instruments
Reading # 60 – Introduction to alternative investments

BIBLIOGRAPHY

CFA 2017 readings

Level II

Reading # 47 – The portfolio management process
Reading # 48 – An introduction to multifactor models
Reading # 49 – Measuring and managing market risk
Reading # 51 – Analysis of active portfolio management
Reading # 52 – Algorithmic trading and high-frequency trading

Level III

Reading # 5 – The behavioral finance perspective
Reading # 6 – The behavioral biases of individuals
Reading # 7 – Behavioral finance and investment processes
Reading # 8 – Managing individual investor portfolios
Reading # 13 – Managing institutional investor portfolios
Reading # 15 – Capital market expectations
Reading # 17 – Asset allocation
Reading # 18 – Currency management: an introduction
Reading # 19 – Market indices and benchmarks
Reading # 29 – Execution of portfolio decisions
Reading # 30 – Monitoring and rebalancing
Reading # 31 – Evaluating portfolio performance

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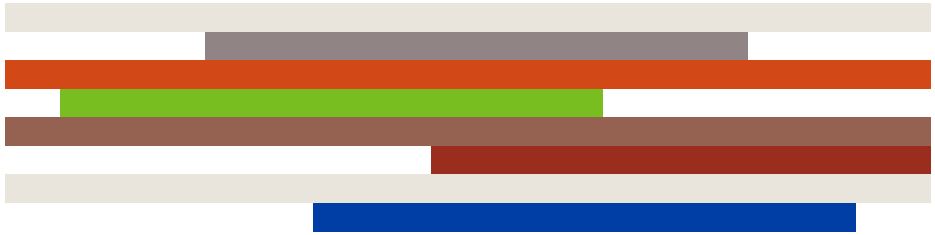
4.
CFA PROGRAM COVERAGE



Level I	Level II	Level III
Study Session 12	Study Session 15	Study session 3
Reading # 40	Reading # 47	Reading # 5
Reading # 41	Reading # 48	Reading # 6
Reading # 42	Reading # 49	Reading # 7
Reading # 43		
Reading # 44		
Study Session 13	Study Session 16	Study Session 4
Reading # 45	Reading # 51	Reading # 8
Reading # 46	Reading # 52	
Reading # 47		
Study Session 14		Study Session 6
Reading # 48		Reading # 13
Study Session 15		Study Session 7
Reading # 51		Reading # 15
Study session 17		Study Session 8
Reading # 57		Reading # 17
		Reading # 18
		Reading # 19
Study session 18		Study Session 16
Reading # 60		Reading # 29
		Reading # 30
		Study Session 17
		Reading # 31
20%	9.6%	37.5%

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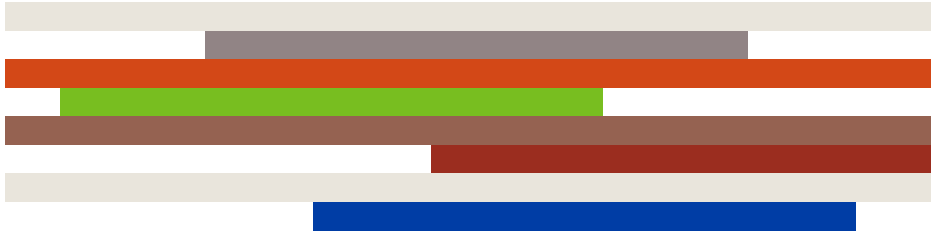
5.
ASSESSMENT METHOD



TWO ALTERNATIVE ASSESSMENT REGIMES

Continuous Evaluation regime

- Simulation Game
- Empirical Assignment
- CFA-style online Quiz Questions
- First Seating Exam
- (Second Seating Exam)

One-exam regime

- Second Seating Exam (100%)

CONTINUOUS EVALUATION (CE)

Assignments

- **Individual assignments:**
  - CFA- Style online Quizes – QQ 15%
  - First seating exam – 1st FE 50%
- **Group Assignments (minimum 3, maximum 5 elements):**
  - Portfolio Management Simulation Game – SG 10%
  - Empirical Assignment – EA 25%

CONTINUOUS EVALUATION (CE)

The **first season final grade** (1st Grade) is computed as

1st Grade = 0.1 x SG + 0.25 x EA + 0.15 x QQ + 0.5 x 1st FE*

The **second season final grade** (2nd Grade) is computed:

- If the student had a 1st Grade <10, then

2nd Grade = max (0.1 x SG + 0.25 x EA + 0.15 x QQ + 0.5 x 2nd FE* ; 2nd FE)

- If the student had a 1st Grade >=10, then

2nd Grade = 2nd FE

(* a minimum of 8/20 point is required at the exam)

ONE-EXAM REGIME

Students who decide to enroll in the one exam regime can only attend the second seating final exam (2ndFE), their final grade will simply be:

Grade = 2nd FE .

CHOICE RECOMMENDATION

Continuous Evaluation

- All students are encouraged to **diversify risk** and choose the continuous evaluation regime.
- Handling all continuous evaluation assignment, students face a variety of different challenges and, thus, **learn naturally** a large portion of the course material.
- In addition, real life future tasks related to investments and portfolio management are likely to be similar to the proposed continuous evaluation challenges. So, while studying this curricular unit students also **get some experience**.

CHOICE DEADLINE

During the first **TWO WEEKS** Students can choose the CE regime

- During the first two weeks in the semester students must decide whether or not they wish to enroll in the ***continuous evaluation regime***, or if they prefer to be evaluated based upon the *one exam regime*.
- **After September 28 2020**, all students that did not register in the continuous evaluation regime, are automatically be placed under the **one-exam regime.**

CE REGISTRATION PROCESS

Choose your Team
Minimum 3, Maximum 5

Register in Aquila (ISEG)
=> Get your **Group NUMBER**

Register at Stocktrak.
=> Get your **Group NAME**

Send E-mail to **Rmgaspar@iseg.ulisboa.pt**
with Group NAME and NUMBER

Wait for e-mail confirmation.
=> SAVE IT AND BE **WELCOME TO CE !!**

SG – SIMULATION GAME

STOCK|TRAK GLOBAL PORTFOLIO SIMULATIONS

Platform

- The IPM portfolio management simulation game runs for **13 weeks**

From Sep 21 until Dec 27 2020

- Each group of students manages two portfolios – a **passively managed** portfolio and an **actively managed**
- SG uses the **Stocktrak** platform (**www.stocktrak.com**).
- This is the leading provider of virtual trading applications for universities, high schools, corporations and the general public.
- Its stock market simulation is used by 1 000 professors in 30 countries and their 60 000 students each year. It is the platform used in 80% of the top U.S. Business Schools and is recommended by most textbooks.

SG – SIMULATION GAME

STOCK|TRAK GLOBAL PORTFOLIO SIMULATIONS

Platform

- It allows for real time trading in **more than 50 global exchanges** including NYSE, AMEX, NASDAQ, TSX, London, Euronext (Amsterdam, Brussels, Lisbon, Paris), Frankfurt, Ireland, Prague, Vienna, Zurich, Warsaw, Mexico, Brazil, Bombay, Hong Kong, KL, New Zealand, Seoul, Shanghai, Singapore, Sydney and Taiwan.
- Each portfolio has an **initial wealth of 1 000 000 euros**.
- The performance portfolios – both passively and actively managed – is evaluated via **Sharpe ratio**. The "winner" of the IPM SG is the manager of the portfolio with the highest Sharpe ratio.
- Groups can invest in the global markets exchanges in **real time**, experiencing financial markets and learning by practice.

SG – SIMULATION GAME

STOCK|TRAK GLOBAL PORTFOLIO SIMULATIONS

Trading and Holding Restrictions

1. When investing, students cannot allocate more than 10% of the portfolio wealth in **individual assets**.
2. When investing, students cannot allocate more than 50% of the portfolio wealth to **Stocks, ETFs, Cypto** and no more than 25% in any other **class of assets** – stocks, bonds, spots, funds, etc.
3. At the **end of the investment period**, students cannot have deposited more than 10% of the portfolio wealth.
4. Students can assume **shortselling** positions only up to 50% of the portfolio wealth.
5. No positions on **derivatives** are allowed.
6. **Day-trading** is allowed, but there is a maximum number of trades.

SG – SIMULATION GAME

STOCK|TRAK GLOBAL PORTFOLIO SIMULATIONS

Passive Portfolios

7. Groups **must allocate their entire wealth until the end of September** and then keep the same portfolio until the of the investment period. After September 30, no more trades are allowed in passive portfolios.
8. **Maximum number of trades is 30 trades**.

Active Portfolios

9. Over the entire investment period, **300 is the maximum allowed number of trades**, and **30 is the minimum number of trades required**.
10. In addition, a **minimum of 1 trade is required per week**, every week of the investment period.

SG – SIMULATION GAME

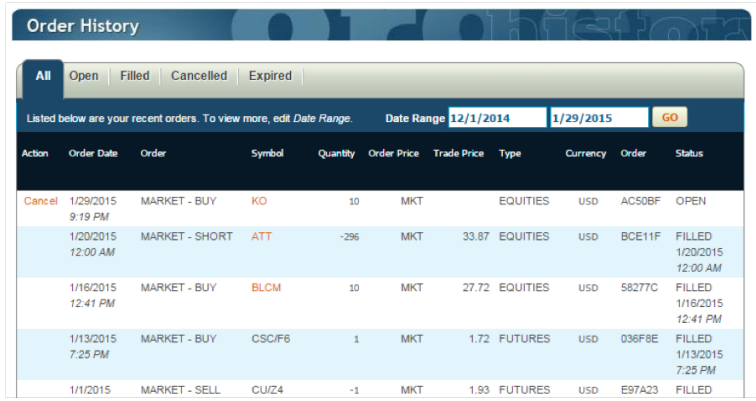
STOCK|TRAK GLOBAL PORTFOLIO SIMULATIONS

Platform

SG – SIMULATION GAME

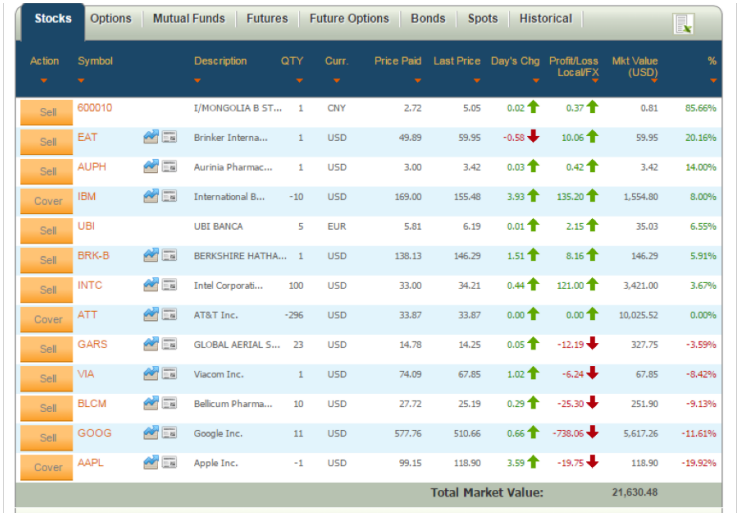
STOCK|TRAK GLOBAL PORTFOLIO SIMULATIONS

Platform



SG – SIMULATION GAME

STOCK|TRAK GLOBAL PORTFOLIO SIMULATIONS



Stocks | Options | Mutual Funds | Futures | Future Options | Bonds | Spots | Historical

Action	Symbol	Description	QTY	Curr.	Price Paid	Last Price	Day's Chg	Profit/Loss Local/FX	Mkt Value (USD)	%
Sell	600010	I/MONGOLIA B ST...	1	CNY	2.72	5.05	0.02	0.37	0.81	85.66%
Sell	EAT	Brinker Interna...	1	USD	49.89	59.95	-0.58	10.06	59.95	20.16%
Sell	AUPH	Aurinia Pharmac...	1	USD	3.00	3.42	0.03	0.42	3.42	14.00%
Cover	IBM	International B...	-10	USD	169.00	155.48	3.93	135.20	1,554.80	8.00%
Sell	UBI	UBI BANCA	5	EUR	5.81	6.19	0.01	2.15	35.03	6.55%
Sell	BRK-B	BERKSHIRE HATHA...	1	USD	138.13	146.29	1.51	8.16	146.29	5.91%
Sell	INTC	Intel Corporati...	100	USD	33.00	34.21	0.44	121.00	3,421.00	3.67%
Cover	ATT	AT&T Inc.	-296	USD	33.87	33.87	0.00	0.00	10,025.52	0.00%
Sell	GARS	GLOBAL AERIAL S...	23	USD	14.78	14.25	0.05	-12.19	327.75	-3.59%
Sell	VIA	Viacom Inc.	1	USD	74.09	67.85	1.02	-6.24	67.85	-8.42%
Sell	BLCM	Bellicum Pharma...	10	USD	27.72	25.19	0.29	-25.30	251.90	-9.13%
Sell	GOOG	Google Inc.	11	USD	577.76	510.66	0.66	-738.06	5,617.26	-11.61%
Cover	AAPL	Apple Inc.	-1	USD	99.15	118.90	3.59	-19.75	118.90	-19.92%
								Total Market Value:	21,630.48	

SG – SIMULATION GAME

STOCK|TRAK GLOBAL PORTFOLIO SIMULATIONS

SG grades

The SG grades are as follow.

- Groups w/ highest Sharpe Ratio: 20/20 points
- Group w/ 2nd best Sharpe Ratio: 18/20 points
- Groups w/ 3rd best Sharpe Ratio: 16/20 points
- Groups w/ Sharpe Ratios above the reference portfolio: 12/20 points
- Groups w/ Sharpe Ratios below the reference portfolio: 8/20 points

Reference portfolio is the **"average" passive portfolio**.

(I.e., its mimics the performance of a fund of funds that invest equally in all passively managed portfolios.)

EA – EMPIRICAL ASSIGNMENT

Consultancy Task

- The IPM empirical assignment (EA) simulates a **consultancy report** following the rules of an **Investment Policy Statement (IPS)**.
- Each year a different **client** – individual or institutional investor – contacts IPM groups and asks for financial advice.
- Students put their investment and portfolio management knowledge to the test. Advising case study clients on a variety of investment topics, recommending strategies for (and changes in) portfolios based on challenges and issues raised by their clients.
- All groups compete with one another. At the end **the client chooses his/her preferred IPS**.

EA – EMPIRICAL ASSIGNMENT

Grading

- Without knowing the client's choice, the **technical quality** of all IPS is graded (up to 20 points).
- In additional to the technical grade, **the client's chosen IPS receives extra 2 points**.

OBS! In the more than 14 years experience with this kind of empirical assignments the client never chose the report with the highest technical grade. => **Important lesson** – one needs to know how to do it well, but also how to sell it.

QQ – CFA-STYLE ONLINE QUIZES

Logic and Grading

- Quizzes are made of multiple choice/ fill in the blanks CFA-style questions
- QQ help students understand if they are keeping up with the material or not.
- All quizzes take place online, at **ISEG Aquila platform**, on Fridays during some of the course Tutorials. Results and doubts are clarified immediately after each Quiz.
  - Part I
  - Part II
  - Part III
  - Part IV + Part V
- The final grade at the CFA-style online Quiz Questions(QQ) is the **average of the best three (out of four) quizzes**.

FE – FINAL EXAMS

Structure

- Questions at the exam can be of five natures.
  - **Quiz Questions**: multiple choice questions
  - **Direct Theoretical Questions**: essay questions
  - **Theoretical Comments**: students should evaluate if statement is true or false and fundament their answers.
  - **Problems**: Analytical questions addressing multiple syllabus topics

FE – FINAL EXAMS

First Seating versus Second Seating Exams

- The structure of the two IPM final exams (FE) is similar, except that the first exam is shorter as it has no multiple choice section and has one less theoretical question (essay or theoretical comment).
- Both exams take 2.5h, so in the first season exam students are less time constrained.
- The **first exam** has no multiple choice questions (because students have CFA-style online quizzes). It does not address IPS related topics (because students solve the EA) nor topics related to trading (because students participate in the SG).
- The **second season** exam has one extra section with multiple choice questions and more theoretical essay or comment, covering the entire syllabus.

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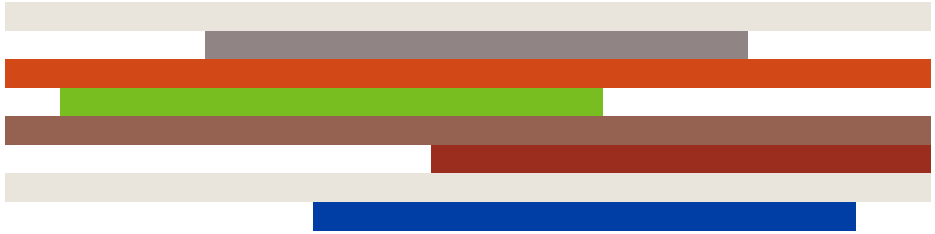
6.
WORKLOAD

160h



WORKLOAD

ECTS

- The **European Credits Transfer Systems (ECTS)** was developed as a means of facilitating the academic recognition of periods of study abroad.
- It is seen as an element of integration of Europe for higher education.
- The system confers transparency on academic recognition processes.
- ECTS affect a number between 1 and 60 to each curricular unit (UC). This number measures **the total volume of work** each UC requires to be successfully completed.
- Total volume of work include: Lectures, tutorials, seminars, individual work, groups work, examinations and any other form of evaluation.
- Under ECTS, 60 credits represent one full-time academic year of studies, 30 credits one semester and 20 credits to one quarter.
- **IPM** has 6 ECTS = > **160h** of workload.

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Q & A