





# ERASMUS+ Programme

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## Academic Year 2022-2023

1. All the Erasmus incoming students are kindly requested to take into consideration that the above-mentioned dates MUST be respected according to the Erasmus student Charter *Erasmus students should comply with internal regulations of the host institution*. As a result, they should not reserve their return tickets for earlier dates.

### 2. Exceptional Changes to the Study Programme

Changes to the study programme should be exceptional, as the three parties have already agreed on a group of educational components that will be taken abroad, based on the course catalogue that the Receiving Institution has committed to publish well in advance of the mobility period and to update regularly.

Any party can request changes to the study programme within two weeks after the start of each semester. These changes should be agreed by all parties as soon as possible within two-weeks following.

3. Attendance at each course is compulsory, after submission of the final Learning Agreement. **Three justified absences** from each course are accepted. The same applies for the Greek Language course, which is offered free of charge at each semester.

# **SCHOOL OF BUSINESS**

**FALL SEMESTER**

**Modern Enterprise Information Systems**

**Instructor:** George Ioannou

6 ECTS credits, Advanced Level

**Communication with the Instructor**

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**Web:** [www.msl.aueb.gr/people.html](http://www.msl.aueb.gr/people.html)

**COURSE DESCRIPTION**

Modern Enterprise Information Systems include all the transactional level platforms and integrated software applications that enable the capturing of company data within data bases in a structured and efficient way. The most typical such system is the ERP, which incorporates functionalities that cover all business tasks, from the procurement of materials to the collection of payments from customers, and from the issue of a production order to the delivery of consolidated shipments to the customers' warehouse, all within a single and totally integrated system. The specific course will address ERP in its whole, i.e., will cover all applications areas in enterprises of today and will also provide additional knowledge about systems that go beyond and complement ERP's transactions such as CRM, WMS, etc. Practical sessions on widely used ERP systems will be offered on top on theoretical and applied-knowledge lectures. Lab exercises, case studies and assignments will be the basis of grading in this course.

**COURSE OBJECTIVES**

Students will:

Analyze a business' enterprise activities, workflow and process to identify problems, weaknesses, strengths, threats, opportunities, stakeholders and entities interacting with the enterprise;

Propose reengineered enterprise processes that optimize the enterprise's performance;

Design integrated organizational structures and business processes that optimize the enterprise's performance, overcome problems and weaknesses of current processes;

Understand the scope of ERP systems and corporate motivation for implementing ERP;

Appreciate the challenge associated with implementing such large-scale systems and the dramatic impact these systems have on key business processes;

Gain an understanding of process integration inherent in ERP;

Solve optimization models for production planning and models for operations management;

Gain an appreciation of related concepts, technologies, and trends in ERP including forward, backward, and upward integration of the enterprise using supply chain management and customer relationship management;

Experience the Microsoft Office Excel, Microsoft Office Visio, Expert Choice and Microsoft Dynamics NAV software.

### **COURSE TOPICS**

The course will cover the following topics:

Supply Chain Management Overview

Enterprise Resource Planning (ERP) Systems Overview

Optimization Models for Production Planning (Microsoft Office Excel)

Models for Operations Management (Microsoft Office Excel)

Business Process Reengineering (BPR) using Microsoft Office Visio

Multi-criteria Decision Making (The Analytic Hierarchy Process, AHP) using Expert Choice

Microsoft Dynamics NAV – An ERP System

### **COURSE METHODOLOGY**

The goal of this course is to develop analytical and critical thinking skills for the development of integrative plans for enterprise-wide systems that optimize enterprise performance. Most class sessions will involve lecture and extensive discussion of ERP based on content contained in the textbooks, readings and cases. Students will be expected to make substantial contributions to the learning process through participation in class discussion. In addition, they will be responsible for several individual assignments.

To pass this course students should:

Prepare: Spend as much time needed to study the assigned topics before coming to class;  
Practice: Review and practice the lab exercises at their own pace;  
Present: complete the homework assignments, come to class, and deliver their work to the instructor.

### **COURSE PLATFORM**

Students will find course lectures, assignments, useful links etc. at the following links:

E-learning portal: <https://edu.dmst.aueb.gr/>

Management Science Support: <http://www.msl.aueb.gr/msupport.html>

### **COURSE MATERIAL**

Hamilton S. *Managing your Supply Chain using Microsoft Navision*. New York: McGraw-Hill; 2004.

Hamilton S. *Maximizing your ERP System: A Practical Guide for Managers*. New York: McGraw-Hill; 2003.

Presentations (Lectures)

### **REQUIRED SOFTWARE**

Microsoft Office Excel (to solve optimization models for production planning and operations management)

Microsoft Office Visio (business process reengineering)

Expert Choice (multi-criteria decision making - AHP)

Microsoft Dynamics NAV (ERP System)

### **ASSIGNMENTS**

The assignments are designed to familiarize students with the major challenges involved in specifying, selecting and implementing ERP. Assignments include lab exercises and cases studies related to optimization models for production planning, models for operations management, business process reengineering methodology, analytic hierarchy process and Microsoft Dynamics NAV. Students will be responsible for individual assignments.

### **STUDENT RESPONSIBILITIES**

This class requires a consistent and substantial week to week commitment on the part of the student. Students are expected to complete reading assignments prior to class and to participate actively in class discussion. Assignments should be emailed on the specified due date. Late work will receive no credit.

Class participation is measured by student's active involvement in discussion of the lab exercises and cases.

### **ACADEMIC INTEGRITY POLICY**

In accordance with The Athens University of Economics and Business' Academic Regulations, cheating in any form will not be tolerated. This includes plagiarism or receiving inappropriate assistance on examination and/or assignments. Cheating is an extremely serious academic offence

### **TENTATIVE SCHEDULE**

<b>Topic</b>	<b>Sub-topic</b>	<b>Specialty</b>
Introduction	ERP Systems Overview	Introduction to Enterprise Resource Planning Systems (ERPs) Architecture and Technical Specifications of ERPs Operational Issues and Modern ERPs Advantages of using ERPs in Modern Enterprise Critical Issues for a Successful ERP Integration Methodological Approach for choosing and Integrating ERPs
Maximizing your ERP System I	Supply Chain Management Overview	Logistics in Supply Chain Management Technology Structure Operations Network Designs Administration Optimization Models for Production and Operations Management
Maximizing your ERP System II	Material Requirement Planning	Needs for Material Planning Basic MRP Concepts Factor Affecting the Computation of MRP Objectives of MRP System Prerequisites and Assumptions of MRP Inputs to MRP MRP Outputs MRP Logic in Brief Manufacturing Resource Planning (MRP II) MRP Implementation How Can Industry Benefit from



MRP?

Material Requirement Planning (**Lab Exercises**)

Technology Platforms for ERP Systems

Multi-  
criteria  
Decision  
Making

Analytic Hierarchy  
Process

Decision Hierarchy  
Preferences  
Synthesization  
Applications  
Decision Making using Expert  
Choice

**Lab Exercises**

**Assignment**

Case Study

Managin  
g your  
Supply  
chain  
using  
Microsoft

**Lab Exercises**

Case Study

Managin  
g your  
Supply  
Chain  
using  
Microsoft

**Lab Exercises**

Case Study

# Managerial Decision Making

Instructor: Manolis Kritikos

6 ECTS credits, Advanced Level

## Communication with the Instructor

[kmn@aueb.gr](mailto:kmn@aueb.gr)

## Course Outline

This course outline describes the course Managerial Decision Making. It has been organized into the following sections:

1. Basic Information about the Course
2. Aim of the course
3. Planned learning activities and teaching methods
4. Learning Outcomes
5. Reading List
6. Syllabus
7. Course Assessment.

## Basic Information about the Course

Prerequisites: None

Teaching Methods: The class meets once a week

## Course Objectives

The course introduces the student to the methodology of decision making, as well as to the major models used today. Decision making is one of the most important functions of management. The three major categories of models are covered: Linear and Integer Programming, Decision Analysis, and Simulation. In each unit, the student is exposed to a number of applications, and has the opportunity to apply his/her knowledge to a number of problems such as Transportation, Assignment and Network models. In addition to developing models, the student is exposed to a number of computer packages, most of them based on Excel, to use in order to solve the problems.

## Planned Learning Activities and Teaching Methods

We cover the course material in lectures. Attending lectures is compulsory. This is the best way of being introduced to a topic. Self-study is a vital and significant part of studying for the course.

## Learning Outcomes

Decision-Making is one of the most important functions of management. Today's business environment is characterized by high competition, constant changes,

extensive globalization, large availability of data and information, and the huge penetration of information and telecommunications technology. In this environment, decision making is increasingly based on the use and analysis of data, through the development of “models”, and the use of user-friendly, PC-based computer packages.

On completion of this course, students should be able to: to understand and formulate decision making problems, and to use the computer technology efficiently in order to make the best decision.

### **Reading List**

Required Textbook

G.P.Prastacos, (2008), Managerial Decision Making Theory and Practice, Tsinghua University Press

### **Recommended Reading**

N.Balakrishnan, B.Render, and R.M.Stair, Jr. (2013), Managerial Decision Modeling with Spreadsheets, Pearson Education Inc.

C.P.Bonini, W.H.Hausman and H.Bierman, (1997), Quantitative Analysis for Management, McGraw-Hill / Irwin

G.L.Nemhauser and L.A.Wolsey, (1999), Integer and Combinatorial Optimization, Wiley Interscience

W.L.Winston and S.C. Albright,(2002), Practical Management Science, South-Western College Pub.

### **Syllabus**

Managerial Decision Making

### **Overview**

The Fundamentals of Operations Research: Introduction to management Science; The methodology of Decision Making; Models in Managerial Decision Making

Linear Programming (LP): Introduction; Characteristics of LP Problems; Graphical solution of a LP problems; A Maximization Problem; a Minimization Problems; Problems General Formulation and Assumptions of LP problems

Sensitivity analysis in Linear Programming: Dual Prices in LP; Reduced costs in LP; Changes in the Objective Function’s Coefficients; Changes in the Right Hand Sides (RHS) of the Constraints; Evaluation of a New Activity

Using Solver to Solve Linear Programming Problems: Introducing the model in Excel; Solving the Problem; Understanding and Analyzing the Solution – SOLVER Reports.

Integer Programming (IP): Introduction; Formulating IP Problems with Binary Variables; Formulating IP Problems; Solving IP problems; Solving Integer Programming Problems with SOLVER.

Implementing Management Science in Practice: Marketing and Sales problems; Production and Inventory problems; Networks and Transportation problems; Logistics and Supply Chain problems; Investments problems; Human Resources problems.

Decision Analysis and Precision Tree: Introduction; Criteria for Making Decision under Uncertainty; The Expected Value of Perfect Information; Decision Tree; Calculating the Risk Profile a Strategy; Sensitivity Analysis; Using Precision Tree to Solve Decision Analysis Problems.

Simulation: Introduction; Implementation of Simulation under Conditions of Uncertainty

Using Excel and @Risk in Simulation: Introduction; Simulation of Queuing Systems; Simulation of an Inventory System; Analysis of Simulation Results.

### **Course Assessment**

The following notes offer guidance on how you will be assessed for the course. The final grade will be based on homework, classroom participation, an individual essay, case studies and a final exam. The breakdown of the final grade will be approximately as follows:

- 20% homework and classroom participation
- 30% individual essay and group case studies
- 50% final written exam

# Innovation in Organizations

**Instructor:** Klas Eric Soderquist

6 ECTS Credits

**Communication with the Instructor**

[soderq@aueb.gr](mailto:soderq@aueb.gr)

## **Knowledge, Creativity and the Processes of Innovation**

- **Type of course (compulsory, optional)**

Optional.

- **Level of course** (e.g., first, second or third cycle; sub-level if applicable)

Advanced

- **Learning outcomes**

Today, all kinds of organizations and businesses must have the ability of constantly innovating and turning environmental uncertainty into exploitable advantages. In this context, demands for creative thinking, and better use of organizational knowledge for enhanced innovation performance and innovation output are raised on employees at all levels. This course provides an introductory overview of innovation, innovation processes and innovation management, placing particular emphasis on the underlying phenomena of knowledge and creativity. The objective is to improve the students' understanding the nature and dynamics of organizational knowledge, the prerequisites and processes of organizational creativity, and how knowledge and creativity relate to innovation.

Innovation in itself is central to the course. Various forms of innovation that can be pursued by organizations will be explained, and the students will develop frameworks for analyzing how different organizational structures, processes and management methods can be used for implementing and managing innovation. The course aims at opening up the black box of innovation and equipping the students with concepts and frameworks that will help them to apprehend and better manage innovation.

- **Mode of delivery (face-to-face, distance learning)**

Face-to face teaching, individual student work and student presentations. Three (3) effective face-to-face teaching hours per week.

- **Prerequisites and co-requisites**

Introductory courses in Management and/or Business Strategy and/or Organizational Behaviour are recommended.

## **Recommended optional programme components**

Independent research and use of bibliographical sources to synthesize material and analyze specific topics related to innovation.

- **Course contents**

### INTRODUCTION TO THE COURSE (SESSION 1)

- Structure and Requirements
- Overview of the three subject topics – Innovation, Creativity and Knowledge.

### INNOVATION (SESSIONS 2-3 & 5 & 7)

- What is innovation and where does it happen? Definitions, Terminology, Types and Forms of Innovation,
- Determinants of Creativity and Innovation,
- Insights from Innovation Leaders. Open Innovation,
- Drivers for innovation,
- Innovation management frameworks, the new product and service development process, bringing innovation to the market,
- Opportunities for Innovation: Ten Types of Innovation.

### BASICS OF CREATIVITY AND KNOWLEDGE AND THEIR MANAGEMENT (SESSION 4)

- Overview of creativity as a concept – Core elements, Myths & Truths,
- The language of knowledge.

### INTERMEDIARY PRESENTATIONS (SESSION 6)

### FURTHER ON CREATIVITY (SESSION 8)

- Creative Strategizing - Strategic management frameworks and their relation to creativity and innovation,
- Creativity Tools - Developing the creative potential of human resources,
- Blockages to innovation and creativity.

### FURTHER ON KNOWLEDGE (SESSIONS 9-10)

- Forms of organizational knowledge,
- The Knowledge Effect – Valuing Intellectual Capital,
- Knowledge Management – What and How,
- Tools for Knowledge Management,
- In-Term Exam.
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## FINAL PRESENTATIONS (SESSIONS 11-12)

### • **Recommended or required reading**



#### Textbooks:

Textbooks are recommended mostly for the part on innovation management. One of the following textbooks is a useful background reading for the entire course:

- Keely, L. et al (2013), *Ten Types of Innovation: The Discipline of Building Breakthroughs*, John Wiley.
- Schilling, M. (2016), *Strategic Management of Technological Innovation*, 5<sup>th</sup> Edition, McGraw-Hill. Earlier editions are also still relevant!
- The [OSLO MANUAL, OECD](#), chapters 2 and 3.



#### Other important books in the innovation field:

- Burgelman, R.A. Christensen, C.M. & Wheelwright, S.C. (2008), *Strategic Management of Technology and Innovation*, 5<sup>th</sup> Edition, McGraw-Hill.
- Chesbrough, H.W. (2006) *Open Innovation The New Imperative for Creating and Profiting from Technology*, Harvard Business School Publishing.
- Christensen, C.M. (1997), *The Innovators Dilemma*, Harvard Business School Press.
- Christensen, C.M. & Raynor, M.E., (2003), *The Innovators Solution*, Harvard Business School Press.



#### Highly rated books on Knowledge and Creativity

- Milton, N. & Lambe, P. (2016), *The Knowledge Manager's Handbook*, Kogan Page Publishers.
- Easterby-Smith M and Lyles M. (eds), (2011), *Handbook of Organizational Learning and Knowledge Management*, 2<sup>nd</sup> Edition, Wiley.
- Michalko, M. (2001), *Cracking Creativity: The Secrets of Creative Genius for Business and Beyond*, Ten Speed Press.



#### Articles

In the following, articles are listed for each of the three different parts of the course. Two articles in each part are compulsory readings for all students. These articles are listed first in bold. Another three articles are listed per part, as an indication of important readings depending on the subject of the dissertation selected by the students.

## INNOVATION

- Crossan, M.M. & Apaydin, M (2010) "A Multi-Dimensional Framework of Organizational Innovation: A Systematic Review of the Literature", *Journal of Management Studies*, 47(6): 1154-1191.
- Dyer, J.H., Gregersen, H.B. & Christensen, C.M. (2009) "The Innovator's DNA", *Harvard Business Review*, December: 61-67.

- Christensen, C.M., Raynor, M. & McDonald, R. (2015), "What is Disruptive Innovation", *Harvard Business Review*, December: 44-53.
- Huston, L. & Sakkab, N. (2006) "Connect and Develop: Inside Procter & Gamble's New Model for Innovation", *Harvard Business Review*, March: 58-66.
- West, J. & Bogers, M. (2013), "Leveraging external sources of innovation: A review of research on open innovation", *Journal of Product Innovation Management*, 31(4): 814-831.

#### CREATIVITY

- Herrmann, D. & Felfe, J. (2014), "Effects of Leadership Style, Creativity Technique and Personal Initiative on Employee Creativity", *British Journal of Management*, 25(2): 209-227.
- Florida, R. & Goodnight, J. (2005), "Managing for Creativity", *Harvard Business Review*, July-August: 124-131.
- Amabile, T.M. et. al. (2002) "Creativity under the Gun", *Harvard Business Review*, August: 52-61.
- Kelley, T. & Kelley, D. (2012), "Reclaim Your Creative Confidence", *Harvard Business Review*, December: 115-118.
- Sutton, R.I. (2001), "The Weird Rules of Creativity", *Harvard Business Review*, September: 94-103.

#### KNOWLEDGE

- Nonaka I, von Krogh, G. & Voelpel, S., (2006), "Organizational Knowledge Creation Theory: Evolutionary Paths and Future Advances", *Organization Studies* 27(8): 1179-1208.
- Johns, T. & Gratton, L. (2013), "The Third Wave of Virtual Work", *Harvard Business Review*, January-February: 66-73.
- Huang, P., Tafti, A., & Mithas, S. (2018). The secret to successful knowledge seeding. *MIT Sloan Management Review*, 59(3), 10-13.
- Soderquist, K.E. (2006), "Organizing Knowledge Management and Dissemination in New Product Development: Lessons from 12 Global Corporations", *Long Range Planning*, 39(5): 497-523.

- **Planned learning activities and teaching methods**

Nine lectures and three presentation sessions. Lectures, reading assignments, exercises, games, individual student work and student presentations.

- **Assessment methods assessment methods and criteria**

70% of the grade is based on a **dissertation** (60% written report, 10% presentation), which can be done by 1 – 3 students. It is recommended that students do it in pairs of two.

30% of the grade is based on an individual **In-Term Exam**.



Two individual **reading assignments** are also required to pass the course. These are not graded, only “Pass” or “Fail & Resubmit” to enable Pass. The reading assignments relate to the following three articles (also among the **bold** above):

#### INNOVATION

Crossan, M.M. & Apaydin, M (2010) "A Multi-Dimensional Framework of Organizational Innovation: A Systematic Review of the Literature", *Journal of Management Studies*, 47(6): 1154-1191.

#### CREATIVITY

Herrmann, D. & Felfe, J. (2014), "Effects of Leadership Style, Creativity Technique and Personal Initiative on Employee Creativity", *British Journal of Management*, 25(2): 209-227.

#### KNOWLEDGE

Nonaka I, von Krogh, G. & Voelpel, S., (2006), "Organizational Knowledge Creation Theory: Evolutionary Paths and Future Advances", *Organization Studies* 27(8):1179-1208.

Each student must do the **first** reading assignment on the **Innovation article by Crossan & Apaydin**. Then, each student selects **one of the other two papers** for their **second** reading assignment. More details about the reading assignment (2 articles) will be handed out separately.

The **In-Term Exam** will take place in session 10, approximately 2 weeks before the Christmas break.

Concerning the **dissertation**, it is recommended that it is done in pairs of two students. Each student must explicitly indicate his/her individual contribution to the whole and the presentation must be shared between the students.

Students will select topic area as soon as possible (emphasis on Innovation *or* Creativity *or* Knowledge – integrated subjects are also encouraged). The final dissertation must contain a synthesis of various literatures on the selected subject (topic area and specific theme within selected topic area), and an integration of examples from practice through the study of company/organization cases and company/organization websites. Students are also encouraged to enrich their dissertation with primary data, e.g., from interviews with managers or other relevant actors in Greece or in their home country of studies.

A template for the dissertation will be handed out at the beginning of the class. Indicatively, the dissertation should be about 6.500 words (between 6.000 and 7.000 words).

It is estimated that the dissertation will require at least another three (3) effective study hours per week and student.

- **Language of instruction**

English

- **Work placement(s) N.A.**

# Information Resource Management

Athanasia (Nancy) Pouloudi

6 ECTS Credits

Level: Advanced

## **Communication with the Instructor**

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## **Course Objective (Expected Learning Outcomes and Competences to be acquired)**

This is an advanced course on the management of information systems in organizations.

Four main axes define the learning outcomes of the course:

- The strategic role of IT in contemporary business and strategic planning for information resources and systems
- The business role of IT as a tool for supporting and promoting business functions and management and the managerial skills associated with this role
- The fundamental role of IT in developing and supporting new business models
- The functional structure (department/ services) of IT in contemporary business, its human resources and management
- Broader socio-economic aspects related to the use of IT in contemporary business

In this course, students are introduced to the basic themes and activities of the information systems manager in a business organization.

## **Prerequisites**

No prerequisite

## **Course Contents**

No prerequisite

## **Recommended Reading**

A series of articles/case studies will be provided in class

## **Teaching Methods**

Lectures and Seminars. In the course of the seminars case studies will be analyzed and presented by student groups.

## **Assessment Methods**

Written exams and presentation of case studies in the course of the seminars

# **Production and Operations Management**

Instructor: Dimitrios Zisis

6 ECTS credits, Advanced level

## **Communication with the Instructor**

[dzisis@aueb.gr](mailto:dzisis@aueb.gr)

## **Learning Outcomes**

The aim of the course is to introduce the student to the design, analysis, reengineering, optimisation and functional control of Manufacturing and Service operations, and to highlight the need for effective management of the constrained resources of operations systems. Through the course, the student will understand the organizational structure and the various components and functions of a Production or Service Operations System. They will practice basic analysis and problem-solving methods that are used by all kinds of organizations to understand and optimize operations.

The topics of the course cover the major business processes inherent in the operation systems, starting from operations strategy – showing the bigger picture of operations in a transforming global economy. Then the course delves into product, service and process design, forecasting, facility location and layout, procurement and inventory management, operations scheduling, and, finally, quality control. In summary, the course provides: a) an introductory overview of the major areas of operations management, b) an understanding of the practical and theoretical problems encountered in operations, and, c) practice of tools and techniques for effective operations management emphasizing both qualitative reflection and quantitative methods.

## **Mode of delivery (face-to-face, distance learning)**

Face-to face teaching, individual work on cases and exercises.

## **Prerequisites and co-requisites**

Fundamentals in quantitative methods. Fundamentals in management.

## **Recommended optional programme components**

Simulation Game.

Video Tours of operations issues in companies and organizations.

## Course contents

The topics included within the scope of Production and Operations Management (POM) are numerous and diverse. The following list provides the areas that will be covered within the course including recommended readings, which are available to the students through the AUEB Library and e-Library.

### 1. Introduction – Definitions

- Course content and structure
- Context and definitions of POM

#### Readings:

- o "Operations as a Competitive Weapon", Chapter 1 in Operations Management, L.J. Krajewski & L.P. Ritzman.
- o Merrifield, R. et al (2008), "The Next Revolution in Productivity", Harvard Business Review, June, pp. 73-80.

### 2. Operations Strategy and Lean Production

- The strategic framework, Illustration and deployment of operations strategies
- "New" operations strategies – Agile Operations

#### Readings:

- o "Operations Strategy", Chapter 2 in Operations Management, L.J. Krajewski & L.P. Ritzman.
- o Pisano, G.P. & Shih, W.C. (2009), "Restoring American Competitiveness", Harvard Business Review, July-August, pp. 114-125.
- o Womack, J.P. & Jones, D.T. (2005), "Lean Consumption", Harvard Business Review, March, pp. 59-68.

### 3. Product, Service and Process Design and Development

- Key concepts in product and service design
- The product development process and project
- Classifications of production process structures (product and process). Video

#### Readings:

- o "Process Design Strategy", Chapter 3 in Operations Management, L.J. Krajewski & L.P. Ritzman.
- o Bonabeau, E et al (2008), A More Rational Approach to New Product Development, Harvard Business Review, March, pp. 96-102.

### 4. Facility Location

- Factors affection location decisions
- Locating a single facility

#### Readings:

- o "Location", Chapter 10 in Operations Management, L.J. Krajewski & L.P. Ritzman.

- o Article

## 5. Facility Layout

- Layout types and performance
- Product and process layout designs - models/algorithms
- Application exercises in class

### Readings:

- o "Process Layout", Chapter 7 in Operations Management, L.J. Krajewski & L.P. Ritzman.

- o Article

## 6. Capacity Planning

- Capacity strategies and tools
- Basic forecasting methods
- Application exercises in class

### Readings:

- o "Process Capacity", Chapters 6 in Operations Management, L.J. Krajewski & L.P. Ritzman.

- o Article

## 7. Forecasting

- Basic forecasting methods
- Application exercises in class

### Readings:

- o "Forecasting", Chapter 13 in Operations Management, L.J. Krajewski & L.P. Ritzman.

- o Saffo, P. (2007), "Six Rules for Effective Forecasting", Harvard Business Review, July-August, pp. 122-131.

## 8. The Beer Game

- Business game in class where students are practically familiarized with the problems of inventory control and management.

### Readings (common to sessions 8-10):

- o "Inventory Management", Resource Planning", and "Lean Systems", Chapters 15, 16, and 11 in Operations Management, L.J. Krajewski & L.P. Ritzman.

- o Abernathy, F.H. et al, (2000), "Control Your Inventory in a World of Lean Retailing", Harvard Business Review, Nov-Dec, pp. 169-176.

- o Liker, J.K. & Choi, T.Y. (2004), "Building Deep Supplier Relationships", Harvard Business Review, December, pp. 104-113.

## 9. Production Planning and Inventory Control I

- Deterministic models: Economic Order Quantity
  - Materials Requirements Planning (MRP)
  - Application exercises in class
10. Production Planning and Inventory Control II
- Just-In-Time – KANBAN
  - Integrated exercise: Determining inventory strategy
11. Production Scheduling
- Operations Scheduling and Monitoring
  - Application exercises in class

Readings:

- o "Scheduling", Chapter 17 in Operations Management, L.J. Krajewski & L.P. Ritzman.
- o Article

12. Statistical Quality Control and Total Quality Management – TQM

- Overview and introduction to Quality Management, Fundamental definitions
- Basics of Statistic Process Control (SPC)
- Application exercises in class

Readings:

- o "Process Performance and Quality", Chapter 5 in Operations Management, L.J. Krajewski & L.P. Ritzman.
- o Grant, R.M. et al (1994), "TQM's Challenge to Management Theory and Practice", Sloan Management Review, Winter, pp. 25-35.

**Recommended or Required Reading**

Krajewski, L.J. and L.P. Ritzman (2005). Operations Management: Strategy and Analysis, 7th Edition, Addison-Wesley, NY. (Newer and older editions, as well as any other Operations Management textbook cover all relevant issues).

Articles according to the above list.

**Planned learning activities and teaching methods**

Lectures, exercises in class, case assignments and readings, video illustrations and Business Game. Cases and readings are discussed in class, case assignments are also handed in written and can be part of formal assessment.

**Assessment methods assessment methods and criteria**

- Two case studies to accomplish in groups of two students (30% (2\*15%) of final grade).

- One individual reading note (10% of final grade).
- Final individual written exam (60% of final grade).

The first case study "Disney" consists of various documents that assess the students' understanding of fundamental introductory aspects of operations management and operations strategy. Students are asked to reflect on how an entertainment company and especially entertainment parks take into account different operational and strategic changes, and how operations interact with other functions of the enterprise.

The second case study "Fitness Plus Part A" (Krajewski & Ritzman, 2005, p. 272) is a capacity analysis and planning case. Students are faced with the problem of a fitness center that operates a number of training areas all which have different demand and different capacity. Students should calculate capacity of each area as well as total capacity for the center, and

suggest how capacity should be balanced and what moves the center should make in view of maximizing utilization and customer satisfaction. The case requires calculation, reflection

and use of capacity notions such as peak and effective capacity, capacity cushions and break-even analysis.

The reading note will be accomplished on the basis of one of the suggested articles (above list) selected by each student. Students can also propose a topic of their own choice. A template for the reading note will be distributed separately.

The final exam lasts for three hours and is composed of two parts. The first assesses through short questions and mini-cases the understanding of fundamental operations management concepts such as different operations paradigms (standardized and diversified mass production, lean production), product, service and process development concepts, procurement, location and lay out issues, forecasting issues and quality management. The second part is based on problems and assesses the different quantitative aspects of the course focusing on inventory management, capacity planning and statistic process control. The above are indicative areas covered, each exam is tailored to the specific emphasis given in class and adapted to what was examined in the case studies.



# Applied Software Engineering

Instructor: Diomidis Spinellis  
6 ECTS credits, Advanced level

## Communication with the Lecturer

[dds@aueb.gr](mailto:dds@aueb.gr)

**Objective of the course** (expected learning outcomes and competences to be acquired)

While most Information Systems and Computer Science courses traditionally deal with the development of new systems, in practice developers spend the largest part of their time in software life-cycle activities that follow the development phase. The objective of the course is to allow students to read and understand a system's software elements (code, structure, architecture). Having followed this course, students should be able to intelligently decide on how existing systems will be maintained, setup design and evolution strategies for legacy code, and prescribe the use of refactoring for dealing with architectural mismatches and low-quality code. An innovative aspect of the course involves the use of Open Source Software (OSS) in course examples and exercises. Through the study of OSS students will be able to see how non-trivial applications like the Apache Web server, the Postgres Relational Database Management System, the Jakarta Java servlet container and the Cocoon framework are structured.

## Prerequisites

Proficiency in programming and software development

## Course contents

Course outline: Course Introduction; Code as Part of the Software Development Process; The Open Source Landscape; Tackling Large Projects; Version Control; Declarative Drawing; Build Management; Code-Reading Tools; General Purpose Tools; Performance Measurement and Management; Inspection and Testing; Coding Standards and Conventions; Documentation; Maintainability.

## Recommended reading

Pierre Bourque and Richard E. Fair (editors). Guide to the software engineering body of knowledge. IEEE Computer Society Press, 2014.

Diomidis Spinellis. Code Reading: The Open Source Perspective. Addison-Wesley, 2003.

Diomidis Spinellis. Code Quality: The Open Source Perspective. Addison-Wesley, 2006.

Martin Fowler. Refactoring: Improving the Design of Existing Code. Addison-Wesley, 2000.

Michael Feathers. Working Effectively with Legacy Code. Prentice-Hall, Englewood Cliffs, NJ, 2005.

**Mode of delivery**

Lectures, labwork, and coursework

Assessment methods

Coursework

**Language of instruction**

Greek & English

# Management of Information Systems

Instructor: Angeliki Poulymenakou

6 ECTS credits, Advanced level

## Communication with the Instructor

[akp@aueb.gr](mailto:akp@aueb.gr)

## Course Objectives (expected learning outcomes and competences to be acquired)

This course aims to introduce to the student the essential dimensions related to the management of Information technology and Systems in modern organisations. Related topics include the pervasive role of ICTS in the economy and in organisations, IS planning and strategy, Types of IS used currently in organisations, E-business, E-commerce, Knowledge Management and e-learning, approaches for developing Information Systems, Outsourcing, the organisation and the business roles of the IS function, IS evaluation and the economics of ICT.

## Prerequisites

No prerequisite. Student should, however, be familiar with the fundamentals of IT, and understand databases and software development methods at a basic level.

## Course Content

The course largely follows the chapter structure of the book provided as essential reading (Turban et al).

## Recommended Reading Material

Turban, McLean, Wetherbe (2010) Information Technology Management (8th Edition). Wiley.

## Teaching Methods

Lectures, tutorials, case study workshops.

## Methods of Assessment

Individual project, class assignments.

## Advertising and Communication Management

**Instructor:** TBA

6 ECTS credits, Advanced Level

### **Course Objective**

The aim of this course is to examine the promotional function and the role of advertising for contemporary companies. The course focuses on the promotional elements in the marketing programs of domestic and foreign companies. Students will be introduced to the concept of integrated marketing communications (IMC) and consider how it evolves. Also, the course examines how various marketing and promotional elements must be coordinated to communicate effectively. Different IMC models are examined in addition with the steps in developing a marketing communication program.

### **Prerequisites**

Two marketing courses, at least an introductory one.

### **Course Content**

- ☑ Integrated marketing communication
- ☑ Setting communication objectives
- ☑ Advertising Planning & Decision Making
- Sales Promotion, Direct marketing & Personal Selling
- Public relations & Corporate Advertising
- Creative strategy
- Media Planning-Strategy & Tactics Media Evaluation
- Advertising Ethics
- Global Advertising
- Advertising and the law

### **Recommended Reading Material**

R.White Advertising 4th ed. Mc Graw Hill

Belch & Belch Advertising & Promotion 6th ed. Mc Graw Hill

### **Teaching Methods**

Lectures, Case studies, Video & Multimedia materials

### **Assessment Methods**

70% written assignment, 30% written exams

# Financial Management

**Instructor :** George Kouretas

6 ECTS credits

Level: Intermediate

## **Communication with the Instructor**

[Kouretas@aueb.gr](mailto:Kouretas@aueb.gr)

## **Course outline**

This module examines various items in the area of Corporate Finance. For that reason it is divided into 2 major groups:

- a) The first group includes the most important methods concerning Investment Appraisal.
- b) The second group is concerned with Financing Decisions.

## **Reading Material**

The required text for the course is:

- ❑ Brigham and Erhardt. Financial Management - Theory and Practice.
- ❑ DRYDEN PRESS HARCOURT

Some highly recommended texts are the following:

- ❑ Brealey, A., Myers, C., (1997): Principles of Corporate Finance, Mc – Graw Hill, New York.
- ❑ Lumbly, S., (1996): Investment Appraisal and Financing Decisions, Chapman and Hall.

## **Components of the Course**

The major components of the course are the following:

- ❑ Introduction to Investment Appraisal
- ❑ Methods and Criteria of Investment Appraisal
- ❑ Net Cash Flow Analysis
- ❑ Investment Appraisal and Inflation
- ❑ Risk Analysis
- ❑ Capital Markets
- ❑ Bond and Share Valuations
- ❑ Cost of Capital
- ❑ Capital Structure
- ❑ Dividend Policy
- ❑ Portfolio Considerations

# Business Strategy

Instructor: TBA

6 ECTS credits

## Communication with the Instructor

### Prerequisites

None

### Objectives

The course aspires to:

1. Help participants understand:
  - a) the external environment in which our companies operate,
  - b) the role and significance of core competences not only in offering competitive advantage, but also in providing the foundation upon which strategies are based,
  - c) the role and significance of corporate mission/vision statements in success.
2. Help participants craft and implement strategy, given a number of alternative strategic options (choices include: in which areas should we diversify, in which products/services should we expand, how we are going to implement this expansion, are we going to acquire, merge, or form an alliance with another business).
3. Develop understanding on how to build and sustain competitive advantage
4. Realize what type of structure, systems, people, a company needs to successfully implement a chosen strategy.
5. To spot and discuss the most common strategy mistakes taking place, and to offer participants ideas as to how to avoid them.

### Course Outline

#### **The course comprises of the following modules:**

1. How to analyze the external environment of the company: (Structural Analysis of Industries-5 Forces, Strategic Groups, Scenario Planning, PESTEL Analysis)
2. How to exploit and build resources and capabilities needed to achieve, maintain and improve the firms market positioning (strategy as the creation of dynamic capabilities, Value Chain, Organizational Culture)
3. How to direct the company into the future (mission/vision/strategic intent)
4. How to make a strategic choice, given a number of alternative strategic options (choices include: in which areas should we diversify, in which products/services

should we expand, how we are going to implement this expansion, are we going to acquire, merge, form an alliance with another business).

5. How to build and sustain competitive advantage (Porter's Generic Competitive Strategies, Value Disciplines, Strategy Clock)

6. What type of structure, systems, people, does a company need to successfully implement a chosen strategy (McKinsey's 7S's).

7. The course will provide frameworks for identifying the challenges of different competitive environments. We will give you some analytical approaches that are useful to widely different strategic problems. Our final aim is to help you understand how to build a strategically responsive organization by tuning systems, structures and people to strategy, and how to effectively manage the process of strategizing.

### **Assessment Methods**

Final written exam and group case studies

### **Reading List**

- **Johnson, G., R. Whittington, K. Scholes, D. Angwin, and P. Renger, Exploring Strategy Pearson, 11<sup>th</sup> Edition, 2017.**
- **Hill, C., G. Jones and M.A. Schilling, Strategic Management Theory, Cengage Learning, 11<sup>th</sup> edition, 2015.**
- **Thompson, A.A., M.A. Peteraf, J.E. Gamble and A.J. Strickland III, Crafting and Executing Strategy: Concepts and Readings, 20<sup>th</sup> edition, McGraw-Hill, 2016.**
- **Hitt, M.A., R.D. Ireland and R.E. Hoskisson, Strategic Management: Competitiveness and Globalization, Cengage Learning, 12<sup>th</sup> edition, 2017.**

# Money and Capital Markets

**Instructor:** TBA

6 ECTS credits

- **Course unit code**

AF6

- **Type of course unit (compulsory, optional)**

Undergraduate course in English for Erasmus students.

- **Level of course unit (e.g. first, second or third cycle; sub-level if applicable)**

Advanced

- **Semester/trimester when the course unit is delivered**

Both Spring and Fall

- **Learning outcomes of the course unit**

At the end of the course students should know:

- How securities prices are determined and how to price securities.
- How to structure an efficient portfolio and understand the importance to financial institutions of risk reduction through holding portfolios of assets.
- How futures contracts are used for risk reduction or speculation.

- **Mode of delivery (face-to-face, distance learning)**

Class teaching

- **Prerequisites and co-requisites**

None.

- **Recommended optional programme components**

None.

- **Course contents**

The course covers the following topics:

- Money and Capital Markets: an overview.



- Intermediaries, Markets and Trading – an overview of the type of companies operating in the money and capital markets and the kinds of transactions they engage into.
- Compounding, Present and Future Value – basic principles used for quantitative analysis of financial assets and instruments.
- Bonds and Interest Rates – an overview of debt instruments, pricing and risk assessment.
- Stocks – pricing techniques for stocks
- Portfolio Theory – how to choose assets in order to build an efficient portfolio
- Futures contracts – an overview of the futures market, pricing of futures contracts, speculation, arbitrage and hedging strategies through futures contracts.

• **Recommended or required reading**

1. Bodie Z, Kane A. and Marcus A.J., (2014) Investments, 10<sup>th</sup> edition, McGraw Hill.
2. Brealey R.A. and Myers S.C. (2017) Principles of Corporate Finance 12<sup>th</sup> edition, McGraw Hill.
3. Lecture notes and case studies.

• **Planned learning activities and teaching methods**

The module is taught through a series of three-hour lectures.

• **Assessment methods and criteria**

Final written two-hour exam.

• **Language of instruction**

English

# Entrepreneurship

**Instructor:** Helen Salavou

6 ECTS credits

## Communication with the Instructor

[esalavou@aueb.gr](mailto:esalavou@aueb.gr)

## COURSE RATIONALE

This course introduces the nature of entrepreneurship. It helps students to be creative and successfully develop viable business ideas. Students are going to write and present business plans based on teamwork.

## BRIEF SYLLABUS

Entrepreneurship is both a way of thinking and of doing. It deals with “creating something from nothing”. The course cultivates an entrepreneurial mindset and focuses on skills necessary for writing a comprehensive business plan.

## LEARNING OBJECTIVES

As a result of taking this course, the students should be able to:

- understand key concepts of entrepreneurship
- cultivate creativity and innovation
- successfully develop viable business ideas
- consider entrepreneurship as a professional career choice

## READING MATERIAL

Together with a list of recommended references, the following book is required:

- Hisrich R., Peters M. and Shepherd D., 2016. **Entrepreneurship**, 10th Edition, Irwin/McGraw-Hill, USA

## COURSE EVALUATION

Your final grade will depend on the following:

<i>Written exams</i>	<i>30%</i>
<i>Business plan</i>	<i>50%</i>
<i>Business plan presentation</i>	<i>20%</i>

Written exams (open book) will take place in January.

# International Management

**Instructor:** TBA

6 ECTS credits

## **Objectives of the course**

The core aim of the course is to familiarize students with the fundamental dimensions of international management. Basic management principles remain the same during the internationalization stage of a corporation; however, they should be placed in a context of different markets and macro-environmental characteristics. In this vein, international management should bridge the divide between global integration and national responsiveness as far as resource selection and deployment decisions, strategy adaptation and challenges from global operations are concerned.

## **Course content**

This course in International Management provides an understanding of how the economic, technological geopolitical and social dimensions of the international business environment shape international business investment and transacting, and how international firms are managed within this environment. It provides students with an appreciation of the increased complexities and opportunities that international markets provide as opposed to operations exclusively focused in the home market. Key issues covered in this course include: macro environmental characteristics, motives for international expansion, entry and global strategies, trade theories, government interventions, foreign direct investments and subsidiary roles and the organizational challenges of the contemporary multinational enterprise.

## **Anticipated Learning Outcomes**

As a result of taking this course, students should be able to:

- Describe and elaborate on the major cultural, political, economic and technological changes that impact on international management.
- Identify the opportunities, challenges, threats and problems faced by multinational managers.
- Analyze and critically evaluate the impact of globalization and national responsiveness on international management and global strategies.
- Analyze internationalization and market entry strategies.
- Classify and describe the role of subsidiaries and their impact on the economic development of host countries.
- Critically evaluate the diverse organizational structures that govern the relationships of the international corporation.
- Describe and evaluate elements of knowledge-related competitiveness that lead to superior performance in the global marketplace.

- Relate theoretical foundations to actual international management practices.

# Conflict Management and Negotiations

**Instructor:** TBA

6 ECTS credits,  
Level: Undergraduate

## Communication with the Instructor

### Objectives of the course

Negotiation is a complex process that requires knowledge, skill, and practice. The aim of this course is to provide the necessary knowledge to effectively prepare for a negotiation, plan a negotiation strategy and deal with conflicts and contingencies. The course also aims at developing those skills that will enable students to effectively communicate with others, manage their emotions, decode their counterparts' interests, etc. Finally, students will participate in negotiation role-plays to apply theory, get feedback, reflect on the outcome and, hence, further enhance their knowledge and abilities.

### Prerequisites

There is no prerequisite for participation in this course.

### Course content

- Managing conflict, building blocks and the process of negotiation
- Preparation: What to do before negotiation
- Creating and claiming value in negotiation
- Managing emotions and building trust in negotiations
- Power, ethics, and reputation
- Multi-party negotiations, coalitions, and team negotiation
- Cross-cultural negotiations and negotiating remotely
- Negotiating a job offer
- Dispute resolution using third parties

### Anticipated Educational Results

Upon completion of this course, the students will be able to:

1. Demonstrate the ability to apply fundamental concepts and theories in conflict management and negotiations to real-world business situations.
2. Be able to analyze the behavior and motives of individuals and the contextual parameters of negotiation and integrate this information into their own behavior.
3. Appraise the advantages and disadvantages of alternative types of competitive and cooperative behavior.

4. Be able to integrate theory and feedback from in-class negotiation simulations and case studies to future negotiations.

### **Recommended reading**

The following book is required:

- Thompson, L. (2021). *The mind and heart of the negotiator*, 7th Edition (Global edition). Pearson. ISBN-10: 1292399465; ISBN-13: 978-1292399461.

together with a list of recommended references for background reading:

- Brett, J. M. & Ramirez-Marin, J. & Galoni, C. (2021). Negotiation Strategy: A Cross-Cultural Meta-Analytic Evaluation of Theory and Measurement. *Negotiation and Conflict Management Research* 14(4). doi: <https://doi.org/10.34891/20210918-525>.
- Fisher, R., Ury, W., & Patton, B. (2011). *Getting to Yes: Negotiating agreement without giving in*, 3rd revised edition, Penguin. ISBN-10: 1844131467; ISBN-13: 978-0143118756.
- Ingerson, M. C., DeTienne, K. B., Hooley, J. M., & Black, N. A. (2020). Dealing with dysfunction: Negotiating with difficult individuals. *Negotiation Journal*, 36(3), 287-307.
- Kapoutsis, I., & Volkema, R. (2019). Hard-core toughie: Donald Trump's negotiations for the United States presidency. *Negotiation Journal*, 35(1), 47-63.
- Malhotra, D. (2015). Control the negotiation before it begins. *Harvard Business Review*, December 2015, pp. 3-8.
- Malhotra, D. & Bazerman, M. (2008). *Negotiation Genius: How to Overcome Obstacles and Achieve Brilliant Results at the Bargaining Table and Beyond*. Bantam.
- Volkema, R. J., & Kapoutsis, I. (2016). From Restaurants to Board Rooms How Initiating Negotiations Teaches Management Principles and Theory. *Journal of Management Education*, 40(1), 76-101.
- Volkema, R., 1999, *The Negotiation Toolkit: How to get exactly what you want in any business or personal situation*, AMACOM.
- Watkins, M. (2006). *Shaping the Game: The New Leaders Guide to Effective Negotiating*. Harvard Business School Press.

### **Teaching methods**

Lectures, case studies, role-plays, videos, and self-assessment tests.

### **Assessment methods**

Final written exam (80%) and class participation (participation in role-plays; 20%).

# **International Marketing Management**

**Instructor:** TBA

6 ECTS credits, Type: Elective, Level: Advanced

## **Course Objective**

This course offers students a practical understanding of the role of marketing in the achievements of corporate goals and the opportunity to gain an appreciation of the different applications of marketing in consumer, and industrial international markets. Also, it provides students with an understanding of both theory and practice of international and export marketing as well as with the ability to apply this understanding to real and simulated situations.

## **Prerequisites**

Three marketing courses

## **Course Content**

☒ International Trade.

☒ Overseas and European environments: cultural, political and economic.

Information gathering and marketing information systems for international marketing decision-making.

☒ Methods of market entrance.

International marketing mix.(Product, Price, Promotion, Place)

☒ Logistics, subsidiaries, agents, importers and intermediaries.

☒ Globalization

## **Recommended Reading Material**

Cateora International Marketing Management 10th ed. Mc Graw Hill

Rugman & Hodgetts International Business 3rd ed. Prentice Hall

## **Teaching Methods**

Lectures, Case studies, Video & Multimedia staff

## **Assessment Methods**

70% written assignment, 30% written exams

# Money and Capital Markets

**Instructor:** TBA

6 ECTS credits

- **Course unit code**

AF6

- **Type of course unit (compulsory, optional)**

Undergraduate course in English for Erasmus students.

- **Level of course unit (e.g. first, second or third cycle; sub-level if applicable)**

Advanced

- **Semester/trimester when the course unit is delivered**

Both Spring and Fall

- **Learning outcomes of the course unit**

At the end of the course students should know:

- How securities prices are determined and how to price securities.
- How to structure an efficient portfolio and understand the importance to financial institutions of risk reduction through holding portfolios of assets.
- How futures contracts are used for risk reduction or speculation.

- **Mode of delivery (face-to-face, distance learning)**

Class teaching

- **Prerequisites and co-requisites**

None.

- **Recommended optional programme components**

None.

- **Course contents**

The course covers the following topics:

- Money and Capital Markets: an overview.



- Intermediaries, Markets and Trading – an overview of the type of companies operating in the money and capital markets and the kinds of transactions they engage into.
- Compounding, Present and Future Value – basic principles used for quantitative analysis of financial assets and instruments.
- Bonds and Interest Rates – an overview of debt instruments, pricing and risk assessment.
- Stocks – pricing techniques for stocks
- Portfolio Theory – how to choose assets in order to build an efficient portfolio
- Futures contracts – an overview of the futures market, pricing of futures contracts, speculation, arbitrage and hedging strategies through futures contracts.
- 

• **Recommended or required reading**

1. Bodie Z, Kane A. and Marcus A.J., (2014) Investments, 10<sup>th</sup> edition, McGraw Hill.
2. Brealey R.A. and Myers S.C. (2017) Principles of Corporate Finance 12<sup>th</sup> edition, McGraw Hill.
3. Lecture notes and case studies.

• **Planned learning activities and teaching methods**

The module is taught through a series of three-hour lectures.

• **Assessment methods and criteria**

Final written two-hour exam.

• **Language of instruction**

English

# Financial Management

**Instructor:** TBA

6 ECTS credits, Level: Intermediate

## Course Outline

This module examines various items in the area of Corporate Finance. For that reason it is divided into 2 major groups:

- ☐ The first group includes the most important methods concerning Investment Appraisal.
- ☐ The second group is concerned with Financing Decisions.

## Reading Material

The required text for the course is:

- ☐ Brigham and Erhardt. Financial Management - Theory and Practice.  
DRYDEN PRESS HARCOURT

Some highly recommended texts are the following:

- ☐ Brealey, A., Myers, C., (1997): Principles of Corporate Finance, Mc – Graw Hill, New York.
- ☐ Lumbly, S., (1996): Investment Appraisal and Financing Decisions, Chapman and Hall.

## Course Components

The major components of the course are the following:

- ☐ Introduction to Investment Appraisal
- ☐ Methods and Criteria of Investment Appraisal
- ☐ Net Cash Flow Analysis
- ☐ Investment Appraisal and Inflation
- ☐ Risk Analysis
- ☐ Capital Markets
- ☐ Bond and Share Valuations
- ☐ Cost of Capital
- ☐ Capital Structure
- ☐ Dividend Policy
- ☐ Portfolio Considerations

# Business Strategy

Instructor: I. Thanos

6 ECTS credits

## Communication with the Instructor

[ithanos@aueb.gr](mailto:ithanos@aueb.gr)

## Prerequisites

None

## Objectives

The course aspires to:

6. Help participants understand:
  - a) the external environment in which our companies operate,
  - b) the role and significance of core competences not only in offering competitive advantage, but also in providing the foundation upon which strategies are based,
  - c) the role and significance of corporate mission/vision statements in success.
7. Help participants craft and implement strategy, given a number of alternative strategic options (choices include: in which areas should we diversify, in which products/services should we expand, how we are going to implement this expansion, are we going to acquire, merge, or form an alliance with another business).
8. Develop understanding on how to build and sustain competitive advantage
9. Realize what type of structure, systems, people, a company needs to successfully implement a chosen strategy.
10. To spot and discuss the most common strategy mistakes taking place, and to offer participants ideas as to how to avoid them.

## Course Outline

**The course comprises of the following modules:**

1. How to analyze the external environment of the company: (Structural Analysis of Industries-5 Forces, Strategic Groups, Scenario Planning, PESTEL Analysis)
2. How to exploit and build resources and capabilities needed to achieve, maintain and improve the firms market positioning (strategy as the creation of dynamic capabilities, Value Chain, Organizational Culture)
3. How to direct the company into the future (mission/vision/strategic intent)
4. How to make a strategic choice, given a number of alternative strategic options (choices include: in which areas should we diversify, in which

products/services should we expand, how we are going to implement this expansion, are we going to acquire, merge, form an alliance with another business).

5. How to build and sustain competitive advantage (Porter's Generic Competitive Strategies, Value Disciplines, Strategy Clock)

6. What type of structure, systems, people, does a company need to successfully implement a chosen strategy (McKinsey's 7S's).

7. The course will provide frameworks for identifying the challenges of different competitive environments. We will give you some analytical approaches that are useful to widely different strategic problems. Our final aim is to help you understand how to build a strategically responsive organization by tuning systems, structures and people to strategy, and how to effectively manage the process of strategizing.

### **Assessment Methods**

Final written exam and group case studies

### **Reading List**

- **Johnson, G., R. Whittington, K. Scholes, D. Angwin, and P. Renger, Exploring Strategy Pearson, 11<sup>th</sup> Edition, 2017.**
- **Hill, C., G. Jones and M.A. Schilling, Strategic Management Theory, Cengage Learning, 11<sup>th</sup> edition, 2015.**
- **Thompson, A.A., M.A. Peteraf, J.E. Gamble and A.J. Strickland III, Crafting and Executing Strategy: Concepts and Readings, 20<sup>th</sup> edition, McGraw-Hill, 2016.**
- **Hitt, M.A., R.D. Ireland and R.E. Hoskisson, Strategic Management: Competitiveness and Globalization, Cengage Learning, 12<sup>th</sup> edition, 2017.**

## Cost and Management Accounting

**Instructor:** Sotiris Karatzimas

6 ECTS credits, Level: Intermediate progressing to advanced

### Communication with the Instructor

[skaratzimas@aueb.gr](mailto:skaratzimas@aueb.gr)

### Course Objectives – Content

#### Learning Objectives

Upon successful completion of the course, the students will be able to understand the:

1. content of cost accounting,
2. concepts and categories of cost,
3. determinants of production cost (raw materials, direct labor and overheads),
4. costing systems (traditional costing and activity-based costing),
5. costing methods (job order costing and process costing),
6. costing techniques (absorption costing, variable costing and standard costing),
7. allocation and reallocation of overheads,
8. cost-volume-profit analysis, and
9. costing of joint products and by-products.

#### Course Structure

The structure of the course includes the following sections:

1. Product Costing Systems: Concepts and Design Issues (Chapter 2)
2. Cost Accumulation for Job Shop and Batch Production Operations (Chapter 3)
3. Activity-Based Costing Systems (Chapter 4)
4. Process Costing Systems (Chapter 8)
5. Joint Process Costing (Chapter 9)
6. Managing and Allocating Support-Service Costs (Chapter 10)
7. Financial and Cost-Volume-Profit Models (Chapter 12)
8. Standard Costing, Variance Analysis and Kaizen Costing (Chapter 16)

**Course Assessment**

Final two-hour written examination comprising exercises and case studies.

**Bibliography**

Course Textbook

Hilton, Maher and Selto (2008), "Cost Management: Strategies for Business Decisions", Fourth Edition, McGraw-Hill. (You may borrow copies of the book from the school's library).

# Financial Statement Analysis

**Instructor:** Konstantinos Chalevas

6 ECTS credits

**Communication with the Instructor**

[chaleas@aueb.gr](mailto:chaleas@aueb.gr)

## Course Content

This course introduces and develops a framework for business analysis and valuation using financial statement data. Four key components of effective financial statement analysis are discussed:

- ❖ Business Strategy Analysis
  - Industry Analysis
  - Competitive Strategy Analysis
  - Corporate Strategy Analysis
- ❖ Overview /Implementing Accounting Analysis
  - Factors Influencing Accounting Quality
  - Steps in Accounting Analysis
  - Accounting Analysis Pitfalls
- ❖ Financial Analysis
  - Ratio Analysis
  - Cash Flow Analysis
- ❖ Prospective Analysis: Forecasting-Valuation Implementation
  - Defining Value for Shareholders
  - The Discounted Cash Flow model
  - The Discounted Abnormal Earnings Valuation model

Cases are used in course projects and will be assigned to student teams. Additional reading on research papers is required.

## Recommended Reading Material

Business Analysis and Valuation : IFRS Edition (4th edition)

Healy P, Palepu G., Peek E.

# Behavioral Finance (Reading course)

**Instructor:** Spyros Spyrou

6 ECTS credits

## **Communication with the Instructor**

[sspyrou@aueb.gr](mailto:sspyrou@aueb.gr)

Traditional economics and finance is developed on the assumption of a rational utility maximizing economic agent. Recent empirical evidence, however, suggests that real people behave differently than assumed. This module reviews the literature on cognitive psychology as regards to human and investor behaviour and contrasts this with the behavior that is expected from traditional models. We discuss Prospect Theory (PT), i.e. a theory alternative to Expected Utility Theory (EUT), and show that many empirical phenomena that are considered as 'anomalies' by traditional finance can be explained within this framework. The module also discusses empirical findings on various related issues such as herding behaviour, measures of herding, investor overreaction and under-reaction, measurement of investor sentiment, mental accounting, overconfidence, the house-money effect, the dividend puzzle, the equity premium puzzle, the closed-end fund puzzle, among others.

## **The main aims of the module are:**

- To help you understand the most important issues in Behavioral Finance
- To provide an opportunity for the critical evaluation of recent empirical studies and empirical findings in the area
- To examine phenomena that affect investment decisions / behavior
- To discuss behavioral explanations of observed capital market inefficiencies

## **Course Outline:**

- Prospect Theory
- Heuristics / Investor Biases
- Overconfidence
- Empirical Puzzles and Behavioral Explanations
- Over-reaction / Under-reaction
- Herding Behavior in Financial Markets
- Investor Sentiment: Measurement & Empirical Evidence
- Behavioral Finance Theories
- Empirical Findings

## **Methods of Assessment**

A 3000 to 4000 word essay (see eclass for suggested essay questions etc)



## **Suggested Reading:**

### **A. Suggested Textbooks / Reading / Lecture Notes**

- Lecture notes / slides
- Academic papers as suggested in lectures
- Barberis, Nicholas, and Richard Thaler, 2003. "A survey of behavioral finance." in G. Constantinides, M. Harris, and R. Stulz (editors) *Handbook of the Economics of Finance* North-Holland, Amsterdam.
- Forbes, W. (2009). Behavioral Finance, John Willey & Sons Ltd.
- Kahneman, D., Slovic, P. and Tversky, A. (eds.) (1982), Judgment under Uncertainty: Heuristics and Biases, Cambridge University Press, New York.
- Kahneman, D. and Tversky, A. (eds.) (2000), Choices, Values, and Frames, Russell Sage Foundation and Cambridge University Press, New York.
- Shefrin, H. (2002). Beyond greed and fear: Understanding behavioral finance and the psychology of investing, Oxford University Press

### **B. Suggested Articles**

- Antoniou, A., Galariotis, E. and Spyrou, S., (2006), Short-term contrarian strategies in the London Stock Exchange: Are they profitable? Which factors affect them?, *Journal of Business Finance & Accounting*, 33, 839-867
- Barberis, N., Shleifer, A., & Vishny, R., 1998. A model of investor sentiment. *Journal of Financial Economics* 49, 307–343.
- Baddeley, M., 2010. Herding, social influence and economic decision-making: socio-psychological and neuroscientific analyses. *Philosophical Transactions, The Royal Society B* 365, 281–290.
- Bikhchandani, S., Sharma, S., 2000. Herd Behavior in Financial Markets. *IMF Staff Papers* 47, 279–310.
- Benartzi, S. and Thaler, R., (2001), Naïve diversification strategies in defined contribution savings plans, *American Economic Review*, 91, 79-98.
- De Bondt, W.F.M., and Thaler, R.H. (1985), Does the Stock Market Overreact? *Journal of Finance*, 40, 793–808.
- Chiang, T., Zheng, D., 2010. An empirical analysis of herd behaviour in global stock markets? *Journal of Banking and Finance* 34, 1911–1921.
- Galariotis, E., Rong, W., & Spyrou, S. (2015). Herding on fundamental information: A comparative study. *Journal of Banking and Finance*, 50, 589-598.
- Grinblatt, M., Titman, S., Wermers, R., 1995. Momentum Investment Strategies, Portfolio Performance, and Herding: A Study of Mutual Fund Behavior. *The American Economic Review* 85, 1088–1105.
- Kahneman, D. and Tversky, A., (1984), Choices, Values and Frames, *American Psychologist*, 39, 341–50.
- Kahneman, D. and A. Tversky, (1979) "Prospect Theory: An Analysis of Decision Making Under Risk," *Econometrica*
- Porter, D. P., and Smith, V., (2003), Stock market bubbles in the laboratory, *Journal of Behavioral finance*, 4, 7-21.
- Ritter, J. R. (2003), Behavioral finance, *Pacific-Basin Finance Journal*, 11, 429-437.

- Shefrin, H. & Statman, M., (2003), The contributions of Daniel Kahneman and Amos Tversky, *The Journal of Behavioral Finance*, 4, 54-58.
- Spyrou, S., 2013. Herding in Financial Markets: A Review of the Literature. *Review of Behavioral Finance* 5, 175-194.
- Other articles as indicated in Lectures.

## Retail Sales Promotions

**Instructor:** Paris Argouslidis

6 ECTS credits

**Communication with the Instructor**

[pargousl@aueb.gr](mailto:pargousl@aueb.gr)

### Course Description and Content

The present course includes 13 4-hour lectures on sales promotions in the sector of retailing. Such promotions can be initiated by manufacturers of consumer products, by retailers or by both of them. The topics to be covered are as follows:

- Fundamentals of retail sales promotions.
- Alternative methods of retail promotions (e.g., price discounts; bonus packs; price bundling; multiple unit pricing; simple coupons; cross-coupons; samples; reward schemes).
- General conditions leading to retail sales promotion campaigns.
- Design and implementation of retail sales promotion campaigns.
- Issues relating to a product's post-promotion period (e.g. what should manufacturers and retailers expect by the end of a product's promotional period?).

### Course Delivery

Lectures will be based on findings from empirical research published in premier journal outlets, on practical examples and on illustrations of sales promotion programs in retail stores. During lectures students will be asked to actively participate in the discussion. Students will get electronic access to the theoretical material that will be covered during lectures. Specifically, before each lecture the corresponding slides will be uploaded on e-class and students will have register in order to get access and print them out. It is important to note, however, that class attendance is particularly important because it will include additional material (e.g. cases studies, visual illustrations) that will not appear on e-class.

## **Course Assessment**

The course will be evaluated as follows.

First, students will be asked to deliver a power point presentation regarding the design and the implementation of a retail sales promotion campaign. Depending on class size, the assignment will be a group or an individual one (weight: 30% of the final mark).

Second, students will take a written exam at the end of the semester (weight: 70% of the final mark).

## **Key Benefits**

Students attending this course will likely get a job with a manufacturer of consumer goods (e.g. grocery or durables) or with a domestic or global retailer. It is, therefore, of particular importance to acquire knowledge about retail sales promotion techniques. By combining empirical evidence with practical illustrations and case studies, this course aims at offering students a thorough understanding of the nature, content and context of retail sales promotions. In particular, by completion of the course, students will be able to know:

1. fundamentals of sales promotions,
2. alternative methods of sales promotions,
3. conditions justifying a sales promotions campaign,
4. issues relating to the design, implementation, and post-promotion evaluation of sales promotion campaigns,
5. price promotions for perishable grocery products,
6. price promotions for more highly-priced durable products.

## **Key References**

Ailawadi K.L., Gedenk K., Lutzky, C., and Neslin S.A. (2007), 'Decomposition of the sales impact of promotion-induced stockpiling', *Journal of Marketing*, 44 (August), pp. 450-467.

Chen, H.A., Marmorstein, H., Tsiros, M., and Rao, A.R., (2012), 'When more is less: the impact of base value neglect on consumer preferences for bonus packs over price discounts', *Journal of Marketing*, 76 (July), pp. 64-77.

DelVecchio D., Krishnan S., and Smith D.C. (2007), 'Cents or percent? The effects of promotion framing on price expectations and choice,' *Journal of Marketing*, 71 (July), pp. 158-170.

Laran, J. and Tsiros, M. (2013), 'An investigation of the effectiveness of uncertainty in marketing promotions involving free-gifts', *Journal of Marketing*, 77 (March), pp. 112-123.

Liu Y. (2007), 'The long-term impact of loyalty programs on consumer purchase behaviour and loyalty', *Journal of Marketing*, 71 (October), pp. 19-35.

Ramanathan S. And Dhar S.K. (2010), 'The effect of sales promotions on the size and the composition of the shopping basket: regulatory compatibility from the framing and temporal restrictions', *Journal of Marketing Research*, 47 (June), pp. 542-552.

Tsiros M. and Heilman C. M. (2005), 'The effects of expiration dates and perceived risk on purchasing behaviour in grocery store perishable categories', *Journal of Marketing*, 69 (April), pp. 114-129.

Tsiros M. and Hardesty D. M. (2010), 'Ending a price promotion: retracting it on one step or phasing it out gradually', *Journal of Marketing*, 74 (January), pp. 49-64.

# Consumer Behavior

**Instructor:** Kallpso Karantinou

Level: Advanced

6 ECTS Credits

## **Communication with the Instructor**

[kkarantinou@aueb.gr](mailto:kkarantinou@aueb.gr)

## **Course Objectives**

Understanding consumer behaviour is critical for marketing. The study of consumption focuses on search, choice, acquisition and consumption activities and on how possessions influence the way we feel about ourselves and about each other. It is concerned with a variety of consumer buying and having behaviours, which most of us experience. The course analyzes these experiences, using consumer behaviour theory, and provides application of theory and concepts via practical examples. The aim is to provide students with an understanding of the process and nature of consumer behaviour, to acquaint them with the factors which influence consumer behaviour at different stages of the consumption process, and to contextualize this understanding of consumer behaviour within marketing, so as to enable them to appreciate how a solid understanding of the intricacies of consumer behaviour paves the way for optimum marketing practices.

## **Learning Outcomes**

At the end of the course students should have developed a comprehensive understanding of the omnipresence, the process and the nature of consumer behaviour. They should be able to identify and assess the various psychological, economic and sociological factors that influence consumer behaviour at different stages of the consumption process and comprehend how consumer behaviour can be understood and explained by the underpinning disciplines of psychology, social psychology and behavioural economics. They should be able to discuss and criticize the assumptions that underlie the consumer behaviour theories and appreciate the links between consumer behaviour and marketing theory and practice.

## **Syllabus Outline**

- Marketing Applications of Consumer Research
- Modeling Consumer Decision Processes
- Pre-and Post-purchase Processes: Searching, Shopping, Buying, Evaluating and Disposing
- The Shopping Experience and Retail Theming

- Consumers as individuals: What Motivates them to Buy and How Cognitive Processes Operate
- Social and Cultural Influences on Consumer Behavior: Group Influences, Lifestyle and Culture
- Self Concept and Self Monitoring
- Symbolic Consumption and the Meaning of Possessions
  
- Perceived Risk: Types and Implications
- Innovativeness, Diffusion of Innovations and New Product Development
- Idealized Images in Advertising and Social Comparison Theory
- Ethics and Social Marketing
  
- Choice Architecture and Nudges: Subtle but Powerful Influencers of People's Decisions and Choices
- Consumerism and Public Policy Issues

### **Teaching and Learning Methods and Style**

Sessions will combine lecture style delivery with case studies, practical examples and extensive discussions of the application of theories in a variety of different sectors and situations. Student participation is particularly encouraged and facilitated. Case studies and readings will be provided every week to facilitate understanding of the practical relevance of theoretical concepts and students will be asked to work on them individually or in groups. Students will also work on practical projects enabling them to apply models and tools in practice.

### **Recommended Reading Material**

Readings and case studies will be uploaded onto e-class every week, pertaining to each lecture, illustrating the discussed concepts and their applications.

### **Assessment**

Assessment will be by a combination of:

- Examination (70%),
- Term projects (30%).
- ***Attention: Please be aware that the number of participants in the course is limited (max 50 students).***

# **Change Management**

**Instructor:** Maria Vakola

6 ECTS credits

Level: Advanced

**Communication with the Instructor**

[mvakola@aueb.gr](mailto:mvakola@aueb.gr)

## **General Aim and Rationale**

The concept of change is not a new one. Indeed change has always been recognized as necessary and inherent to all aspects of life. However, the last decade has, for most organizations, been a time of totally unprecedented and seemingly ever accelerating change so that the phrase "change or die" has increasing resonance. Coping with change has become another element in organizations' battle to compete, thereby focusing attention on the need to manage change effectively. The aim of this course is to provide an understanding of the change management process and to present a framework for managing change in order for the participants to further explore advanced issues related to change management such as leadership, resistance to change, communication in a change context etc.

## **Specific Objectives**

On successfully completing the module, participants will be able to do the following.

- Present a clear view of the theory and practice of managing change.
- Demonstrate an understanding of the choices and dilemmas facing organisations.
- Explain the nature and history of the theories, approaches and beliefs available to guide their action, in order to make informed choices when instigating and implementing change.
- Demonstrate a practical understanding of organizational change, of the approaches to change and the methods of identifying, planning and implementing change.

## **Methodology**

The course is based on lectures, workshops and individual and group work . Please find below a detailed description of these scheduled meetings.



<b>Weeks</b>	<b>CONTENT</b>
1	Introduction to the course Introduction to change management
2	Selecting change agents/ Theory and team exercise
3	Culture change: Case study
4	Workshop: Identify success or failure factors in a culture change context
5	The role of culture in mergers and acquisitions
6	Resistance to change
7	Workshop: Antecedents and outcomes of resistance to change
8	Leadership and change management
9	Communication and change
10	Group presentations

### **Assessment**

**Course assessment is based on a group assignment and a group presentation:**

**Group report:** In a group of 5-7 people, you try to explore a major change that took place in a European country. The aim is to collect information in order to write a case study of a major change presenting its main phases, ways of change implementation, main obstacles etc. This report counts for the 70% of your total mark.

**Group presentation:** You need to present to our group you main findings in a 10 minute presentation. This presentation counts for the 30% of your total mark. More information will be given in the first lecture.

### **Reading**

Change is a broad subject and therefore students need to invest on searching and collecting materials from the library. Students will have access to e-class where there is recommended reading list.

# Marketing of Services

**Instructor:** Kalipso Karantinou

6 ECTS credits

Level: Advanced

## **Communication with the Instructor**

[kkarantinou@aueb.gr](mailto:kkarantinou@aueb.gr)

## **Course Objectives**

The service sector is the dominant driving economic force worldwide and marketing and management practices in this field are evolving rapidly. There is as a result an increasing academic and business interest in the service sector, where the manufacturing-based models of business and marketing practice are not always useful, relevant and appropriate. Service organizations differ in many important respects, posing a number of interesting challenges to managers, and thus requiring a distinctive approach to the development of marketing strategies. This course aims to provide the students with an extensive understanding of the distinguishing characteristics of services and their implications and to acquaint students with services marketing theories, models, applications, and best practices, as ways to deal effectively with the unique challenges in services.

## **Learning Outcomes**

At the end of the course students should have developed a comprehensive understanding of the distinguishing characteristics of services, an appreciation of their multifaceted implications, and a resulting insight into the challenges of managing and marketing services. They should be able to identify optimal strategies for services and know how to implement them.

## **Course Content**

- The Uniqueness and Characteristics of Services
- Managerial Implications and Challenges in Marketing Services
- Service Quality - Customer Care - Service Excellence
- Creating and Sustaining Competitive Advantages in Services
- Service Positioning and Branding
- Communicating an Offering the Customer Cannot See
- The Role of People in Services
- Internal Marketing in Services
- Loyalty and Relationship Development in Services

- The Importance of Physical Evidence in Services
- Developing Servicescapes
- Using Process as a Distinguishing Advantage in Services
- Blueprinting and Customer Journey Mapping
- Pricing for Optimal Yield and Demand Management

### **Teaching and Learning Methods and Style**

Sessions will combine lecture style delivery with case studies, practical examples and extensive discussions of the application of theories in a variety of different sectors and situations. Student participation is particularly encouraged and facilitated. Case studies will be provided every week to facilitate understanding of the practical relevance of theoretical concepts and students will be asked to work on them individually or in groups. Students will also work on five practical projects enabling them to apply models and tools in practice.

### **Reading Material**

Readings and case studies will be uploaded onto e-class every week, pertaining to each lecture, illustrating the discussed concepts and their applications.

### **Assessment**

Assessment will be by a combination of:

- Examination (70%),
- Projects (30%).

# Human Resource Management

**Instructor:** Leda Panayotopoulou

6 ECTS credits

Level: Intermediate

## **Communication with the Instructor**

[ledapan@aueb.gr](mailto:ledapan@aueb.gr)

## **Aims**

This course aims at familiarizing students with the theoretical background of Human Resource Management. The subjects covered throughout the lectures will introduce students to the current way of managing employees in modern organizations. More specifically, after the completion of the course, the participants will be able to understand:

- The important role of HRM in supporting organizational strategy in the modern firm.
- HRM practices and current trends.
- Issues in international HRM

## **Course Outline**

The course covers the following areas of HRM:

- The Nature of HRM - Strategic HRM
- Staffing: HR planning, Recruitment, Selection
- Performance Management
- Learning and Development
- Rewards and Incentives
- International Dimension

The main textbook of the course is: *Human Resource Management*, by Torrington, Hall & Taylor, Prentice Hall.

## **Teaching Method**

- Interactive lecture enriched with case studies and group discussions.

## **Assessment of the Course**

- Class participation
- Individual and group assignments
- Written exam

# **SCHOOL OF ECONOMIC SCIENCES**

**DEPARTMENT OF INTERNATIONAL AND EUROPEAN ECONOMIC  
STUDIES**  
**FALL SEMESTER**

## **International Economics**

**Instructors:** Panagiotis Hatzipanayiotou, Dimitris Christopoulos

6 ECTS credits, Intermediate Level

### **Communication with the Instructor**

[hatzip@aueb.gr](mailto:hatzip@aueb.gr)

### **Course Description**

#### **International Trade: Theory and Policy**

Presentation of the current theoretical and policy developments in the literature of International Trade: Absolute and comparative advantage in international trade; International trade and income distribution; Factor endowments and international trade; International trade and international factor movements; International trade in imperfectly competitive markets; Instruments and the political economy of international trade policy; Preferential trading agreements and the theory of economic integration.

#### **International Monetary Relations: Theory and Policy**

Presentation of the current theoretical and policy developments in the literature of International Monetary Relations: Exchange Rates and open economy macroeconomics; Exchange rate systems and exchange rate crises, Effectiveness of international macroeconomic policy; International monetary system.

# Economics of Globalization

**Instructor:** Thomas Moutos

6 ECTS credits, Advanced Level (4th year course)

## Communication with the Instructor

[tmoutos@aueb.gr](mailto:tmoutos@aueb.gr)

## Course Objective

The purpose of this course is to examine the forces that have shaped the evolution of the world economy during the last two centuries (with special emphasis on developments after World War II), and to study the consequences for national and individual welfare of the increased pace of worldwide economic integration.

## Course Content

1. A Brief Historical Overview of the World Economy
2. International Trade in Goods
  - (a) Effects on National Welfare
  - (b) Distributional Implications
3. The Effects of Preferential Liberalization
4. Economic Integration, Labour Markets and Migration
5. Outsourcing
6. Capital Movements and Exchange Rate Regimes
  - (a) Fixed Exchange Rates
  - (b) Flexible Exchange Rates
  - (c) Monetary Unions

## Recommended Prerequisite Knowledge

Intermediate-level knowledge of International Economics such as presented in Robert Feenstra and Alan Taylor, 2008, International Economics, Worth

## Recommended Books on Globalization

Dani Rodrik, 1997, Has Globalization Gone too Far?, Peterson Institute

Joseph Stiglitz, 2003, Globalization and Its Discontents, Norton

Jeffrey Frieden, 2006, Global Capitalism: Its Fall and Rise in the 20th Century, Norton

Dani Rodrik, 2011, The Globalization Paradox: Democracy and the Future of the World Economy, Norton

Additional reading of (mainly) journal articles will be provided after the first lecture.

### **Course Evaluation**

The overall evaluation in this course is based on the following items:

1. Comprehensive Final Exam (50% of the final grade) covering all the units and topics presented in the lectures.
2. Students will have to work on a project (approximately 5000 words), to do in-class presentation (30 minutes), and to deliver the essay to their discussant a week prior to their presentation (35% of the final grade).
3. Students will have to write a comment on another student's project (maximum 1000 words) and to present it in class (15% of the final grade).



# Legal Aspects of European Integration

**Instructor:** A. Pliakos

6 ECTS credits Level: advanced

**Communication with the Instructor**

[pliakos@aueb.gr](mailto:pliakos@aueb.gr)

## **Course Objective**

The aim of the course is to analyze the most fundamental aspects of the process of European integration. Its objective is to provide an overview of the basic EU institutional and Economic law issues. It will help students understand how EU law can facilitate the process of the European Integration and promote or impede business transactions taking place at the European as well national level.

## **Course Outline**

1. The History of European Integration
2. The Creation of the European Communities
3. The Creation of the European Union
4. EU Institutions
5. EU Decision Making System
6. The Protection of Fundamental Rights
7. The Citizenship of the European Union
8. EU-Member States: the Principles
9. The Internal Market of the EU
10. Economic and Monetary Union
11. EU Competition Policy
12. EU Social Policy
13. Freedom, Security and Justice
14. External action by the EU

## **Course material**

EU Law, Chalmers/Davies/Monti, 2015 (CUP)

EU Law, R. Schütze, 2015 (CUP)

## **SPRING SEMESTER**

# **Empirical Economics**

**Instructor:** Panagiotis Konstantinou

6 ECTS credits

### **Communication with the Instructor**

[pkonstantinou@aueb.gr](mailto:pkonstantinou@aueb.gr)

### **Course Objective**

The course is an introduction to practical problems of applied econometrics. The approach followed will be very practical, emphasizing the empirical aspects of economic problems. This requires a good knowledge of econometric theory as it is essential to have a good idea of what the computer does, when asked to estimate and evaluate a model. Each section will begin with a presentation of the main theoretical econometric results that are required, followed by an economic/financial problem of interest and concluded with empirical applications. The analysis of the issues will be performed using real data.

### **Learning Outcomes**

The aim of the course is to acquaint students with the basic methodological tools of modern empirical analysis, providing a comprehensive background. Upon successful completion of the course students will be able to:

- Understand and analyze the fundamental problems associated with empirical analysis of financial problems.
- Collect data suitable for empirical research and evaluate empirical models.
- Understand the concept of causality and how the causal effect of a variable can be calculated experimentally.
- Estimate linear regression models.
- Estimate and evaluate discrete choice models and use them for classification.
- Use instrumental variable techniques to estimate causal effects of interest

- Estimate models with panel data or repeated cross-sections, and use these in policy analyses

### **Course Content**

- Understanding cause and effect in Economics
- Review of the simple and multiple regression model
- Pooled Cross Sections and Panel Data Models (DID methodology)
- Instrumental Variables Regression and Systems of Equations
- Models with binary dependent variables and classification
- Other limited dependent variable models (Tobit, Poisson)

### **Delivery Method**

- Lectures followed by computer sessions to get a hands-on experience with the use of R

### **Evaluation**

- Final Written Exam (40%)
- Projects and Assignments (60%)

### **Level**

Intermediate level, appropriate mainly for third year students of economics or related subjects.

### **Recommended Prerequisite Knowledge**

Introductory econometrics (basic linear model and deviations from classical assumptions).

### **Textbooks**

Wooldridge, J. M. (2018) *Introduction to Econometrics: A Modern Approach*, 7<sup>th</sup> ed, Cengage

Stock, J. H. and Watson, M. W. (2019) *Introduction to Econometrics*, 4<sup>th</sup> ed, Pearson Education.

### **Other Material**

Angrist, J. and Pischke, J.-S. (2014) *Mastering 'Metrics. The Path from Cause to Effect*. Princeton University Press

Angrist, J. D. and Pischke, J.-S. (2009) *Mostly Harmless Econometrics: An Empiricist's companion*, Princeton University Press.

Greene, W. H. (2018) *Econometric Analysis*, 8<sup>th</sup> ed, Pearson

Kleiber, C. and Zeileis, A. (2008) *Applied Econometrics with R*, Springer

Hanck, C., Arnold, M., Gerber, A. and Schmelzer, M. (2020) Introduction to Econometrics with R, <https://www.econometrics-with-r.org>

Heiss, F. (2020) *Using R for Introductory Econometrics*, <http://www.urfie.net>

## **Labour Economics**

**Instructor:** E. Hatziharitou

6 ECTS credits, Intermediate Level (3<sup>rd</sup> year course)

Semester: Fall semester (5<sup>th</sup> semester)

### **Communication with the Instructor**

[ehatzi@aueb.gr](mailto:ehatzi@aueb.gr)

### **Objectives of the course:**

Upon completion of the course , students will be able to understand why it is so important to study LABOUR ECONOMICS. So we emphasize first the main economic and institutional characteristics of the labour market and how this market is related to the other markets and the whole economy. It is very important to understand that demand and supply forces play an important role to the labour market as to the whole economy .The whole course use both static and dynamic analysis as we are living in a very changeable environment and all economic agents react and adapt to these changes all over time.

### **Course Contents:**

#### **(1) Introduction**

- . Why it is so important to study Labour Economics ?
- . Which are the main questions we will try to answer in this course ?
- . Static versus dynamic analysis .

#### **(2) Labour Market**

- . The economic and institutional factors of the labour market.
- . The relation of the labour market with the other markets of an economy.
- . The role of labour resource in the productive procedure .
- . The analysis of labour market at local , regional , national , European and inter- national level .

- . The main determinants of the size of the labour force and its quality ( the investment in human capital ) .
- . Labour market flexibility . Advantages and disadvantages.
- . Labour market statistics and their comparability over time and between countries
- . EUROSTAT labour market statistics for all the member countries.

### **( 3 ) Industrial Relation System**

- . Industrial relation system and labour market .
- . Industrial relation system and working terms determination .
- . Which is the best ? Centralized or decentralized industrial relation system ?

### **( 4 ) Quantified Aspect of Labour Supply**

- . Static and dynamic analysis of individual and total labour supply .
- . Income and substitution effect .
- . The elasticity of labour supply .
- . Income tax and labour supply .
- . Labour market participation cost and labour supply .
- . Unemployment and labour supply .
- . The role of family income in each member labour supply .
- . Gary Becker analysis of the allocation of time .

### **( 5 ) Qualified Aspect of Labour Supply: (A)Labour Mobility**

- . Occupational and geographical mobility .
- . Economic and non- economic incentives and disincentives .
- . Unemployment and labour mobility .

### **( 6 ) Qualified Aspect of Labour Supply:(B) Education ,Training and Research**

- . Investment in human capital theory .
- . Education , training and experience as an investment in human capital .
- . Training on the job .

### **( 7 ) Labour Demand**

- . The short-run and long-run demand for labour under competitive or non-competitive conditions in the product market .
- . The elasticity of labour demand .
- . Its importance.
- . The main determinants of labour demand elasticity.
- . Which factors shift the labour demand curve ?

### **( 8 ) Wage and Employment Determination**

- . Under perfect competitive conditions in product and labour market.
- . In monopolistic product market.
- . In monopsonistic labour market.
- . Bilateral monopoly.

### **( 9 ) Labour Unions and Collective Bargaining**

- . The economic impact of unions.
- . The bargaining power of both parties of negotiation.
- . The determining factors of bargaining power.

### **( 10 ) Wage Structure**

- . The main sources of wage differentials.
- . Heterogeneous jobs, heterogeneous workers, market imperfections.
- . Hedonic theory of wages.

### **( 11 ) Labour Market Discrimination**

- . Types of discrimination.
- . Theories of labour market discrimination.

### **( 12 ) Employment and Unemployment**

- . Theoretical and empirical analysis.
- . European Union countries comparison.

- **Prerequisites and co-requisites**

N.A.

- **Recommended optional or not optional practical assignments**

All the Erasmus students have the obligation / or not to write and present an essay

Under the supervision of their professor

- **Assessment methods and criteria**

The course grade will be based on written exams and an optional group or individual

assignment

**TEXT BOOKS IN LABOUR ECONOMICS**

- 1 )** C. Mc CONNELL and S. BRUE, " CONTEMPORARY LABOUR ECONOMICS ", 4th ed. (1995) Mc Graw - Hill
- 2)** C. McCONNELL , S. BRUE and D. MACPHERSON, " CONTEMPORARY LABOUR ECONOMICS", 9 th ed. (2009) McGraw - Hill
- 3)** O. ASHENFELTER and R . LAYARD, " HANDBOOK OF LABOR ECONOMICS ", Vol. I , II, (1986) North - Holland
- 4)** R. EHREBERG and R . SMITH, " MODERN LABOR ECONOMICS ", 6 th ed. (1997) Addison Welsey, 9 th ed. (2006) Pearson
- 5)** D. HAMERMESH and D. REES, " THE ECONOMICS OF WORK AND PAY ", 5 th ed. (1993) Harper Collins Publisher
- 6)** R. EHREBERG and R . SMITH, " MODERN LABOR ECONOMICS :THEORY AND PUBLIC POLICY", 12 th ed. (2017) Ronald G.
- 7)** GEORGEJ. BORGJAS, " LABOUR ECONOMICS " ,6th ed. Mac-Graw Hill.
- 8)** A. BOOTH, "THE ECONOMICS OF THE TRADE UNION " , 1995 , Cabridge University Press

# Theory and Practice of Economic Integration

**Instructor:** E. Hatziharitou

6 ECTS credits, Advanced Level (4<sup>th</sup> year course)

Semester: Fall and Spring semester (7<sup>th</sup> and 8<sup>th</sup> semester)

## Communication with the Instructor

[ehatzi@aueb.gr](mailto:ehatzi@aueb.gr)

## Objectives of the course:

Upon completion of the course, students will be able to understand the main objectives of the European Union and the way to achieve these objectives as the member countries have different economic and institutional characteristics. It is also very important to understand completely the stages and policies of economic and monetary integration. Using cost-benefit analysis we can derive the main conclusions about the behaviour of each member country after the experience of various shocks and see which country with which characteristics (both economic and institutional) manage to be in the Optimum Currency Area Zone. In these countries the economic integration leads to economic convergence over time.

## Course Contents:

### PART I

Introduction ,Historical References and the Main Purpose of this course

( a ) The Treaty of Rome

( b ) The stages of Economic and Monetary Integration

( c ) The main objectives of the EU and the way to achieve these objectives

( d ) The role of : mutual recognition , cooperation , coordination and harmonization .

( e ) Which countries , with which characteristics ( economic and non-economic ) managed to be in the "Optimum Currency Area Zone " ?

( f ) How this was achieved during the process of Economic and Monetary Integration ?

### PART II

The Structure Policy of the European Union, its Instruments and its Targets

( a ) European Social Fund and European Social Policy



( b ) European Agricultural Fund

(c) European Fund of Regional Development and Regional Economic Policy

(d) Cohesion fund

(e) The Budget of the EU

### **PART III**

The Creation of the Unified Internal market

(a) Economic Integration and its forms

(b) Partial and general equilibrium analysis of the custom duties effects

(c) The welfare effects of custom duties, quotas and subsidies

(d) The theory of custom union's and its effects. A partial and general equilibrium analysis

(e) Free Trade Area Agreement and the comparison with custom union

(f) Fiscal unions and tax harmonization

(g) Excise tax harmonization

### **PART IV**

Historical Reference of the Monetary Union : From the European Monetary System to the Economic and Monetary Union and the Common Currency , EURO

( a ) The system of the ECU

( b ) The Single European Act

( c ) The Criteria of Maastricht

( d ) The Three Stages of the Monetary union

( e ) The Euro : The mechanism of the Unique Money

### **PART V**

The Theory of Monetary Integration

( a ) The Theory of " Optimum Currency Areas "

( b ) The criticism of " Optimum Currency Areas Theory " over time : symmetric or asymmetric shocks ?

( c ) The benefits of a common currency

(d) The comparison between costs and benefits : static and dynamic analysis

( e ) The European Monetary System and its imperfections

f) Case studies comparing EU member countries and third countries

## **PART VI**

The Implementation of the Central Banks European System

( a ) The European System of Central Banks

( b ) The European Central Bank

( c ) The Policy of the European Central Bank

## **PART VII**

The Economic and Financial Crisis

( a ) How the EU member countries were affected and why ?

( b ) Which were the policies followed during the crisis ?

( c ) Which will be the new rules and policies of the EU after the experience of the shocks created during the Economic and Financial crisis ?

### **• Prerequisites and co-requisites**

N.A.

### **• Recommended optional or not optional practical assignments**

All the Erasmus students have the obligation / or not to write and present an essay under the supervision of their professor

### **• Assessment methods and criteria**

The course grade will be based on written exams and an optional group or individual assignment

## **TEXT BOOKS IN THEORY AND PRACTICE OF ECONOMIC INTEGRATION**

- 1) T. HITIRIS , “ EUROPEAN UNION ECONOMICS ” 5<sup>th</sup> ed. (2002) and 6<sup>th</sup> ed.(2012)Prentice Hall
- 2) P. KRUGMAN and M. OBSTFELD , “ INTERNATIONAL ECONOMICS : THEORY AND POLICY ”, 2<sup>nd</sup> ed. (1991) Harper Collins College, 8<sup>th</sup> ed. (2009) Addison – Wesley Pearson
- 3) P. ROBSON , “THE ECONOMICS OF INTERNATIONAL INTEGRATION ”, 3<sup>rd</sup> ed. (1987) George Allen & Unwin, 4<sup>th</sup> ed. (1998) Routledge Chapman & Hall
- 4) PAUL DE GRAUWE , “THE ECONOMICS OF MONETARY INTEGRATION ”, 3<sup>rd</sup> (1997)and 7<sup>th</sup> (2007) ed. Oxford University Press

# Principles of Sociology

**Instructor:** TBA

6 ECTS credits, Introductory level, (2<sup>nd</sup> year course)

## **Course Objectives**

The course aims to introduce students to the science of Sociology and, specifically, to acquaint them with basic concepts, analytical tools and research methods. The presentation of classic and modern sociological theories and perspectives, fundamental sociological concepts (social structure, action, organization, social reproduction/transformation, social facts, social interaction, culture, stratification and social class, social inequalities etc.), and of quantitative and qualitative research methods purports to equip students with the proper knowledge and analytical skills that will enable them to approach, analyze, understand and interpret critically the social, cultural, economic, political processes and dimensions of our contemporary –complex, globalized, and rapidly changing– social world(s).

## **Course Contents**

Session 1. Introduction to Sociology

Session 2. Founders of Sociology: The development of French, German, British and Italian Sociology

Session 3. Modern Sociological Theories: Functionalism, Conflict Theory, Symbolic Interactionism

Session 4. Sociological Research Methods: Quantitative and qualitative research methods

Session 5. Culture, Social Structure and Socialization

Session 6. Stratification, Social Class and Inequalities

Session 7. Gender, Race and Ethnicity: Social discrimination, exclusion and inequalities

Session 8. Political Sociology: Forms of Government and Social Movements

Session 9. Sociology of Work: The social organization of work and the experience of employment and unemployment

Session 10. Media, Popular Culture and Consumption

Session 11. Urban Sociology: Forms of urbanization in contemporary social world

Session 12. Sociology in a globalized world: Social, Cultural, Political, Ecological, Labour Changes

Session 13. Oral presentations of group assignments.

### **Mode of Delivery**

Face-to-face teaching, class discussion, group student work and oral presentations of assignments.

### **Textbook and Reading**

#### ***Main textbook:***

Anthony Giddens, *Sociology*, 6<sup>th</sup> edition, Polity Press, Cambridge: 2009.

#### ***Recommended books for further reading:***

- M. Hughes-C. J. Kroehler, *Sociology: The core*, 7<sup>th</sup> edition, The McGraw-Hill Companies, 2005
- S. Hall-B. Gieben, *Formations of Modernity*, Polity Press/Blackwell Publ., Oxford 1992
- G. Ritzer, *Modern Sociological Theory*, 7<sup>th</sup> Edition, The McGraw-Hill Companies, 2008.

\* Course participants will be informed about additional-recommended reading in every session.

### **Planned learning activities and teaching methods**

Regular three-hour Lectures per week/ Internet-based communication with students. At every lecture we will present and discuss main subject matters of Sociology, as it's referred in Course Content. We will follow largely A. Giddens' book, but we will also draw material from additional resources, in order to accomplish a more comprehensive presentation of sociological subject-areas. Students will have to join in groups of 3 or 5 individuals and to conduct a research on the same topic that will be announced to them in the first meeting. The joining of students from different countries will provide an interesting and important ground for comparative sociological research work. At the last lecture, student research teams will have to present orally their assignments. This presentation will offer the possibility for critical sociological discussion and will testify students acquired analytical skills.

### **Assessment methods and criteria**

Final written exam (80%)

Written assignment and Oral presentation of assignment (20%)

# Business Economics

**Instructor:** Fabio Antoniou

6 ECTS credits, Intermediate Level (3rd year course)

## Communication with the instructor

[fantoniou@aueb.gr](mailto:fantoniou@aueb.gr)

**Web Site:** Look at the website of this course on e-class: <http://eclass.aueb.gr>

## Course Description

Managerial (or Business) Economics is the application of economic theory to decisions made by firms. Our focus is on four topics. We start with demand theory and consumer behaviour, studying how consumers and other firms respond to price changes and thus how to decide what price to charge. We then move to production and cost theory, where we think about the most basic decisions of firms: how much to produce and what inputs to use (optimal boundaries). We then analyze pricing strategies under different market structures and the strategic world of managers (market and competitive analysis). Then we look at how firms choose (and maintain) their competitive advantage. Lastly, we look inside the firm, on how firms are organized and the way they evaluate and reward performance (optimal internal structure). Managerial economics provides a comprehensive application of economic theory and methodology to managerial decision making.

## Course Objectives

The learning objectives of the course:

- To enable students to develop the skills and to provide the opportunity to practice the study of Managerial Economics.
- To develop a critical understanding of methods, procedures and current issues and debates appropriate to the study of Managerial Economics.

By the end of the course the students should:

- have gained a knowledge and understanding of the themes, issues and debates within the study of Managerial Economics
- be able to think critically and independently about what they have seen and read
- have been introduced to the range of skills and critical vocabularies needed to facilitate the study of Managerial Economics
- gained a critical understanding of the application of the methods involved in the study of Managerial Economics

## **Textbooks and Reading**

The main textbook of the course is:

1. Besanko, D., Dranove, D., Shanley, M., Shaefer, S., Economics of Strategy, John Wiley and Sons, 5<sup>th</sup> edition, 2010.

Course participants will be given a package of additional reading in some sessions. For those interested in further reading the following books are recommended:

2. W. Bruce Allen, Neil Doherty, Keith Weigelt, and Edwin Mansfield, Managerial Economics, Norton, 7<sup>th</sup> edition, 2009.

3. Church J. and R. Ware (2000), Industrial Organization: A Strategic Approach, McGrawHill.

4. Keat, P. and Young, P., Managerial Economics, Prentice Hall, fifth edition, 2006.

5. Lazear E. and M.Gibbs, Personnel Economics in Practice, Wiley, 2<sup>nd</sup> edition, 2009.

## **Course Outline**

- i. Introduction; Theory of the Firm
- ii. Does Management matter?
- iii. Basics of Demand and Supply & consumer behaviour
- iv. Individual and Market Demand; Estimating Demand
- v. Production and Cost Theory
- vi. Profit maximization and competitive supply-optimal boundaries
- vii. Market power and pricing
- viii. Business strategy and game theory
- ix. Markets with Asymmetric Information
- x. Strategic position and dynamics
- xi. Internal organization

# Public Economics I

**Instructor:** Petros Varthalitis

6 ECTS credits, level: 3<sup>rd</sup> year course

## **Communication with the instructor**

[pvarthalitis@aueb.gr](mailto:pvarthalitis@aueb.gr)

## **Course Unit Code**

Level of course: Undergraduate

Year of study: 3<sup>RD</sup> year

## **Assessment methods and criteria**

The course grade will be based on written exams and (optional) assignments.

## **Prerequisites and co-requisites**

**Basic Microeconomics and Macroeconomics**

## **Planned learning activities and teaching methods**

**Lectures, problem sets and assignments.**

## **Objectives of the course:**

This is the basic course in public economics. Public economics focus on the role of the government in the economy by answering key questions like:

- How do government policies affect the economy?
- How should government policies be designed to maximize economic welfare?

The main objective of the course is to equip students with the basic analytical concepts, theoretical and empirical tools in public economics so as to understand the 'real-world' policy making issues faced by policymakers and applied economists in national (e.g. Government Departments, Fiscal Councils and Central Banks) and international policy institutions (e.g. IMF, OECD, European Commission).

By the end of this course students will be able to use the main analytical tools, theoretical models and empirical evidence to:

- Understand and explain issues on public finances, e.g. tax and government expenditures, budget deficits/surpluses and public debt sustainability.
- Analyze efficiency and equity concepts.
- Market failures and government intervention.
- Political economy issues, e.g. how the government make decisions.
- The effect of taxation on the economy, types of taxation, principles of optimal taxation.

Students will learn how to use and interpret modern theoretical models so as to study economic policy issues as well as to process and interpret economic data for policy analysis. Ultimately, students will acquire necessary skills and competences so as to pursue a professional career as applied economists to policy-orientated institutions.

#### **Recommended optional programme components**

N.A.

#### **Course contents**

In general, public economics is the study of economic efficiency, distribution and economic policies. Public economics attempts to understand how the government makes decisions and what decisions should make. The course will cover the following topics:

- Public Finances.
- Efficiency and Equity.
- Externalities.
- Public Goods.
- Political Economy and Democracy.



- Issues on taxation.
- Government policies in the era of COVID-19 crisis.

**Recommended or required reading**

- Gruber, Jonathan., Public Finance and Public Policy, 6th Edition, MacMillan (2019).
- Hindriks Jean and Myles D. Gareth., Intermediate Public Economics, MIT Press (2006).

Additional references and will be recommended during each lecture.

# **Theory and Practice of Economic Integration**

**Instructor:** E. Hatziharitou

6 ECTS credits, Advanced Level (4<sup>th</sup> year course)

Semester: Fall and Spring semester (7<sup>th</sup> and 8<sup>th</sup> semester)

## **Communication with the Instructor**

[ehatzi@aueb.gr](mailto:ehatzi@aueb.gr)

## **Objectives of the course:**

Upon completion of the course, students will be able to understand the main objectives of the European Union and the way to achieve these objectives as the member countries have different economic and institutional characteristics. It is also very important to understand completely the stages and policies of economic and monetary integration. Using cost-benefit analysis we can derive the main conclusions about the behaviour of each member country after the experience of various shocks and see which country with which characteristics (both economic and institutional) manage to be in the Optimum Currency Area Zone. In these countries the economic integration leads to economic convergence over time.

## **Course Contents:**

### **PART I**

Introduction ,Historical References and the Main Purpose of this course

( a ) The Treaty of Rome

( b ) The stages of Economic and Monetary Integration

( c ) The main objectives of the EU and the way to achieve these objectives

) The role of : mutual recognition , cooperation , coordination and harmonization .

( e ) Which countries , with which characteristics ( economic and non-economic ) managed to be in the "Optimum Currency Area Zone " ?

( f ) How this was achieved during the process of Economic and Monetary Integration ?

( d

### **PART II**

The Structure Policy of the European Union, its Instruments and its Targets

( a ) European Social Fund and European Social Policy

( b ) European Agricultural Fund

( c ) European Fund of Regional Development and Regional Economic Policy

( d ) Cohesion fund

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( c ) The benefits of a common currency

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## **PART VII**

The Economic and Financial Crisis

( a ) How the EU member countries were affected and why ?

( b ) Which were the policies followed during the crisis ?

( c ) Which will be the new rules and policies of the EU after the experience of the shocks created during the Economic and Financial crisis ?

### **• Prerequisites and co-requisites**

N.A.

### **• Recommended optional or not optional practical assignments**

All the Erasmus students have the obligation / or not to write and present an essay under the supervision of their professor

### **• Assessment methods and criteria**

The course grade will be based on written exams and an optional group or individual assignment

## **TEXT BOOKS IN THEORY AND PRACTICE OF ECONOMIC INTEGRATION**

**1 )** T . HITIRIS , “ EUROPEAN UNION ECONOMICS ” 5<sup>th</sup> ed. (2002) and 6<sup>th</sup> ed.(2012)Prentice Hall

**2 )** P. KRUGMAN and M. OBSTFELD , “ INTERNATIONAL ECONOMICS : THEORY AND POLICY ”, 2<sup>nd</sup> ed. (1991) Harper Collins College, 8<sup>th</sup> ed. (2009) Addison – Wesley Pearson

**3 )** P. ROBSON , “THE ECONOMICS OF INTERNATIONAL INTEGRATION ”, 3<sup>rd</sup> ed. (1987) George Allen & Unwin, 4<sup>th</sup> ed. (1998) Routledge Chapman & Hall

4 ) PAUL DE GRAUWE , "THE ECONOMICS OF MONETARY INTEGRATION " , 3<sup>rd</sup>  
(1997)and 7<sup>th</sup> (2007) ed. Oxford University Press

# Start up Entrepreneurship

**Instructor:** Ioanna Sapfo Pepelasi

**Communication with the Instructor**

[ioannasapfopepelasis@gmail.com](mailto:ioannasapfopepelasis@gmail.com)

6 ECTS credits, level: 3<sup>rd</sup> year course

## CONTENTS

1. Defining entrepreneurship and startups.
2. Startup entrepreneurship and links to economic growth
3. Basic elements of a startup ecosystem.
3. Survey of startup ecosystems : Silicon Valley, Greece, Cyprus, Israel.
3. From idea to realisation. The birth and early stages of growth of a startup.
4. Gamification for prospective startupperpers ( Business Model Canvas, Pitching)
6. Presentation of participant students' projects \*
7. In dialogue with real life startupperpers.

Requirements: (exam and project\* : startup idea development)

**SCHOOL OF INFORMATION SCIENCES  
AND  
TECHNOLOGY**

## DEPARTMENT OF INFORMATICS

Incoming Erasmus students who speak Greek may attend any of the undergraduate courses of the Department of Informatics (7 or 6 ECTS credits each); their descriptions (in Greek) can be found at:

<http://www.cs.aueb.gr/el/content/programma-spydon>.

Incoming students who speak English may also attend any of the following courses, which are offered as **reading courses**.

### **FALL SEMESTER**

## **Wireless Networks and Mobile Communications**

**Instructor:** Vasileios Siris

6 ECTS credits

### **Communication with the Instructor**

[vsiris@aueb.gr](mailto:vsiris@aueb.gr)

### **Course Description**

The course's goal is an in depth discussion of the fundamental principles, architectures, and functionalities of wireless networks and mobile communications. The course discusses not only how wireless networks operate, but also why they operate in a particular way. Moreover, the course highlights key trends which includes cross-layer dependence of functions in wireless networks and the integration of fixed/wired with wireless and mobile communications.

## **Diploma Thesis**

6 ECTS credits

Interested students should contact directly the faculty members: G. Polyzos ([polyzos@aueb.gr](mailto:polyzos@aueb.gr)), V. Vassalos ([vassalos@aueb.gr](mailto:vassalos@aueb.gr)), Vana Kalogeraki ([vana@aueb.gr](mailto:vana@aueb.gr)), G. Papaioannou ([gepap@aueb.gr](mailto:gepap@aueb.gr)), G. Xylomenos ([xgeorge@aueb.gr](mailto:xgeorge@aueb.gr)).



## SPRING SEMESTER

# Distributed Systems

**Instructor:** Vana Kalogeraki

6 ECTS credits

### **Communication with the Instructor**

[vana@aueb.gr](mailto:vana@aueb.gr)

**Course Description:** The purpose of this course is to integrate the theory and practice of distributed systems with focus on recent developments and state-of-the-art practical systems. The topics we will cover include middleware architectures, process management, replication, consistency and group communication protocols, peer-to-peer systems, real-time scheduling, programming frameworks such as MapReduce, file systems and caching, and distributed sensor systems. We will discuss detailed case studies that illustrate the concepts for each major topic.

# Software Verification, Validation & Maintenance

**Instructor:** Nikolaos Malevris

6 ECTS credits

## **Communication with the Instructor**

[ngm@aueb.gr](mailto:ngm@aueb.gr)

## **Course Description**

Importance of software specifications and user's requirements. Programming practice. Programming languages importance in software development. High quality software development. Software quality and methods for achieving it. Quality standards. Software verification – formal methods. Validation of software and techniques. Software testing. Strategies and methods for effective software testing. Test data generation. Software maintenance. Emphasis on effective methods for maintaining software. Importance of appropriate documentation in software development. Cost estimation of software development. Emphasis on special characteristics of object oriented software as well as web applications. Automated tools with respect to the topics listed above.

## **Suggested textbooks**

M. PEZZE, M. YOUNG, «SOFTWARE TESTING AND ANALYSIS: PROCESS, PRINCIPLES AND TECHNIQUES» (WILEY) or

P.AMMANN, J.OFFUTT, INTRODUCTION TO SOFTWARE TESTING (CAMBRIDGE UNIVERSITY PRESS).

# Special Topics in Database Systems

**Instructor:** V. Vassalos

6 ECTS credits

## **Communication with the Instructor**

[vassalos@aueb.gr](mailto:vassalos@aueb.gr)

## **Course Description**

The course focuses on the important challenges of data integration. It includes in depth discussions of the following: Data source modeling. Answering queries using views. String matching. Schema matching. Schema mapping. Ontology matching. Data exchange. Data cleaning. Web data integration. Building wrappers. Query execution for data integration systems. We will discuss detailed case studies that illustrate the concepts for each major topic.

**Suggested textbooks:** Principles of Data Integration, by [AnHai Doan](#), [Alon Halevy](#), and [Zachary Ives](#), Morgan Kaufmann, 1st edition (2012), 520 pages

## Diploma Thesis

6 ECTS credits

Interested students should contact directly the faculty members: G. Polyzos ([polyzos@aueb.gr](mailto:polyzos@aueb.gr)), V. Vassalos ([vassalos@aueb.gr](mailto:vassalos@aueb.gr)), G. Papaioannou ([gepap@aueb.gr](mailto:gepap@aueb.gr)), G. Xylomenos ([xgeorge@aueb.gr](mailto:xgeorge@aueb.gr)).

## DEPARTMENT OF STATISTICS

All students should come from Department of Statistics or

Department of Mathematics

**WINTER SEMESTER**

# Statistics I: Probability and Estimation

**Instructor:** TBA

6 ECTS credits

Course Unit Code	9079
Level of course:	Undergraduate
Year of study:	1 <sup>st</sup> year

Objectives of the course:

The students will be able to compute probabilities of events, expected values and variances of discrete and continuous random variables. They will also be able to apply the central limit theorem and find estimates of unknown parameters. Furthermore, they will have the necessary background for the construction of confidence intervals of the mean value and the variance of a normal population.

The students will be able to solve realistic problems that are related with random experiments.

• **Prerequisites and co-requisites**

Knowledge of Calculus

• **Recommended optional program components**

None

• **Course contents**

Random Experiment. Sample Space. Axioms of Kolmogorov. Properties of Probabilities. Law of total probability. Bayes's Rule. Discrete and Continuous random variables. Expected value and variance of random variables. Binomial distribution. Geometrical Distribution. Poisson Distribution. Hypergeometrical Distribution. Uniform Distribution. Exponential Distribution. Normal Distribution. Central Limit Theorem. Law of Large Numbers. Estimator of unknown parameter. Unbiased Estimator. Consistent Estimator. Sufficient Estimator. Rao-Blackwell Estimator. Cramer-Rao lower bound. Method of maximum likelihood. Methods of moments. Confidence Intervals for the Normal mean when (i) the population variance is known and (ii) when the population variance is unknown. Confidence

Intervals for the difference of means of Normal populations. Confidence intervals for ratios. Confidence Intervals for the variance of a Normal distribution.

• **Recommended or required reading**

- S. M. Ross, "A first course in Probability", 8<sup>th</sup> Edition, 2010, Prentice Hall.
- S. M. Ross, "Introduction to Probability and Statistics for Engineers and Scientists", 3<sup>rd</sup> Edition, 2004, Elsevier.
- G. G. Roussas, "A Course in Mathematical Statistics", 2<sup>nd</sup> Edition, 1997, Academic Press.

• **Planned learning activities and teaching methods**

Teaching in Class, distant learning (if necessary)

• **Assessment methods and criteria**

Written final exam, Assignments

# Computational Statistics (Master course)

**Instructor:** TBA

7,5 ECTS credits

Course Unit Code: 9007  
Level of course: Postgraduate  
Year of study: 1<sup>st</sup> year

## **Objectives of the course:**

The students learn the basic principles of simulations and its usage in modern statistical analyses. They also learn how to make statistical inference using the computer and how to apply numerical methods to solve statistical problems like, estimation, calculation of quantities that it is not possible otherwise etc.

### **• Prerequisites and co-requisites**

Probability, Statistics, Estimation-Hypothesis testing, Linear Modelling, Analysis of Variance.

The course is suitable for students from Statistics departments.

### **• Recommended optional program components**

None

### **• Course contents**

R programming, simulation techniques, Monte Carlo methods, numerical methods for stats, smoothing, numerical optimization, bootstrap, MCMC.

### **• Recommended or required reading**

- Venables, W.N., Ripley, B.D. (2002). Modern Applied Statistics with S (4th edn). Springer
- Crawley, M.J. (2002). Statistical Computing: An introduction to data analysis using S-Plus. Wiley
- Robert, C.P. and Casella, G. (2010). Introducing Monte Carlo Methods with R, Springer.
- Efron, B. and Tibshirani, R.J. (1993). An Introduction to the Bootstrap, Chapman & Hall.

### **• Planned learning activities and teaching methods**

Teaching face to face

1-2 extra lab sessions, the students need to bring their laptop

### **• Assessment methods and criteria**

30% by two projects during the course

70% final exam

## **Actuarial Science II** (Reading course)

**Instructor:** TBA

7 ECTS credits

Course Unit Code: 9001

Level of course: Undergraduate

Year of study: 4<sup>th</sup> year

### **Objectives of the course:**

At the end of the course, students can deal with the main problems of pricing and reserving of life insurance policies.

#### **• Prerequisites and co-requisites**

Basic knowledge of Mathematics, Probability and Statistics.

#### **• Recommended optional program components**

N/A

#### **• Course contents**

Survival function, Simple mortality table and related functions, force of mortality, laws Classics mortality, actuarial tables and commutation functions, Stochastic approach to Life Insurance. Life annuities with one or more payments annually, Relationship between annuities, life insurance of various kinds, Relationship annuities and insurance, interest rate movements and mortality. Net premiums and gross premiums, concept and process of calculating reserves, Relationship between successive stock price. Tables and Actuarial functions for two or more persons, Contingent actuarial functions..

#### **• Recommended or required reading**

- Zimbidis A.(2009), «Actuarial Mathematics of Life Insurance»
- Neil A. (1986), «Life Contingencies» Heinemann Professional Publishing
- Etienne De Vylder (1997), "Life insurance : Actuarial Perspectives"
- Kluwer Academic Print

#### **• Planned learning activities and teaching methods**

Teaching Method: Reading Course

#### **• Assessment methods and criteria**

Courseworks during the semester plus oral exam at the end of the semester.



# Probability and Statistical Inference (Master course)

**Instructor:** TBA

7.5 ECTS credits

Course Unit Code: 9075

Level of course: Postgraduate

Year of study: 1<sup>st</sup> year

## **Objectives of the course:**

Upon successful completion of the course, students will be able to handle issues related to: probability and distribution theory, principles of sufficiency and likelihood, and statistical inference with emphasis on the presentation of analytical methods of finding and evaluating: point estimators, interval estimators and hypothesis tests (using the Frequentist and the Bayesian approaches).

### **• Prerequisites and co-requisites**

Undergraduate probability and calculus of functions of multiple variables.

### **• Recommended optional program components**

None

### **• Course contents**

The aim of the course is to present key topics of probability and distribution theory and to place particular emphasis on statistical inference. Initially, the axiomatic definition of probability is given by using measure theory and its interpretation in the classical/Bayes approach. Then the conditional probability is given, the concept of random variable, transformations, moments, moment generating function and characteristic functions. It follows the distribution theory, location/scale families, exponential family and goodness of fit measures. The topics defined in the one-dimensional case are presented for multivariate distributions and furthermore are defined the hierarchical models, the idea of independence, correlation and prediction, while some basic inequalities are given. Next, is the theory of order statistics, convergence (in probably, almost sure and by law), law of large numbers, central limit theorem and delta method. The principle of sufficiency and likelihood and completeness are also given. Finding point estimators (method of moments, maximum probability, Bayes rule) and their evaluation (mean square error, uniformly minimum variance unbiased estimator, Cramer-Rao, Rao-Blackwell, decision theory). Hypothesis testing (likelihood ratio test, Bayesian testing, union-intersection tests) and their evaluation (size and level, p-value, type I and II errors, even more powerful test, Neyman-Pearson lemma, monotone probability ratio, Karlin-Rubin), hypothesis testing and large

data, multiple comparisons and corrections. Finally, confidence interval material is covered by

finding methods (inverting a test statistic, pivots and Bayes methods), their evaluation (coverage probability) and interpretation.

**Recommended or required reading**

- R. Ash, Statistical Inference, Dover
- Jacod and Protter, Probability Essentials Springer.
- Berger and Casella, Statistical Inference

**Planned learning activities and teaching methods**

In vivo and online teaching

**Assessment methods and criteria**

Exercises during the semester, essays and written or oral exam.

# Generalized Linear Models (Master course)

Course Unit Code	90?????
Level of course:	Postgraduate
Year of study:	1 <sup>st</sup> year
Semester/trimester:	Winter (1 <sup>st</sup> Semester)
Number of credits allocated:	7.5 ECTS credits

## Objectives of the course:

Upon successful completion of the course, students are expected to understand if the nature of their data allows application of a generalized linear model (knowledge and understanding). They should also be able to define the appropriate generalized linear model to the data at hand (application). They should be able to fit this model and interpret the results of analysis (skill). Finally, they should be able to explain to scientists of other disciplines the results of their analysis (synthesis).

## • Prerequisites and co-requisites

Students should have basic knowledge of mathematical calculus, linear algebra, and probability theory

## • Recommended optional program components

None

## • Course contents

Introduction to statistical modeling, exponential family of distributions, part of a GLM, binomial data, logit models, contingency tables, Poisson models, log-linear models, overdispersion, normal data, Gamma data, polynomial-ordinal regression models, linear mixed effects models, GEE models, GLMM models. All applications include the use of the R language.

## • Recommended or required reading

- Agresti (2013). Categorical data analysis, Wiley
- Atkinson (1985). Plots, transformations and regression, Oxford university Press
- Carroll and Ruppert (1988). Transformation and weighting in regression, Chapman and Hall
- Chatterjee and Price (1977). Regression analysis by example, Wiley.
- Christensen R. (1998). Analysis of variance, design and regression. Chapman and Hall.
- Collett, D. (1991) Modelling Binary data, Chapman and Hall
- Cook and Weisberg, S. (1982). Residuals and Influence in regression, Chapman and Hall
- Dobson, A., Barnett, A.G (2008). An introduction to generalized linear models, Chapman and Hall.
- Draper and Smith (1981). Applied regression analysis, Wiley.

- Fitzmaurice, Laird and Ware (2004). Applied longitudinal data analysis, Wiley.  
Hedeker and Gibbons (2006). Longitudinal data analysis.
- McCullagh, P and Nelder, J.A. (1989) Generalized Linear Models, Chapman and Hall.  
Montgomery, D.C. (1989) Design and Analysis of Experiments, Wiley
- Montgomery, D.C., Peck, E.A. and Vining, G.G. (2001). Introduction to linear regression analysis. Wiley. Ryan (1997). Modern regression methods, Wiley.  
Weisberg, S. (1985) Applied Linear Regression, Wiley Venables W.N. and Ripley B.D (1999) Modern Applied Statistics with S-Plus, Springer

- **Planned learning activities and teaching methods**

One three-hour lecture per week, one one-hour laboratory, study exercises as homework (some to be submitted).

- **Assessment methods and criteria**

The final grade is the final examination grade.

## Data Analysis (Master course)

Course Unit Code	9013
Level of course:	Postgraduate
Year of study:	1 <sup>st</sup> year
Semester/trimester:	Winter (1 <sup>st</sup> Semester)
Number of credits allocated:	7.5 ECTS credits

### Objectives of the course:

Upon completion of the course, students will be able to:

- 1) To manipulate and analyze data in R
- 2) To perform basic hypothesis tests
- 3) To build and interpret regression models
- 4) To write statistical reports in a professional way.

### • Prerequisites and co-requisites

Students should have good knowledge of estimation and statistical inference. It is also useful to have basic knowledge of the statistical language R and to be familiar with the statistical theory of regression

### • Recommended optional programme components

None

### • Course contents

Primary aim of this course is the understanding and the application of statistical method in real life problems of various scientific fields such as Management, Marketing, Psychology, Medicine, Sports and Social Sciences. Focus is given on the review of parametric and non-parametric hypothesis tests for one and two samples (t-tests και Wilcoxon tests), analysis of variance and regression models. Emphasis is given in the implementation of all methods using R and in problem solving. Interesting real-life datasets and problems are analyzed during this course with aim to provoke their attention and motivate them. Finally, the students are introduced to the basic principles of scientific report writing and story telling either in the form of a written report or in form of oral presentation.

### • Recommended or required reading

- Diez, D., Barr, C., & Cetinkaya-Rundel, M. (2012). Open Intro statistics (Second Edition). Free Open Book; available at <http://www.openintro.org/stat/textbook.php>.
- Fox J. & Weisberg H.S. (2011). An R Companion to Applied Regression. 2nd edition. SAGE Publications Inc.

- Faraway, J. (2002). Practical regression and ANOVA using R; available at <http://cran.r-project.org/doc/contrib/Faraway-PRA.pdf>
- James, G., Witten, D., Hastie, T., & Tibshirani, R. (2013). An introduction to statistical learning. Springer; available at <http://www-bcf.usc.edu/~gareth/ISL/> .

- **Planned learning activities and teaching methods**

- Introductory motivational talk about the value and the fun part of Statistics.
- Introductory course in R
- Introductory videos (for R, for interpretation of Statistics by David Spiegelhalter, for the necessity of statistics in our daily life).
- Teaching in a classroom and computer labs.
- Laboratory exercises conducted during an extended lab session.
- Online game Quizizz (all together in the room - online version and asynchronously - offline).
- Guess the correlation game.

- **Assessment methods and criteria**

One assignment (50%) and one written examination (50%) with the requirement the grade in the written examination to be higher than 5 (out of 10).

## SPRING SEMESTER

# Statistics II: Inference and Regression

**Instructor:** TBA

6 ECTS credits

Course Unit Code: 9068  
Level of course: Undergraduate  
Year of study: 1<sup>st</sup> year

### **Objectives of the course:**

By completing the course the students will be able to:

Learn the fundamentals in statistical inference allowing them to understand which type of analysis is necessary and how it can be correctly implemented.

Learn about the theory and the accurate practice of regression analysis.

#### **• Prerequisites and co-requisites**

Knowledge of Probability and (point/interval) Estimation Theory.

#### **• Recommended optional program components**

None

#### **• Course contents**

Hypothesis testing, statistical hypotheses, test statistic, hypothesis testing for parameters of normal populations (mean, variance, mean difference in independent normal populations, variance ratio in independent normal populations), significance level, p-value, power, sample size determination. Introduction to regression, simple linear model, statistical linear model, normal linear model, inference (confidence and prediction intervals, hypothesis testing), transformations, residuals, diagnostic tests, multiple linear model, variable selection, forward, backward and stepwise regression, all possible regressions, model selection using information criteria, AIC, BIC, Mallows Cp, One-way analysis of variance (ANOVA). Applications in R.

#### **• Recommended or required reading**

- "An Introduction to Probability and Statistical Inference", by G. Roussas, 2<sup>nd</sup> edition, 2014, Academic Press
- "Statistical Inference" by G. Casella and R.L. Berger, 2nd edition, Duxbury Press, 2001
- "Applied Linear Regression", by S. Weisberg, 3<sup>rd</sup> edition, Wiley 2005

○ “An R Companion to Applied Regression”, by J. Fox and S. Weisberg, 2nd edition, SAGE Publications Inc, 2011.

• **Planned learning activities and teaching methods**

Teaching in Class, distant learning (if necessary)

• **Assessment methods and criteria**

Written final exam, Assignments



# Statistical Quality Control (Reading Course)

**Instructor:** TBA

7 ECTS credits

## **Course Title:**

Course Unit Code: 9057

Level of course: Undergraduate

Year of study: 3<sup>rd</sup> year

## **Objectives of the course:**

After the course the student will have the skills needed to deal with improving the quality of products or services using statistical methods.

### **• Prerequisites and co-requisites**

Attendance and knowledge of topics related to Estimation-Hypothesis testing, are very useful.

### **• Recommended optional program components**

None

### **• Course contents**

Basic concepts of quality control and statistical quality control. Cause and effect charts. Pareto charts. Control charts for variables (R,S). Attributes control charts (p,np,c,u). CUSUM and EWMA control charts. Capability indices. Introduction to multivariate control charts. The six sigma methodology. Acceptance sampling. Basic experimental design using principals of repetition and blocking.

### **• Recommended or required reading**

- Montgomery D (2012) Introduction to Statistical Quality Control, 7th Edition Wiley.
- Ryan, T. (2000). Statistical methods for quality improvement. J. Wiley New York 2nd edition.

### **• Planned learning activities and teaching methods**

Teaching in Class, distant learning (if necessary)

### **• Assessment methods and criteria**

Written final exam, Assignments

# Actuarial Science I (Reading course)

**Instructor: TBA**

7 ECTS credits

Course Unit Code: 9032  
Level of course: Undergraduate  
Year of study: 2<sup>nd</sup> year  
Semester/trimester: Spring (4<sup>th</sup> Semester)

## **Objectives of the course:**

At the end of the lectures, the students are able to deal with the basic problems of pricing, reserving and reinsurance in a general insurance company.

### **• Prerequisites and co-requisites**

Basic knowledge of Mathematics, Probability and Statistics.

### **• Recommended optional programme components**

N/A

### **• Course contents**

Uncertainty, Risk, Insurance, Insurance Companies, Actuaries, Insurance Concepts, Products, Actuarial base. Frequency, severity and pricing methodology premium adjustments, Projections and trends for the final payments by using linear and other models. Reserving methods, Analysis of Insurance Data, Triangular methods and olistic methods of reserving, Discounting reserves, and Confidence Intervals. Reinsurance schemes, «Bonus-Malus» and Markov Chains.

### **• Recommended or required reading**

- Zimbidis A.(2008) "Actuarial Mathematics of Non-life Insurance"
- Brown R.L , Gottlieb L.R. (2005) -3<sup>rd</sup> edition
- "Introduction to Ratemaking and Loss Reserving for Property and Casualty Insurance", Actex Publications,
- Mikosch T. (2006) "Non-Life Insurance Mathematics: An Introduction with Stochastic Processes", Springer

### **• Planned learning activities and teaching methods**

Teaching Method: Reading course.

### **• Assessment methods and criteria**

Courseworks during the semester plus oral exam at the end of the semester.

# Financial Econometrics (Master course)

**Instructor:** TBA

3,5 ECTS credits

Course Unit Code: 9036  
Level of course: Postgraduate  
Year of study: 1<sup>st</sup> year

## **Objectives of the course:**

The aim of this module is to provide students with advanced statistical and econometric skills required to analyze empirical problems in finance. After successfully completing the course, students will be able to:

- interpret the concepts of return and risk in financial markets
- model the expected returns of financial assets
- model the variances and covariances/correlations of financial returns
- use advanced econometric tools to analyze models used in financial applications
- forecast financial returns
- assess the performance of portfolio managers
- understand modern portfolio theory
- solve mean-variance optimization problems
- estimate the risk of financial assets

## **• Prerequisites and co-requisites**

Statistical Inference, Regression Analysis

## **• Recommended optional program components**

None

## **• Course contents**

This course provides a broad introduction to the theory and empirical analysis of advanced econometric models in financial applications such as construction of optimal portfolios, evaluating managers' performance, and forecasting financial returns. Multi-factor models are introduced, which can be used to estimate the expected returns of financial assets, and univariate and multivariate heteroscedasticity models (ARCH/GARCH), which can be used to model the variations and covariances/correlations of financial returns. Indicative examples of the application of these advanced statistical and econometric models and techniques are (a) the construction of optimal portfolios, (b) the evaluation of the performance of the various mutual fund or hedge fund investment managers, (c) forecasts of financial series, e.g. stock returns.

- **Recommended or required reading**

- Elton, E.J., Gruber, M.J., Brown, S.J., and Goetzmann W.N. (2014). Modern Portfolio Theory and Investment Analysis, 9th edition, Wiley.
- Sharpe, W.F., Alexander, G.J, and Bailey, J.V. (1999). Investments, 6th edition, Prentice-Hall.
- Tsay, Ruey S. (2010). Analysis of Financial Time Series, New York: Wiley.
- Selected papers.

- **Planned learning activities and teaching methods**

One three-hour lecture per week, study exercises, and programming exercises as homework (some to be submitted).

- **Assessment methods and criteria**

The final grade is the average of the final examination grade (weight 80%) and the grade of the study and programming exercises to be submitted (weight 20%), provided that the final examination grade is at least 5/10. Otherwise, the final grade equals the final examination grade.

# Advanced Stochastic Processes (Master course)

**Instructor:** TBA

3,5 ECTS credits

Course Unit Code: 9042  
Level of course: Postgraduate  
Year of study: 1<sup>st</sup> year

## **Objectives of the course:**

Upon successful completion of the course the students will have a working knowledge of the theory of stochastic processes (martingales and Brownian motion) as well as of Stochastic Integration and Stochastic Differential Equations. They will also be able to use models based on these concepts in Statistics, Finance and Insurance Mathematics.

- Prerequisites and co-requisites

Probability Theory

- **Recommended optional program components**

N/A

- **Course contents**

Martingales in Discrete and Continuous Time. Brownian Motion: Characterization, Construction and Properties. Quadratic Variation. Ito integration. Properties of Ito integrals, the Ito formula. Stochastic Differential Equations. Existence and uniqueness of solutions. Examples and applications from Insurance, Finance, and Operations Research.

- **Recommended or required reading**

- Fima C. Klebaner (2005). *Introduction to Stochastic Calculus with Applications*. Imperial College Press.
- Bernt Oksendal (2003). *Stochastic Differential Equations, an Introduction with Applications*. Sixth Edition, Springer Verlag.
- J. Michael Steele (2000). *Stochastic Calculus and Financial Applications*. Springer Verlag.

- **Planned learning activities and teaching methods**

- Reading Course, weekly meetings

- **Assessment methods and criteria**

- Weekly homework