ΟΙΚΟΝΟΜΙΚΟ ΠΑΝΕΠΙΣΤΗΜΙΟ ΑΘΗΝΩΝ
ATHENS UNIVERSITY OF ECONOMICS AND BUSINESS

ERASMUS+ Programme

INTERNATIONAL RELATIONS OFFICE
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Academic Year 2021-2022

Fall Semester (from 11.10.2021 till 25.02.2022)

Spring Semester (from 28.02.2022 till 10.06.2022)

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

DEPARTMENT OF MANAGEMENT SCIENCE AND TECHNOLOGY

FALL SEMESTER

Modern Enterprise Information Systems

Instructor: George Ioannou

6 ECTS credits, Advanced Level

Communication with the Instructor
ioannou@aueb.gr

Web: 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

Topic	**Sub-topic**	**Specialty**
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
Managing your Supply chain using Microsoft Dynamics	**Lab Exercises**	Case Study
Managing your Supply Chain using Microsoft Dynamics	**Lab Exercises**	Case Study

Managerial Decision Making

Instructor: Manolis Kritikos
6 ECTS credits, Advanced Level

Communication with the Instructor
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 Uncertainly; 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

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, brining 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.

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*, 5th 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*, 5th 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*, 2nd 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, Dec ember: 44-53.
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– 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.

SPRING SEMESTER

Production and Operations Management

Instructor: George Ioannou

6 ECTS credits, Advanced level

Communication with the Instructor

ioannou@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:

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

6. Capacity Planning

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

Readings:

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

- Article

7. Forecasting

- Basic forecasting methods
- Application exercises in class

Readings:

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

- "Inventory Management", Resource Planning", and "Lean Systems", Chapters 15, 16, and 11 in Operations Management, L.J. Krajewski & L.P. Ritzman.
- Abernathy, F.H. et al, (2000), "Control Your Inventory in a World of Lean Retailing", Harvard Business Review, Nov-Dec, pp. 169-176.
- 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

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

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

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., Mayers, C., (1997): Principles of Corporate Finance, Mc – Graw Hill, New York.
- Lumby, 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, 11th Edition, 2017.
- **Hill,** C., G. Jones and M.A. Schilling, Strategic Management Theory, Cengage Learning, 11th edition, 2015.
- **Thompson**, A.A., M.A. Peteraf, J.E. Gamble and A.J. Strickland III, Crafting and Executing Strategy: Concepts and Readings, 20th edition, McGraw-Hill, 2016.
- **Hitt**, M.A., R.D. Ireland and R.E. Hoskisson, Strategic Management: Competitiveness and Globalization, Cengage Learning, 12th 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, 10th edition, McGraw Hill.

2. Brealey R.A. and Myers S.C. (2017) Principles of Corporate Finance 12th 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

Engineering Logistics

Instructor: Paraschos Maniatis

6 ECTS credits

Communication with the Instructor
pman@aueb.gr

Suggested Reading Material
Handbook of Logistics & Distribution Management 4th Edition. Edited by John L. Gattorna – Gower Publishing Company,1990

Logistics and Supply Chain Management. Strategies for Reducing Costs and Improving Services. Martin Christopher. Pitman Publishing 1992

Articles and Material to be distributed.

Course Description
An introduction to the operations aspects of logistics combined with an overview of Supply Chain Management. Topics will include purchasing, vendor relations, inventory strategies and control, warehousing, material handling, layout planning, packaging, and transportation, combined under supply chain management philosophy. The course will be taught through lectures, problem sets and case studies.

Course Objectives
To enable the student to describe, understand, analyze and recommend enhancements to the purchase, logistics and distribution functions within a manufacturing or service environment.

To provide the student with an overview of the larger issues associated with Supply Chain Management.

Learning Outcomes
Upon successful completion of this course, the student will be able to:

- Demonstrate systems thinking capacity in the logistics environment.
- Be able to provide input to, understand and take action on reports generated by the various functions associated with purchasing, logistics and distribution.
- Be able to generate and analyze simple reports in the areas of forecasting, purchasing, inventory management, transportation and warehousing.
- Be able to articulate a solid understanding of Supply Chain Management including vendor selection and vendor relations strategies and techniques.

- Be able to assemble, review and recommend action plans for complex logistics and Supply Chain Systems.

Course Methodology

We will be using a combination of lectures, class discussions, class exercises with solved problems and solving problems with the usage of computers (SOLVER) to cover the required material.

Methods of Assessment

- Written test at the end of the semester (Required) 90%
- Class participation 10%

Attendance Policy

Students are expected to attend all class sessions. Circumstances that prevent attendance will be honoured up to two instances. Absences in excess of three times may result in an incomplete grade for the course. Contact the instructor when a special situation arises. All absences require that the instructor be informed in advance.

Class Schedule

Week	**Topic/Activity**
Week 1:	Introduction, Course Overview, Logistics of the course
Week 2	Logistics Integration, Customer Service
Week 3:	Supply Chain Relationships, Global Logistics
Week 4	Productivity (three forms) problems solving
Week 5:	Breakeven problems solving
Week 6:	General Inventory problems solving
Week 7:	Economic Production Quantity problems solving
Week 8:	Outsourcing versus insourcing problems solving
Week 9:	Layout Planning
Week 10:	Problems solving with computers (laptops)
Week 11:	Problems solving with computers (laptops)
Week 12:	Problems solving with computers (laptops)
Week 13:	G eneral Repetition

Entrepreneurship

Instructor: Helen Salavou

6 ECTS credits

Communication with the Instructor

esalavou@aueb.gr

COURSE RATIONALE

This course introduces the nature of entrepreneurship. It helps students to successfully develop viable business ideas. This is a teaching-mentoring course. You are going to write and present business plans based on teamwork.

BRIEF SYLLABUS & LEARNING OBJECTIVES

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

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

PRE-REQUISITES

This course synthesizes concepts from various courses at business schools, such as marketing, finance, human resource management. Students with managerial know-how are allowed to follow this course. Students registered in the Business Policy and Strategy course during the fall semester of this University are not allowed to attend this course.

READING MATERIAL

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

- Hisrich R., 2014, ***Advanced Introduction to Entrepreneurship***, Edward Elgar Publishing Ltd, USA.

COURSE EVALUATION

Your final grade will depend on the following:

Written exams 20%

Business plan 50%

Business plan presentation 30%

Written exams (open book) will take place in the period between January – February

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.

SPRING SEMESTER

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, 10th edition, McGraw Hill.

2. Brealey R.A. and Myers S.C. (2017) Principles of Corporate Finance 12th 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., Mayers, C., (1997): Principles of Corporate Finance, Mc – Graw Hill, New York.
- Lumby, 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

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, 11th Edition, 2017.
- **Hill,** C., G. Jones and M.A. Schilling, Strategic Management Theory, Cengage Learning, 11th edition, 2015.
- **Thompson**, A.A., M.A. Peteraf, J.E. Gamble and A.J. Strickland III, Crafting and Executing Strategy: Concepts and Readings, 20th edition, McGraw-Hill, 2016.
- **Hitt**, M.A., R.D. Ireland and R.E. Hoskisson, Strategic Management: Competitiveness and Globalization, Cengage Learning, 12th edition, 2017.

DEPARTMENT OF ACCOUNTING AND FINANCE

FALL SEMESTER

Financial Risk Management

Instructor: D. Georgoutsos

6 ECTS credits

Communication with the Instructor

dgeorg@aueb.gr

Reading material

(*) Hull John, 2018, "Risk Management and Financial Institutions", 5rd ed., J. Wiley **(H)**

(*) Jorion Philippe, 2011, "Financial Risk Manager Handbook", 6th ed., J. Wiley & Sons **(PJ1),**

(*) Saunders Anthony & M. Cornett, 2017, 9th ed., "Financial Institutions Management: a Risk Management Approach", McGraw Hill **(AS1)**

http://www-2.rotman.utoronto.ca/~hull/

(*) suggested textbooks

Course Evaluation: Final written exams – multiple choice questions

Lectures Outline

1. Classification of Risks for Financial Institutions and the Recent Experience. Interest Rate Risk (Repricing and Duration Gap analysis). Liquidity Risk: gap analysis and liquidity risk indexes. Market risk and Value-at-Risk. The variance-covariance method, Historical Simulations and Monte-Carlo Simulations. Back testing evaluation.

- **(PJ1) ch** . 12,13, 14, 15, 16, 17, 28.
- **(AS1) ch.** 7, 8, 9, 10, 20
- **(H) ch.** 2, 9, 12, 13

2. **(**Measuring the exposure to credit risk. Statistical approaches: Linear Discriminant analysis and Probit models. Measuring Default risk from market prices (The KMV model, the creditmetrics model). Measuring Actuarial Default risk. Default risk for off-balance positions. Managing the credit risk exposure: credit derivatives and securitizations.

- **(PJ1) ch**. 19, 20, 21,22, 24, 28
- **(AS1) ch**. 11, 12, 13,
- **(H) ch.** 19, 20, 21

3. The Regulatory framework for the capital adequacy of banks. The Basle Accord proposals.

- **(PJ1) ch** .28,
- **(AS1)** . **ch** 20
- **(H) ch.** 6, 15, 16, 17

SPRING SEMESTER

Cost and Management Accounting

Instructor: Sotiris Karatzimas

6 ECTS credits, Level: Intermediate progressing to advanced

Communication with the Instructor

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 Assesment

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 (Teaching course)

Instructor: Konstantinos Chalevas

6 ECTS credits

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

Instructor: Spyros Spyrou

6 ECTS credits

Communication with the Instructor
sspyrou@aueb.gr

Traditional economics and finance are developed on the assumption of an economic agent who is motivated by self-interest and is also capable of making decisions rationally after evaluating all the relevant information quickly and accurately. However, there is empirical evidence to suggest that the behaviour of real-world economic agents may be very different from this theoretically assumed reaction to information. This module reviews the literature on cognitive psychology as regards to human and investor behaviour and contrasts this with the behaviour that is expected from traditional models such as the Efficient Market Hypothesis (EMH). Furthermore, the module discusses and reviews empirical evidence on financial market "anomalies" that may be explained with investor psychology.

Assessment
One 5,000 word essay

Course Outline

- • The Limits to arbitrage
- • Prospect theory and frame dependence
- • Cognitive heuristics and biases
- • Representativeness, availability, anchoring and conservatism
- • Mental accounting and choice bracketing
- • Overconfidence
- • Money illusion
- • Overreaction and Underreaction
- • Empirical Evidence

Suggested Essay Titles

"The limits of arbitrage"
"Prospect Theory and its contribution to behavioral finance"
"Heuristics & biases in investment decisions"
"The role of overconfidence in investment decisions"
"Representativeness and financial markets"
"Anchoring and investor underreaction to information"
"Conservatism and biased judgments in financial markets"
"Availability bias in financial decision making"
"Stock market anomalies and the Efficient Market Hypothesis"
"Disposition Effect"
"Location Bias"
"Equity Premium Puzzle"

“Dividend Puzzle”
“Stock Market Bubbles”
“Herding”
“The role of Investor Sentiment”

Reading

• A list of recent papers and relevant articles will be announced in e-class

Suggested books

• Shefrin, H. (2002). Beyond greed and fear: Understanding behavioral finance and the psychology of investing, Oxford University Press

• Kahneman, D., Slovic, P. andTversky, A. (eds.) (1982), Judgment under Uncertainty: Heuristics and Biases, Cambridge University Press, New York.

• Kahneman, D. andTversky, A. (eds.) (2000), Choices, Values, and Frames, Russell Sage Foundation and Cambridge University Press, New York.

• 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.

Retail Sales Promotions

Instructor: Paris Argouslidis

6 ECTS credits

Communication with the Instructor
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

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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

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).***

Cross-Cultural Communication

Instructor: Eleni Apospori

6 ECTS credits

Level: Advanced

Communication with the Instructor
apospori@aueb.gr

Course Aim

The overall aim of this course is to educate students so that they develop basic competences in cross-cultural communication in general and in organizational environment in particular.

Course Content

Topics that will be covered:

1. Introduction to Culture
Aim

To analyse the basic dimensions/concepts of culture in order to become clear the complexity and multi-dimensionality of culture

1.1 Basic Concepts

- Elements of culture
- Artefacts
- Norms and Sanctions
- Values and Beliefs
- Levels of culture
- From small groups to supranational groups

2. Introduction to Communication

Aim

To analyse various approaches to and concepts of communication in order to become clear the complexity and multi-dimensionality of communication and its mechanisms

2.1 Basic concepts

- Problems in Communication
- Noise in Communication
- Communication – Semiotics

2.2 The Five Rules of Communication
2.3 Definition of Cross – Cultural Communication

3. The cultural context of communication

Aim

To present, analyse and compare the wide spectra of cultural characteristics across the globe.

3.1 Basic concepts

- Individualism/collectivism
- High/low context
- Small/large power distance
- Low/high uncertainty avoidance

4. The Perceptual context of communication

Aim

To list and discuss the stages of human information processing and familiarize students with cultural differences in perception, stereotypes, ethnocentrism and racism

4.1 Basic concepts

- Culture and cognition
- Stereotyping
- Ethnocentrism
- Racism
- Ethnocentrism and Communication in the workplace

5. Verbal and Non-verbal codes in Communication

Aim

To familiarize the students with the wide varieties of verbal and non-verbal codes of communication across culture

5.1 Basic concepts

- The relationship between language and culture
- Cross-cultural communication styles
- The relationship between verbal and non-verbal codes

6. Developing Intercultural relationships

Aim

To help students command their intercultural relationships

6.1 Basic concepts

- Communication and Uncertainty
- Anxiety and uncertainty management
- Uncertainty reduction
- Empathy and similarity

7. Intercultural conflict

Aim

To familiarize student with the levels and styles of conflict in cross cultural communication

7.1 Basic concepts

- Definition of intercultural conflict
- Models of intercultural conversation
- Conflict resolution in various cultures

8. Intercultural communication in Organizations

Aim

To discuss how dimensions of the cultural context affect organizations across cultures and to identify how the perceptual context can influence doing business with other cultures

8.1 Basic concepts

- Intercultural management
- Clashing cultural concepts on the job
- Doing business in various cultures across the Globe

Change Management

Instructor: Maria Vakola

6 ECTS credits

Level: Advanced

Communication with the Instructor

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.

Weeks	CONTENT
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

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

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

The Changing European Monetary Union

Instructor: George Zanias

6 ECTS credits

Communication with the Instructor

zanias@aueb.gr

Course Content

Introduction to the economics of a monetary union (optimal currency areas: asymmetric shocks – external and internal, effectiveness of national monetary policies, benefits and costs of a common currency).

The economics of the European Monetary Union (EMU): EMU institutions and policies: the Maastricht Treaty, the ECB, the Eurozone Monetary policy. The incomplete EMU.

The recent international financial crisis and the European fiscal/banking crisis.

Responses to the crisis and completion of the EMU structure (new economic governance rules, Banking Union, plan to complete the EMU).

Level

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

Course Objective

The purpose of this course is to understand: the initial structures of the EMU compared to an optimal monetary union, the weaknesses that were revealed during the recent financial/debt crisis, and the changes recently introduced to deal with them and move towards a more complete monetary union.

Textbooks/material

Paul De Grauwe, Economics of Monetary Union, 11th Edition. Oxford University Press.

Richard Baldwin and Francesco Giavazzi: The Eurozone crisis. A consensus view of the causes and a few possible solutions. http://www.voxeu.org/content/eurozone-crisis-consensus-view-causes-and-few-possible-solutions

How to fix Europe's Monetary Union.

http://www.voxeu.org/sites/default/files/file/epub/rebooting2_upload.pdf

Other: ec, ecb, voxeu, bruegel, etc internet sites.

Recommended Prerequisite Knowledge

Intermediate-level knowledge of Macroeconomics and International Economics.

Course Evaluation

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

1. Comprehensive Final Exam (two-thirds of the final grade) covering all the units and topics presented in the lectures.
2. Students will have to work on a project, and deliver an essay (on the national perspectives with respect to the EMU, the financial/debt crisis, the EMU completion), and do an in-class presentation (20 minutes) - (one-third of the final grade).

International Economics

Instructors: Panagiotis Hatzipanayiotou, Dimitris Christopoulos

6 ECTS credits, Intermediate Level

Communication with the Instructor

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

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
Jeffry 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: TBA

6 ECTS credits Level: advanced

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

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*, 7th ed, Cengage

Stock, J. H. and Watson, M. W. (2019) *Introduction to Econometrics*, 4th 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*, 8th 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

DEPARTMENT OF ECONOMICS

FALL SEMESTER

Labour Economics

Instructors: Natassa Miaouli/E. Hatziharitou

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

Communication with the Instructor

ehatzi@aueb.gr

Course Content

The role of the resource of labor in the productive procedure. The importance of Labour Economics and its relation with the other social sciences. The economic and institutional factors of the labor market. The analysis of labor market at local, regional, national, European and international level. The main determinants of the size of the labor force and its quality. The investment in human capital. Static and dynamic analysis of the individual and total labor supply. The elasticity of labor supply. Labor force mobility and efficiency. The short – run and long – run demand for labor under competitive or non-competitive conditions in the product market. The elasticity of labor demand. Wage determination and resource allocation under competitive or non-competitive conditions. Labour unions and collective bargaining. The economic impact of unions. The wage structure and labor market discrimination. Employment and unemployment: a brief reference of what is happening in the European Union countries. Unemployment data sources, its measurement and its comparability between the European Union countries. How the various countries confront the social problem of unemployment.

Theory and Practice of Economic Integration

Instructor: E. Hatziharitou

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

Communication with the Instructor

ehatzi@aueb.gr

Course Content

Part I

The creation of the unified internal market:

- Economic Integration and its forms
- Partial and general equilibrium analysis of the custom duties effects
- The welfare effects of custom duties quotas and subsidies
- The theory of custom union and its effects. A partial and general equilibrium analysis
- Fiscal unions and tax harmonization

Part II

The structural policy of the European Union, its instruments and its targets:

- European Social Fund and European Social Policy
- European Agricultural Fund
- European Fund of Regional Development and Regional Economic Policy
- Cohesion fund
- The Budget of the EU

Part III

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

- The system of the ECU
- The Single Act
- The Criteria of Maastricht
- The Three Stages of the Monetary Union
- The Euro: The Mechanism of the Unique Money

Part IV

The Theory of Monetary Integration

- The theory of “Optimum Currency Areas” and its criticism
- The benefits of a common currency
- The comparison between costs and benefits
- The European Monetary System and its imperfections

Part V

The Implementation of the Central Banks European System:

- The European System of Central Banks
- The European Central Bank
- The Policy of the European Central Bank

Note: All the Erasmus students have the opportunity to write an essay under the supervision of their professor.

Principles of Sociology

Instructor: TBA

6 ECTS credits, Introductory level, (2nd 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

Session1. 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*, 6th edition, Polity Press, Cambridge: 2009.

Recommended books for further reading:

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

Industrial Organization

Instructor: TBA
6 ECTS credits, Level: (3rd year course)

Learning Outcomes

After successful completion of this course the students must have understood the historical evolution of the Theory of Industrial Organisation and must have learned the basic concepts and definitions of the subject as well as its relation to other fields of economic science. They must have also learned the theories concerning the horizontal and vertical limits to the size of the firms, to analyze in depth monopolies, strategies of price discrimination, as well as strategies of tying and bundling. They must be able to analyze oligopolistic interaction by using the tools of Oligopoly Theory: Cournot, Bertrand and von Stackelberg models and must have learned to relate measures of market concentration and market performance. They must be able to understand and distinguish between different notions of product differentiation and to examine oligopolistic competition under product differentiation. They must also be able to understand and analyze models of entry of firms and of barriers to entry, models of tacit collusion and the theory of market failures and micro-economic policy. Finally, they must be able to measure the social welfare losses due to monopoly power and the basic principles of regulation and competition policy.

Mode of delivery

Face-to face

Prerequisites (recommended)

Micro-economic theory

Course contents

- Introduction, basic concepts and relation of Industrial Organisation to other fields of economics.
- A simple model of industrial organisation: social optimum, perfect competition and monopoly compared. Reasons for market failure. Welfare losses of monopoly power.
- The theory of the firm. Horizontal and vertical limits to the size of the firm. Vertical integration: motives for, and monopoly power.
- Price discrimination of first, second and third degrees. Tying and bundling.
- Oligopoly theory: Oligopolistic competition with homogenous products – detailed analysis of the Cournot, Bertrand and von Stackelberg models. Market concentration: measurement and relation to prices and profits.
- Product differentiation: oligopolistic competition under product differentiation – the Hotelling model. Choice of location. Comparison of oligopolistic equilibria.
- Dynamic oligopoly theory: tacit collusion models.

- Theory of entry deterrence: type and measurement of entry barriers and models of entry deterrence. Contestability theory and sunk costs. Endogenous vs. exogenous entry costs.
- Introduction to competition policy and regulation.

Recommended or required reading

Main Textbook: Cabral L. (2000) "Introduction to Industrial Organisation", MIT Press.
More Advanced: Belleflame P. and Peitz M. (2010) "Industrial Organisation – Markets and Strategies", Cambridge University Press.

Planned learning activities and teaching methods

Students are given periodically sets of exercises and they have to prepare answers. The exercises are discussed in tutorials. Marks of course work does not count towards the final mark.

Assessment methods and criteria

By written examination at the end of the semester

Business Economics

Instructor: Fabio Antoniou

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

Communication with the instructor

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, 5th 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, 7th 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, 2nd 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

Puplic Economics I

Instructor: Petros Varthalitis

6 ECTS credits, level: 3rd year course

Communication with the instructor

pvarthalitis@aueb.gr

Course Unit Code

Level of course: Undergraduate

Year of study: 3RD 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 pursuit 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.

SPRING SEMESTER

Theory and Practice of Economic Integration

Instructor: E. Hatziharitou

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

Communication with the instructor

ehatzi@aueb.gr

Course Content

Part I

The creation of the unified internal market:

- Economic Integration and its forms
- Partial and general equilibrium analysis of the custom duties effects
- The welfare effects of custom duties quotas and subsidies
- The theory of custom union and its effects. A partial and general equilibrium analysis
- Fiscal unions and tax harmonization

Part II

The structural policy of the European Union, its instruments and its targets:

- European Social Fund and European Social Policy
- European Agricultural Fund
- European Fund of Regional Development and Regional Economic Policy
- Cohesion fund
- The Budget of the EU

Part III

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

- The system of the ECU
- The Single Act
- The Criteria of Maastricht
- The Three Stages of the Monetary Union
- The Euro: The Mechanism of the Unique Money

Part IV

The Theory of Monetary Integration

- The theory of “Optimum Currency Areas” and its criticism
- The benefits of a common currency
- The comparison between costs and benefits

- The European Monetary System and its imperfections

Part V

The Implementation of the Central Banks European System:

- The European System of Central Banks
- The European Central Bank
- The Policy of the European Central Bank

Note: All the Erasmus students have the opportunity to write an essay under the supervision of the lecturer.

Money and Banking

Instructor: TBA

6 ECTS credits, level: 3rd year course

Learning Outcomes
The course aims to introduce students in the field of Monetary Theory, producing them with knowledge and skills concerning the Role of Money, the Monetary System and the Banking System.

Mode of Delivery
Face-to-face.

Prerequisites and co-requisites
Not applicable.

Recommended Optional Programme Components
Microeconomic Theory I, Macroeconomic Theory I.

Course contents (should contain topics in:)
The Role of Money. Money and Economic Activity. The Macroeconomic Framework. The Financing Balance of the Economy. The Monetary and Credit System. The Market of Financial Intermediation. The direct Capital market. Banking Operations. Banks Models. Banks Behaviour and Strategy. Banks and Risk Management. Assets and Liabilities Management. The Role of the Central Bank. Money Supply. Money Demand. Interest Rate Determination.

Recommended or required reading
1. Mishkin S. Frederic, ***"Economics of Money, Banking and Financial Markets"***, (ISBN13: 9780133836790, or ISBN13/International Edition: 9781292094182), Publisher: Pearson Education, 11th International Edition, 2014 [**Recommended Bibliography**]

2. Ritter S. Lawrence, Silber L. William, Udell F. Gregory, ***"Principles of Money, Banking and Financial Markets"*** (ISBN13: 9780321339195), Publisher: Pearson Education, 12th Edition, 2008. [**Alternative Bibliography]**

Planned learning activities and teaching methods
2 Regular two-hour Lectures per week/ Internet-based communication with students.

Assessment methods and criteria
Final written exam.

Work placement(s)
Not applicable.

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-spoydon.

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

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.

2. Diploma Thesis

6 ECTS credits

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

SPRING SEMESTER

Distributed Systems

Instructor: Vana Kalogeraki

6 ECTS credits

Communication with the Instructor

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

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, INDRODUCTION TO SOFTWARE TESTING (CAMBRIDGE UNIVERCITY PRESS.

Special Topics in Database Systems

Instructor: V. Vassalos

6 ECTS credits

Communication with the Instructor

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), V. Vassalos (vassalos@aueb.gr), G. Papaioannou (gepap@aueb.gr), G. Xylomenos (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:	1st 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", 8th Edition, 2010, Prentice Hall.
- S. M. Ross, “Introduction to Probability and Statistics for Engineers and Scientists”, 3rd Edition, 2004, Elsevier.
- G. G. Roussas, “A Course in Mathematical Statistics”, 2nd 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: 1st 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: 4th 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: 1st 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.

SPRING SEMESTER

Statistics II: Inference and Regression

Instructor: TBA

6 ECTS credits

Course Unit Code: 9068
Level of course: Undergraduate
Year of study: 1st 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**

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

o Montgomery D (2012) Introduction to Statistical Quality Control, 7th Edition Wiley.
o 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

Multivariate Statistical Analysis

Instructor: TBA

8 ECTS credits

ADVANCED LEVEL

Course Unit Code: 9024
Level of course: Undergraduate
Year of study: 3rd year

Objectives of the course:
Upon completion of the course, the student will be able to: produce graphs and comprehend relations in his data, apply basic methods of multivariate data analysis, infer on multivariate data, use methods of dimension reduction.

• Prerequisites and co-requisites

Knowledge of

- Statistical Inference
- Linear Algebra
- Basic knowledge of R

• Recommended optional programme components

None

• Course contents

The course has the following parts

- Multivariate descriptive and graphs
- Multivariate normal and related distributions
- Hypotheses tests for multivariate data
- MANOVA
- Multivariate Linear model
- Principal Components Analysis
- Factor Analysis

• Recommended or required reading

- Everitt, Sidney B., Casella, Fienberg G., Olkin S., Ingram, An R and S-PLUS Companion to Multivariate Analysis, Springer-Verlag London Limited, 2005.
- Anderson, T. W. (1984). An Introduction to Multivariate Statistical Analysis, John Wiley & Sons, New York, 2nd edition.
- Bartholomew, D.J., Steele, F., Moustaki, I., Galbraith, J. (2011) Αναλυση πολυμεταβλητών τεχνικών στις κοινωνικές επιστήμες, Εκδόσεις ΚΛΕΙΔΑΡΙΘΜΟΣ
- Basilevski, A. (1994). Statistical Factor Analysis and Related Methods. Theory and Applications. John Wiley & Sons.
- Chatfield, C. and Collins, A.J. (1992). Introduction to Multivariate Analysis.

- Jackson, J. (1991). A User's Guide to Principal Components, John Wiley & Sons, Inc., New York, NY.
- Krzanowski, W. J. (1988). Principles of Multivariate Analysis. Oxford University Press.
- Mardia, K. V., Kent, J. T. & Bibby, J. M. (1979). Multivariate Analysis. London: Academic Press.

• Planned learning activities and teaching methods

Teaching Method: Face to Face.
Teaching includes: Class lectures. Tutorial. Research Assignment. Self Study.
During the course there are 3-4 projects. The projects need computing in R.

• Assessment methods and criteria

70% Written exam at the end of the semester

30% Projects

Statistical Learning (Master Course)

Instructor: TBA

4 ECTS credits

Course Unit Code: 9044
Level of course: Postgraduate
Year of study: 1st year

Objectives of the course:
Upon completion of the course, students will have the knowledge and the skills to implement statistical methods aiming to deal with the problem of non-linear modelling, data dimension reduction, classification and clustering. They will be able to interpret the results and assess the methodologies' performance.

• **Prerequisites and co-requisites**
Attendance only for students from Statistics departments with good knowledge of R, multivariate analysis, statistical inference, data analysis and Linear algebra.

• **Recommended optional programme components**
N/A

• **Course contents**
A range of statistical learning methods are covered. For supervised learning: k-nn regression, spline regression, smooth spline. LDA, QDA, k-nn, decision trees. For unsupervised learning: clustering (hierarchical, optimization clustering, model-based), data reduction methods. Model Assessment and Selection.

• **Recommended or required reading**
- Hastie, Tibshirani and Friedman (2009) Elements of Statistical Learning, 2nd edition Springer
- James, Witten, Hastie and Tibshirani (2011) Introduction to Statistical Learning with applications in R, Springer
- B. S. Everitt, S. Landau, M. Leese, and D. Stahl (2011) Cluster Analysis, Fifth Edition, Wiley

• **Planned learning activities and teaching methods**
Lectures in class. Lab for implementation of the techniques, projects for the students during the course.

• **Assessment methods and criteria**
Written exam and projects

Introduction to Probability and Statistics using R

Instructor: TBA

7,5 ECTS credits

ADVANCED LEVEL

Course Unit Code: 9046
Level of course: Undergraduate
Year of study: 1st year

Objectives of the course:

The student will be able to understand and make use of basic concepts about statistics and probability. They will be able to have sufficient knowledge of R program, as to be capable to implement basic programs in order to perform basic statistical methods, to create and understand basic descriptive visualization, to manage data of certain complexity and to extract them from large datasets. They will be also able to comprehend basic characteristics of real data and communicate them efficiently

• Prerequisites and co-requisites

Students should have taken introductory courses in Probability, Statistics and R programming. The course is suitable only for Statistics students

• Recommended optional program components

None

• Course contents

Emphasis is given on R programming using ideas from probability and Statistics. So, the course is mainly an R programming course. The curse aims at introducing ideas from Probability and Statistics together with R programming. Such examples is using simulation to show and understand with the Central limit theorem, the law of large numbers, probability as frequency, descriptive statistics and their properties, etc.

• Recommended or required reading

- Verzani, J. (2018). Using R for introductory statistics. CRC press.
- Gelman, A. Nolan, D. (2002) Teaching Statistics: A bag of tricks. Oxford University Press
- Dalgaard, P. (2008) Introductory Statistics with R. Springer
- Kerns, J. (2011) Introduction to Probability and Statistics Using R. Available at http://cran.r-project.org/web/packages/IPSUR/vignettes/IPSUR.pdf

- Horgan, J. (2008) Probability with R: An Introduction with Computer Science Applications. Wiley
- Crawley, M.J. (2014) Statistics: An Introduction Using R, 2nd Edition, Wiley

• **Planned learning activities and teaching methods**

Teaching Method: Face to Face.
Teaching includes: Class lectures. Bibliography studying and analyzing. Tutorial. Assignments. Self Study.

• **Assessment methods and criteria**

80% Written exam at the end of the semester
20% (Project)

Actuarial Science I (Reading course)

Instructor: TBA

7 ECTS credits

Course Unit Code: 9032
Level of course: Undergraduate
Year of study: 2nd year
Semester/trimester: Spring (4th 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) -3rd 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: 1st 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.

Biostatistics (Master course)

Instructor: TBA

4 ECTS credits

Course Unit Code: 9038
Level of course: Postgraduate
Year of study: 1st year

Objectives of the course:

After successfully completing the course, students will be able to:

- recognize the appropriate study design in a medical study, and
- use appropriate measures and statistical methods to help the health scientist in deriving sensible conclusions.

• Prerequisites and co-requisites

Students should have basic knowledge of probability theory and statistics. For the programming assignments of the course, programming experience in R is required.

• Recommended optional program components

N/A

• Course contents

Introduction to epidemiology and epidemiological study designs. Measures of health and disease: Measures of disease frequency (prevalence, incidence), Risk measures (cumulative incidence or risk of disease, incidence rate of disease, odds of disease), Measures of exposure effect (risk ratio, rate ratio, odds ratio, risk difference, rate difference). Cohort studies: Rates, Rate ratio, Test of null hypothesis, Exposures with more than two levels, Stratified analysis of rates – Controlling for confounders. Survival analysis: Censored observations, The lifetable method, The Kaplan-Meier method, The log-rank and other tests for testing survival curves, The Nelson Aalen estimator, Survival regression (Cox's proportional hazard model, Aalen's additive model, Cox's time varying proportional hazard model). Case-control studies: Analysis of case-control studies (prospective/ retrospective approach), Analysis of unmatched case-control studies, Matched case-control studies, Choice of controls in case-control studies.

• Recommended or required reading

- Armitage, P.; Berry, G.; Matthews, J.N.S. Statistical Methods in Medical Research; Wiley: Hoboken, NJ, USA, 2002.
- Clayton, D.; Hills, M. Statistical Models in Epidemiology; Oxford University Press: Oxford, UK, 2013.

- Pocock SJ. Clinical trials: a practical approach. Wiley, New York, 2013.
- David W. Hosmer, Jr., Stanley Lemeshow, Susanne May, 2008 Applied Survival Analysis: Regression Modeling of Time to Event Data, 2nd Edition. Wiley Series in Probability and Statistics
- Kenneth J. Rothman, Sander Greenland, Timothy L. Lash, 2012 Modern Epidemiology Third Edition, Lippincott Williams & Wilkins

• **Planned learning activities and teaching methods**

One three-hour lecture per week, assignment as homework (to be submitted).

• **Assessment methods and criteria**

The final grade is the weighted average of the final examination grade (80%) and the grade of the assignment to be submitted (20%).

Advanced Stochastic Processes (Master course)

Instructor: TBA

3,5 ECTS credits

Course Unit Code: 9042
Level of course: Postgraduate
Year of study: 1st 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