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</table>
ACADEMIC SKILLS IN ENGLISH (The course is taught in English) (ΠΛ0115)

Coordinator: Kokkinou Ourania

Semester: 1st (Winter) | Orientation: Core Course - Compulsory | Weekly hours: 3 | ECTS: 5

Instructors: Kokkinou Ourania

General Competences
The course familiarizes students with the English academic vocabulary, the conventions of academic writing (plagiarism, citations/ references, describing graphs) and the strategies needed to deal with them (note-taking, summarizing, rephrasing). It is built around contemporary topics in the fields of economics and informatics and aims to develop the students’ personal reflection on and evaluation of the content. It requires a minimum of B1 level of competence.

Course Content
1. University campus and facilities
2. Great personalities in Computer Science
3. Internet of Things (IoT)
4. Open source
5. Social networks
6. Introduction to economics
7. Academic abstracts & scientific articles
8. Describing trends
9. Talking about Greece
10. Globalisation

Assessment
Group assignments 50% and final exam 50%.

Course Bibliography
(One of the following):


Additional material
(http://compus.uom.gr/INF201/index.php)
ALGORITHMS WITH C (ΠΛ0102-3)

Coordinator: Samaras Nikolaos
Semester: 1st (Winter) | Orientation: Core Course - Compulsory | Weekly hours: 3 | ECTS: 5
Instructors: Samaras Nikolaos

General Competences
The student will (a) learn the algorithmic thought, (b) gain familiarity with basic algorithms for sorting and searching and (c) be able to implement these algorithms in C.

Course Content
6. Graph Algorithms: Depth First Search, Breadth First Search, Graph connectivity, Directed acyclic graphs.
7. Special Topics on Algorithms: On-line algorithms, Dynamic Programming, Greedy algorithms, Backtracking, Branch and Bound.
9. Laboratory. Implementation of basic sorting and searching algorithms using C.

Assessment
Written Final examination 100%
Coursework (optional) 30%

Course Bibliography
(One of the following):

Additional material
Supplemental material and course slides.
APPLIED MATHEMATICS I (ΠΛ0111)

Coordinator: Sifaleras Angelo

Semester: 1st (Winter) | Orientation: Core Course - Compulsory | Weekly hours: 3 | ECTS: 5

Instructors: Sifaleras Angelo

General Competences
The student is introduced to the basic concepts and methods of Linear Algebra with SageMath.

Course Content
1. Matrices (Definitions – Properties of Operations – Introduction to SageMath)
2. Linear Systems
3. Vector Spaces – Applications
4. Projections – Linear transformations
5. Eigenvalues - Eigenvectors

Assessment
Written Final examination 100%

Course Bibliography
(One of the following):

Additional material
Instructor's Notes and Exercises ()
INTRODUCTION TO ECONOMICS (ΠΛ0105-2)

Coordinator: Katsouli-Katou Helen

Semester: 1st (Winter) | Orientation: Core Course - Compulsory | Weekly hours: 3 | ECTS: 5

Instructors: Katsouli-Katou Helen

General Competences
Upon completion of this course, students should be able to:
(a) Understand the basic principles of Economics
(b) Identify the main theories of Economics
(c) Apply the methodologies of Economics on real cases
(d) Use the tools of Economics in decision-making

Course Content
1. Fundamental concepts and methodological approach
2. Economic scarcity and social choice
3. The framework and the mechanism of the market
4. The role of the state
5. National product, Unemployment, Inflation
6. Consumption, Saving, Investment
7. Income determination
8. Income equilibrium
9. Monetary policy
10. External sector
11. Economic policies
12. The theory of choice and consumer demand
13. Production and cost
14. Types of markets

Assessment
Final written examinations 100%
Alternatively
Two progress examinations 100%

Course Bibliography
(One of the following):

Additional material
Instructor's Notes and Transparencies ()
INTRODUCTION TO INFORMATICS (ΠΛ0101-2)

Coordinator: Mamatas Eleftherios

Semester: 1st (Winter) | Orientation: Core Course - Compulsory | Weekly hours: 3 | ECTS: 5

Instructors: Mamatas Eleftherios, Souravlas Stavros, Papadimitriou Panagiotis

General Competences
(a) To familiarize with the various computer science branches; (b) to get a feeling of the various classes that will be taught during his/her studies.

Course Content
1. Introduction. Turing model, von Neumann model, Computer components
2. Number System. Positional number systems, Nonpositional number systems
3. Storing Data. Data types, Storing numbers - text - audio - images - video
4. Operations on Data. Logic operations, Shift operations, Arithmetic operations
5. System organization. Central processing unit, memory, storing devices, peripherals, bus.
9. Lab exercises in the Linux operating system, the digital typography system Latex and in computer networks.

Assessment
Written Final examination 100%

Course Bibliography
(One of the following):

Additional material
Course notes and presentations. ()
MANAGEMENT INFORMATION SYSTEMS (ΠΛ0113)

Coordinator: Manthou Vassiliki

Semester: 1st (Winter) | Orientation: Core Course - Compulsory | Weekly hours: 3 | ECTS: 5

Instructors: Manthou Vassiliki, Tambouris Efthimios

General Competences
The investigation of the role and impact of information systems in the business functions, through the examination of major models of strategy and management information systems used in today's business environment. Additionally, a conceptual approach through the use of case studies, of a series of information systems applied in the "extended" or "digital enterprise", such as Enterprise Resource Planning Systems (ERP), Customer Relationship Management Systems (CRM), Supply Chain Management Systems (SCM), Decision Support Systems.

Course Content
1. Business information systems in the career
2. E-Business: How businesses use information systems
3. Achieving competitive advantage with information systems
4. Information technology infrastructure
5. Achieving Operational Excellence and Customer Intimacy: Enterprise applications
7. Building and managing systems
8. Improved decision making and managing knowledge
9. Ethical and social issues in information systems

Assessment
Written Final examination 100%

Course Bibliography
(One of the following):


Additional material
Instructor's Notes and Slides ()
PROCEDURAL PROGRAMMING (ΠΛ0106-3)

Coordinator: Satratzemi Maria

Semester: 1st (Winter) | Orientation: Core Course - Compulsory | Weekly hours: 3 | ECTS: 5

Instructors: Satratzemi Maria, Chatzigeorgiou Alexandros, Xinogalos Stylianos, Sakellariou Ilias

General Competences
The course is an introduction to procedural programming, and problem solving techniques using the C language as a vehicle. By the end of the course the student will be able a) to understand the principles of procedural programming, b) to demonstrate the necessary skills for algorithm implementation in the C programming language, c) to develop, test and debug programs in a integrated programming environment.

Course Content

Assessment
Written Examination 55%
Mid-term Examination 30%
Compulsory Assignments 15%

Course Bibliography
(One of the following):


Additional material
Course website (http://compus.uom.gr/INF122/)
2nd SEMESTER

APPLIED MATHEMATICS II (ΠΛ0112)

Coordinator: Hristou - Varsakelis Dimitrios
Semester: 2nd (Spring) | Orientation: Core Course - Compulsory | Weekly hours: 3 | ECTS: 5
Instructors: Hristou - Varsakelis Dimitrios, Mamatas Eleftherios, Chalkidis Spyridonas

General Competences
Introduction to Mathematical Analysis, Optimization, Difference Equations, Differential Equations, Basic usage of Python.

Course Content
Course Content
1. Function differentiation - differentials
2. Differentiation of multivariable functions
3. Sequences, Series and Convergence
4. Taylor series and applications
5. Extrema of multivariable functions
6. Optimization with equality constraints
7. Difference Equations – equilibrium points, stability
8. Differential equations
9. Introduction to Python as a computational tool.

Assessment
Written Final examination 70%, Homeworks 30%

Course Bibliography
(One of the following):

Additional material
Class Notes ()
DATA STRUCTURES (ΠΛ0201)

Coordinator: Satratzemi Maria

Semester: 2nd (Spring) | Orientation: Core Course - Compulsory | Weekly hours: 3 | ECTS: 5

Instructors: Satratzemi Maria, Koloniari Georgia

General Competences
The goal of this course is the study of data structures and it is focused in two axes: a) the recognition and the development of useful mathematic models (Abstract Data Types (ADT) and their functions as well as the determination of categories of problems that they can solve. b) the development of methods of representation for the objects of abstract data models and the implementation of their functions in procedural programming language C.

Course Content
1. Introduction to Data Structures.
2. Stacks, Basic operations, implementing stacks with arrays and records, application of stacks.
3. Queues, Basic operations, implementing Queues with arrays and records, application of Queues.
4. Lists, Basic operations, sequential storage implementation of Lists.
5. Introduction to Linked Lists, array-based implementation of Linked Lists. A pointer-based implementation of Linked lists. A pointer-based implementation of Stacks and Queues.
8. Application of Binary Trees: Huffman Codes.
9. Hashing, open probing, Chaining.

Assessment
Written Examination 80%
Compulsory Assignments 20%

Course Bibliography
(One of the following):

Additional material
Course website (http://compus.uom.gr/INF159/)
DISCRETE MATHEMATICS (ΠΛ0108-3)

Coordinator: Petridou Sofia
Semester: 2nd (Spring) | Orientation: Core Course - Compulsory | Weekly hours: 3 | ECTS: 5
Instructors: Petridou Sofia

General Competences
The study of discrete objects and relationships among them. The study and implementation of computational methods in finite algebraic structures.

Course Content
1. Logic and proof: Statements and Logic - Predicates and quantifiers - Proof techniques - Mathematical induction.
3. Discrete probability: events and probabilities - conditional probability - random variables and expected values - covariance and correlation.
4. Relations - Operations - Structures: binary relations - representation of binary relations - properties of relations - equivalence relations and partial orders - binary operations - internal operation and equivalence classes - structures - isomorphisms.
5. Modular arithmetic - Cyclic groups: Divisibility - Euclidean algorithm - residues - "exponents" - cyclic groups - computations with big integers.

Assessment
Written Final examination 100%

Course Bibliography
(One of the following):


Additional material
()
FINANCIAL ACCOUNTING (ΠΛ0502-1)

Coordinator: Vazakidis Athanasios

Semester: 2nd (Spring) | Orientation: Core Course - Compulsory | Weekly hours: 3 | ECTS: 5

Instructors: Vazakidis Athanasios, Stavropoulos Antonios, Trakatelis Georgios

General Competences
This course is aiming to: Enable students familiar and aware of the essentials of accounting. Enable students capable of posting entries belonged to the general or financial accounting (Journal, general ledger, balance sheets). Enable students aware of posting entries in the accounting books of a company which is classified in the second class (B’ class) of book keeping using the manuscript method, and at the time capable for the accounting estimation of the value added tax (VAT). Enable students capable of posting entries in accounting books of a company which is classified in the second class of book keeping (B’ class) by the use of computer’ software.

Course Content

Assessment
Laboratory exams 35%
Final writing exams 65%

Course Bibliography
(One of the following):

Additional material
()
INTRODUCTION TO ALGORITHM ANALYSIS (ΠΛ0509-2)

Coordinator: Satratzemi Maria

Semester: 2nd (Spring) | Orientation: Core Course - Compulsory | Weekly hours: 3 | ECTS: 5

Instructors: Satratzemi Maria

General Competences
By the completion of the course the student will be acquainted with the basic mathematical concepts for algorithm analysis, will be able to compare the theoretical complexities of the algorithms and apply the basic methodology in developing efficient algorithms.

Course Content
1. The concepts of computational problem and algorithm. The detailed and simplified computational model. Examples.
2. Asymptotic analysis. The asymptotic symbols Ο, Θ, Ω. Properties of the asymptotic symbols. The value of Algorithm analysis. The concept of algorithm complexity (Worst, best and average case)
3. Analysis of iterative algorithms
4. Analysis of recursive and divide and conquer algorithms
10. Graphs: Max heap, Heapsort, MinMax heap, Double-ended heap (Deap). Complexity analysis

Assessment
Written Final examination 100%

Course Bibliography
(One of the following):

Additional material
Course website (http://compus.uom.gr/INF165/)
STATISTICS I (ΠΛ0104)

Coordinator: Papanastasiou Demetrios
Semester: 2nd (Spring) | Orientation: Core Course - Compulsory | Weekly hours: 3 | ECTS: 5
Instructors: Papanastasiou Demetrios

General Competences
The course is an introduction to the basics of the probability theory. The aim is to prepare the student to follow other subjects that require relative knowledge, such as statistics, operations research, etc. Calculations are implemented using the free source software R.

Course Content
1. Data (introduction to R, entry and presentation of data).
4. Random Variable: Discrete, continuous, expected value, conditional rv, independence.
5. Basic theoretical distributions.
6. Basic inequalities, LLN, CLT.

Assessment
Written examination, a four (4) question paper, very similar to those taught in the class.

Course Bibliography
(One of the following):

Additional material
Instructor's notes and slides, see http://compus.uom.gr/INF267 ()
COMPUTER ARCHITECTURE (ΠΛ0304-1)

Coordinator: Souravlas Stavros

Semester: 3rd (Winter) | Orientation: AI - Compulsory | Weekly hours: 3 | ECTS: 5

Instructors: Souravlas Stavros

General Competences

Computer Architecture deals with the logic design of the basic abstraction layers that facilitate the efficient execution of computer programs, according to current digital circuit technologies, with emphasis on processor and memory operation. Students must be able to explain the organization of a typical computer system, as well as the execution of a simple program on that system. Further, students must be able to design simple digital circuits, program in simple assembly language and estimate the performance of a simple computer system.

Course Content


Digital Logic: Information Representation, Logic Gates and Boolean Algebra, Basic Combinatorial Circuits, Basic Sequential Circuits and Memory, Buses.

Microarchitecture: Data Paths and Memory Models, Execution of Instructions and Microinstructions, Instruction Level Parallelism, Cache Memory, Performance Improvements.

Instruction Set Architecture: Data Types, Instruction Formats, Addressing Modes, Instruction Types, Flow Control, Assembly Language Programming.

Assessment

Optional programming assignment up to 2 additional marks

Course Bibliography

(One of the following):


Additional material

(http://www.etl.uom.gr/mr/index.php?mypage=archit)
Databases I (ΠΛ0501-1)

Coordinator: Evangelidis Georgios
Semester: 3rd (Winter) | Orientation: AI - Compulsory | Weekly hours: 3 | ECTS: 5
Instructors: Evangelidis Georgios, Koloniari Georgia

General Competences
The student will be able to: (a) design ER-diagrams for a database based on the requirements of a specific application, (b) transform an ER-diagram to a relational schema, (c) use specialized database modeling CASE tools to achieve the above, (d) derive a relational schema via normalization, (e) implement relational schemas in commercial DBMSs (e.g., Oracle) and open-source DBMSs (e.g., MySQL), (f) master relational algebra and use SQL to manage a database.

Course Content
Introduction to Databases.
The ER-model (Entity-Relationship model)
The relational model
Normalization (1NF, 2NF, 3NF)
Relational algebra
SQL introduction, QBE
SQL (nested queries)
SQL (aggregate queries)
SQL (advanced queries)
Normalization (4NF and 5NF)

Assessment
Written final examination 80%
Coursework 20%

Course Bibliography
(One of the following):

Additional material
Instructor’s Notes and Transparencies ()
DIGITAL ECONOMICS (ΠΛ0316)

Coordinator: Stiakakis Emmanuil

Semester: 3rd (Winter) | Orientation: AI - Compulsory | Weekly hours: 3 | ECTS: 5

Instructors: Stiakakis Emmanuil

General Competences
To investigate the characteristics of the digital economy and to comprehend the way in which these characteristics, related to each other, contribute to the improvement of the micro- and macro-economic measures.

Course Content
Introduction to the digital economy (From industrial economics to digital economics, Differences between the old and the new economy, Rules and characteristics of the new economy),
Productivity and new technologies (Productivity change measurement, The "productivity paradox", Integration of the digital goods into the productivity measurement),
Pricing policies in the Internet (Factors that influence pricing in the Internet, Internet pricing types, E-auctions, Pricing of the Internet services),
Information & Communication Technologies and digital divide (Determinants of the digital divide, Digital divide types, Measurement of the digital divide),
Economic consequences of the digital technologies on the environment (Analysis of the economic consequences of e-waste, Environmental pollution by the disposal and recycling of e-waste, Estimation methods of the e-waste produced quantity)

Assessment
Written examination 70%
Compulsory assignment 30%

Course Bibliography
(One of the following):


Additional material
()
FINANCE (ΠΛ0502)

Coordinator: Dasilas Apostolos

Semester: 3rd (Winter) | Orientation: AI - Compulsory | Weekly hours: 3 | ECTS: 5

Instructors: Dasilas Apostolos

General Competences

Students are introduced to the following concepts and practices in Finance:
1. Understanding the basic concepts in Financial Analysis and Management
2. Use of financial analysis tools in firms business operations.
3. Decision making based on the results of the financial analysis.
4. Competence in using spreadsheet type of software to solve problems in finance.

Course Content

1. Financial environment
2. Financial system
3. Financial statement analysis
4. Financial ratios
5. Depreciation methods
6. Sources and uses of funds
7. Time value of money
8. Security valuation
9. Cost of capital
10. Capital budgeting
11. Investment decision methods
12. Break-even analysis

Assessment

Written final examination: 100%

Course Bibliography

(One of the following):
68380751 ΧΡΗΜΑΤΟΟΙΚΟΝΟΜΙΚΗ ΔΙΟΙΚΗΣΗ, Τύπος: Σύγγραμμα, ΝΟΥΛΑΣ Γ. ΑΘΑΝΑΣΙΟΣ, 2015, ΝΟΥΛΑΣ Γ. ΑΘΑΝΑΣΙΟΣ, ISBN: 9789609148757

Additional material

(http://compus.uom.gr/INF110)
**OBJECT-ORIENTED PROGRAMMING (ΠΛ0401)**

Coordinator: Chatzigeorgiou Alexander

Semester: 3rd (Winter) | Orientation: AI - Compulsory | Weekly hours: 3 | ECTS: 5

Instructors: Chatzigeorgiou Alexander, Xinogalos Stylianos

**General Competences**
To understand the object-oriented way of thinking as a way to model and solve problems. To learn the basic elements of the object-oriented programming language Java.

**Course Content**

**Assessment**
Written examination (Lab) 100%
Optional programming assignment up to 2 additional marks

**Course Bibliography**
(One of the following):


**Additional material**

()
STATISTICS II (ΠΛ0202)

Coordinator: Papanastasiou Demetrios

Semester: 3rd (Winter) | Orientation: AI - Compulsory | Weekly hours: 3 | ECTS: 5

Instructors: Papanastasiou Demetrios

General Competences
A student must be able to make decisions by analyzing properly the statistical data in hand, using the free source software R. It is an introduction to the basics, such as (a) statistical hypothesis testing and confidence intervals, and (b) the linear regression model.

Course Content
Statistical data (introduction to R, entry and presentation of data). Basic Inference (sample, LLN, CLT, point estimation, confidence intervals for means, proportions and variances). Hypothesis Testing (fundamental notions, testing for means, proportions and variances, χ²-tests, ANOVA). Regression analysis (fundamental notions, diagnostic checking, case studies). Sampling methods (fundamental methods).

Assessment
Written examination, a four (4) question paper, very similar to those taught in the class. Some questions include R-code and print out, with which students should be familiar.

Course Bibliography
(One of the following):
50656357 ΕΙΣΑΓΩΓΗ ΣΤΗ ΣΤΑΤΙΣΤΙΚΗ ΜΕ ΤΗΝ R, JOHN VERZANI
32997808 Στατιστική Ανάλυση με το R, Crawley M.J.
32008 Στατιστική, Παπαδημητρίου Γιάννης

Additional material
Instructors' lecture notes on CoMPUS, http://compus.uom.gr/INF238
COMPUTER ARCHITECTURE (ΠΛ0304-1)

Coordinator: Souravlas Stavros
Semester: 3rd (Winter) | Orientation: TM - Compulsory | Weekly hours: 3 | ECTS: 5
Instructors: Souravlas Stavros

General Competences
Computer Architecture deals with the logic design of the basic abstraction layers that facilitate the efficient execution of computer programs, according to current digital circuit technologies, with emphasis on processor and memory operation. Students must be able to explain the organization of a typical computer system, as well as the execution of a simple program on that system. Further, students must be able to design simple digital circuits, program in simple assembly language and estimate the performance of a simple computer system.

Course Content
Digital Logic: Information Representation, Logic Gates and Boolean Algebra, Basic Combinatorial Circuits, Basic Sequential Circuits and Memory, Buses.
Microarchitecture: Data Paths and Memory Models, Execution of Instructions and Microinstructions, Instruction Level Parallelism, Cache Memory, Performance Improvements.
Instruction Set Architecture: Data Types, Instruction Formats, Addressing Modes, Instruction Types, Flow Control, Assembly Language Programming.

Assessment
Written final examination 100%

Course Bibliography
(One of the following):

Additional material
Instructor's Website (http://www.etl.uom.gr/mr/index.php?mypage=archit)
COMPUTER NETWORKS (ΠΛ0503-2)

Coordinator: Fouliras Panayotis

Semester: 3rd (Winter) | Orientation: TM - Compulsory | Weekly hours: 3 | ECTS: 5

Instructors: Fouliras Panayotis

General Competences
First, there is an introduction into the use of networks and the concepts of several network layers. Covered next are topics of computer network analysis and design, including aspects such as network structures and architectures OSI and TCP/IP, network examples, topologies, the physical layer, data connection layer, protocol analysis, sliding window protocols, ALOHA and CSMA/CD protocols, network layer, routing algorithms, flow control, network congestion, transport layer. This course also features major Internet applications (DNS, E-mail, WWW, etc.). Internet protocols are studied in the laboratory, too, with the aid of appropriate software.

Course Content

Assessment
Written final examination 80%
Mandatory Coursework 20%

Course Bibliography
(One of the following):
41960177 ΔΙΚΤΥΑ ΚΑΙ ΔΙΑΔΙΚΤΥΑ ΥΠΟΛΟΓΙΣΤΩΝ, DOUGLAS E. COMER
12534026 ΔΙΚΤΥΑ ΥΠΟΛΟΓΙΣΤΩΝ, ANDREW S. TANENBAUM, DAVID J. WETHERALL

Additional material
()
DATABASES I (ΠΛ0501-1)

Coordinator: Evangelidis Georgios

Semester: 3rd (Winter) | Orientation: TM - Compulsory | Weekly hours: 3 | ECTS: 5

Instructors: Evangelidis Georgios, Koloniari Georgia

General Competences
The student will be able to: (a) design ER-diagrams for a database based on the requirements of a specific application, (b) transform an ER-diagram to a relational schema, (c) use specialized database modeling CASE tools to achieve the above, (d) derive a relational schema via normalization, (e) implement relational schemas in commercial DBMSs (e.g., Oracle) and open-source DBMSs (e.g., MySQL), (f) master relational algebra and use SQL to manage a database.

Course Content
Introduction to Databases.
The ER-model (Entity-Relationship model)
The relational model
Normalization (1NF, 2NF, 3NF)
Relational algebra
SQL introduction, QBE
SQL (nested queries)
SQL (aggregate queries)
SQL (advanced queries)
Normalization (4NF and 5NF)

Assessment
Written final examination 80%
Coursework 20%

Course Bibliography
(One of the following):

Additional material
Instructor’s Notes and Transparencies ()
MANAGEMENT AND TECHNOLOGY (ΠΛ0317)

Coordinator: Fouskas Konstantinos

Semester: 3rd (Winter) | Orientation: TM - Compulsory | Weekly hours: 3 | ECTS: 5

Instructors: Fouskas Konstantinos

General Competences
The aim of this course is to familiarize the student with issues related to business administration, usage and application of technology in modern companies and e-business. To this end key issues related to business administration such as the basic functions and activities of the enterprise and the importance of management for business efficiency. It will additionally examine issues related to how technology is an integral part of modern business and how managers can handle it.

Course Content

Assessment
Written final examination 50%
Compulsory assignment/lab tests 50%

Course Bibliography
(One of the following):
50656013 Διοίκηση Επιχειρήσεων, 11η Έκδοση, Bateman Shell
68379703 Διοίκηση επιχειρήσεων, Robbins Stephen P., Decenzo David A., Coulter Mary

Additional material
(http://compus.uom.gr/MT186/)
OBJECT-ORIENTED PROGRAMMING (ΠΛ0401)

Coordinator: Chatzigeorgiou Alexander
Semester: 3rd (Winter) | Orientation: TM - Compulsory | Weekly hours: 3 | ECTS: 5
Instructors: Chatzigeorgiou Alexander, Xinogalos Stylianos

General Competences
To understand the object-oriented way of thinking as a way to model and solve problems. To learn the basic elements of the object-oriented programming language Java.

Course Content

Assessment
Written examination (Lab) 100%
Optional programming assignment up to 2 additional marks

Course Bibliography
(One of the following):

Additional material
()
WEB TECHNOLOGIES (ΠΛ0318)

Coordinator: Kaskalis Theodoros

Semester: 3rd (Winter) | Orientation: TM - Compulsory | Weekly hours: 3 | ECTS: 5

Instructors: Kaskalis Theodoros

General Competences
The subject aims in developing dynamic web pages and web applications, focusing on the “client-side” perspective. Emphasis is given in markup and scripting languages (HTML, CSS, Javascript) and it expands on aspects of networking programming.

Course Content

Assessment

Course Bibliography

(One of the following):

50658790 Μάθετε HTML 5, CSS και JavaScript Όλα σε Ένα, 2η Έκδ., Julie C. Meloni
12481635 Πλήρες Εγχειρίδιο της HTML 5 & CSS, 6η Έκδοση, Lemay Laura, Colburn Rafe

Additional material

(http://compus.uom.gr/MT177/)
4th SEMESTER

COMPUTER NETWORKS (ΠΛ0503-2)

Coordinator: Fouliras Panayotis
Semester: 4th (Spring) | Orientation: AI - Compulsory | Weekly hours: 3 | ECTS: 5
Instructors: Fouliras Panayotis

General Competences
First, there is an introduction into the use of networks and the concepts of several network layers. Covered next are topics of computer network analysis and design, including aspects such as network structures and architectures OSI and TCP/IP, network examples, topologies, the physical layer, data connection layer, protocol analysis, sliding window protocols, ALOHA and CSMA/CD protocols, network layer, routing algorithms, flow control, network congestion, transport layer. This course also features major Internet applications (DNS, E-mail, WWW, etc.). Internet protocols are studied in the laboratory, too, with the aid of appropriate software.

Course Content

Assessment
Written final examination 80%
Mandatory Coursework 20%

Course Bibliography

(One of the following):
41960177 ΔΙΚΤΥΑ ΚΑΙ ΔΙΑΔΙΚΤΥΑ ΥΠΟΛΟΓΙΣΤΩΝ, DOUGLAS E. COMER
12534026 ΔΙΚΤΥΑ ΥΠΟΛΟΓΙΣΤΩΝ, ANDREW S. TANENBAUM, DAVID J. WETHERALL

Additional material
()
DATABASES II (ΠΛ0601)

Coordinator: Evangelidis Georgios

Semester: 4th (Spring) | Orientation: AI - Compulsory | Weekly hours: 3 | ECTS: 5

Instructors: Evangelidis Georgios

General Competences
The student will be able to: (a) distinguish the components of a DBMS, (b) know the available file organizations and index types, (c) understand the importance of query optimization, (d) understand the notion of transaction and the DBMS recovery procedure, (e) connect and submit SQL queries to a DMBS when programming using a 3rd generation language.

Course Content
1. DBMS Architecture
2. Storing Data: Disks and Files
3. File Structures and Indexes
4. Tree IndexesHash-based Indexes
5. External Sorting
6. Relational Operators
7. Query Optimization
8. Transaction Management/Concurrency Control
9. Recovery
10. DBMS Connectivity- PHP and MySQL

Assessment
Written Final examination 80%
Coursework 20%

Course Bibliography
(One of the following):

Additional material
Instructor's Notes and Slides ()
HUMAN COMPUTER INTERACTION AND GRAPHICS (ΠΛ0420)

Coordinator: Kokkinidis Konstantinos-Iraklis
Semester: 4th (Spring) | Orientation: AI - Compulsory | Weekly hours: 3 | ECTS: 5
Instructors: Kokkinidis Konstantinos-Iraklis

General Competences

Course Content

Assessment
Written examination 100%

Course Bibliography

(One of the following):


Additional material
Instructor's Notes and Slides ()
LINEAR AND NETWORK PROGRAMMING (ΠΛ0313-2)

Coordinator: Samaras Nikolaos

Semester: 4th (Spring) | Orientation: AI - Compulsory | Weekly hours: 3 | ECTS: 5

Instructors: Samaras Nikolaos, Sifaleras Angelo

General Competences
The course aims to introduce the students to the algorithms for the solution of two of the most applied problems; The Linear and Network problems, as also it's applications in Informatics and in the scientific method for decision making in complicated economical and managerial decisions.

Course Content

Assessment
Written final examination 100%

Course Bibliography
(One of the following):


Additional material
Supplemental material and course slides. ()
OPERATING SYSTEMS (ΠΛ0404)

Coordinator: Souravlas Stavros

Semester: 4th (Spring) | Orientation: AI - Compulsory | Weekly hours: 3 | ECTS: 5

Instructors: Souravlas Stavros

General Competences
Analysis of the component architecture, operating principles, design issues, programming and usage interfaces, as well as algorithmic subjects of modern operating systems. Students should be able to explain the structure and functioning of a modern operating system, communication of operating system with computer hardware, control of file systems and disks, as well as input/output devices. Further, they should be able to explain the management of processes and threads, process scheduling, inter-process communication and deadlock avoidance, memory management with paging and segmentation. Finally the student should be able to use the programming and usage interfaces.

Course Content

Assessment

Course Bibliography
(One of the following):


Additional material
()
SOFTWARE ENGINEERING (ΠΛ0613)

Coordinator: Chatzigeorgiou Alexander

Semester: 4th (Spring) | Orientation: AI - Compulsory | Weekly hours: 3 | ECTS: 5

Instructors: Chatzigeorgiou Alexander

General Competences
To understand the principles underlying the development of large-scale software projects. To gain an understanding of the methodologies and techniques employed in each phase of the software lifecycle.

Course Content

Assessment
Written examination 65%
Compulsory Group Assignment 35%

Course Bibliography
(One of the following):


Additional material
()
DIGITAL TELECOMMUNICATIONS SYSTEMS (ΠΛ0526)

Coordinator: Psannis Konstantinos

Semester: 4th (Spring) | Orientation: TM - Compulsory | Weekly hours: 3 | ECTS: 5

Instructors: Psannis Konstantinos, Petridou Sofia, Mamatas Eleftherios

General Competences
Principles of Digital Communications/ Communication theory

Course Content

Assessment
Written final examination / assignment/Virtual labs

Course Bibliography
(One of the following):

Additional material
ebooks, papers, Demonstrations, Virtual Labs, Experiments (Labs) ()
INTERNET TECHNOLOGIES (ΠΛ0424)

Coordinator: Kaskalis Theodoros

Semester: 4th (Spring) | Orientation: TM - Compulsory | Weekly hours: 3 | ECTS: 5

Instructors: Kaskalis Theodoros, Xinogalos Stylianos

General Competences
Developing dynamic web pages and web applications, focusing on the “server-side” perspective. Emphasis is given in web server programs’ management, in scripting languages (PHP) and in Database Management Systems. Combining the above leads to dynamic web sites and web applications.

Course Content

Assessment

Course Bibliography
(One of the following):


Additional material
(http://compus.uom.gr/MT120)
OPERATING SYSTEMS (ΠΛ0404)

Coordinator: Souravlas Stavros

Semester: 4th (Spring) | Orientation: TM - Compulsory | Weekly hours: 3 | ECTS: 5

Instructors: Souravlas Stavros

General Competences
Analysis of the component architecture, operating principles, design issues, programming and usage interfaces, as well as algorithmic subjects of modern operating systems. Students should be able to explain the structure and functioning of a modern operating system, communication of operating system with computer hardware, control of file systems and disks, as well as input/output devices. Further, they should be able to explain the management of processes and threads, process scheduling, inter-process communication and deadlock avoidance, memory management with paging and segmentation. Finally the student should be able to use the programming and usage interfaces.

Course Content

Assessment
Written final examination 100-70%
Optional 3 (three) Courseworks 0-30%

Course Bibliography
(One of the following):

Additional material
Instructor’s website ()
OPERATIONS RESEARCH (ΠΛ0814-1)

Coordinator: Hristou - Varsakelis Dimitrios

Semester: 4th (Spring) | Orientation: TM - Compulsory | Weekly hours: 3 | ECTS: 5

Instructors: Hristou - Varsakelis Dimitrios, Samaras Nikolaos, Sifaleras Angelo

General Competences
Operations Research (OR) concerns the use of mathematical models, techniques and algorithms for the purposes of making optimal decisions in problems concerning engineering, economics, management, bioinformatics and many other areas. The course aims to help students a) understand the fundamental principles and results available for some of the most important classes of optimization problems and b) formulate and solve optimization problems using analytical and computational methods.

Course Content
1. Linear programming
2. Nonlinear programming
3. Laboratory exercises using SageMath

Assessment
Written final examination (70%), Homework assignments (30%)

Course Bibliography
(One of the following):

Additional material
Class Notes ()
PROBABILITY AND STATISTICS (ΠΛ0423)

Coordinator: Nikolaidis Ioannis

Semester: 4th (Spring) | Orientation: TM - Compulsory | Weekly hours: 3 | ECTS: 5

Instructors: Nikolaidis Ioannis

General Competences
The purpose of this course is for the students to get to know and familiarize themselves with some additional issues of Statistics (apart from those that they learnt about in Statistics I), which are absolutely necessary in many research and non-research projects. The students are introduced not only to Descriptive Statistics but also to Inferential Statistics (confidence intervals, hypotheses testing etc.) at first by theory and then through exercises, in order to be able to implement their knowledge in practice.

Course Content
Terminology: population, sample, random variable etc.
Data collection: from the entire population or samples. Graphical and numerical presentation of data. Frequency distribution.
Measures of Central Tendency and Dispersion.
Hypotheses testing. Testing for goodness of fit.
Regression-correlation

Assessment
100% final written exam, 5% for each project.

Course Bibliography
(One of the following):

Additional material
PRODUCTION AND OPERATIONS MANAGEMENT (ΠΙΛ0836)

Coordinator: Nikolaidis Ioannis

Semester: 4th (Spring) | Orientation: TM - Compulsory | Weekly hours: 3 | ECTS: 5

Instructors: Nikolaidis Ioannis, Stiakakis Emmanuil

General Competences
The purpose of this course is for the students to acquire basic knowledge regarding production systems and various types of production processes, as well as their relation with products’ and markets’ characteristics. The presentation of various approaches of plant layout helps the students understand any production system and the decision making system that is related with it. Besides, the course aims in the comprehension of administrative decisions of production planning and control, and their relation with the business strategy. Moreover, during the course basic knowledge regarding inventory management, reliability and equipment maintenance is given. Finally, in the framework of the specific course we examine the systems of efficiency measurement which constitute basic element of production improvement and decisive factor of production incorporation in the business strategy.

Course Content
1. Introduction – Operations
2. Strategic Management
3. Product development
4. Work organization
5. Design of the administrative organization
6. Capacity planning
7. Production planning (transportation modelling)
8. Visits – Guest lectures

Assessment
100% final written exam, 5% for each design project (that students work either during the course or at home).

Course Bibliography
(One of the following):

Additional material
COMPUTERIZED ACCOUNTING (ΠΛ0803)

Coordinator: Vazakidis Athanasios

Semester: 5th (Winter) | Orientation: AI - Compulsory | Weekly hours: 3 | ECTS: 5

Instructors: Vazakidis Athanasios, Stavropoulos Antonios, Trakatelis Georgios

General Competences
This course is aiming to: Enable students aware of the general accepted accounting principles (G.A.A.P.). Enable students aware of the content and the way by which Greek General Chart of Accounts is operating (classes of accounts 1-8). Enable students capable of posting entries in accounting books by using computers’ software. Enable students aware of posting entries in relation to the opening and closing of the accounting books. Enable students capable for the accounting treatment of individuals and business entities using the Greek Centre of Informational and Economics Affairs, the VAT, and the Greek Social Insurance Organization. Enable students capable of reporting the basic financial statements such as the balance sheet and the income statement. Content: Greek general accepted accounting principles and accounting standardization. Description and analysis of the Greek general chart of accounts using the eight classes (1st - 8th classes) of accounts classification. Understanding and using accounts such as: customers, vendors, creditors, accounts receivables, purchases and expenditures. Recognition of the existence of accounting errors in relation to the accounting doctrines and the results recorded in other accounts. Correct accounting errors, balancing their effects not only in the balance sheet but also in income statement, using counterbalancing and non counterbalancing approaches. Realization of concepts regarding tax subjects such as: direct and indirect taxes, tax bracket and gradual tax, value added tax (VAT) and its treatment in relation to the Greek legislation and general accepted accounting principles. Understanding and use of concepts related to insurance charges of employers and employees. Connection with Greek taxes net and accomplishment tax accounting tasks. Accounting of inventories. Reporting of accounting and financial transactions using the methodology related to the third class of book keeping (In relation to Greek Commercial and Tax Law). Generation of accounting reports, such as: general ledger, trial balance, balance sheet, profit and loss statement. Accounting exercises by the use of software. Accounting statements. Analytical presentation of accounting software by the use of computers and recording of representative movements of accounts with respect to the legal form of Greek companies. Case studies.

Course Content

Assessment
Written final examination 100%
Optional coursework 30%

Course Bibliography
(One of the following):
77244379 ΛΟΓΙΣΤΙΚΟ ΣΧΕΔΙΟ ΜΗΧΑΝΟΓΡΑΦΗΣΗ ΛΟΓΙΣΤΗΡΙΟΥ, ΒΑΖΑΚΙΔΗΣ ΑΘΑΝΑΣΙΟΣ, ΣΤΑΥΡΟΠΟΥΛΟΣ ΑΝΤΩΝΙΟΣ, ΧΑΤΖΗΣ ΑΝΑΣΤΑΣΙΟΣ

Additional material
Instructor’s notes and slides ()
DIGITAL TELECOMMUNICATIONS SYSTEMS (ΠΛ0526)

Coordinator: Psannis Konstantinos
Semester: 5th (Winter) | Orientation: AI - Compulsory | Weekly hours: 3 | ECTS: 5
Instructors: Psannis Konstantinos, Petridou Sofia, Mamatas Eleftherios

General Competences
Principles of Digital Communications/ Communication theory

Course Content

Assessment
Written final examination/ assignment/Virtual labs

Course Bibliography
(One of the following):

Additional material
ebooks, papers, Demonstrations, Virtual Labs, Experiments (Labs) ()
ECONOMETRICS I (ΠΛ0504)

Coordinator: Dritsakis Nikolaos

Semester: 5th (Winter) | Orientation: AI - Compulsory | Weekly hours: 3 | ECTS: 5

Instructors: Dritsakis Nikolaos

General Competences
This course aims to provide an empirical content in economic theories using basic tools of Mathematics and Statistics. General aims are as follows: empirical verification and theory testing, exercise of economic policy and future values forecasting on economic variables.

Course Content
1. Simple Regression
1.1 Introduction
1.2 Regression functions
1.3 Ordinary Least Squares Method
1.4 Properties of Regression Line
1.5 Hypotheses of Regression Model
1.6 Sampling distributions of least squares estimators
1.7 Properties of OLS estimators
1.8 Regression coefficients
1.9 Regression Line
1.10 Forecasting
2. Multiple Regression
2.1 Introduction
2.2 Regression functions
2.3 Ordinary Least Squares Method
2.4 Properties of Regression
2.5 The basic hypotheses of multiple regression model
2.6 Sampling distributions of least square estimators
2.7 Properties of OLS estimators
2.8 Regression coefficients
2.9 Regression Line
2.10 Investigation of multiple regression model
2.11 Special Topics
2.12 Regression Line Sensitivity
2.13 Forecasting
3. Hypotheses Violation: The non sphericity of errors
3.1 Introduction
3.2 Generalized least squares method
3.3 Generalized method of maximum likelihood
3.4 Other possible generalized estimation methods
3.5 Heteroscedasticity
3.6 Autocorrelation
3.7 Normality
4. Hypotheses Violation: Problems of Sample
4.1 Introduction
4.2 Multicollinearity
4.3 Specification Errors

Assessment
Written final examination 80%
Mandatory Coursework 20%

Course Bibliography
(One of the following):

Additional material
()
MARKETING INFORMATION SYSTEMS (ΠΛ0114)

Coordinator: Vlachopoulou Maro

Semester: 5th (Winter) | Orientation: AI – Compulsory | Weekly hours: 3 | ECTS: 5

Instructors: Vlachopoulou Maro, Mastoras Theodoros

General Competences

This course introduces students to the multiply elements of E-Marketing; Marketing Information Systems, e-Marketing, Internet / mobile marketing. Emphasis is on tools and techniques appropriate for the management of marketing information needed to support marketing decision making. To introduce students to a) the new ways ICT and Internet has changed the rules of marketing, (b) to current information systems and tools in the E-Marketing space, to teach students how (c) to design and facilitate a real world E-Marketing action /campaign, and (d) to measure its performance. Content Conceptual framework of E-marketing. Marketing Information Systems (MAIS), Internet marketing, online/digital marketing, mobile marketing, e- vs. traditional marketing, marketing applications. Current map of e-marketing, MAIS typology. Overview of marketing information systems, users and sources of marketing information. Database Marketing and Customers/Partners Relationship Management (CRM/PRM), knowledge-based marketing, applications of Geographic Information Systems in marketing (GIS), electronic identification and data collection systems (bar codes, EPOS, smart cards, etc.). E-marketing plan, e-marketing mix and e-marketing strategy. The use of electronic technology /systems/ networks in marketing: as a channel for marketing research, as a medium for promotion and relationship building, as a distribution channel, and as a platform for connecting groups and offering network services. Online customers behavior, differentiation and positioning strategies. Social media marketing and networks. Website marketing management. E-marketing performance metrics and analysis. Case Studies.

Course Content

Assessment

Essay (a literature review and empirical research paper) 30%
Case study (presentation and writing) 30%
Written final examination 40%

Course Bibliography

(One of the following):

Additional material

Instructor's website
(Students will access literature references and all other course materials online) (http://compus.uom.gr/INF173/)

Academic Year 2018-2019

Course orientation AI
MULTIMEDIA TECHNOLOGIES AND COMMUNICATIONS (ΠΛ0520)

Coordinator: Kokkinidis Konstantinos-Iraklis

Semester: 5th (Winter) | Orientation: AI - Compulsory | Weekly hours: 3 | ECTS: 5

Instructors: Kokkinidis Konstantinos-Iraklis

General Competences
After the completion of this course, the students will be capable to: - analyze and study various multimedia technologies - discuss and describe specialized topics of multimedia communications as well as to point the use of those concepts on developing, assessing, and evaluating multimedia applications. Content - multimedia technologies (digitization, compression & multimedia content-based analysis) - multimedia communications (requirements, protocols, real-time multimedia services, QoS, streaming technologies, multimedia transmission & synchronization) - multimedia systems - applications (interactive «retrieval systems: hypertext - hypermedia WWW», interpersonal «video-conferencing systems» and distribution «VoD systems»)

Course Content

Assessment
Written examination 100%

Course Bibliography
(One of the following):

Πρόσθετο Διδακτικό Υλικό:

Additional material
Slides ()
E-COMMERCE TECHNOLOGY (ΠΛ0521)

Coordinator: Georgiadis Christos
Semester: 5th (Winter) | Orientation: AI - Compulsory | Weekly hours: 3 | ECTS: 5
Instructors: Georgiadis Christos

General Competences
The student is introduced to several concepts (infrastructures, activities, programming techniques) involved with the development of e-commerce (EC) applications. At the end of the course, he/she should be able to: (a) understand current technologies of Web-based applications; (b) identify and express the typical requirements of EC applications; (c) design and develop small-scale Web-based and EC applications.

Course Content

Assessment
Written final examination 80%
Optional coursework 20%

Course Bibliography
(One of the following):
Επιλογές ελεύθερων συγγραμμάτων

Additional material
Instructor’s notes and slides. Instructor’s website
(Compus: http://compus.uom.gr/INF245/index.php ) (Compus)
BUSINESS POLICY AND STRATEGY (ΠΛ0524)

Coordinator: Kitsios Fotios

Semester: 5th (Winter) | Orientation: TM - Compulsory | Weekly hours: 3 | ECTS: 5

Instructors: Kitsios Fotios

General Competences
Structured market analysis, competition factors, value chains and competitive advantages, basic competition strategies, long-term goals and general strategies, shaping and implementing strategic decisions, outer and inner environment analysis, risk and strategic option, strategy analysis and evaluation, strategic planning. Preparation of strategic plans. Case studies.

Course Content

Assessment
Written final examination 70%
coursework 30%

Course Bibliography

(One of the following):


Additional material ()
DISTRIBUTED APPLICATIONS (ΠΛ0525)

Coordinator: Margaritis Konstantinos

Semester: 5th (Winter) | Orientation: TM - Compulsory | Weekly hours: 3 | ECTS: 5

Instructors: Margaritis Konstantinos

General Competences

• Distinguish between concurrent and distributed computing.
• Distinguish between multiple, theoretical and applied / programming constructs for task communication and coordination.
• Distinguish between basic types of modern models of distributed systems.
• Explain the advantages and disadvantages, benefits and complications of distributed systems.
• Explain why concurrent programming algorithms and structures are not sufficient in distributed systems and description of suitable alternatives.
• Describe the relative advantages and disadvantages of optimistic versus conservative concurrency control.
• Write programs that perform data marshaling and conversion into message units, to communicate simple data between two hosts.
• Implement simple client-server applications as well as Design a simple distributed system employing several modern technologies.

Course Content

• Introduction to Distributed Systems and Distributed Applications
• Middleware and Services
• Processes and Threads,
• Communication and Networking
• Client Server Model, and Applications
• Elements of Distributed Algorithms, Mutual Exclusion, Transactions, Load: Balancing, Fault Tolerance
• Remote Procedure Call and Applications
• Web Servers, Web Applications and Web Service
• Modern Distributed Systems Case Studies

Assessment

• Laboratory Exercises
• Written Examination

Course Bibliography

(One of the following):


Additional material

• Course web site (http://compus.uom.gr/MT169/)
• Parallel and Distributed Systems Programming with Java (in Greek), Π. Μιχαηλίδης, Κ.Γ. Μαργαρίτης, Πανεπιστημιακές Σημειώσεις (http://compus.uom.gr/MT169/)
ECONOMETRICS I (ΠΛ0504)

Coordinator: Dritsakis Nikolaos
Semester: 5th (Winter) | Orientation: TM - Compulsory | Weekly hours: 3 | ECTS: 5
Instructors: Dritsakis Nikolaos

General Competences
This course aims to provide an empirical content in economic theories using basic tools of Mathematics and Statistics. General aims are as follows: empirical verification and theory testing, exercise of economic policy and future values forecasting on economic variables.

Course Content
1. Simple Regression
   1.1 Introduction
   1.2 Regression functions
   1.3 Ordinary Least Squares Method
   1.4 Properties of Regression Line
   1.5 Hypotheses of Regression Model
   1.6 Sampling distributions of least squares estimators
   1.7 Properties of OLS estimators
   1.8 Regression coefficients
   1.9 Regression Line
   1.10 Forecasting
2. Multiple Regression
   2.1 Introduction
   2.2 Regression functions
   2.3 Ordinary Least Squares Method
   2.4 Properties of Regression
   2.5 The basic hypotheses of multiple regression model
   2.6 Sampling distributions of least square estimators
   2.7 Properties of OLS estimators
   2.8 Regression coefficients
   2.9 Regression Line
   2.10 Investigation of multiple regression model
   2.11 Special Topics
   2.12 Regression Line Sensitivity
   2.13 Forecasting
3. Hypotheses Violation: The non sphericity of errors
   3.1 Introduction
   3.2 Generalized least squares method
   3.3 Generalized method of maximum likelihood
   3.4 Other possible generalized estimation methods
   3.5 Heteroscedasticity
   3.6 Autocorrelation
   3.7 Normality
4. Hypotheses Violation: Problems of Sample
   4.1 Introduction
   4.2 Multicollinearity
   4.3 Specification Errors

Assessment
Written final examination 80%
coursework and a midterm test 20%

Course Bibliography
(One of the following):

Additional material
()
INFORMATION SYSTEMS ANALYSIS AND DESIGN (ΠΛ0603-1)

Coordinator: Tambouris Efthimios
Semester: 5th (Winter) | Orientation: TM - Compulsory | Weekly hours: 3 | ECTS: 5
Instructors: Tambouris Efthimios

General Competences
This course aims at developing the following skills and competences:

- analytical and synthetic ability in design and analysis of information systems
- decision making
- organizational, collaborative learning
- presentation and defense of positions
- writing skills
- teamwork
- evaluation and self-evaluation

After completing the course students will be able to:

- enumerate methodologies and phases of analyzing and designing information systems
- identify and enumerate the development phases of information systems
- distinguish the components and perform a feasibility study
- recognize the requirements collection methods and their components and apply and compare the main requirements elicitation strategies (BPA, BPI, BPR)
- analyze information systems using UML diagrams (usage cases, classes, objects)
- model business processes using UML activity diagrams
- design information systems using UML diagrams and model the behavior of a system using UML sequence diagrams
- use special tools to analyze and design information systems that support UML (such as VisualParadigm)

Course Content
This course aims at developing analytical and synthetic skills through the understanding and application of modern methods for Analysis and Design of Information Systems using the Unified Modeling Language (UML)

The structure of the course includes the following main subject areas:

- Introduction to information systems analysis and design, e-learning platform used and CaseStudy
- Preparation: Project start and project management
- Analysis: Collection of requirements and scenarios
- Analysis: Business Modeling – UML activity diagrams
- Analysis: Functional modeling – UML use case diagrams
- Analysis: Functional modeling – UML use case templates
- Analysis: Interfaces – HCI design
- Analysis: Structural modeling – UML class diagrams
- Analysis: structural modeling – UML object diagrams
- Design: concepts and design strategy – detailed UML class diagrams
- Design: behavioral modeling – UML sequence diagrams
- Implementation: From UML to Java
- Evaluation

Assessment
Student assessment is based on 3 main criteria with the corresponding gravity ratios:

- Final Examination: 50%
- Project of 4-5 students (Interim Reports / Progress Presentations, Deliverables, Final Report): 30%
- Individual work

Course Bibliography
(One of the following):

Greek bibliography
A. Dennis, B. H. Wixom, D. Tegarden, Ανάλυση και Σχεδιασμός Συστημάτων με την UML 2.0. Μια αντικειμενοστρεφής Προσέγγιση, 3η έκδοση, (μετάφραση: Χ. Τζίτζικας), Εκδ. Κλειδάριθμος, 2010
M. Fowler, Εισαγωγή στη UML, Εκδόσεις Κλειδάριθμος, 2006
B. Γερογιάννης κ.α., 2006, Αντικειμενοστρεφής Ανάπτυξη Λογισμικού με τη UML, Κλειδάριθμος
S. L. Pfleeger, 2003, Τεχνολογία Λογισμικού, Τόμος 1, 2η Αμερικάνικη Έκδοση, εκδ. Κλειδάριθμος
English bibliography

I. Sommerville, 2018, Software Engineering, 10th ed., Person Education Limited


Additional material
()

NETWORK AND INTERNET APPLICATIONS SECURITY (ΠΛ0825)

Coordinator: Mavridis Ioannis

Semester: 5th (Winter) | Orientation: TM - Compulsory | Weekly hours: 3 | ECTS: 5

Instructors: Mavridis Ioannis

General Competences
The student will (a) gain familiarity with protection requirements of modern information and communication systems, (b) learn the fundamental cryptology-based techniques for securing data processing and transmission over the Internet, (c) acquire experience on applying the above techniques in laboratory conditions.

Course Content
Basic concepts (Network and Internet security issues, Types of attacks and countermeasures, Comparison of security technologies)
Introduction to Cryptography (Terminology, Types of cryptographic systems and features of their components, Key-stream generators)
Classic Cryptographic Algorithms and Cryptanalysis (Caesar, Vigenere, One Time Pad / Vernam, ROT13, Transposition algorithms, Substitution algorithms, Application examples with CRYPTOOL)
Modern Symmetric Cryptographic Algorithms and Cryptanalysis (DES, 3-DES, AES, IDEA, RC2, RC4, etc, Modes of Operation (ECB, CBC, OFB, CFB), Application examples with CRYPTOOL)
Modern Asymmetric Cryptographic Algorithms and Cryptanalysis (Diffie-Hellman, ECDH, RSA, ECC, Application examples with CRYPTOOL)
Integrity Mechanisms (CBC-MAC, HMAC, OWHF, CRHF, MD5, SHA, DSA, ECDSA, etc, Application examples with CRYPTOOL)
Applications of Cryptography (message digests, digital signatures, digital certificates, etc)
Certification Infrastructures (Components and Features of Public Key Infrastructures - PKIs)
Protection of Digital Communications (S/MIME, PGP, Kerberos, SSL/TLS, IPsec, etc)
Protocols for Secure Transactions over the Internet (eCash, CAFE, NetCash, CyberCoin, CyberCash, iKP, SET, etc)
Wired Network and Web Applications Security (Issues, Critical vulnerabilities, Types of attacks, Case studies)
Firewalls and IDSs (Kinds of mechanisms, Architectures, Case studies)
Wireless Network security (Operational features and security issues, Protection mechanisms and protocols (WEP, WPA, IEEE 802.11i, etc), Techniques and types of attacks, Case studies)

Assessment
Written final examination 100%
Optional coursework up to 30%

Course Bibliography
(One of the following):

Additional material
Instructor's notes and slides ()
PROJECT PLANNING AND MANAGEMENT (ΠΛ0523)

Coordinator: Tambouris Efthimios
Semester: 5th (Spring) | Orientation: TM - Compulsory | Weekly hours: 3 | ECTS: 5
Instructors: Tambouris Efthimios, Mantas Michael

General Competences
This course aims at developing the following skills and competences:
• project design and management (using appropriate tools / software, e.g. Microsoft Project)
• implementation of project management principles and practice in “real-life” conditions (e.g. small-scale projects)
• decision making
• organizational, collaborative learning
• presentation and defense of positions
• writing skills
• teamwork, leadership, altruism
• evaluation and self-evaluation
After completing the course, students will be able to:
• define the aim, scope, objectives and basic structure of a project in a systematic manner
• select the appropriate project to implement
• design and analyze the organizational structure of a project (Work Breakdown Structure - WBS)
• perform Critical Path Method (CPM) time scheduling
• plan resource requirements and apply resource-smoothing techniques
• apply costing methods and control time allocation of cost
• apply risk and change management principles and techniques
• implement appropriate tools and techniques to monitor, control, review and improve the management process of a project
• perform the appropriate work for the proper completion and documentation of a project

Course Content
The course examines the overall life cycle of project management. In particular, issues analyzed include the definition and selection of a project, organization and structural analysis of the project, time planning, resource and cost management, change management and risk management, as well as control of implementation and evaluation of the project. Particular emphasis is put on the presentation and analysis of theory through practical training to address the major challenges facing the management of modern projects with emphasis on IT projects.

The structure of the course includes the following main topics / phases in the life cycle of a project management:
• Definition phase: Project aim and initiation
• Definition phase: Definition and Selection
• Design phase: Working in Groups
• Design phase: Work Breakdown Structure
• Design phase: Critical Path Management
• Design phase: Time scheduling and Gantt Graphs
• Design phase: Cost management
• Design phase: Change and risk management
• Implementation phase: Quality assurance and project control
• Implementation phase: Implementation of the project
• Evaluation Phase: Project Evaluation and Overview
• Evaluation Phase: Project Performance Improvement

Assessment
Student assessment is based on 2 main criteria with the corresponding gravity ratios:
• Final Examination: 50%
• Project of 4-5 students (Interim Reports / Progress Presentations, Deliverables, Final Report): 50%
Students are informed abo

Course Bibliography
(One of the following):

English bibliography

Related Scientific Journals
Project Management Journal
International Journal of Project Management
International Journal of Information Technology Project Management
International Journal of Managing Projects in Business
International Journal of Project Organisation and Management

Additional material
()
**ARTIFICIAL INTELLIGENCE (ΠΛ0701)**

**Coordinator:** Refanidis Ioannis  
**Semester:** 6th (Spring)  
**Orientation:** AI - Compulsory  
**Weekly hours:** 3  
**ECTS:** 5  

**Instructors:** Refanidis Ioannis

**General Competences**

Artificial Intelligence is an area of computer science with an increasing number of applications in the recent years. The aim of the course is to present the principles of the area, on which all modern applications are based. By the end of the course the student will be able to: (a) model problems and use suitable search algorithms to solve them; (b) represent knowledge and reason over it; (c) model and solve planning/scheduling problems.

**Course Content**


**Assessment**

Written examination 80%  
Homework 20%

**Course Bibliography**

(One of the following):

- Artificial Intelligence, a modern approach. STUART RUSSELL and PETER NORVIG, 3rd edition, Prentice Hall.

**Additional material**

Lecture slides. Exemplary solved exercises.  
Course site (http://compus.uom.gr/INF184/index.php)
ECONOMETRICS II (ΠΛ0709)

Coordinator: Dritsakis Nikolaos

Semester: 6th (Spring) | Orientation: AI - Compulsory | Weekly hours: 3 | ECTS: 5

Instructors: Dritsakis Nikolaos

General Competences
Upon completion of this course, students should be able to:(a) Understand the basic principles of Econometrics II(b) Identify the main theories of Econometrics II(c) Apply the methodologies of Econometrics II on real cases(d) Use the tools of Econometrics II in decision-making

Course Content
- Models with dummy variables (functional relocation, functional rotation, simultaneous functional relocation and rotation, simultaneous use of more than one qualitative explanatory variables, Use of dummy variables in seasonal analysis)
- Combining cross-section and time-series data (cross-section heteroscedasticity, cross-section independence and time-series autocorrelation, cross-section heteroscedasticity, cross-section correlation and time-series autocorrelation)
- Distributed-lag models (DLM) (Estimation of DLM, Estimation of DLM under restrictions with limited or unlimited number of lags, empirical DLM, methods of estimation of DLM with unlimited number of lags, diagnostic tests, and applications)
- Simultaneous equation models (simultaneous equations bias, identification, methods of estimation (indirect least squares, two-stages least squares), seemingly unrelated equations, diagnostic tests, model analysis)

Assessment
Written final examination 20%
Final examination in laboratory 80%

Course Bibliography
(One of the following):

Additional material
()
INFORMATION AND SYSTEMS SECURITY (ΠΛ0713-2)

Coordinator: Mavridis Ioannis

Semester: 6th (Spring) | Orientation: AI - Compulsory | Weekly hours: 3 | ECTS: 5

Instructors: Mavridis Ioannis

General Competences
The student will (a) learn the fundamental issues and principles of information and systems security, (b) gain familiarity with theoretical background like security models and policies, (c) acquire knowledge and experience on basic protection techniques and new directions on developing secure information systems.

Course Content
Introduction (Fundamental concepts, Security breaches, Vulnerabilities, Threats, Control measures, IS security requirements, Privacy protection)
Personal Computers Security - Malicious Code (Viruses, Warms, Trojan Horses)
Identification and Authentication (Techniques, media, standards, procedures and issues, Implementations in common operating systems)
Access Control (Discretionary, Mandatory, Role-based, Extensions and Implementations in common operating systems)
Risk Analysis and Assessment (Theoretical approaches, Application examples, Cramm and Cobra tools)
Computer Systems Security Evaluation (TCSEC criteria, ITSEC criteria, Federal criteria (FF), Common Criteria (CC))
Database Systems Security (Components and security domains, Implementations in the DBMS of ORACLE)
Mobile Computing Systems Security (Mobile computing systems infrastructure configuration, classification of security parameters, security mechanisms and standards)

Assessment
Written final examination 100%
Optional coursework 30%

Course Bibliography
(One of the following):


Additional material
Instructor's notes and slides ()
INFORMATION TECHNOLOGY LAW (IT LAW) (ΠΛ0617)

Coordinator: Alexandropoulou Evgenia
Semester: 6th (Spring) | Orientation: AI - Compulsory | Weekly hours: 3 | ECTS: 5
Instructors: Alexandropoulou Evgenia

General Competences
The aim of this course is to familiarize students with the legal framework of personal data protection, including the rules governing their electronic processing, as well as with the legal framework of intellectual rights in digital environment.

Course Content
Part I: Electronic processing of personal data (Legal framework/ Simple and sensitive personal data/ Obligations of data controllers/ Rights of data subjects/ Sanctions/ The Data Protection Authority)
Part II: IT and intellectual property. Historical background of copyright law/ The necessity of legal protection of copyright in the modern digital environment/ Modern legal environment of copyright / Legal protection of computer programmes, databases, multimedia/ Copyright transfer/ Right owners/ Right enforcements and sanctions/ Right collective management organizations/ Intellectual Property Organization

Assessment
Written Final examination 100%
Optional coursework

Course Bibliography
(One of the following):

Additional material
OPERATIONS RESEARCH (ΠΛ0814-1)

Coordinator: Hristou - Varsakelis Dimitrios

Semester: 6th (Spring) | Orientation: AI - Compulsory | Weekly hours: 3 | ECTS: 5

Instructors: Hristou - Varsakelis Dimitrios

General Competences
Operations Research (OR) concerns the use of mathematical models, techniques and algorithms for the purposes of making optimal decisions in problems concerning engineering, economics, management, bioinformatics and many other areas. The course aims to help students a) understand the fundamental principles and results available for some of the most important classes of optimization problems and b) formulate and solve optimization problems using analytical and computational methods.

Course Content
1. Linear programming
2. Nonlinear programming
3. Laboratory exercises using SageMath

Assessment
Written final examination (70%), Homework assignments (30%)

Course Bibliography
(One of the following):


Additional material
Class Notes ()
PARALLEL AND DISTRIBUTED COMPUTING (ΠΛ0621)

Coordinator: Margaritis Konstantinos
Semester: 6th (Spring) | Orientation: AI - Compulsory | Weekly hours: 3 | ECTS: 5
Instructors: Margaritis Konstantinos

General Competences
• Distinguish between concurrent, parallel and distributed computing.
• Distinguish between multiple, theoretical and applied / programming constructs for task communication and coordination.
• Distinguish between basic types of modern architectures / models of parallel and distributed computing systems.
• Selection and mapping of algorithms and applications on parallel and distributed computing systems.
• Application of basic types of parallel and distributed decomposition on algorithms and applications.
• Characterization of algorithms and applications based on their potential to be decomposed for parallel and distributed computation and initial estimation of the performance of the proposed solution.
• Writing of simple parallel and distributed applications including task creation, data distribution, computations, data collection and task termination.
• Debugging of simple parallel and distributed applications at algorithmic and programming level, and experimental estimation of application performance and scalability.

Course Content
• Fundamentals of Parallel and Distributed Computing: Concurrency, Communication and Coordination
• Parallel and Distributed Systems Architecture: Overview of Modern Computer Systems
• Software Support of Parallel and Distributed Computing: Systems Software, Programming Languages, Middleware
• Problem Decomposition and Programming Techniques for Parallel and Distributed Computing
• Algorithms and Performance Analysis for Parallel and Distributed Computing: an Introduction

Assessment
• Laboratory Exercises
• Written Examination

Course Bibliography
(One of the following):

Additional material
• Course web site
• Parallel and Distributed Systems Programming with Java (in Greek), Π. Μιχαηλίδης, Κ.Γ. Μαργαρίτης, Πανεπιστημιακές Σημειώσεις ()
EMBEDDED SYSTEMS (ΠΛ0623)
Coordinator: Kaskalis Theodoros
Semester: 6th (Spring) | Orientation: TM · Compulsory | Weekly hours: 3 | ECTS: 5
Instructors: Kaskalis Theodoros

General Competences
The subject aims to present the Embedded Systems’ ecosystem in a practical and also in a managerial way. The final target is the understanding of the immense penetration of digital technologies in everyday life and the methods that will allow this “ubiquitous” computing practice to become profitable business. The subject presents the design of hardware and software under a common perspective.

Course Content

Assessment
Written final examination
Coursework

Course Bibliography
(One of the following):

Additional material
(http://compus.uom.gr/MT144)
ENTERPRISE ARCHITECTURES (ΠΛ0624)

Coordinator: Vergidis Konstantinos
Semester: 6th (Spring) | Orientation: TM - Compulsory | Weekly hours: 3 | ECTS: 5
Instructors: Vergidis Konstantinos

General Competences

Course Content
Enterprise Architectures provide a holistic view of the Organisation that unified its various aspects such as: Business Processes, Information Systems, Human Resources etc. Throughout the course, various Enterprise Architecture Frameworks are presented that enable this holistic (re)structuring of the Organisation based on specific rules, constructs and principles. Enterprise Architectures allow the modelling and analysis of various aspects of the Enterprise in a systematic manner. They are an essential tool of design and analysis of complex business information systems. The course introduces software tools for the student to design and build a complete business model based on the principles of Enterprise Architectures.

Assessment

Course Bibliography

(One of the following):


Additional material

()}
MOBILE AND WIRELESS COMMUNICATIONS SYSTEMS (ΠΛ0841)

Coordinator: Psannis Konstantinos

Semester: 6th (Spring) | Orientation: TM - Compulsory | Weekly hours: 3 | ECTS: 5

Instructors: Psannis Konstantinos, Petridou Sofia

General Competences

Course Content

Assessment
Written final examination / Assignment/lab tests

Course Bibliography

(One of the following):


Additional material
ebooks, papers, Demonstrations, Virtual Labs, Experiments (http://compus.uom.gr) ()
QUALITY ASSURANCE AND QUALITY CONTROL TECHNIQUES (ΠΛ0625)

Coordinator: Nikolaidis Ioannis

Semester: 6th (Spring) | Orientation: TM - Compulsory | Weekly hours: 3 | ECTS: 5

Instructors: Nikolaidis Ioannis

General Competences
This course constitutes one of the most important “extensions” - applications of Probability and Statistics. In its framework, simple as well as more developed quality control techniques for products or processes which can be applied in any type of factory are presented to students. During this course students get in touch with industries through case studies and exercises of the real world. Finally, students become familiar with the relevant software.

Course Content

Assessment
100% final written exam, 5% for each project.

Course Bibliography
(One of the following):


Additional material
SUPPLY CHAIN MANAGEMENT (ΠΛ0622)

Coordinator: Madas Michael
Semester: 6th (Spring) | Orientation: TM - Compulsory | Weekly hours: 3 | ECTS: 5
Instructors: Mantas Michael

General Competences
The course aims to present topics related to the design, planning and operation of logistics and supply chain business functions of contemporary companies and organizations.

Course Content
The course covers the following thematic sections: i) introduction, structure and basic concepts of Supply Chain Management (SCM), ii) role and importance of SCM, iii) SCM operations and functions, iv) customer service, v) demand forecasting, vi) distribution channels, vii) inventory management, viii) warehousing, ix) freight transport and x) Greek and international logistics.

Assessment
Written final examination 60%
Coursework 40%

Course Bibliography
(One of the following):

Additional material
()
SYSTEMS DEVELOPMENT TECHNOLOGY (ΠΛ0626)

Coordinator: Vergidis Konstantinos

Semester: 6th (Spring) | Orientation: TM - Compulsory | Weekly hours: 3 | ECTS: 5

Instructors: Vergidis Konstantinos

General Competences

Course Content
The course focuses on software engineering principles and methods, with emphasis on developing Business Information Systems that cover specific business needs.
The course involves practice in configuring open software and using software as a service (SaaS) applications that are freely available on the web. Indicative examples of application areas are business portals, content management systems, business processes systems using BPEL and workflow systems.

Assessment

Course Bibliography
(One of the following):


Additional material
()
BUSINESS INNOVATION AND PRODUCTIVITY (ΠΛ0611-3)

Coordinator: Vlachopoulou Maro
Semester: 7th (Winter) | Orientation: AI - Elective | Weekly hours: 3 | ECTS: 5
Instructors: Vlachopoulou Maro, Stiakakis Emmanuil

General Competences
(a) To investigate business innovation as competitive advantage source, (b) to acquire knowledge with regard to productivity, (c) to comprehend the way in which innovation development and productivity increase contribute to competitiveness improvement of businesses.

Course Content

Assessment
Compulsory assignment 100%

Course Bibliography
(One of the following):

Additional material
Καραγιάννης, Η. Καινοτομία & Επιχειρηματικότητα: Θεωρία - πράξη, Αθήνα: Σοφία Δ.Ε., 2010
Burgelman, R.; Christensen, C. Wheelwright Strategic Management of Technology and Innovation, Boston, USA: McGraw-Hill, 2008 (Καραγιάννης, Η. Καινοτομία & Επιχειρηματικότητα)
COMPUTATION THEORY AND AUTOMATA (ΠΛ0506-1)

Coordinator: Refanidis Ioannis

Semester: 7th (Winter) | Orientation: AI - Elective | Weekly hours: 3 | ECTS: 5

Instructors: Refanidis Ioannis

General Competences
To be able (a) to recognize abstract models of computation (b) to identify various classes of computational problems (c) to formally describe problems.

Course Content

Assessment
Final examination 100%.
Optional homework up to an additional 30%

Course Bibliography
(One of the following):

Additional material
Lecture slides, exemplary solved exercises. (http://compus.uom.gr/INF201/index.php)
CRYPTOGRAPHY (ΠΛ0618)

Coordinator: Petridou Sofia

Semester: 7th (Winter) | Orientation: AI - Elective | Weekly hours: 3 | ECTS: 5

Instructors: Petridou Sofia

General Competences
Introduction to modern cryptology.

Course Content

Assessment
Coursework - Oral examination

Course Bibliography
(One of the following):

Additional material
(Σημειώσεις και διαφάνειες μαθήματος. (})
DECISION SUPPORT SYSTEMS (ΠΛ0805-1)

Coordinator: Hristou - Varsakelis Dimitrios

Semester: 7th (Winter) | Orientation: AI - Elective | Weekly hours: 3 | ECTS: 5

Instructors: Hristou - Varsakelis Dimitrios

General Competences
The course will run through a series of practical decision problems and their accompanying mathematical models. We will discuss appropriate solution techniques and tools from applied mathematics and optimization, in order to arrive at the “best” decisions in each case.

Course Content
Introduction to Decision Theory
Decision Trees
Utility theory
Multicriteria Decision-making
Introduction to discrete-time dynamical systems
Markov-based models
Dynamic Programming

Assessment
Written final examination 70%
Homework 30%

Course Bibliography
(One of the following):

Additional material
Instructor’s notes ()
GAME THEORY (ΠΛ0722)

Coordinator: Refanidis Ioannis
Semester: 7th (Winter) | Orientation: AI - Elective | Weekly hours: 3 | ECTS: 5
Instructors: Refanidis Ioannis

General Competences
To be able to (a) recognize and model game situations, (b) solve games through the identification of Nash equilibriums, (c) use Game Theory to interpret real-world situations.

Course Content

Assessment
Written final examination 100%
Optional homework up to an additional 30%

Course Bibliography
(One of the following):

Additional material
Lecture slides, exemplary solved exercises. (http://compus.uom.gr/INF201/index.php)
HIGH PERFORMANCE COMPUTING (ΠΛ0705-1)

Coordinator: Margaritis Konstantinos

Semester: 7th (Winter) | Orientation: AI - Elective | Weekly hours: 3 | ECTS: 5

Instructors: Margaritis Konstantinos

General Competences
- Explain the features of each classification in Flynn’s taxonomy, (MIMD, SIMD) as well as terms such as shared / distributed memory, SMP, multi-core, UMA / NUMA, MPP.
- Computer systems performance metrics and their calculation.
- Describe ILP and memory hierarchy and their limitations
- Describe assembly-level support for atomic operations.
- Describe the challenges and solutions in maintaining cache coherence in different systems.
- Describe the basic interconnection structures used in several parallel architectures.
- Describe the key performance challenges in different parallel systems.
- Describe the advantages and limitations of GPUs vs. CPUs and alternative models of CPU-GPU integration.
- Apply several parallel algorithmic and programming patterns and explain the field of application of each pattern.
- Calculate the implications of Amdahl’s and Gustafson’s law for a particular parallel algorithm and empirically measure the actual performance and scaling.
- Explain performance impacts of data locality.
- Detect and correct a load imbalance.
- Describe how data distribution/layout can affect an algorithm’s communication costs.
- Detect and correct an instance of false sharing.
- Apply Foster’s methodology for parallel application development.
- Implement basic parallel algorithms and applications (such as matrix, sorting, matching, graph etc computations) using shared memory, distributed memory, SIMD and GPU-based programming environments

Course Content
- High Performance Computing Architecture and Software Support
- Performance Evaluation and Analysis of Computer Systems and Applications
- Parallel Algorithms: Design, Implementation and Analysis
- Parallel Algorithmic and Programming Patterns
- Shared Memory Parallel Programming
- Distributed Memory Parallel Programming
- SIMD and GPU Accelerator Programming

Assessment
- Laboratoty Exercises
- Written Examination

Course Bibliography
(One of the following):


Additional material
- Course website (http://compus.uom.gr/INF120/)
- Τεχνικές Παράλληλου Προγραμματισμού, Β.Ρ.Ι.Σ.ΤΕΡΟΣ, Πανεπιστημιακές Σημειώσεις (Ιστοτόπος μαθήματος Τεχνικές Παράλληλου Προγραμματισμού, Β.Ρ.Ι.Σ.ΤΕΡΟΣ, Πανεπιστημιακές
INFORMATICS AND SUSTAINABLE DEVELOPMENT (ΠΛ0732)

Coordinator: Petridis Konstantinos
Semester: 7th (Winter) | Orientation: AI - Elective | Weekly hours: 3 | ECTS: 5
Instructors: Petridis Konstantinos

General Competences
Upon completion of the courses the student will be capable of:
1. Identifying the positive and negative impact of green ICT
2. Synthesizing and processing environmental data relating to issues and challenges of ICTs
3. Studying environmental efficiency and innovation techniques of ICT
4. Identifying the types of e-waste
5. Selecting and planning the e-waste quantities computational technique
6. Identifying the recycling techniques of e-waste

Course Content
1. Introduction to green ICTs
2. Trends and reasons of using green ICTs
3. Corporate value creation and environmental sustainability
4. Development of corporation strategy with green ICTs
5. Hardware design for a green corporations
6. Information Systems development for a green corporations
7. CO2 emissions in software development
8. Negative environmental impact of e-waste
9. E-waste handling systems
10. Methods for calculating electronic waste quantities
11. Methods for forecasting e-waste quantities
12. Socio-economic factors that affect e-waste maximum rejection rate
13. E-waste recycling
14. Environmental efficiency - environmental innovation and ICTs
15. Applications of green ICTs in developed and developing countries

Assessment
Assignment, Oral presentations

Course Bibliography
(One of the following):

Additional material
((http://compus.uom.gr/MT199/index.php))
KNOWLEDGE DISCOVERY FROM DATABASES (ΠΛ0823)

Coordinator: Evangelidis Georgios

Semester: 7th (Winter) | Orientation: AI - Elective | Weekly hours: 3 | ECTS: 5

Instructors: Evangelidis Georgios

General Competences
The student will be able to:
(a) understand the concepts behind knowledge discovery from databases,
(b) learn how to design Data Warehouses and apply OLAP analysis on multidimensional cubes,
(c) understand and learn how to apply data mining techniques like classification, clustering, association rules using well established tools (e.g., WEKA).

Course Content
Introduction to knowledge discovery from databases concepts - Data Warehousing - Multidimensional cubes - OLAP - Data Mining concepts - Classification - Clustering - Association Rules.

Assessment

Course Bibliography

(One of the following):


Additional material
(())
LOGISTICS INFORMATION SYSTEMS (ΠΛ0819)

Coordinator: Madas Michael

Semester: 7th (Winter) | Orientation: AI - Elective | Weekly hours: 3 | ECTS: 5

Instructors: Mantas Michael

General Competences
The course aims to present topics related to the planning, operation and decision support in logistics and supply chain management. Special emphasis is placed on the use of quantitative methods for the modelling and solution of relevant logistical and supply chain problems, as well as the application of emerging technologies and information systems in logistics and supply chain management.

Course Content
The course covers the following thematic sections: i) introduction, structure and basic concepts of Supply Chain Management (SCM), ii) main and supporting logistical functions, iii) warehousing, iv) facility location, v) supply chain modelling, vi) information systems in logistics and SCM and vii) advanced topics and emerging trends in SCM. The course includes laboratory sessions on the use of software for the optimization of SCM decisions and operations.

Assessment
Written final examination 100%
Optional coursework up to 30%

Course Bibliography
(One of the following):


Additional material


(Επιμέλεια)
MOBILE APPLICATION DEVELOPMENT (ΠΛ0733)

Coordinator: Chaikalis Theodoros
Semester: 7th (Winter) | Orientation: AI - Elective | Weekly hours: 3 | ECTS: 5
Instructors: Chaikalis Theodoros

General Competences
The in-depth understanding of the way that mobile software works and the acquisition of skills on the domain of mobile programming.

Course Content
1. Introduction to mobile devices
2. Presentation of android platform
3. Advanced topics on android architecture
4. Graphical user interface on mobile devices
5. Local storage management
6. Advanced topics on local storage management and database management
7. Multimedia (Sound and Video) management
8. Web services

Assessment
50% Group development project
50% Exams

Course Bibliography
(One of the following):

Additional material
(http://compus.uom.gr/MT199/index.php)
Networks and Internet Applications Security (ΠΛ0825)

Coordinator: Mavridis Ioannis

Semester: 7th (Winter) | Orientation: AI - Elective | Weekly hours: 3 | ECTS: 5

Instructors: Mavridis Ioannis

General Competences
The student will (a) gain familiarity with protection requirements of modern information and communication systems, (b) learn the fundamental cryptography-based techniques for securing data processing and transmission over the Internet, (c) acquire experience on applying the above techniques in laboratory conditions.

Course Content

- Basic concepts (Network and Internet security issues, Types of attacks and countermeasures, Comparison of security technologies)
- Introduction to Cryptography (Terminology, Types of cryptographic systems and features of their components, Key-stream generators)
- Classic Cryptographic Algorithms and Cryptanalysis (Caesar, Vigenere, One Time Pad / Vernam, ROT13, Transposition algorithms, Substitution algorithms, Application examples with CRYPTOOL)
- Modern Symmetric Cryptographic Algorithms and Cryptanalysis (DES, 3-DES, AES, IDEA, RC2, RC4, etc, Modes of Operation (ECB, CBC, OFB, CFB), Application examples with CRYPTOOL)
- Modern Asymmetric Cryptographic Algorithms and Cryptanalysis (Diffie-Hellman, ECDH, RSA, ECC, Application examples with CRYPTOOL)
- Integrity Mechanisms (CBC-MAC, HMAC, OWHF, CRHF, MD5, SHA, DSA, ECDSA, etc, Application examples with CRYPTOOL)
- Applications of Cryptography (message digests, digital signatures, digital certificates, etc)
- Certification Infrastructures (Components and Features of Public Key Infrastructures - PKIs)
- Protection of Digital Communications (S/MIME, PGP, Kerberos, SSL/TLS, IPsec, etc)
- Protocols for Secure Transactions over the Internet (eCash, CAFE, NetCash, CyberCoin, CyberCash, iKP, SET, etc)
- Wired Network and Web Applications Security (Issues, Critical vulnerabilities, Types of attacks, Case studies)
- Firewalls and IDSs (Kinds of mechanisms, Architectures, Case studies)
- Wireless Network Security (Operational features and security issues, Protection mechanisms and protocols)

Assessment

Written final examination and Optional coursework

Course Bibliography

(One of the following):


Additional material

()
SPECIAL ISSUES IN ACCOUNTING (ΠΛ0510)

Coordinator: Karagiannis Ioannis
Semester: 7th (Winter) | Orientation: AI - Elective | Weekly hours: 3 | ECTS: 5
Instructors: Karagiannis Ioannis

General Competences
SPECIAL SUBJECTS IN ACCOUNTING

Course Content
This course is aiming to:  
? Enable students familiar with the essentials of the Value Added Tax (VAT), listing in-trastat.  
? Enable students aware of labour relationships in Greece with references on topics such as industrials, payroll, and insurance.  
? Enable students capable of posting entries in accounting books (first, second and third class of categorization), and at the same time aware in relation to the composition of the periodical and annual VAT statements.  
? Enable students aware of real situations related to the termination of contracts (relationship between employees and employers), and VAT.

Content
This course examines the application of the Value Added Tax (VAT) to companies belonged to one of the three classes of books keeping in Greece accordingly with Greek general accepted accounting principles. In this framework the tax treatment of companies with a significant magnitude of entrepreneurial transactions, imports and exports inside and outside the European community is also analyzed. Additionally, issues related to the Greek law of labor such as recruitment, payroll, leave, holiday with pay, bonus of Christmas and Easter, maternity leave and redundancy pay are attributed. The lectures of this course combine theoretical examples and case studies which are solving using hand written and the use of software.

Assessment
Written final examination 100%  
Optional coursework up to 30%

Course Bibliography
(One of the following):

Additional material
()
UNIFIED COMMUNICATIONS AND APPLICATIONS (ΠΑ0737)

Coordinator: Psannis Konstantinos

Semester: 7th (Winter) | Orientation: AI - Elective | Weekly hours: 3 | ECTS: 5

Instructors: Psannis Konstantinos

General Competences
Unified Communications and their Apps

Course Content
Next generation communications systems, media communications, mobile and wireless communications, algorithms for communications systems and their apps, cloud computing, internet of things, big DATA, information theory

Assessment
Written final examination /assignment/ Virtual Labs

Course Bibliography
(One of the following):


50657185 Κινητές Τεχνολογίες, Τύπος: Σύγγραμμα, Δαμιανός Γαβαλάς, Βλάσης Κασαπάκης, Θωμάς Χατζηδημήτρης, 2015, Εκδόσεις Νέων Τεχνολογιών, ISBN: 978-960-578-007-4


Additional material
ebooks, papers, Demonstrations, Virtual Labs, Experiments (http://compus.uom.gr) ( )
ADVANCED INFORMATION SYSTEMS (ΠΛ0741)

Coordinator: Tambouris Efthimios
Semester: 7th (Winter) | Orientation: TM - Elective | Weekly hours: 3 | ECTS: 5
Instructors: Tambouris Efthimios

General Competences
This course aims at developing the following skills and competences:
• solving business problems and exploiting opportunities
• decision making
• organizational, collaborative learning
• presentation and defense of positions
• writing skills
• teamwork
• evaluation and self-evaluation

After completing the course students will be able to:
• know what is Open Data
• obtain Open Data
• visualize Open Data
• make decisions about the use of Open Data
• use software to retrieve, modify, and visualize Open Data

Course Content
The course aims to equip students with sufficient understanding of the importance of (Advanced) Information Systems (IS) in order to solve business problems and exploit new opportunities to achieve competitive advantage. The course will focus on the use of big data and especially of open data.
The structure of the course includes the following main subject areas:
• Definitions, benefits and challenges of Open Data
• Open Data recovery
• Open Data visualization
• Open Data analysis
• Problem and analysis presentations
• Open Data advanced topics
• Summary - general conclusions

Assessment
Student assessment is based on 2 main criteria with the corresponding gravity ratios:
• Final Examination: 50%
• Project of 3-4 students (Interim Reports / Progress Presentations, Deliverables, Final Report): 50%

Course Bibliography
(One of the following):

Greek bibliography
Πληροφοριακά Συστήματα Παγκοσμίου Ιστού, Α. Βακάλη – Ζ. Παπαμήτσιου,2012, Εκδ. Νέων Τεχνολογιών
Grigoris Antoniou και Frank van Harmelen, Εισαγωγή στον Σημασιολογικό Ιστό, 2η έκδοση, 2009, Εκδ. Κλειδάριθμος (Ελληνική Έκδοση)
F. GUY, D. AVISON, ΠΡΟΗΓΜΕΝΑ ΠΛΗΡΟΦΟΡΙΑΚΑ ΣΥΣΤΗΜΑΤΑ, 2007,ΕΚΔΟΣΕΙΣ ΝΕΩΝ ΤΕΧΝΟΛΟΓΙΩΝ ΑΘΗΝΑ

Additional material
Lecture notes and Tutorials for all applications used within the course.
BUSINESS MODELLING (ΠΛ0738)

Coordinator: Vergidis Konstantinos

Semester: 7th (Winter) | Orientation: TM - Elective | Weekly hours: 3 | ECTS: 5

Instructors: Vergidis Konstantinos

General Competences
During the course, students become familiarized with theories, principles, methodologies, tools and use cases related to Business Modelling (BM). The BM area is placed vis-a-vis Model Driven Architecture and Design (MDA/MDD) as well as to the relevant courses of Enterprise Architectures and Information Systems Analysis and Design. The course focuses on process and data modelling. Several formalisms and tools are presented. Real world use cases will be analyzed and process/data models will be drafted by the students.

Course Content

Assessment
Midterm tests 50%
Coursework 50%

Course Bibliography

(One of the following):

Additional material
(Οι διαφάνειες του μαθήματος, χρήσιμοι σύνδεσμοι (links) καθώς και επιπρόσθετο υλικό θα γίνεται διαθέσιμο μέσω της πλατφόρμας compus. (})
COMPUTERIZED ACCOUNTING (ΠΛ0803)

Coordinator: Vazakidis Athanasios

Semester: 7th (Winter) | Orientation: TM - Elective | Weekly hours: 3 | ECTS: 5

Instructors: Vazakidis Athanasios, Stavropoulos Antonios, Trakatelis Georgios

General Competences

Course Content

Assessment
Written final examination 100%
Optional coursework up to 30%

Course Bibliography

(One of the following):

Additional material
(Σημειώσεις και διαφάνειες μαθήματος. ())
DECISION SUPPORT SYSTEMS (ΠΛ0805-1)

Coordinator: Hristou - Varsakelis Dimitrios

Semester: 7th (Winter) | Orientation: TM - Elective | Weekly hours: 3 | ECTS: 5

Instructors: Hristou - Varsakelis Dimitrios

General Competences
The course will run through a series of practical decision problems and their accompanying mathematical models. We will discuss appropriate solution techniques and tools from applied mathematics and optimization, in order to arrive at the “best” decisions in each case.

Course Content
Introduction to Decision Theory
Decision Trees
Utility theory
Multicriteria Decision-making
Introduction to discrete-time dynamical systems
Markov-based models
Dynamic Programming

Assessment
Written final examination 70%
Homework 30%

Course Bibliography
(One of the following):


Additional material
Instructor's notes ()
DESIGN AND PRODUCTION TECHNOLOGIES (ΠΛ0735)

Coordinator: Vergidis Konstantinos

Semester: 7th (Winter) | Orientation: TM - Elective | Weekly hours: 3 | ECTS: 5

Instructors: Vergidis Konstantinos

General Competences

Course Content

Assessment
Written final examination 50%
2 (two) midterm tests 50% (2*25%)  

Course Bibliography
(One of the following):

Additional material
(Οι διαφάνειες του μαθήματος, χρήσιμοι σύνδεσμοι (links) καθώς και επιπρόσθετο υλικό θα γίνεται διαθέσιμο μέσω της πλατφόρμας compus (J))
DIGITAL MEDIA COMMUNICATION SYSTEMS (ΠΛ0731)

Coordinator: Psannis Konstantinos
Semester: 7th (Winter) | Orientation: TM - Elective | Weekly hours: 3 | ECTS: 5
Instructors: Psannis Konstantinos

General Competences
Business Data Communications and their Applications

Course Content
Data Communications for Enterprise, Convergence and Unified Communications, Business Information Requirements, Transmission of Information, Distributed Data Processing, Business Information (Audio, Data, Image, Video), Data Transmission, Signals for Conveying Information, Transmission Media, Transmission Impairments, Communications Channels, Channel capacity, Shannon bound, Nyquist Bandwidth, Data Communication Fundamentals, Analog and Digital Data Communications, Data Encoding Techniques, Flow Control and Error Control, Asynchronous and Synchronous Transmission, Error Detection, Multiplexing, Telecommunications Products, Standards, Performance Parameters of Coding and Modulation Scheme, Data Communication Services for Enterprises, Quality of Services, Quality of Experience), Multimedia Applications for Enterprises Internet Operation Quality of Service, Quality of Experience, Business Data Communications: Case Studies (Internet of things, Cloud-based Data Communications, Convergence and Unified Communications)

Assessment
Written final examination 60%
Compulsory assignment/lab tests 40%

Course Bibliography

(One of the following):


Additional material
DIGITAL SYSTEMS' DESIGN AND PROGRAMMING (ΠΛ0742)

Coordinator: Kaskalis Theodoros
Semester: 7th (Winter) | Orientation: TM - Elective | Weekly hours: 3 | ECTS: 5
Instructors: Kaskalis Theodoros

General Competences
Elective module subject aiming to provide full understanding about the process of producing and programming digital systems, from the phase of the initial concept idea to the point of the final product programming.

Course Content

Assessment
Midterm tests, final coursework, final examination

Course Bibliography
(One of the following):

Additional material
(Διαφάνειες μαθήματος, Προτεινόμενα sites, ιστοσελίδα μαθήματος (http://compus.uom.gr/MT184))
ENTREPRENEURSHIP AND TECHNOLOGY INNOVATION (ΠΙΛ0739)

Coordinator: Fouskas Konstantinos

Semester: 7th (Winter) | Orientation: TM - Elective | Weekly hours: 3 | ECTS: 5

Instructors: Fouskas Konstantinos

General Competences
During this course we will examine the concepts of entrepreneurship and innovation, focusing on their technological dimension. We will analyze the business process from conception to finding financial resources and launch of a start-up. It will also examine the concepts, procedures and practices of innovation, management modes and methods of assessment. The presentations will be accompanied by actual case studies from both Greek and international business environment, while, speakers from leading companies and organizations with relevant experience will be invited. The purpose of this course is to introduce students to the concept of entrepreneurship and innovation, they can develop innovative thinking and to equip and skills that will help them in their business pursuits.

Course Content
• Introduction to Innovation • Strategy and Technological Innovation • Innovation Management and Practices • Systems and innovation policies • Creativity in the enterprise • Introduction to Entrepreneurship • Business model and business plan • Analysis of competition and targeting • Development and management of groups and organizations • Financial Analysis and early stages operations

Assessment
Written final examination 30%
Compulsory assignment/lab tests 70%

Course Bibliography
(One of the following):


Additional material
(Σημειώσεις και διαφάνειες μαθήματος (http://compus.uom.gr/MT174))
INFORMATICS AND SUSTAINABLE DEVELOPMENT (ΠΛ0732)

Coordinator: Petridis Konstantinos
Semester: 7th (Winter) | Orientation: TM - Elective | Weekly hours: 3 | ECTS: 5
Instructors: Petridis Konstantinos

General Competences
Upon completion of the courses the student will be capable of:
1. Identifying the positive and negative impact of green ICT
2. Synthesizing and processing environmental data relating to issues and challenges of ICTs
3. Studying environmental efficiency and innovation techniques of ICT
4. Identifying the types of e-waste
5. Selecting and planning the e-waste quantities computational technique
6. Identifying the recycling techniques of e-waste

Course Content
1. Introduction to green ICTs
2. Trends and reasons of using green ICTs
3. Corporate value creation and environmental sustainability
4. Development of corporation strategy with green ICTs
5. Hardware design for a green corporations
6. Information Systems development for a green corporations
7. CO2 emissions in software development
8. Negative environmental impact of e-waste
9. E-waste handling systems
10. Methods for calculating electronic waste quantities
11. Methods for forecasting e-waste quantities
12. Socio-economic factors that affect e-waste maximum rejection rate
13. E-waste recycling
14. Environmental efficiency - environmental innovation and ICTs
15. Applications of green ICTs in developed and developing countries

Assessment
Assignment, Oral presentations

Course Bibliography
(One of the following):

Additional material
-Alexandropoulou, E., Copyright and Information Technology, ed. Themis-N.A. Sa (http://compus.uom.gr/MT199/index.php)
INNOVATIVE SERVICE AND PRODUCT DEVELOPMENT (ΠΛ0740)

Coordinator: Kitsios Fotios
Semester: 7th (Winter) | Orientation: TM - Elective | Weekly hours: 3 | ECTS: 5
Instructors: Kitsios Fotios

General Competences
The importance of new products and services, organization for new products and services, parallel parallel mechanics, product planning, customer demands, products and services specifications, generation and benchmarking of new ideas, product architecture, designing and manufacturing technologies, product life cycle management, promotion and advertisement of new products and services. Cases analysis.

Course Content

Assessment
Final examination 60%
Coursework and oral examination 40%

Course Bibliography
(One of the following):


Additional material
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MOBILE APPLICATION DEVELOPMENT (ΠΛ0733)

Coordinator: Chaikalis Theodoros

Semester: 7th (Winter) | Orientation: TM - Elective | Weekly hours: 3 | ECTS: 5

Instructors: Chaikalis Theodoros

General Competences
The in-depth understanding of the way that mobile software works and the acquisition of skills on the domain of mobile programming.

Course Content
1. Introduction to mobile devices
2. Presentation of android platform
3. Advanced topics on android architecture
4. Graphical user interface on mobile devices
5. Local storage management
6. Advanced topics on local storage management and database management
7. Multimedia (Sound and Video) management
8. Web services

Assessment
50% Group development project
50% Exams

Course Bibliography
(One of the following):

Additional material
(http://compus.uom.gr/MT199/index.php)
SPECIAL CHAPTERS OF APPLIED STATISTICS AND QUALITY CONTROL

(ΠΛ0736)

Coordinator: Nikolaidis Ioannis

Semester: 7th (Winter) | Orientation: TM - Elective | Weekly hours: 3 | ECTS: 5

Instructors: Nikolaidis Ioannis

General Competences
The purpose of this course is for the students to get to know and familiarize themselves with a number of special chapters of Statistics, Statistical Quality Control and, in general, Operations Research. This will be done at the lab and through the use of simple or advanced software, like Excel and Minitab - Crystal Ball respectively. The students are introduced to this wide research area partly through theory and partly through working on case studies at the lab. Finally, their knowledge is broadened through analyzing applied case studies.

Course Content
Introduction: discrete and continuous distributions, sampling distributions, central limit theorem, etc.
Applications on point estimations and confidence interval estimations.
Theory and applications on Hypotheses testing and testing for goodness of fit.
Theory and applications on linear regression.
Exercises on acceptance sampling for attributes and by variables, control charts (for attributes or variables) and determination of control chart parameters.

Assessment

Course Bibliography
(One of the following):


Additional material
1. «Εφαρμοσμένη Στατιστική», Όθωνας Παπαδήμας, Χρήστος Κούλιας, και
2. «Μαθήματα Εφαρμοσμένης Στατιστικής με χρήση του Microsoft Excel (με ασκήσεις)», Λιώκη-Λειβαδά Ηρώ, Ασημακόπουλος Δημοσθένης Ν.
UNIFIED COMMUNICATIONS AND APPLICATIONS (ΠΛ0737)
Coordinator: Psannis Konstantinos
Semester: 7th (Winter) | Orientation: TM - Elective | Weekly hours: 3 | ECTS: 5
Instructors: Psannis Konstantinos

General Competences
Unified Communications and their Apps

Course Content
Next generation communications systems, media communications, mobile and wireless communications, algorithms for communications systems and their apps, cloud computing, internet of things, big DATA, information theory

Assessment
Written final examination /assignment/ Virtual Labs

Course Bibliography
(One of the following):
50657185 Κινητές Τεχνολογίες, Τύπος: Σύγγραμμα, Δαμιανός Γαβαλάς, Βλάσης Κασαπάκης, Θωμάς Χατζηδημήτρης, 2015, Εκδόσεις Νέων Τεχνολογιών, ISBN: 978-960-578-007-4
41963074 Το Δίκτυο LTE, Τύπος: Σύγγραμμα, Λούβρος Σπυρίδων, 2014, Εκδόσεις Νέων Τεχνολογιών, ISBN: 978-960-6759-16-

Additional material
ebooks, papers, Demonstrations, Virtual Labs , Experiments (http://compus.uom.gr) (())
BIG DATA MINING (ΠΛ0833)

Coordinator: Karakasidis Alexandros

Semester: 8th (Spring) | Orientation: AI - Elective | Weekly hours: 3 | ECTS: 5

Instructors: Karakasidis Alexandros

General Competences
The lesson focuses on learning the management of Big Data. After the successful completion of the course, the students will be able to:

• Identify the sources and the characteristics of Big Data and how these characteristics affect Big Data management.
• Use the existing Big Data management platforms.
• Understand programming concepts, structures and techniques for Big Data management.
• Use R and Python for data analysis.
• Understand and implement the basic existing algorithm for Big Data mining.
• Design algorithms appropriate for execution on Big Data platforms.
• Write programs for Big Data Management platforms.
• Perform teamwork for designing and implementing Big Data applications.

Course Content
1. Introduction to Big Data Analytics – Big Data Platforms.
2. Introduction to Python. Introduction to R. R Studio.
4. Introduction to MapReduce. Algorithm design with MapReduce.
11. Graph and Social Graph Analysis: Clustering, Graph Summarization, Discovery of Communities.
12. Large Scale Machine Learning: SVMs.

Assessment
30% Exercises
50% Project
20% Final exam

Course Bibliography
(One of the following):

Additional material
( (http://compus.uom.gr/MT199/index.php))
BLOCKCHAIN TECHNOLOGIES AND DECENTRALIZED APPLICATIONS (ΠΛ0844)

Coordinator: Mavridis Ioannis

Semester: 8th (Spring) | Orientation: AI - Elective | Weekly hours: 3 | ECTS: 5

Instructors: Mavridis Ioannis, Fouliras Panayotis

General Competences

Course Content

Assessment

Course Bibliography

(One of the following):

Additional material
CLOUD COMPUTING (ΠΛ0831)

Coordinator: Papadimitriou Panagiotis

Semester: 8th (Spring) | Orientation: AI - Elective | Weekly hours: 3 | ECTS: 5

Instructors: Papadimitriou Panagiotis

General Competences
The course aims to provide a thorough understanding of cloud computing concepts, applications, technologies, and cloud data-center architectures.

Course Content
Introduction to Cloud Computing
Cloud Characteristics, Cloud Deployment Models
Roles and Cloud Services (IaaS, PaaS, SaaS)
Server Virtualization, Network Virtualization, Network Interface Virtualization
Datacenters: Scale-out model, Topologies, Architectures
Cloud management: Virtual switching, Virtual machine migration, Fault management
Cloud storage: Key-value stores, Amazon S3
Cloud Pricing Models
Service Level Agreements

Assessment
Written Exam (100%)

Course Bibliography
(One of the following):

Additional material
Course website (http://compus.uom.gr/INF281/), Slides. (http://compus.uom.gr/INF281)
COMBINATORIAL OPTIMIZATION (ΠΛ0842)

Coordinator: Sifaleras Angelo

Semester: 8th (Spring) | Orientation: AI - Elective | Weekly hours: 3 | ECTS: 5

Instructors: Sifaleras Angelo, Samaras Nikolaos

General Competences

Introduction to network optimization models and integer programming, and more specifically in problem modelling and network optimization applications for the design of large-scale networks. The shortest path problem, the minimum spanning tree problem, the maximum flow problem, and the minimum cost network flow problem. Furthermore, the student will be introduced to modelling and solution techniques for integer programming problems, branch & bound algorithm, dynamic programming, and special problems such as the Steiner tree problem and the traveling salesman problem (TSP). The student, apart from the methodology in each section, will learn how to use state-of-the-art optimization software packages such as the CPLEX & Gurobi solvers and the modelling language AMPL.

Course Content

Assessment
Written final examination

Course Bibliography

(One of the following):


Additional material

COMPUTER NETWORKS DEPLOYMENT AND MANAGEMENT (ΠΛ0610-2)

Coordinator: Fouliras Panayotis

Semester: 8th (Spring) | Orientation: AI - Elective | Weekly hours: 3 | ECTS: 5

Instructors: Fouliras Panayotis

General Competences
In-depth comprehension of basic protocols function at the transport and application layer, as well as programming network applications using the Socket API. Network planning, deployment and monitoring using related software tools.

Course Content
Transport layer. Detailed examination of TCP operation and that of its many variations, as well as important protocols at the application layer. How a router works and the basic routing protocols. NAT and Virtual Private Networks (VPN). Examples. Network application programming using the Socket API - examples in various programming languages. Network monitoring and examples using Wireshark. Quality of Service (QoS) - IntServ and DiffServ. Network simulation using popular simulators (e.g., ns-2, OMNeT++). Programming a simple network analyzer (Sniffer). The Simple Network Management Protocol (SNMP).

Assessment

Course Bibliography
(One of the following):
Ελεύθερο Σύγγραμμα


Additional material
(Εργαλεία παρακολούθησης και προσομοιώσεως Δικτύων Η/Υ, καθώς και επιστημονικά άρθρα, κλπ, διαθέσιμα σε ηλεκτρονική μορφή ())
CONSTRAINT LOGIC PROGRAMMING (ΠΛ0828)

Coordinator: Sakellariou Ilias

Semester: 8th (Spring) | Orientation: AI - Elective | Weekly hours: 3 | ECTS: 5

Instructors: Sakellariou Ilias

General Competences
Logic Programming and Constraint Logic programming are among the most interesting programming schools, that significantly differ from the "classical" schools of imperative and object oriented programming. Upon successful completion of the course the student will be able to: (1) understand the different approach of declarative programming in algorithm implementation, (2) understand the advantages and disadvantages of Logic Programming compared to imperative programming, (3) identify types of applications or modules of larger software systems that could be developed in significantly reduced time using declarative programming, (4) describe and be able to exploit procedures such as term unification and use higher order predicates, (5) design and implement logic programs, exploiting the execution mechanism of the language, unification, and techniques such as recursion and procedural abstraction, (6) explain the nature of a constraint variable, its domain and constraints as relations that express partial information for the problem, (7) describe and explain constraint solving techniques, (8) model problems as constraint satisfaction problems and develop the corresponding implementations in a CLP system.

Course Content

Assessment
Final written Examination (70%), weekly Coursework (10%), Practicals (20%)

Course Bibliography
(One of the following):


Free Access Textbooks


Additional material

Kowalski, Robert. Logic For Problem Solvi
COSTING (ΠΛ0824)

Coordinator: Vazakidis Athanasios

Semester: 8th (Spring) | Orientation: AI - Elective | Weekly hours: 3 | ECTS: 5

Instructors: Vazakidis Athanasios, Stavropoulos Antonios

General Competences
This course is aiming to:
1. Enable students familiar with the essentials of the cost and the cost accounting.
2. Enable students capable for understanding the content and the way by which the 9th class of the Greek general chart of accounts is used in practice.
3. Enable students capable of posting entries in accounting books of a company which is classified in the third class (C' class) of book keeping in accordance with the 9th class of the Greek general chart of accounts.
4. Enable students capable for implementing cost accounting software using computers.

Course Content
Distinction among financial, managerial and cost accounting. Budgeting, Control, budgeting. Essentials of cost accounting. Costing of products, goods and services, Analysis the way by which the 9th class of the Greek general chart of accounts is used in practice. Recording of sheets for cost sharing. Examples of costing concerning: finished, unfinished, residuals and defective products. Valuation of products, recording of sheets for products held by third parties out of the company. Flow of materials using measures related to their quantity and value until the completion of finished products. Cost of production based on budgeting (budgeting cost of production). Monthly and annual costing process based on examples. It’s worth to be noted that, the majority of the exercises and cases are solved at the laboratories of our department using specific cost accounting software.

Assessment

Course Bibliography
(One of the following):


Additional material
( ()
DISTRIBUTED SYSTEMS (ΠΛ0809)

Coordinator: Margaritis Konstantinos

Semester: 8th (Spring) | Orientation: AI - Elective | Weekly hours: 3 | ECTS: 5

Instructors: Margaritis Konstantinos

General Competences
- Explain the advantages and disadvantages, benefits and complications of distributed systems.
- Explain why concurrent programming algorithms and structures are not sufficient in distributed systems and description of suitable alternatives.
- Describe the relative advantages and disadvantages of optimistic versus conservative concurrency control.
- Distinguish several types of faults in a distributed system as well as possible remedy strategies.
- Explain the trade-offs among overhead, consistency, replication, scalability, and fault tolerance for a given distributed system.
- Evaluate the observed throughput, initial and response latency across hosts in a given distributed system.
- Write programs that perform data marshaling and conversion into message units, to communicate complex data between two hosts.
- Implement a full server, for example, a spell checking service.
- Design and implement a small scale distributed system employing several modern technologies.

Course Content
- Introduction, Processes, Services and Communication
- Architecture and Design of Distributed Systems
- Distributed Messaging, Naming
- Timing, Synchronization, Transactions, Election
- Consistency, Replication
- Fault Tolerance, Load Balancing, Security
- Distributed Object-Based Systems
- Distributed File Systems
- Distributed Web-Based Systems
- Distributed Coordination-Based Systems
- Modern Distributed Systems Case Studies

Assessment
- Laboratory Exercises
- Written Examination

Course Bibliography

(One of the following):


Additional material
Course website (Ιστότοπος μαθήματος (http://compus.uom.gr/INF121/))
ELECTRONIC COMMERCE (ΠΛ0807)

Coordinator: Fouskas Konstantinos

Semester: 8th (Spring) | Orientation: AI - Elective | Weekly hours: 3 | ECTS: 5

Instructors: Fouskas Konstantinos, Mastoras Theodore

General Competences
This course introduces students to:

a) the strategy, application and implementation of Electronic Commerce (EC) / E-Business (EB) and mobile commerce/business-Technology, business, and market aspects
b) practical approaches to implementing an EC/ EB and mobile commerce/business strategy. Case studies - best practices - business / industry applications.

Course Content

Assessment

Course Bibliography
(One of the following):


Additional material
( ()
ELECTRONIC GOVERNANCE (ΠΛ0840)

Coordinator: Tambouris Efthimios

Semester: 8th (Spring) | Orientation: AI - Elective | Weekly hours: 3 | ECTS: 5

Instructors: Tambouris Efthimios

General Competences

This course aims at developing the following skills and competences:
• decision making
• organizational, collaborative learning
• presentation and defense of positions
• writing skills
• teamwork
• evaluation and self-evaluation

After completing the course students will be able to:
• understand the role and capabilities of implementing Information Systems in the Public Sector
• use eGovernment and eParticipation applications
• develop simple applications based on linked open government data

Course Content

The structure of the course includes the following main subject areas:
• Introduction to eGovernment
• Open Government Data and Linked Open Data
• Provision of Public Information and Services
• One-stop Government
• Interoperability
• eParticipation

Assessment

Student assessment is based on 2 main criteria with the corresponding gravity ratios:
• Final Examination: 50%
• Project: 50%

Students are informed about the obligations, policy and requirements of the six-month group work (3-4 students)

Course Bibliography

(One of the following):

Greek bibliography

Αποστολάκης Ι., Λουκής Ε., Χάλαρης Ι., Ηλεκτρονική Δημόσια Διοίκηση – Οργάνωση, Τεχνολογία και εφαρμογές, Εκδ. Παπαζήση, 2008

Πομπόρτσης, Α. Εισαγωγή στην ηλεκτρονική διακυβέρνηση (e-government) : ο μετασχηματισμός των λειτουργιών και υπηρεσιών της δημόσιας διοίκησης στην ψηφιακή εποχή : ανάλυση, σχεδιασμός, εφαρμογές, διαχείριση, βέλτιστες πρακτικές. Εκδόσεις Τζιόλα, c2005.

Στεφανιδάκης, Μ., Ανδρόνικος, Θ., Παπαδάκης, Ι., 2015. Ανοικτά συνδεδεμένα δεδομένα και εφαρμογές. [ηλεκτρ. βιβλ.] Αθήνα: Σύνδεσμος Ελληνικών Ακαδημαϊκών Βιβλιοθηκών. Διαθέσιμο στο: http://hdl.handle.net/11419/1338

Additional material

Notes and Tutorials for all applications used within the course.

(http://compus.uom.gr/INF201/index.php)
EUROPEAN INTEGRATION (ΠΛ0609)

Coordinator: Katsouli-Katou Helen

Semester: 8th (Spring) | Orientation: AI - Elective | Weekly hours: 3 | ECTS: 5

Instructors: Katsouli-Katou Helen

General Competences
Upon completion of this course, students should be able to:
(a) Understand the basic principles of European Integration
(b) Identify the main theories of European Integration
(c) Apply the methodologies of European Integration on real cases
(d) Use the tools of European Integration in decision – making, both in the European Union and in its member-states separately

Course Content
- Introduction to economic integration
- The formation and expansion of the E.E.C.
- Economic theory (customs union and free trade area theory, the theory of common markets, monetary integration)
- European policies and their problems (macroeconomic policies – budget, European monetary system, regional policy, external relations – microeconomic policies – common agricultural policy, social policy, other policies)
- Measuring the impact of integration
- The European Union and the rest of the world

Assessment

Course Bibliography
(One of the following):

Additional material
(Σημειώσεις και διαφάνειες μαθήματος ())
INFORMATION RETRIEVAL AND SEARCH ENGINES (ΠΛ0734)

Coordinator: Koloniari Georgia

Semester: 8th (Spring) | Orientation: AI - Elective | Weekly hours: 3 | ECTS: 5

Instructors: Koloniari Georgia

General Competences
The goal of this course is for students to learn and study the algorithms, methods and applications that are used in information retrieval from text-based files and also in search engines at the web.

Course Content
Introduction to information retrieval
Information retrieval models (boolean, vector space model, probabilistic)
Evaluation (feedback, accuracy, relevance)
Indexing (inverted lists, signature files)
Index compression
Relevance feedback
Clustering (K-Means, hierarchical clustering)
Introduction to web search
Retrieval of XML data
Link analysis (PageRank, Hits)
Web crawlers, feeds and indexes
Social search

Assessment
Project 40%
Exercises 20%
Written exams 40%

Course Bibliography
(One of the following):

Additional material
Course website. (http://compus.uom.gr/MT199/index.php)
MOBILE AND WIRELESS COMMUNICATIONS SYSTEMS (ΠΛ0841)

Coordinator: Psannis Konstantinos

Semester: 8th (Spring) | Orientation: AI - Elective | Weekly hours: 3 | ECTS: 5

Instructors: Psannis Konstantinos, Petridou Sofia

General Competences

Course Content

Assessment
Written final examination / Assignment/lab tests

Course Bibliography
(One of the following):

Additional material
ebooks, papers, Demonstrations, Virtual Labs , Experiments (http://compus.uom.gr) ( ()

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MONEY AND CAPITAL MARKETS (ΠΛ0608)

Coordinator: Dasilas Apostolos
Semester: 8th (Spring) | Orientation: AI - Elective | Weekly hours: 3 | ECTS: 5
Instructors: Dasilas Apostolos

General Competences
The learning objectives of the module “Money and Capital Markets are:
1. The presentation and analysis of Money & Capital Markets as well as the construction and management of investment portfolios in these markets.
2. The investigation of the institutional characteristics of the Money & Capital Markets, the theoretical basis of their operation, their financial products/services, the methods of price/return estimation of these products and the hedging of financial risk.
3. The use of spreadsheet type software for the construction and management of Money & Capital products, the statistical analysis of these products, the construction and management of investment portfolios and the use of optimization models (risk-return).

Course Content
1. Introduction to money and capital markets
2. Financial institutions
3. Modern financial products
4. Hellenic capital market and supervision
5. Valuing stocks
6. Risk-return estimation
7. Portfolio theory
8. Portfolio construction
9. Portfolio optimization
10. Portfolio evaluation

Assessment
Written final examination: 100%

Course Bibliography
(One of the following):

Additional material
NEURAL NETWORKS (ΠΛ0806)

Coordinator: Refanidis Ioannis

Semester: 8th (Spring) | Orientation: AI - Elective | Weekly hours: 3 | ECTS: 5

Instructors: Refanidis Ioannis

General Competences
By the end of the course the student should be able (a) to recognize machine learning problems, (b) to create and train neural networks of various architectures, (c) to become familiar with various neural networks tools, (d) to prepare data for feeding neural networks, (e) to avoid over fitting to the training data, (f) to comparatively evaluate various learning models.

Course Content
Control systems. Delay elements and linear neurons. Linear filters. Genetic algorithms.

Assessment
Final examination 100%.
Optional homework up to an additional 30%

Course Bibliography
(One of the following):

Additional material
PRODUCTION AND OPERATIONS MANAGEMENT (ΠΛ0416)

Coordinator: Stiakakis Emmanuil
Semester: 8th (Spring) | Orientation: AI - Elective | Weekly hours: 3 | ECTS: 5
Instructors: Stiakakis Emmanuil, Nikolaidis Ioannis

General Competences
To make students familiar with the management principles and activities in the production process, as well as the understanding of the role and the importance of production in the manufacturing and service sectors.

Course Content
The function of production – Relationship to the other business functions – Differences between manufacturing firms and firms providing services,

Assessment

Course Bibliography
(One of the following):

Additional material
(Διοίκηση Συστημάτων Παραγωγής
Δ. Λιαρμακόπουλος
Διοίκηση Παραγωγής, Βασικές αρχές του προγραμματισμού και της ρύθμισης παραγωγής
S. Kiener, N. Maier-Scheubeck, R. Obermaier, M. Weib
Προπομπός, Αθήνα

Academic Year 2018-2019
PROFESSIONAL SKILLS IN ENGLISH (The course is taught in English)  
(ΠΛ0834)

Coordinator: Kokkinou Ourania

Semester: 8\textsuperscript{nd} (Spring) | Orientation: AI - Elective | Weekly hours: 3 | ECTS: 5

Instructors: Kokkinou Ourania

General Competences
The course familiarizes students with topics and conventions of speaking and writing in English in the international business environment. Students prepare their curriculum vitae (CV) and cover letters for selected real job advertisements and present the profile of an actual Greek or international company in the field of informatics. Professional skills such as telephoning, letter writing, emails, turn-taking in negotiations and intercultural awareness skills are practiced.

Course Content
1. Company profile & structure
2. Advertising & marketing
3. e-Commerce
4. Applying for a job
5. Telecommuting
6. Business across cultures
7. Business etiquette
8. Company accountability
9. SWOT analysis

Assessment

Course Bibliography
(One of the following):


Additional material
()
PROGRAMMING LANGUAGES AND COMPILERS (ΠΛ0827-1)

Coordinator: Sakellariou Ilias

Semester: 8th (Spring) | Orientation: AI - Elective | Weekly hours: 3 | ECTS: 5

Instructors: Sakellariou Ilias

General Competences

Upon the successful completion of the course the student will be able to (1) demonstrate knowledge of the main concepts of compiling higher level languages and the theoretical foundations of Programming Language Compilers, (2) describe the basic compiling phases (lexical, syntax, semantic analysis and code generation) and identify in which phase a check takes place, (3) select appropriate algorithms (e.g. parsing) for a language compiler implementation, (4) design lexical (e.g. regular expressions) and syntax analysis and propose a correct suitable grammar for a language, (5) describe the importance of type checking and the rest of the semantic checks that take place during semantic analysis and design the implementation of such checks using attributed grammars, (6) demonstrate knowledge of code generation techniques (7) be able to develop a a small-size compiler using well-established tools.

Course Content

Introduction to Compilers and Compiler Design. Lexical Analysis (Finite Automata, Regular Expressions, Lexical Analyser using FLEX), Syntax Analysis (Grammars, bottom-up and top-down syntax analysis, LL and LR Syntax Analysers, Syntax Analysis using Bison, Symbol Table Management, Information stored in Symbol Table, Data structures), Semantic Analysis (Checks performed during semantic analysis, Type checking, Syntax Directed Analysis), Intermediate Code Generation (Syntax Directed Translation, Intermediate Languages), Final Code Generation (Issues and Techniques, Memory Management).

Assessment

Final written Examination (100%), Optional Practicals (20%) concerning the implementation of a simple compiler using well established tools.

Course Bibliography

(One of the following):


Additional material

Flex Manual, Fast Lexical Analyser (http://flex.sourceforge.net/)
SPECIAL TOPICS IN COMPUTER AND COMMUNICATION NETWORKS  
(ΠΑ0838)

Coordinator: Mamatas Eleftherios
Semester: 8th (Spring) | Orientation: AI - Elective | Weekly hours: 3 | ECTS: 5
Instructors: Mamatas Eleftherios

General Competences

Course Content
The course covers selected aspects of computer and communication networks, providing basic operation principles as well as technical details that assist in understanding and evaluating representative technologies and infrastructures. The course begins with an overview of applications and network services with special requirements and selected aspects of computer and communication network architecture. The course also includes basic access network technologies, such as WiFi, DSL, ATM etc. Furthermore, it provides a review of new computer networking technologies (deployed or under research), such as the 5th generation networks (5G networks), the software defined networks (SDNs) and the wireless sensor networks (WSNs). The course emphasizes experimentation with computer network simulators and emulators.

Assessment

Course Bibliography
(One of the following):


Additional material
Course notes and presentations. (Επιπλέον διδακτικό υλικό στα αγγλικά (e-books, papers, tutorials, technical reports, patents). (}))
SPECIAL TOPICS IN ECONOMETRICS (ΠΛ0815)

Coordinator: Dritsakis Nikolaos

Semester: 8th (Spring) | Orientation: AI - Elective | Weekly hours: 3 | ECTS: 5

Instructors: Dritsakis Nikolaos

General Competences
The basic aim of this unit is to study the definition of time series stationarity and cointegration as well as to determine the relationship of causality using data from the field of economics and management.

Course Content
StationarityIntroductionBasic Meanings (Time series data, Stochastic Procedure, White noise, Random walk, Stochastic and Deterministic trend, Integrated time series)Spurious regressionsTime series stationarityStationarity tests (Graphs)Autocorrelation coefficientsUnit RootsUnit Root TestsDickey - Fuller (DF) testAugmented Dickey - Fuller (ADF) testsSelection of number time lagsPhillips-Perron testsCointegrationDefinitionsCointegration testsEngel - Granger testsJohansen testsError Correction ModelsEstimation of error correction modelCausalityDefinitionGranger causality test

Assessment

Course Bibliography
(One of the following):

Additional material
( ()

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TAXATION FOR INDIVIDUALS AND BUSINESS ENTITIES (ΠΛ0620)

Coordinator: Vazakidis Athanasios

Semester: 8th (Spring) | Orientation: AI - Elective | Weekly hours: 3 | ECTS: 5

Instructors: Vazakidis Athanasios, Stavropoulos Antonios

General Competences

This course is aiming to:

i. Enable students familiar with the fundamentals of taxation for individuals and business entity in Greece.

ii. Help students to acquire the necessary experience for filling without errors the annual tax statements of individuals.

iii. Enable students filling without errors the annual tax statements of business entities.

iv. Enable students to respond in real situation relative to tax topics by solving exercises and case studies.

Course Content

The course approaches the taxation of revenues produced by all recognized recourses accordingly the Greek tax legislation. It is noted that tax legislation in Greece recognize seven possible sources of income. Particularly its content focused on the tax treatment of revenues produced by agricultural companies, professionals, earned income, technical companies and capital companies such as SA companies, Ltd Companies and cooperatives. Also the way by which taxation imposed to foreign companies operating in Greece is presented. The accurate fill of tax statements forms of individuals E1, E2, E3, E9 is also a learning. The lectures of this course combine theoretical examples and case studies which are solving using hand written and the use of software.

Assessment

Course Bibliography

(One of the following):


Additional material

( ()

Academic Year 2018-2019
VIRTUAL ENTERPRISES AND NEW TECHNOLOGIES (ΠΛ0724)

Coordinator: Georgiadis Christos

Semester: 8th (Spring) | Orientation: AI - Elective | Weekly hours: 3 | ECTS: 5

Instructors: Georgiadis Christos, Stiakakis Emmanuil

General Competences
(a) To familiarize students with the concept of virtual enterprises and business activity in the digital economy, (b) to acquire knowledge with regard to the use and exploitation of new technologies by virtual enterprises.

Course Content
Introduction to the concept of virtual enterprise (analysis of the term «virtual enterprise», introduction to the relationship between virtual enterprises and Information & Communications Technologies)Knowledge management and virtual communities (types of virtual communities, economy and virtual communities, social Web, development stages of virtual communities)Entrepreneurship and virtual enterprise (analysis of the term «entrepreneurship» - ways to develop entrepreneurship, sources of financial support for entrepreneurship) E-Auctions (types of e-auctions, new technologies and e-auctions, advantages and disadvantages of online auctions)Case studies of virtual enterprises (successful cases of virtual enterprises, reasons to develop entrepreneurship).

Assessment

Course Bibliography
(One of the following):

Additional material
WEB PROGRAMMING (ΠΛ0816)

Coordinator: Georgiadis Christos

Semester: 8th (Spring) | Orientation: AI - Elective | Weekly hours: 3 | ECTS: 5

Instructors: Georgiadis Christos

General Competences
The student will be able to: (a) develop client-based scripts for web pages, using HTML, CSS, Javascript, and jQuery library, (b) develop server-side web applications using PHP and SQL databases.

Course Content
Client-side programming: HTML tags, CSS rules, JAVASCRIPT (variables, operators, events, forms, validating fields, loops, DOM model), jQuery library.
Server-side programming: PHP (variables, arrays, super globals, processing forms, Sessions, Cookies, Files), PHP and MySQL.

Assessment
Written final examination 50%
Compulsory coursework 50%

Course Bibliography
(One of the following):

Additional material
WEB SERVICES AND TRANSACTIONS (ΠΛ0729)

Coordinator: Georgiadis Christos

Semester: 8th (Spring) | Orientation: AI - Elective | Weekly hours: 3 | ECTS: 5

Instructors: Georgiadis Christos

General Competences
The student is introduced to basic concepts of Service-Oriented Architectures (SOA) and Web Services (WS) Platform Architecture. At the end of the course, he/she should be able to: (a) understand the functionality of the different layers in the WS stack; (b) model business processes and transactions using BPEL and design small to medium scale service compositions and orchestrations.

Course Content
Service-Oriented Architecture (SOA): Interoperability, Services, Loose Coupling
XML markup language and Messaging Framework: SOAP, WS Addressing
Describing and Discovering Metadata: WSDL, WS Policy, UDDI
Quality of Service - Transactions: Reliable Messaging, Classic and Business Transactions

Assessment

Course Bibliography
(One of the following):


Ελεύθερα συγγράμματα


Additional material
Instructor's notes and slides. Scientific articles.

-Do more with SOA Integration: Best of Packt, A. Poduval, D. Todd, et al., Packt Publishing

-Instructor's website (Compus: http://compus.uom.gr/INF196/index.php ) (Διαφάνειας του μαθήματος,Επιστημονικ
BIG DATA MINING (ΠΛ0833)

Coordinator: Karakasidis Alexandros

Semester: 8th (Spring)  |  Orientation: TM  |  Elective |  Weekly hours: 3  |  ECTS: 5

Instructors: Karakasidis Alexandros

General Competences
The lesson focuses on learning the management of Big Data. After the successful completion of the course, the students will be able to:

- Identify the sources and the characteristics of Big Data and how these characteristics affect Big Data management.
- Use the existing Big Data management platforms.
- Understand programming concepts, structures and techniques for Big Data management.
- Use R and Python for data analysis.
- Understand and implement the basic existing algorithm for Big Data mining.
- Design algorithms appropriate for execution on Big Data platforms.
- Write programs for Big Data Management platforms.
- Perform teamwork for designing and implementing Big Data applications.

Course Content
1. Introduction to Big Data Analytics – Big Data Platforms.
2. Introduction to Python. Introduction to R. R Studio.
4. Introduction to MapReduce. Algorithm design with MapReduce.
11. Graph and Social Graph Analysis: Clustering, Graph Summarization, Discovery of Communities.
12. Large Scale Machine Learning: SVMs.

Assessment
30% Exercises
50% Project
20% Final exam

Course Bibliography
(One of the following):


Additional material
(http://compus.uom.gr/MT199/index.php)

Academic Year 2018-2019
CLOUD COMPUTING (ΠΛ0831)

Coordinator: Papadimitriou Panagiotis

Semester: 8th (Spring) | Orientation: TM - Elective | Weekly hours: 3 | ECTS: 5

Instructors: Papadimitriou Panagiotis

General Competences
The course aims to provide a thorough understanding of cloud computing concepts, applications, technologies, and cloud data-center architectures.

Course Content
Introduction to Cloud Computing
Cloud Characteristics, Cloud Deployment Models
Roles and Cloud Services (IaaS, PaaS, SaaS)
Server Virtualization, Network Virtualization, Network Interface Virtualization
Datacenters: Scale-out model, Topologies, Architectures
Cloud management: Virtual switching, Virtual machine migration, Fault management
Cloud storage: Key-value stores, Amazon S3
Cloud Pricing Models
Service Level Agreements

Assessment
Written Exam (100%)

Course Bibliography
(One of the following):

Additional material
Course website (http://compus.uom.gr/INF281/), Slides. (http://compus.uom.gr/INF281)
COMBINATORIAL OPTIMIZATION (ΠΛ0842)

Coordinator: Sifaleras Angelo

Semester: 8th (Spring) | Orientation: TM - Elective | Weekly hours: 3 | ECTS: 5

Instructors: Sifaleras Angelo, Samaras Nikolaos

General Competences
Introduction to network optimization models and integer programming, and more specifically in problem modelling and network optimization applications for the design of large-scale networks. The shortest path problem, the minimum spanning tree problem, the maximum flow problem, and the minimum cost network flow problem. Furthermore, the student will be introduced to modelling and solution techniques for integer programming problems, branch & bound algorithm, dynamic programming, and special problems such as the Steiner tree problem and the traveling salesman problem (TSP). The student, apart from the methodology in each section, will learn how to use state-of-the-art optimization software packages such as the CPLEX & Gurobi solvers and the modelling language AMPL.

Course Content

Assessment
Written final examination

Course Bibliography

(One of the following):

Additional material
DIGITAL DESIGN - MODELING OF LOGIC CIRCUITS (ΠΛ0843)

Coordinator: Souravlas Stavros

Semester: 8th (Spring) | Orientation: TM - Elective | Weekly hours: 3 | ECTS: 5

Instructors: Souravlas Stavros

General Competences

Course Content

Assessment

Course Bibliography

(One of the following):


Additional material

( ()

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ELECTRONIC COMMERCE (ΠΛ0807)

Coordinator: Fouskas Konstantinos

Semester: 8th (Spring) | Orientation: TM - Elective | Weekly hours: 3 | ECTS: 5

Instructors: Fouskas Konstantinos, Mastoras Theodoros

General Competences
This course introduces students to:
a) the strategy, application and implementation of Electronic Commerce (EC) /E-Business (EB) and mobile commerce/business- Technology, business, and market aspects
b) practical approaches to implementing an EC/ EB and mobile commerce/business strategy. Case studies - best practices - business / industry applications.

Course Content

Assessment

Course Bibliography
(One of the following):

Additional material
(Iστότοπος μαθήματος (Υπάρχει online πρόσβαση σε εκτενή βιβλιογραφία και υλικό) (http://compus.uom.gr/INF174/))
ELECTRONIC GOVERNANCE (ΠΛ0840)

Coordinator: Tambouris Efthimios

Semester: 8th (Spring) | Orientation: TM - Elective | Weekly hours: 3 | ECTS: 5

Instructors: Tambouris Efthimios

General Competences

This course aims at developing the following skills and competences:

- decision making
- organizational, collaborative learning
- presentation and defense of positions
- writing skills
- teamwork
- evaluation and self-evaluation

After completing the course students will be able to:

- understand the role and capabilities of implementing Information Systems in the Public Sector
- use eGovernment and eParticipation applications
- develop simple applications based on linked open government data

Course Content

The structure of the course includes the following main subject areas:

- Introduction to eGovernment
- Open Government Data and Linked Open Data
- Provision of Public Information and Services
- One-stop Government
- Interoperability
- eParticipation

Assessment

Student assessment is based on 2 main criteria with the corresponding gravity ratios:

- Final Examination: 50%
- Project s: 50%

Students are informed about the obligations, policy and requirements of the six-month group work (3-4 students)

Course Bibliography

(One of the following):

Greek bibliography

Αποστολάκης Ι., Λουκής Ε., Χάλαρης Ι., Ηλεκτρονική Δημόσια Διοίκηση – Οργάνωση, Τεχνολογία και εφαρμογές, Εκδ. Παπαζήση, 2008

Πομπόρτσης, Α. Εισαγωγή στην ηλεκτρονική διακυβέρνηση (e-government) : ο μετασχηματισμός των λειτουργιών και υπηρεσιών της δημόσιας διοίκησης στην ψηφιακή εποχή : ανάλυση, σχεδίαση, εφαρμογές, διαχείριση, βέλτιστες πρακτικές. Εκδόσεις Τζιόλα, c2005.

Στεφανιδάκης, Μ., Ανδρόνικος, Θ., Παπαδάκης, Ι., 2015. Ανοικτά συνδεδεμένα δεδομένα και εφαρμογές. [ηλεκτρ. βιβλ.] Αθήνα: Σύνδεσμος Ελληνικών Ακαδημαϊκών Βιβλιοθηκών. Διαθέσιμο στο: http://hdl.handle.net/11419/1338

Additional material

Notes and Tutorials for all applications used within the course.

(http://compus.uom.gr/INF201/index.php)
ENTREPRENEURSHIP CASE STUDIES (ΠΛ0839)

Coordinator: Fouskas Konstantinos

Semester: 8th (Spring) | Orientation: TM - Elective | Weekly hours: 3 | ECTS: 5

Instructors: Fouskas Konstantinos

General Competences

The Entrepreneurship and Start-ups course introduces students to the concept of entrepreneurship through the presentation of actual case studies from the international business environment. Emphasis will be given to innovative entrepreneurship cases (such as social networks and electronic business) and new forms of entrepreneurial focus such as corporate social responsibility. The aim of this course is the encouragement and development of young entrepreneurship. Moreover, the students come closer to the development of their own entrepreneurial idea and participate in national entrepreneurship competitions.

Course Content

Initially, the issue of entrepreneurship and its dimensions in national and international level will be presented. Following, before each lecture a Case Study will be given to students, will be discussed in class and in collaboration with the instructor useful conclusions in entrepreneurship are drawn. Issues to be discussed include green and social entrepreneurship, innovative and digital entrepreneurship, clusters of enterprises, global entrepreneurship.

Assessment

Course Bibliography

(One of the following):


Additional material

(Σημειώσεις και διαφάνειες μαθήματος. (http://compus.uom.gr/MT187))
INFORMATION RETRIEVAL AND SEARCH ENGINES (ΠΛ0734)

Coordinator: Koloniari Georgia

Semester: 8th (Spring) | Orientation: TM - Elective | Weekly hours: 3 | ECTS: 5

Instructors: Koloniari Georgia

General Competences

The goal of this course is for students to learn and study the algorithms, methods and applications that are used in information retrieval from text-based files and also in search engines at the web.

Course Content

Introduction to information retrieval
Information retrieval models (boolean, vector space model, probabilistic)
Evaluation (feedback, accuracy, relevance)
Indexing (inverted lists, signature files)
Index compression
Relevance feedback
Clustering (K-Means, hierarchical clustering)
Introduction to web search
Retrieval of XML data
Link analysis (PageRank, Hits)
Web crawlers, feeds and indexes
Social search

Assessment

Project 40%
Exercises 20%
Written exams 40%

Course Bibliography

(One of the following):

Additional material

Course website. (http://compus.uom.gr/MT199/index.php)
MONEY AND CAPITAL MARKETS (ΠΛ0608)

Coordinator: Dasilas Apostolos
Semester: 8th (Spring) | Orientation: TM · Elective | Weekly hours: 3 | ECTS: 5
Instructors: Dasilas Apostolos

General Competences
The learning objectives of the module “Money and Capital Markets are:
1. The presentation and analysis of Money & Capital Markets as well as the construction and management of investment portfolios in these markets.
2. The investigation of the institutional characteristics of the Money & Capital Markets, the theoretical basis of their operation, their financial products/services, the methods of price/return estimation of these products and the hedging of financial risk.
3. The use of spreadsheet type software for the construction and management of Money & Capital products, the statistical analysis of these products, the construction and management of investment portfolios and the use of optimization models (risk-return).

Course Content
1. Introduction to money and capital markets
2. Financial institutions
3. Modern financial products
4. Hellenic capital market and supervision
5. Valuing stocks
6. Risk-return estimation
7. Portfolio theory
8. Portfolio construction
9. Portfolio optimization
10. Portfolio evaluation

Assessment
Written final examination: 100%

Course Bibliography
(One of the following):

Additional material
NETWORK-CENTRIC SOFTWARE (ΠΛ0835)

Coordinator: Xinogalos Stylianos

Semester: 8th (Spring) | Orientation: TM - Elective | Weekly hours: 3 | ECTS: 5

Instructors: Xinogalos Stylianos

General Competences
After successfully attending the course students will be able to: handle web server software and configure their system for developing Java EE application (Eclipse, Apache server); distinguish, describe and use the main structures of JAVA servlets and JSP; use data base management systems (MySQL) for designing and network databases to Java web applications; implement dynamic web pages and applications using servlets and JSP focusing on server-side scripting.

Course Content
Development of applications sig the object-oriented design technique and the network centric programming language. Comparative presentation of the main features and the role of the various types of Java programs: applications, applets, web applications using servlets and JSP. Emphasis is given on implementing web applications and sites using servlets and JSP. Development of applications using servlets and JSP: the role of servlets and JSP, installing and configuring Apache Tomacat server, life cycle of a servlet, HTTP requests and responses, cookies, session tracking, JDBC, Java beans, forms, Model View Controller architecture. Review of relevant frameworks: Apache Struts, Spring MVC, JavaServer Faces.

Assessment
Programming assignments
Exams (lab)

Course Bibliography

(One of the following):


Additional material
Notes, assignments, programs
Course website (http://compus.uom.gr/MT188/) (Διδακτικές σημειώσεις, φυλλάδια ασκήσεων, προγράμματα (διατίθενται μέσω του CoMPUs) ()

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PROFESSIONAL SKILLS IN ENGLISH (The course is taught in English) (ΠΑ0834)

Coordinator: Kokkinou Ourania

Semester: 8<sup>th</sup> (Spring) | Orientation: TM - Elective | Weekly hours: 3 | ECTS: 5

Instructors: Kokkinou Ourania

General Competences
The course familiarizes students with topics and conventions of speaking and writing in English in the international business environment. Students prepare their curriculum vitae (CV) and cover letters for selected real job advertisements and present the profile of an actual Greek or international company in the field of informatics. Professional skills such as telephoning, letter writing, emails, turn-taking in negotiations and intercultural awareness skills are practiced.

Course Content
1. Company profile & structure
2. Advertising & marketing
3. e-Commerce
4. Applying for a job
5. Telecommuting
6. Business across cultures
7. Business etiquette
8. Company accountability
9. SWOT analysis

Assessment

Course Bibliography
(One of the following):


Additional material
()
SPECIAL ISSUES OF STRATEGIC MANAGEMENT (ΠΛ0830)

Coordinator: Kitsios Fotios
Semester: 8th (Spring) | Orientation: TM - Elective | Weekly hours: 3 | ECTS: 5
Instructors: Kitsios Fotios

General Competences
The course Special Issues of Strategic Management is an advanced course in strategy, which aims to give students theoretical and practical knowledge in a series of topical issues of strategic management that concern every company and organization with particular emphasis in the new digital economy and emerging technologies.

Course Content
Competitive strategy, strategic business models, strategy development models, learning organization and strategic change, strategic innovation, imitation strategy, value creation through multiple activities, corporate governance and strategy, modern methodologies, tools and practices (scenario planning, benchmarking, outsourcing, strategic alignments, balanced scorecard), strategic decision making, strategy in e-business, strategy and ICT. Case Studies.

Assessment

Course Bibliography
(One of the following):

Additional material
( ()

Academic Year 2018-2019
SPECIAL TOPICS IN COMPUTER AND COMMUNICATION NETWORKS (ΠΛ0838)

Coordinator: Mamatas Eleftherios

Semester: 8th (Spring) | Orientation: TM - Elective | Weekly hours: 3 | ECTS: 5

Instructors: Mamatas Eleftherios

General Competences

Course Content
The course covers selected aspects of computer and communication networks, providing basic operation principles as well as technical details that assist in understanding and evaluating representative technologies and infrastructures. The course begins with an overview of applications and network services with special requirements and selected aspects of computer and communication network architecture. The course also includes basic access network technologies, such as WiFi, DSL, ATM etc. Furthermore, it provides a review of new computer networking technologies (deployed or under research), such as the 5th generation networks (5G networks), the software defined networks (SDNs) and the wireless sensor networks (WSNs). The course emphasizes experimentation with computer network simulators and emulators.

Assessment

Course Bibliography
(One of the following):


Additional material
Course notes and presentations. (Επιπλέον διδακτικό υλικό στα αγγλικά (e-books, papers, tutorials, technical reports, patents). ()
TECHNOLOGICAL INNOVATION MANAGEMENT (ΠΛ0837)

Coordinator: Kitsios Fotios
Semester: 8th (Spring) | Orientation: TM | Elective | Weekly hours: 3 | ECTS: 5
Instructors: Kitsios Fotios

General Competences
The module aims to introduce students to Change Theory. The rapidly changing business environment of last years has created uncertainty in the market place and a high risk for future decisions in the next years. In order to survive in this demanding market place, organisations have only one choice, to successfully face technological changes. Techniques of planning and application of changes are analyzed.

Course Content
Impact analysis of technology in structure, organization and production of business or organisation. Analytical approach of the impact at the domains of marketing, human resource, products development and production, organizational structure, finance management, technological infrastructure. Synthesized presentation of managerial implementation plan for the resulting changes. Cases analysis.

Assessment

Course Bibliography
(One of the following):
50659772 Οργανωσιακή Αλλαγή, Τύπος: Σύγγραμμα, Senior B., Dr Swailes S., 2016, BROKEN HILL PUBLISHERS LTD, ISBN: 9789963258512

Additional material
( ()

Academic Year 2018-2019