School of
Information
Sciences

Department of Applied Informatics

[2018-2019]

Study Guide

Applied Informatics (AI)

Technology Management (TM)

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Information
Sciences

Department of Applied Informatics

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Applied Informatics (AI)

Technology Management (TM)

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1st SEMESTER

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):

12519392 ENGLISH FOR ACADEMIC PURPOSES, Τύπος: Σύγγραμμα, KANTARIDOU ZOE, 2011, ΠΑΝ/ΜΙΟΥ ΜΑΚΕΔΟΝΙΑΣ, ISBN: 978-960-8396-61-6

59377892 TEXT ANALYSIS IN ACADEMIC ENGLISH - 2nd REVISED EDITION, Τύπος: Σύγγραμμα, KARAGEVREKI MERSINI, 2016, ΕΚΔΟΣΕΙΣ ΠΑΝΕΠΙΣΤΗΜΙΟΥ ΜΑΚΕΔΟΝΙΑΣ, ISBN: 978-618-5196-19-6

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

1. Algorithms and Problems. Historical review, Definitions and properties of Algorithms, Computational problems, Description of algorithms, Basic concepts of algorithms (Iterative, Recursive, Stochastic, Heuristic).
2. Iterative Sorting Algorithms. Selection Sort, Bucket Sort, Bubble Sort, Radix Sort.
3. Searching Algorithms: Linear Search, Binary Search.
4. Data Structures: Stack, Queue, Cyclic queue, Linked lists (single and double), Heaps, Heap Sort.
5. Recursive Algorithms: Factorial, Fibonacci Numbers, Anoi Towers, Transformation from recursive to iterative.
6. Divide and conquer: Quick Sort, Merge Sort, Matrix Multiplication, Strassen Multiplication, Polynomial Multiplication.
7. Graph Algorithms: Depth First Search, Breadth First Search, Graph connectivity, Directed acyclic graphs.
8. 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):

18548861 Ανάλυση και σχεδίαση αλγορίθμων, Τύπος: Σύγγραμμα, Παπαρρίζος Κωνσταντίνος, 2010, ΤΖΙΟΛΑ, ISBN: 978-960-418-222-0

18549081 Η τέχνη του προγραμματισμού, τόμος Α΄, Τύπος: Σύγγραμμα, Knuth Donald E., 2009, ΤΖΙΟΛΑ, ISBN: 978-960-418-185-8

59367744 Αλγόριθμοι, Τύπος: Σύγγραμμα, Edmonds Jeff, 2016, Κριτική, ISBN: 978-960-586-043-1

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 - Egeinvectors

Assessment

Written Final examination 100%

Course Bibliography

(One of the following):

41960366 ΓΡΑΜΜΙΚΗ ΑΛΓΕΒΡΑ ΜΕ ΤΟ MATLAB : ΝΕΑ ΕΚΔΟΣΗ, Τύπος: Σύγγραμμα, Στεφανίδης Γιώργος, 2014, ΖΥΓΟΣ, ISBN: 978-618-5063-08-5

31174 Γραμμική άλγεβρα, Τύπος: Σύγγραμμα, Δονάτος Γεώργιος Σ., Αδάμ Μαρία Χ., 2008, Gutenberg, ISBN: 978-960-01-1193-4

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):

50656979 ΑΡΧΕΣ ΟΙΚΟΝΟΜΙΚΗΣ ΑΝΑΛΥΣΗΣ, Τύπος: Σύγγραμμα, ΠΟΥΡΝΑΡΑΚΗΣ ΕΥΘΥΜΙΟΣ, ΑΞΑΡΛΟΓΛΟΥ ΚΩΝΣΤΑΝΤΙΝΟΣ, 2015, Εκδόσεις "σοφία", ISBN: 978-960-6706-74-5

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 brunches; (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.
6. Algorithms. Representation of Algorithms, Basic Algorithms, Recursion.
7. Operation systems. Resource management. Computer cloud. Computer networks.
8. Security. Security fundamentals - attacks - services - techniques.
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):

50656007 Εισαγωγή στην Πληροφορική και τους Υπολογιστές, Τύπος: Σύγγραμμα, Μποζάνης Παναγιώτης Δ., 2016, ΤΖΙΟΛΑ, ISBN: 978-960-418-538-2

50656335 ΕΙΣΑΓΩΓΗ ΣΤΗΝ ΕΠΙΣΤΗΜΗ ΤΩΝ ΥΠΟΛΟΓΙΣΤΩΝ, Τύπος: Σύγγραμμα, BEHROUZ FOROUZAN, 2015, ΕΚΔΟΣΕΙΣ ΚΛΕΙΔΑΡΙΘΜΟΣ ΕΠΕ, ISBN: 978-960-461-660-2

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
6. E-Commerce: Digital Markets, Digital Goods
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):

41962586 ΠΛΗΡΟΦΟΡΙΑΚΑ ΣΥΣΤΗΜΑΤΑ ΔΙΟΙΚΗΣΗΣ, Τύπος: Σύγγραμμα, KENNETH C. LAUDON, JANE P. LAUDON, 2014, ΕΚΔΟΣΕΙΣ ΚΛΕΙΔΑΡΙΘΜΟΣ ΕΠΕ, ISBN: 978-960-461-623-7

32997790 Πληροφοριακά συστήματα διοίκησης, Τύπος: Σύγγραμμα, Wallace Patricia, 2014, Κριτική, ISBN: 978-960-218-886-6

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

1. Introduction to programming languages. Integrated Development Environments. Basic concepts of the C programming language: Types, operators and expressions. Control Flow: Conditional Statements, Looping.
2. Procedural Programming: Functions, Pointers. Data Structures: Arrays, Structures & Arrays of Structures. Input and Output: Files, Characters, Strings. Use of the programming environment Code:Blocks.

Assessment

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

Course Bibliography

(One of the following):

68384925 Η ΓΛΩΣΣΑ C ΣΕ ΒΑΘΟΣ, Τύπος: Σύγγραμμα, ΝΙΚΟΣ Μ. ΧΑΤΖΗΓΙΑΝΝΑΚΗΣ, 2017, ΕΚΔΟΣΕΙΣ ΚΛΕΙΔΑΡΙΘΜΟΣ ΕΠΕ, ISBN: 978-960-461-715-9

13767 Η ΤΕΧΝΗ ΚΑΙ ΕΠΙΣΤΗΜΗ ΤΗΣ C: ΜΙΑ ΕΙΣΑΓΩΓΗ ΣΤΗΝ ΕΠΙΣΤΗΜΗ ΤΩΝ ΥΠΟΛΟΓΙΣΤΩΝ, Τύπος: Σύγγραμμα, ERIC S. ROBERTS, 2004, ΕΚΔΟΣΕΙΣ ΚΛΕΙΔΑΡΙΘΜΟΣ ΕΠΕ, ISBN: 960-209-791-4

68370518 Εισαγωγή στη γλώσσα C, με παραδείγματα και ασκήσεις, Τύπος: Σύγγραμμα, Αλέξανδρος Καράκος, 2012, Καράκος Αλεξανδρος (Αυτοέκδοση), ISBN: 9789609340694

68383623 C: Από τη Θεωρία στην Εφαρμογή, Τύπος: Σύγγραμμα, Γ. Σ. Τσελίκης - Ν. Δ. Τσελίκας, 2016, Γ.Σ.Τσελίκης - Ν.Δ.Τσελίκας, ISBN: 978-960-93-1961-4

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):

50655961 Οικονομικά Μαθηματικά, Τύπος: Σύγγραμμα, Μυλωνάς Νίκος, Γεώργιος Σαραφόπουλος, 2015, ΤΖΙΟΛΑ, ISBN: 978-960-418-564-1

41962521 ΠΡΟΣΚΛΗΣΗ ΣΤΑ ΜΑΘΗΜΑΤΙΚΑ ΟΙΚΟΝΟΜΙΚΩΝ ΚΑΙ ΔΙΟΙΚΗΤΙΚΩΝ ΕΠΙΣΤΗΜΩΝ ΤΟΜΟΣ Β', Τύπος: Σύγγραμμα, ΛΟΥΚΑΚΗΣ ΜΑΝΩΛΗΣ, 2014, "σοφία", ISBN: 978-960-6706-75-2

22767283 Μαθηματικά Οικονομικών Επιστημών, Τύπος: Σύγγραμμα, Hoy Michael, Livernois John, McKenna Chris, Stengos Thanasis, Κυρίτσης Ιωάννης (επιμ.), 2012, Gutenberg, ISBN: 978-960-01-1535-2

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 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.
6. Linked implementation of sparse polynomials.
7. Binary Trees, basic operations. A pointer-based implementation of Binary Trees. A recursive implementation of Binary trees. Application of Binary Trees: Huffman Codes.
8. Hashing, open probing, Chaining.
9. B-Trees. AVL Trees, basic operations.

Assessment

Written Examination 80%
Compulsory Assignments 20%

Course Bibliography

(One of the following):

77112308 Δομές Δεδομένων με C, Τύπος: Σύγγραμμα, Νικόλαος Μισυρλής, 2017, ΕΘΝΙΚΟ ΚΑΙ ΚΑΠΟΔΙΣΤΡΙΑΚΟ ΠΑΝΕΠΙΣΤΗΜΙΟ, ISBN: 978-960-466-181-7

18548971 Δομές δεδομένων, αλγόριθμοι και εφαρμογές C++, Τύπος: Σύγγραμμα, Sahnii Sartaj, 2004, ΤΖΙΟΛΑ, ISBN: 978-960-418-030-1

59357253 Δομές Δεδομένων, 2η Έκδοση, Τύπος: Σύγγραμμα, Μποζάνης Παναγιώτης Δ., 2016, ΤΖΙΟΛΑ, ISBN: 978-960-418-594-8

50658958 Δομές Δεδομένων και Αλγόριθμοι με Αντικειμενοστρεφή Σχεδιαστικά Μορφήματα στη C++, Τύπος: Σύγγραμμα, BrunoR. Preiss, Επιστ. Επιμ. Κώστας Κοντογιάννης, 2016, Πεδίο Α.Ε., ISBN: 978-960-546-692-3

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.
2. Combinatorics: sum and product rules - rules of combinatorics - binomial coefficients.
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.
6. Rings and finite fields: the problem of generators and discrete logarithm - polynomial arithmetic and applications - Algorithms for finite fields - applications.
7. Recursion: sequences - recurrence relations - computation of sums and products.

Assessment

Written Final examination 100%

Course Bibliography

(One of the following):

41960368 ΔΙΑΚΡΙΤΑ ΜΑΘΗΜΑΤΙΚΑ, Τύπος: Σύγγραμμα, Στεφανίδης Γιώργος, 2015, ΖΥΓΟΣ, ISBN: 978-618-5063-07-8

13799 ΜΙΑ ΥΠΟΛΟΓΙΣΤΙΚΗ ΕΙΣΑΓΩΓΗ ΣΤΗ ΘΕΩΡΙΑ ΑΡΙΘΜΩΝ ΚΑΙ ΤΗΝ ΑΛΓΕΒΡΑ, Τύπος: Σύγγραμμα, VICTOR SHOUP, 2007, ΕΚΔΟΣΕΙΣ ΚΛΕΙΔΑΡΙΘΜΟΣ ΕΠΕ, ISBN: 978-960-209-990-2

13953 ΔΙΑΚΡΙΤΑ ΜΑΘΗΜΑΤΙΚΑ ΜΕ ΕΦΑΡΜΟΓΕΣ, Τύπος: Σύγγραμμα, SUSANNA S. EPP, 2010, ΕΚΔΟΣΕΙΣ ΚΛΕΙΔΑΡΙΘΜΟΣ ΕΠΕ, ISBN: 978-960-461-325-0

Additional material

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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

Essentials of accounting, general accepted accounting principles (G.A.A.P), and accounting branches. Accounting recording methods: "Aplografiko" and Double entry system. Analysis of the Greek general chart of accounts. Valuation of inventories. Fixed assets and their depreciation. Development and analysis of the financial statements (Journal entries, general ledger, trial balance, balance sheet, profit and losses statement). Adjustments. Accounting process for the measuring, reporting and announcement of the financial annual results. Book keeping of the first and second classes of accounting classification, using manuscript method and by the use of software. Exercises related to the different classes of book keeping (mainly B' and C'). Questions and answers related to the subject of code for books and records as well as value added tax and intersection of tax records.

Assessment

Laboratory exams 35%
Final writing exams 65%

Course Bibliography

(One of the following):

68401196 ΧΡΗΜΑΤΟΟΙΚΟΝΟΜΙΚΗ ΛΟΓΙΣΤΙΚΗ ΛΟΓΙΣΤΙΚΟ ΣΧΕΔΙΟ, Τύπος: Σύγγραμμα, ΒΑΖΑΚΙΔΗΣ ΑΘΑΝΑΣΙΟΣ,ΣΤΑΥΡΟΠΟΥΛΟΣ ΑΝΤΩΝΙΟΣ, ΤΣΟΠΟΓΛΟΥ ΣΤΑΥΡΟΣ, 2010, ΧΑΡΙΣ ΜΕΠΕ, ISBN: 978-960-93-2046-7

59385242 ΠΑΡΑΔΕΙΓΜΑΤΑ ΕΦΑΡΜΟΓΗΣ ΚΑΙ ΑΝΑΛΥΣΗΣ ΤΩΝ ΕΛΛΗΝΙΚΩΝ ΛΟΓΙΣΤΙΚΩΝ ΠΡΟΤΥΠΩΝ ΣΤΗΝ ΠΡΑΞΗ, Τύπος: Σύγγραμμα, ΙΩΑΝΝΗΣ Δ. ΚΑΡΑΓΙΑΝΝΗΣ, ΑΙΚΑΤΕΡΙΝΗ Δ. ΚΑΡΑΓΙΑΝΝΗ, ΔΗΜΗΤΡΙΟΣ Ι. ΚΑΡΑΓΙΑΝΝΗΣ, 2016, ΙΩΑΝΝΝΗΣ ΚΑΡΑΓΙΑΝΝΗΣ ΚΑΙ ΑΙΚΑΤΕΡΙΝΗ ΚΑΡΑΓΙΑΝΝΗ Ο.Ε., ISBN: 978-960-9781-15-2

Additional material

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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 O, 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
5. Searching. Algorithms of Sequential searching and Binary. Complexity analysis.
6. Sorting Algorithms I: Insertion sort, Selection. Complexity analysis (Worst, best and average).
7. Sorting Algorithms II: Quicksort, Mergsort, Complexity analysis (Worst, best and average). Shell sort. Complexity analysis. Comparing sorting algorithms.
8. Sorting Algorithms III: Counting sort. Radix sort. Complexity analysis
9. Limits in sorting algorithms. Medians and Order statistics.
10. Heaps: Max heap, Heapsort, MinMax heap, Double-ended heap (Deap). Complexity analysis
11. Graphs. Fundamental concepts. Breath first search, Depth first search, Topological order. Minimum Spanning Trees, Prim and Kruskal algorithm. Shortest paths, Shortest paths algorithms - Bellman-Ford, Dijkstra, Floyd. Complexity analysis.

Assessment

Written Final examination 100%

Course Bibliography

(One of the following):

59359780 ΕΙΣΑΓΩΓΗ ΣΤΟΥΣ ΑΛΓΟΡΙΘΜΟΥΣ, Τύπος: Σύγγραμμα, Thomas H. Cormen, Charles E. Leiserson, Ronald L. Rivest, Clifford Stein, 2016, ΙΤΕ-ΠΑΝΕΠΙΣΤΗΜΙΑΚΕΣ ΕΚΔΟΣΕΙΣ ΚΡΗΤΗΣ, ISBN: 978-960-524-473-6

18548861 Ανάλυση και σχεδίαση αλγορίθμων, Τύπος: Σύγγραμμα, Παπαρρίζος Κωνσταντίνος, 2010, ΤΖΙΟΛΑ, ISBN: 978-960-418-222-0

13898 ΣΧΕΔΙΑΣΜΟΣ ΑΛΓΟΡΙΘΜΩΝ, Τύπος: Σύγγραμμα, JON KLEINBERG, EVA TARDOS, 2009, ΕΚΔΟΣΕΙΣ ΚΛΕΙΔΑΡΙΘΜΟΣ ΕΠΕ, ISBN: 978-960-461-207-9

68370088 Ανάλυση και Σχεδίαση Αλγορίθμων, 3η Έκδοση, Τύπος: Σύγγραμμα, Levitin Anavy, Μάνος Ρουμελιώτης (επιμέλεια), 2018, Τζιόλα, ISBN: 978-960-418-732-4

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).
2. Modeling uncertainty.
3. Probability: Definitions, basic rules.
4. Random Variable: Discrete, continuous, expected value, conditional rv, independence.
5. Basic theoretical distributions.
6. Basic inequalities, LLN, CLT.
7. Stochastic Process: Definitions, Poisson process, Markov chain.

Assessment

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

Course Bibliography

(One of the following):

12858980 ΒΑΣΙΚΕΣ ΑΡΧΕΣ ΘΕΩΡΙΑΣ ΠΙΘΑΝΟΤΗΤΩΝ, Τύπος: Σύγγραμμα, SHELDON ROSS, 2011, ΕΚΔΟΣΕΙΣ ΚΛΕΙΔΑΡΙΘΜΟΣ ΕΠΕ, ISBN: 978-960-461-457-8

33114257 Εισαγωγή στις πιθανότητες με στοιχεία στατιστικής, Τύπος: Σύγγραμμα, Μπερτσεκάς Δ. - Τσιτσικλής Γ., 2013, ΤΖΙΟΛΑ, ISBN: 978-960-418-398-2

Additional material

Instructor's notes and slides, see http://compus.uom.gr/INF267 ()

3rd SEMESTER

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

Introduction: Structured Computer Organization, Survey of Modern Computer Systems: Processor, Memory, Buses, I/O.
Digital Logic: Information Representation, Logic Gates and Boolean Algebra, Basic Combinatorial Circuits, Basic Sequential Circuits and Memory, Buses.
Microarchietcture: Data Paths and Memory Models, Execution of Instructions and Microisnstructions, 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):

68374428 Ψηφιακή Σχεδίαση, 2η 'Εκδοση, Τύπος: Σύγγραμμα, Ρουμελιώτης Μάνος, Σουραβλάς Στάυρος, 2017, ΤΖΙΟΛΑ, ISBN: 978-960-418-742-3

59386815 Οργάνωση και Αρχιτεκτονική Υπολογιστών, 10η Έκδοση, Τύπος: Σύγγραμμα, Stallings William, 2016, ΤΖΙΟΛΑ, ISBN: 978-960-418-580-1

15120 Οργάνωση και αρχιτεκτονική ηλεκτρονικών υπολογιστών, Τύπος: Σύγγραμμα, Hammacher Carl,Vranesic Zvonko,Zaky Safwat, 2007, Επίκεντρο, ISBN: 978-960-458-000-2

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):

22694245 Συστήματα Διαχείρισης Βάσεων Δεδομένων, 3η Έκδοση, Τύπος: Σύγγραμμα, Ramakrishnan Raghu, Gehrke Joahannes, 2012, ΤΖΙΟΛΑ, ISBN: 978-960-418-411-8

12273 Βάσεις δεδομένων Α' Τόμος, Τύπος: Σύγγραμμα, Connoly Thomas,Begg Carolyn E., 2008, Α. Γκιούρδα & ΣΙΑ ΟΕ, ISBN: 978-960-512-499-1

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):

32998108 ΨΗΦΙΑΚΗ ΟΙΚΟΝΟΜΙΚΗ, Τύπος: Σύγγραμμα, ΣΤΕΙΑΚΑΚΗΣ ΕΜΜΑΝΟΥΗΛ, 2013, ΑΝΙΚΟΥΛΑ, ISBN: 978-960-516-051-7

13763 Η ΔΙΟΙΚΗΣΗ ΚΑΙ ΑΝΑΠΤΥΞΗ ΣΤΗ ΝΕΑ ΟΙΚΟΝΟΜΙΑ, Τύπος: Σύγγραμμα, ΒΑΣΙΛΗΣ ΜΑΣΟΥΛΑΣ, 2008, ΕΚΔΟΣΕΙΣ ΚΛΕΙΔΑΡΙΘΜΟΣ ΕΠΕ, ISBN: 978-960-461-126-3

Additional material

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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

68402043 Σύγχρονη Χρηματοοικονομική Ανάλυση και Επενδύσεις, Τύπος: Σύγγραμμα, Δημήτριος Ν. Σουμπενιώτης, Ιωάννης Α. Ταμπακούδης, 2017, Αφοί Θ. Καραγιώργου, ISBN: 978-618-83308-2-5

Additional material

1. Brealey, R., Myers, S. και Allen, F. (2015) «Αρχές Χρηματοοικονομικής των Επιχειρήσεων», Εκδόσεις Utopia, Αθήνα, Κωδικός Βιβλίου στον Εύδοξο: 41965173 (μεταφρασμένο από την Αγγλική)
(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

Introduction to the object-oriented way of thinking. Objects and Classes. Introduction to the Java programming language: Language features, variables, data types and expressions. Control statements. Using Java libraries. Design of classes and construction of objects. Associations between classes. The concept of reference. Inheritance and Polymorphism. Applets and Applications. Graphical User Interface and event handling. Exceptions. Object-oriented analysis and design with UML.

Assessment

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

Course Bibliography

(One of the following):

50655978 JAVA, 7η Έκδοση, Τύπος: Σύγγραμμα, Savitch Walter, 2015, ΤΖΙΟΛΑ, ISBN: 978-960-418-501-6

77108692 ΑΝΤΙΚΕΙΜΕΝΟΣΤΡΕΦΗΣ ΠΡΟΓΡΑΜΜΑΤΙΣΜΟΣ ΣΕ JAVA: ΜΙΑ ΠΡΑΚΤΙΚΗ ΕΙΣΑΓΩΓΗ ΜΕ ΧΡΗΣΗ ΤΟΥ BLUEJ, Τύπος: Σύγγραμμα, DAVID J. BARNES, MICHAEL KOLLING, 2018, ΕΚΔΟΣΕΙΣ ΚΛΕΙΔΑΡΙΘΜΟΣ ΕΠΕ, ISBN: 978-960-461-820-0

13958 Η ΤΕΧΝΗ ΚΑΙ ΕΠΙΣΤΗΜΗ ΤΗΣ JAVA: ΜΙΑ ΕΙΣΑΓΩΓΗ ΣΤΗΝ ΕΠΙΣΤΗΜΗ ΤΩΝ ΥΠΟΛΟΓΙΣΤΩΝ, Τύπος: Σύγγραμμα, ERIC S. ROBERTS, 2008, ΕΚΔΟΣΕΙΣ ΚΛΕΙΔΑΡΙΘΜΟΣ ΕΠΕ, ISBN: 978-960-461-164-5

13549 JAVA ΜΕ UML: ΑΝΤΙΚΕΙΜΕΝΟΣΤΡΕΦΗΣ ΣΧΕΔΙΑΣΗ ΚΑΙ ΠΡΟΓΡΑΜΜΑΤΙΣΜΟΣ, Τύπος: Σύγγραμμα, ELSE LERVIK, VEGARD B. HAVDAL, 2004, ΕΚΔΟΣΕΙΣ ΚΛΕΙΔΑΡΙΘΜΟΣ ΕΠΕ, ISBN: 960-209-802-3

Additional material

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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

77120260 Στατιστική, Τύπος: Σύγγραμμα, Κολυβά - Μαχαίρα Φωτεινή, Μπόρα - Σέντα Ευθυμία, Μπράτσας Χαράλαμπος, 2018, Ζήτη, ISBN: 978-960-456-511-5

32997808 Στατιστική Ανάλυση με το R, Crawley M.J.

32008 Στατιστική, Παπαδημητρίου Γιάννης

Additional material

Instructor s lecture notes on CoMPUS, http://compus.uom.gr/INF238

-R. M. Heiberger, B. Holland, Statistical Analysis and Data Display, An Intermediate Course with Examples in S-Plus, R, and SAS, Springer, New York, 2004 ()

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

Introduction: Structured Computer Organization, Survey of Modern Computer Systems: Processor, Memory, Buses, I/O.
Digital Logic: Information Representation, Logic Gates and Boolean Algebra, Basic Combinatorial Circuits, Basic Sequential Circuits and Memory, Buses.
Microarchietcture: Data Paths and Memory Models, Execution of Instructions and Microisnstructions, 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):

68374428 Ψηφιακή Σχεδίαση, 2η 'Εκδοση, Τύπος: Σύγγραμμα, Ρουμελιώτης Μάνος, Σουραβλάς Στάυρος, 2017, ΤΖΙΟΛΑ, ISBN: 978-960-418-742-3

59386815 Οργάνωση και Αρχιτεκτονική Υπολογιστών, 10η Έκδοση, Τύπος: Σύγγραμμα, Stallings William, 2016, ΤΖΙΟΛΑ, ISBN: 978-960-418-580-1

15120 Οργάνωση και αρχιτεκτονική ηλεκτρονικών υπολογιστών, Τύπος: Σύγγραμμα, Hammacher Carl,Vranesic Zvonko,Zaky Safwat, 2007, Επίκεντρο, ISBN: 978-960-458-000-2

Additional material

Instructor's Website (http://www.etl.uom.gr/mr/index.php?mypage=archit)

COMPUTER NETWORKS (ΠΛ0503-2)

Coordinator: **Fouliras Panayotis**

Semester: **3th** (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

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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):

22694245 Συστήματα Διαχείρισης Βάσεων Δεδομένων, 3η Έκδοση, Τύπος: Σύγγραμμα, Ramakrishnan Raghu, Gehrke Joahannes, 2012, ΤΖΙΟΛΑ, ISBN: 978-960-418-411-8

12273 Βάσεις δεδομένων Α' Τόμος, Τύπος: Σύγγραμμα, Connoly Thomas,Begg Carolyn E., 2008, Α. Γκιούρδα & ΣΙΑ ΟΕ, ISBN: 978-960-512-499-1

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

Definition of Management, the role of the management science for the contemporary enterprise, Internal and external environment analysis. Functional departments and their authorities. Management functions- Business functions. Evolution of the management science. Contemporary managerial approaches. The close interrelation of efficiency and effectiveness with the management functions and procedural approaches. Decision making procedures. Strategic management. Leadership theories and corporate communication. Motivation theories. Management control. Social responsibility. Technology management and innovation. E-Business. Technology usage in the modern enterprise.

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

Introduction to the object-oriented way of thinking. Objects and Classes. Introduction to the Java programming language: Language features, variables, data types and expressions. Control statements. Using Java libraries. Design of classes and construction of objects. Associations between classes. The concept of reference. Inheritance and Polymorphism. Applets and Applications. Graphical User Interface and event handling. Exceptions. Object-oriented analysis and design with UML.

Assessment

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

Course Bibliography

(One of the following):

50655978 JAVA, 7η Έκδοση, Τύπος: Σύγγραμμα, Savitch Walter, 2015, ΤΖΙΟΛΑ, ISBN: 978-960-418-501-6

77108692 ΑΝΤΙΚΕΙΜΕΝΟΣΤΡΕΦΗΣ ΠΡΟΓΡΑΜΜΑΤΙΣΜΟΣ ΣΕ JAVA: ΜΙΑ ΠΡΑΚΤΙΚΗ ΕΙΣΑΓΩΓΗ ΜΕ ΧΡΗΣΗ ΤΟΥ BLUEJ, Τύπος: Σύγγραμμα, DAVID J. BARNES, MICHAEL KOLLING, 2018, ΕΚΔΟΣΕΙΣ ΚΛΕΙΔΑΡΙΘΜΟΣ ΕΠΕ, ISBN: 978-960-461-820-0

13958 Η ΤΕΧΝΗ ΚΑΙ ΕΠΙΣΤΗΜΗ ΤΗΣ JAVA: ΜΙΑ ΕΙΣΑΓΩΓΗ ΣΤΗΝ ΕΠΙΣΤΗΜΗ ΤΩΝ ΥΠΟΛΟΓΙΣΤΩΝ, Τύπος: Σύγγραμμα, ERIC S. ROBERTS, 2008, ΕΚΔΟΣΕΙΣ ΚΛΕΙΔΑΡΙΘΜΟΣ ΕΠΕ, ISBN: 978-960-461-164-5

13549 JAVA ΜΕ UML: ΑΝΤΙΚΕΙΜΕΝΟΣΤΡΕΦΗΣ ΣΧΕΔΙΑΣΗ ΚΑΙ ΠΡΟΓΡΑΜΜΑΤΙΣΜΟΣ, Τύπος: Σύγγραμμα, ELSE LERVIK, VEGARD B. HAVDAL, 2004, ΕΚΔΟΣΕΙΣ ΚΛΕΙΔΑΡΙΘΜΟΣ ΕΠΕ, ISBN: 960-209-802-3

Additional material

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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

Client, server technologies. Client-side orientation: HTML, CSS,Javascript. Web site and web content publishing. HTML page structure,elements, semantic markup. Content vs presentation. CSS evolution and present state. Selectors, properties, pseudo-classes, pseudo-elements.Inheritance, layout, ordering, compatibility. JavaScript programming.Primitive values, objects, functions, closures. Document Object Model(DOM), events. AJAX, JSON.

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, 6ή 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

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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):

22683637 Θεμελιώδεις αρχές συστημάτων βάσεων δεδομένων, Τύπος: Σύγγραμμα, Elmasri Ramez,Navathe Shamkant B., 2012, ΔΙΑΥΛΟΣ, ISBN: 978-960-531-281-7

12535833 Συστήματα Βάσεων Δεδομένων 6η Έκδοση, Τύπος: Σύγγραμμα, Abraham Silberschatz,Henry F. Korth,S. Sudarshan, 2011, Α. Γκιούρδα & ΣΙΑ ΟΕ, ISBN: 978-960-512-623-0

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):

12172 Εισαγωγή στην επικοινωνία ανθρώπου-υπολογιστή, Τύπος: Σύγγραμμα, Αβούρης Νικόλαος, 2000, Δίαυλος, ISBN: 978-960-531-098-1

12304 Επικοινωνία ανθρώπου - υπολογιστή, 3ή Έκδοση, Τύπος: Σύγγραμμα, Dix Alan J.,Finlay Janet E.,Abowd Gregory D.,Beale Russell, 2007, Α.Γκιούρδα & ΣΙΑ ΟΕ, ISBN: 960-512-503-X

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

Introduction - Basic concepts. Historical review, Definitions and concepts of Linear and Network optimization, Applications of the linear problem formulation, Description of the linear problem, Linear problem formulations (normal, standard, general), Transformation between different formulations, Storage schemes of graphs and trees, Node - node adjacency matrix, Node - arc adjacency matrix, Linked lists.Network flow problems and transformations. Minimum Cost Network Flow Problems, (MCNF), Balanced and not-balanced MCNF, Special MCNF cases, Network flow problems' transformations, MCNF optimality conditions.Geometrical solution of the linear problem. Improving directions, Geometrical solution in the space of variables, Invert matrix properties, Methods of invert matrix calculation for linear optimization problems, Eta-matrices usage.Simplex type algorithms. General description of simplex type algorithms, Methodology of simplex type algorithms, The revised primal simplex algorithm, simplex algorithm's justification, Analysis of different pivoting rules, Solution of general linear problems, (two phase algorithm and big M algorithm), Implementation of simplex type algorithms.Duality theory. Relations between primal and dual linear problem, Transforming primal to dual, Weak duality theorem, Strong duality theorem, Theorem of complementarity slackness, The revised dual simplex algorithm.Minimum spanning tree algorithms. Kruscal algorithm, Prim algorithm.Sensitivity analysis. Classical sensitivity analysis, Changes in the cost variables, Changes in the right hand side.

Assessment

Written final examination 100%

Course Bibliography

(One of the following):

1827 ΔΙΚΤΥΑΚΗ ΒΕΛΤΙΣΤΟΠΟΙΗΣΗ, Τύπος: Σύγγραμμα, ΠΑΠΑΡΡΙΖΟΣ Κ., ΣΑΜΑΡΑΣ Ν., ΣΙΦΑΛΕΡΑΣ Α., 2009, ΖΥΓΟΣ, ISBN: 978-960-8065-68-0

1775 ΓΡΑΜΜΙΚΟΣ ΠΡΟΓΡΑΜΜΑΤΙΣΜΟΣ, Μια Προσέγγιση με Matlab, Τύπος: Σύγγραμμα, ΠΑΠΑΡΡΙΖΟΣ ΚΩΝΣΤΑΝΤΙΝΟΣ, 2009, ΖΥΓΟΣ, ISBN: 978-960-8065-67-3

12518837 ΠΟΣΟΤΙΚΗ ΑΝΑΛΥΣΗ ΓΙΑ ΤΗ ΛΗΨΗ ΔΙΟΙΚΗΤΙΚΩΝ ΑΠΟΦΑΣΕΩΝ ΤΟΜΟΣ Α΄, Τύπος: Σύγγραμμα, Τόμος: Α΄, ΟΙΚΟΝΟΜΟΥ ΓΕΩΡΓΙΟΣ, ΓΕΩΡΓΙΟΥ ΑΝΔΡΕΑΣ, 2011, ΕΥΓΕΝΙΑ ΜΠΕΝΟΥ, ISBN: 978-960-359-102-3

691 ΓΡΑΜΜΙΚΟΣ ΠΡΟΓΡΑΜΜΑΤΙΣΜΟΣ, Τύπος: Σύγγραμμα, ΜΑΝΩΛΗΣ ΛΟΥΚΑΚΗΣ, 2010, Εκδόσεις "σοφία", ISBN: 978-960-87438-8-5

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

Types, structure and evolution of operating systems.Programming and usage interfaces. Hardware interfce.Processor management, process scheduling, interprocess communication, deadlocks.Memory management, virtual memory, paging, segementation.File systems, disk management.Input/output devices management.

Assessment

Course Bibliography

(One of the following):

68374433 Λειτουργικά Συστήματα, 9η Έκδοση, Τύπος: Σύγγραμμα, Stallings William, 2017, ΤΖΙΟΛΑ, ISBN: 978-960-418-715-7

13884 ΣΥΓΧΡΟΝΑ ΛΕΙΤΟΥΡΓΙΚΑ ΣΥΣΤΗΜΑΤΑ, Τύπος: Σύγγραμμα, ANDREW S. TANENBAUM, 2009, ΕΚΔΟΣΕΙΣ ΚΛΕΙΔΑΡΙΘΜΟΣ ΕΠΕ, ISBN: 978-960-461-200-0

Additional material

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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

Software Engineering Principles. Problems in the development of software projects.Differences from other technical disciplines. Product and process characteristics. Life cycle models.Software project management. Cost estimation, COCOMO.Requirements analysis and specification. Formal methods for requirements specification (Pre-post conditions, FSM, Petri Nets, Algebraic specifications, Z language). Structured Analysis.Architectural software design. Modularity, Abstraction, coupling - cohesion. Structured design.Object-oriented analysis and design methodologies. Unified Modeling Language.Coding. Testing, Theoretical foundations of testing. Documentation.Software metrics.Computer-Aided Software Engineering (CASE) tools.Applications with UML and C++/Java.Case Study: development of a complete software project.

Assessment

Written examination 65%
Compulsory Group Assignment 35%

Course Bibliography

(One of the following):

13600 ΑΝΤΙΚΕΙΜΕΝΟΣΤΡΕΦΗΣ ΣΧΕΔΙΑΣΗ: UML, ΑΡΧΕΣ, ΠΡΟΤΥΠΑ ΚΑΙ ΕΥΡΕΤΙΚΟΙ ΚΑΝΟΝΕΣ, Τύπος: Σύγγραμμα, ΑΛΕΞΑΝΔΡΟΣ Ν. ΧΑΤΖΗΓΕΩΡΓΙΟΥ, 2005, ΕΚΔΟΣΕΙΣ ΚΛΕΙΔΑΡΙΘΜΟΣ ΕΠΕ, ISBN: 960-209-882-1

13597 ΑΝΤΙΚΕΙΜΕΝΟΣΤΡΕΦΗΣ ΑΝΑΠΤΥΞΗ ΛΟΓΙΣΜΙΚΟΥ ΜΕ ΤΗ UML, Τύπος: Σύγγραμμα, ΒΑΣΙΛΗΣ ΓΕΡΟΓΙΑΝΝΗΣ, ΓΙΩΡΓΟΣ ΚΑΚΑΡΟΝΤΖΑΣ, ΑΧΙΛΛΕΑΣ ΚΑΜΕΑΣ, ΓΙΑΝΝΗΣ ΣΤΑΜΕΛΟΣ, ΠΑΝΟΣ ΦΙΤΣΙΛΗΣ, 2006, ΕΚΔΟΣΕΙΣ ΚΛΕΙΔΑΡΙΘΜΟΣ ΕΠΕ, ISBN: 960-209-913-5

68402214 Τεχνολογία λογισμικού, Τύπος: Σύγγραμμα, Γιακουμάκης Μανόλης, Διαμαντίδης Νίκος, 2017, UNIBOOKS ΙΚΕ, ISBN: 9786185304416

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

Fourier analysis,Time/frequency representation of digital signals. Baseband Data Transmission,, Sampling Process, Voice/video Communication, Pulse Amplitude Modulation (PAM), Pulse Code Modulation, Shannon Limit , Modulation, Performance Parameters of Coding and Modulation Scheme , Power Limited and Bandwidth-Limited Channel, Nyquist Bandwidth, OSI Model, Data Communication Services, Multiplexing, Transmission Media, Transmission Impairments, Communication Networks, Information Theory/quantitative theory of information and its applications to reliable, efficient communication systems, Algorithms for Communications Systems and their Applications

Assessment

Written final examination / assignment/Virtual labs

Course Bibliography

(One of the following):

18548860 Αρχές τηλεπικοινωνιακών συστήματων, Τύπος: Σύγγραμμα, Taub Herbert 1918-,Schilling Donald L., 2006, ΤΖΙΟΛΑ, ISBN: 978-960-418-061-5

77107676 Επικοινωνίες υπολογιστών και δεδομένων, 10η Έκδοση, Τύπος: Σύγγραμμα, Stallings William, Κατσαβούνης Στέφανος (επιμέλεια), 2018, ΤΖΙΟΛΑ, ISBN: 978-960-418-814-7

18548741 Ψηφιακές επικοινωνίες, Τύπος: Σύγγραμμα, Rice Michael, 2009, ΤΖΙΟΛΑ, ISBN: 978-960-418-176-6

3235 ΑΛΓΟΡΙΘΜΟΙ & ΕΦΑΡΜΟΓΕΣ ΣΥΣΤΗΜΑΤΩΝ ΕΠΙΚΟΙΝΩΝΙΩΝ ΤΟΜΟΣ 1:ΣΗΜΑΤΑ & ΣΥΣΤΗΜΑΤΑ, Τύπος: Σύγγραμμα, NEVIO BENVENUTO,GIOVANNI CHERUBINI, 2004, ΕΚΔΟΣΕΙΣ ΠΑΝΕΠΙΣΤΗΜΙΟΥ ΠΑΤΡΩΝ, ISBN: 960-530-065-5

68369851 Τηλεπικοινωνιακά Συστήματα, 4η Έκδοση, Τύπος: Σύγγραμμα, Καραγιαννίδης Γεώργιος, Παππή Κοραλία, 2017, Τζιόλα, ISBN: 978-960-418-675-4

18549058 Εισαγωγή στις Τηλεπικοινωνίες, Τύπος: Σύγγραμμα, Κωττής Παναγιώτης Γ., 2011, ΤΖΙΟΛΑ, ISBN: 978-960-418-362-3

50657744 ΣΥΣΤΗΜΑΤΑ ΤΗΛΕΠΙΚΟΙΝΩΝΙΩΝ, Τύπος: Σύγγραμμα, Proakis/Salehi, 2015, Fountas, ISBN: 9789603307631

12866698 Digital Communications, Τύπος: Σύγγραμμα, John Proakis, Massoud Salehi, 2008, McGraw Hill, ISBN: 9780071263788

14869 Ψηφιακή Ανάλυση Σήματος, Τύπος: Σύγγραμμα, Proakis J, Manolakis D., 2010, Ίων, ISBN: 978-960-411-715-4

33197231 Ψηφιακά Συστήματα Επικοινωνιών, Τύπος: Σύγγραμμα, Simon Haykin, 2014, Παπασωτηρίου, ISBN: 978-960-491-088-5

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

The notion of the server and its services. Web server installation and management (apache). Activating dynamic features. Introduction to server-side scripting languages with emphasis on PHP. Basic data structures. Data storing and retrieving. Using tables. String handling. Code reuse and function syntax. Object orientation. Interfacing with the file system and the server. Database Management System (DBMS) installation and management for web services (MySQL). Design and creation of a network data base. Accessing data through PHP. E-commerce web site example functioning. Security issues. Identity check and secure transactions through PHP and MySQL. Expanding towards XML and AJAX. Comparison with competitive technologies in web servicing, scripting, DBMS.

Assessment

Course Bibliography

(One of the following):

13690 ΕΙΣΑΓΩΓΗ ΣΤΙΣ PHP 6 ΚΑΙ MYSQL 5 ΜΕ ΕΙΚΟΝΕΣ, Τύπος: Σύγγραμμα, LARRY ULLMAN, 2009, ΕΚΔΟΣΕΙΣ ΚΛΕΙΔΑΡΙΘΜΟΣ ΕΠΕ, ISBN: 978-960-461-250-5

68387584 Ανάπτυξη Web Εφαρμογών με PHP και MySQL, 5η εκδ., Τύπος: Σύγγραμμα, Thomson Laura, Welling Luke, 2017, Χ. ΓΚΙΟΥΡΔΑ & ΣΙΑ ΕΕ, ISBN: 978-960-512-7015

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

Types, structure and evolution of operating systems.Programming and usage interfaces. Hardware interfce.Processor management, process scheduling, interprocess communication, deadlocks.Memory management, virtual memory, paging, segementation.File systems, disk management.Input/output devices management.

Assessment

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

Course Bibliography

(One of the following):

68374433 Λειτουργικά Συστήματα, 9η Έκδοση, Τύπος: Σύγγραμμα, Stallings William, 2017, ΤΖΙΟΛΑ, ISBN: 978-960-418-715-7

13884 ΣΥΓΧΡΟΝΑ ΛΕΙΤΟΥΡΓΙΚΑ ΣΥΣΤΗΜΑΤΑ, Τύπος: Σύγγραμμα, ANDREW S. TANENBAUM, 2009, ΕΚΔΟΣΕΙΣ ΚΛΕΙΔΑΡΙΘΜΟΣ ΕΠΕ, ISBN: 978-960-461-200-0

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):

59386820 Εισαγωγή στην Επιχειρησιακή Έρευνα, 10η Έκδοση, Τύπος: Σύγγραμμα, Hillier Frederick S., Lieberman Gerald J., Διαμαντίδης Αλέξανδρος (επιμέλεια), 2017, ΤΖΙΟΛΑ, ISBN: 978-960-418-604-4

59415056 Εισαγωγή στην Επιχειρησιακή Έρευνα, 10η Έκδοση, Τύπος: Σύγγραμμα, Taha A. Hamdy, 2017, ΤΖΙΟΛΑ, ISBN: 978-960-418-691-4

Additional material

Class Notes ()

PROBABILITY AND STATISTICS (ΠΛ0423)

Coordinator: **Nikolaidis Ioannis**

Semester: **4rd** (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.
Sampling distributions. Central limit theorem. Point estimation. Properties of estimators. Confidence interval estimation. Choice of sample size.
Hypotheses testing. Testing for goodness of fit.
Regression-correlation

Assessment

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

Course Bibliography

(One of the following):

50657217 ΕΦΑΡΜΟΣΜΕΝΕΣ ΠΙΘΑΝΟΤΗΤΕΣ ΚΑΙ ΣΤΑΤΙΣΤΙΚΗ, Τύπος: Σύγγραμμα, ΚΟΥΤΡΟΥΒΕΛΗΣ ΙΩΑΝΝΗΣ, 2015, GOTSIS, ISBN: 978-960-9427-47-0

11365 Στατιστική, Τύπος: Σύγγραμμα, Ψωινός Δημήτριος Π., 1999, Ζήτη, ISBN: 960-431-561-7

59377478 Στατιστική Μέθοδοι Ανάλυσης για Επιχειρηματικές Αποφάσεις (4η έκδοση), Τύπος: Σύγγραμμα, Ιωάννης Χαλικιάς, 2017, Εκδοτικός Οίκος Rosili, ISBN: 978-618-5131-20-3

Additional material

Probability and Statistics in Engineering and Management Science. W. W. Hines, D. C. Montgomery, Ed. Wiley, 1990. ()

PRODUCTION AND OPERATIONS MANAGEMENT (ΠΛ0836)

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):

59382666 Διοίκηση Παραγωγής και Υπηρεσιών, Τύπος: Σύγγραμμα, Στειακάκης Εμμανουήλ- Κωφίδης Νίκος, 2016, ΤΖΙΟΛΑ, ISBN: 978-960-418-608-2

11513 Διοίκηση παραγωγικών συστημάτων, Τύπος: Σύγγραμμα, Δημητριάδης Σωτήριος Γ.,Μιχιώτης Αθανάσιος Ν., 2007, Κριτική, ISBN: 978-960-218-522-3

68402905 Διοίκηση Παραγωγής Ο Σχεδιασμός Παραγωγικών Συστημάτων - Β΄ Έκδοση, Τύπος: Σύγγραμμα, Παππής Κώστας Π., 2017, UNIBOOKS ΙΚΕ, ISBN: 9786185304218

Additional material

Nahmias, S. (1997). Production and Operations Analysis, 3rd Edition, Irwin, Chicago ()

5th SEMESTER

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.ContentGreek 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):

6717 Λογιστικά Πληροφοριακά Συστήματα Μηχανογραφημένη Λογιστική, Τύπος: Σύγγραμμα, Δ. Γκίνογλου, Π. Ταχυνάκης, Ν. Πρωτόγερος, 2004, Εκδοτικός Οίκος Rosili, ISBN: 960-7745-09-4

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

Fourier analysis,Time/frequency representation of digital signals. Baseband Data Transmission,, Sampling Process, Voice/video Communication, Pulse Amplitude Modulation (PAM), Pulse Code Modulation, Shannon Limit , Modulation, Performance Parameters of Coding and Modulation Scheme , Power Limited and Bandwidth-Limited Channel, Nyquist Bandwidth, OSI Model, Data Communication Services, Multiplexing, Transmission Media, Transmission Impairments, Communication Networks, Information Theory/quantitative theory of information and its applications to reliable, efficient communication systems, Algorithms for Communications Systems and their Applications

Assessment

Written final examination / assignment/Virtual labs

Course Bibliography

(One of the following):

18548860 Αρχές τηλεπικοινωνιακών συστήματων, Τύπος: Σύγγραμμα, Taub Herbert 1918-,Schilling Donald L., 2006, ΤΖΙΟΛΑ, ISBN: 978-960-418-061-5

77107676 Επικοινωνίες υπολογιστών και δεδομένων, 10η Έκδοση, Τύπος: Σύγγραμμα, Stallings William, Κατσαβούνης Στέφανος (επιμέλεια), 2018, ΤΖΙΟΛΑ, ISBN: 978-960-418-814-7

18548741 Ψηφιακές επικοινωνίες, Τύπος: Σύγγραμμα, Rice Michael, 2009, ΤΖΙΟΛΑ, ISBN: 978-960-418-176-6

3235 ΑΛΓΟΡΙΘΜΟΙ & ΕΦΑΡΜΟΓΕΣ ΣΥΣΤΗΜΑΤΩΝ ΕΠΙΚΟΙΝΩΝΙΩΝ ΤΟΜΟΣ 1:ΣΗΜΑΤΑ & ΣΥΣΤΗΜΑΤΑ, Τύπος: Σύγγραμμα, NEVIO BENVENUTO,GIOVANNI CHERUBINI, 2004, ΕΚΔΟΣΕΙΣ ΠΑΝΕΠΙΣΤΗΜΙΟΥ ΠΑΤΡΩΝ, ISBN: 960-530-065-5

68369851 Τηλεπικοινωνιακά Συστήματα, 4η Έκδοση, Τύπος: Σύγγραμμα, Καραγιαννίδης Γεώργιος, Παππή Κοραλία, 2017, Τζιόλα, ISBN: 978-960-418-675-4

18549058 Εισαγωγή στις Τηλεπικοινωνίες, Τύπος: Σύγγραμμα, Κωττής Παναγιώτης Γ., 2011, ΤΖΙΟΛΑ, ISBN: 978-960-418-362-3

50657744 ΣΥΣΤΗΜΑΤΑ ΤΗΛΕΠΙΚΟΙΝΩΝΙΩΝ, Τύπος: Σύγγραμμα, Proakis/Salehi, 2015, Fountas, ISBN: 9789603307631

12866698 Digital Communications, Τύπος: Σύγγραμμα, John Proakis, Massoud Salehi, 2008, McGraw Hill, ISBN: 9780071263788

14869 Ψηφιακή Ανάλυση Σήματος, Τύπος: Σύγγραμμα, Proakis J, Manolakis D., 2010, Ίων, ISBN: 978-960-411-715-4

33197231 Ψηφιακά Συστήματα Επικοινωνιών, Τύπος: Σύγγραμμα, Simon Haykin, 2014, Παπασωτηρίου, ISBN: 978-960-491-088-5

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):

32997757 ΕΙΣΑΓΩΓΗ ΣΤΗΝ ΟΙΚΟΝΟΜΕΤΡΙΑ ΜΕ ΤΗ ΧΡΗΣΗ ΤΟΥ ΛΟΓΙΣΜΙΚΟΥ EVIEWS, Τύπος: Σύγγραμμα, ΧΑΪΔΩ Ν. ΔΡΙΤΣΑΚΗ, ΜΕΛΙΝΑ Ν. ΔΡΙΤΣΑΚΗ, 2013, ΕΚΔΟΣΕΙΣ ΚΛΕΙΔΑΡΙΘΜΟΣ ΕΠΕ, ISBN: 978-960-461-544-5

2047 ΟΙΚΟΝΟΜΕΤΡΙΑ, Τύπος: Σύγγραμμα, ΤΖΑΒΑΛΗΣ ΗΛΙΑΣ, 2008, ΟΠΑ, ISBN: 978-960-98566-0-7

Additional material

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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.ContentConceptual 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):

32997535 Ηλεκτρονικό Επιχειρείν και Μάρκετινγκ, Τύπος: Σύγγραμμα, Βλαχοπούλου Μάρω ,Δημητριάδης Σέργιος, 2013, Εκδοτικός Οίκος Rosili, ISBN: 978-960-7745-32-3

14035 ΚΑΙΝΟΤΟΜΙΑ, ΣΤΡΑΤΗΓΙΚΗ, ΑΝΑΠΤΥΞΗ ΚΑ ΠΛΗΡΟΦΟΡΙΑΚΑ ΣΥΣΤΗΜΑΤΑ, Τύπος: Σύγγραμμα, Γεώργιος Δουκίδης, 2010, ΑΝΔΡΕΑΣ ΣΙΔΕΡΗΣ - ΙΩΑΝΝΗΣ ΣΙΔΕΡΗΣ & ΣΙΑ Ο.Ε., ISBN: 978-960-08-0528-4

14952 Εισαγωγή στο Marketing, Τύπος: Σύγγραμμα, Armstrong Gary,Kotler Philip, 2009, Επίκεντρο, ISBN: 978-960-458-204-4

59395494 Επικοινωνία και Διαφήμιση στα Μέσα Κοινωνικής Δικτύωσης, Τύπος: Σύγγραμμα, Ανδρονίκη Κάβουρα, 2016, ΔΙΟΝΙΚΟΣ, ISBN: 978-960-6619-80-9

Additional material

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

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):

22728229 Πολυμέσα Αναλυτικός Οδηγός, 8η Έκδοση, Τύπος: Σύγγραμμα, Tay Vaughan, 2012, Α. Γκιούρδα & ΣΙΑ ΟΕ, ISBN: 978-960-512-633-9

Πρόσθετο Διδακτικό Υλικό:

320156 ΠΟΛΥΜΕΣΑ, Τύπος: Ηλεκτρονικό Βιβλίο, ΦΩΤΙΟΣ ΛΑΖΑΡΙΝΗΣ, 2016, , ISBN: 978-960-603-141-0

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

LECTURES:- e-Architectures, Web & e-commerce applications- mobile e-commerce, mobile devices & Web - e-Payments and e-commerce security - Usability and Accessibility, Personalization and Recommendation SystemsLAB:The Visual Studio integrated development environment (IDE) – Developing Web-based applications & e-commerce sites (C#, ADO.NET, ASP.NET) - Introduction to visual programming, visual tools/mechanisms, object-oriented event-driven programming, development of Web-based applications.- Developing e-commerce sites. Case studies (design and implementation).

Assessment

Written final examination 80%
Optional coursework 20%

Course Bibliography

(One of the following):

33154014 Ηλεκτρονικό Εμπόριο 2014, Τύπος: Σύγγραμμα, Laudon K.,Traver C. C., 2014, Παπασωτηρίου, ISBN: 978-960-491-085-4

Επιλογές ελεύθερων συγγραμμάτων

320170 ΤΕΧΝΟΛΟΓΙΕΣ ΠΑΓΚΟΣΜΙΟΥ ΙΣΤΟΥ ΚΑΙ ΗΛΕΚΤΡΟΝΙΚΟΥ ΕΜΠΟΡΙΟΥ, Τύπος: Ηλεκτρονικό Βιβλίο, ΧΡΗΣΤΟΣ ΓΕΩΡΓΙΑΔΗΣ, 2016, , ISBN: 978-960-603-125-0

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):

77107332 Στρατηγικό Μάνατζμεντ-Μια Ολοκληρωμένη Προσέγγιση -Θεωρία και Μελέτες Περίπτωσης, Τύπος: Σύγγραμμα, Hill W.L. Charles, Schilling A. Melissa, Jones R. Gareth, 2018, Broken Hill Publishers Ltd, ISBN: 9789925563524

50659970 ΣΤΡΑΤΗΓΙΚΗ ΤΩΝ ΕΠΙΧΕΙΡΗΣΕΩΝ ΤΟΜΟΣ Α΄, Τύπος: Σύγγραμμα, Τόμος: Α΄, ΠΑΠΑΔΑΚΗΣ ΒΑΣΙΛΕΙΟΣ, 2016, ΕΥΓΕΝΙΑ ΜΠΕΝΟΥ, ISBN: 978-960-359-119-1

59396604 Σχεδιασμός και Υλοποίηση Στρατηγικής των Επιχειρήσεων, Τύπος: Σύγγραμμα, A.Thompson Jr, Margaret A. Peteraf, John E. Gamble, Dr. A. J. (Lonnie) Strickland, 2016, Utopia, ISBN: 978-618-81298-0-1

50656356 ΒΑΣΙΚΕΣ ΑΡΧΕΣ ΕΠΙΧΕΙΡΗΜΑΤΙΚΗΣ ΣΤΡΑΤΗΓΙΚΗΣ, Τύπος: Σύγγραμμα, ROBERT M. GRANT, JUDITH JORDAN, 2016, ΕΚΔΟΣΕΙΣ ΚΛΕΙΔΑΡΙΘΜΟΣ ΕΠΕ, ISBN: 978-960-461-670-1

59368002 Βασικές αρχές στρατηγικής των επιχειρήσεων, Τύπος: Σύγγραμμα, Johnson Gerry, Scholes Kevan, Whittington Richard, 2016, Κριτική, ISBN: 978-960-586-140-7

50656360 ΨΗΦΙΑΚΕΣ ΕΠΙΧΕΙΡΗΣΕΙΣ ΚΑΙ ΗΛΕΚΤΡΟΝΙΚΟ ΕΜΠΟΡΙΟ: ΣΤΡΑΤΗΓΙΚΗ, ΥΛΟΠΟΙΗΣΗ ΚΑΙ ΕΦΑΡΜΟΓΗ, Τύπος: Σύγγραμμα, DAVE CHAFFEY, 2016, ΕΚΔΟΣΕΙΣ ΚΛΕΙΔΑΡΙΘΜΟΣ ΕΠΕ, ISBN: 978-960-461-671-8

13882 ΣΤΡΑΤΗΓΙΚΗ ΤΩΝ ΕΠΙΧΕΙΡΗΣΕΩΝ, Τύπος: Σύγγραμμα, ΜΙΧΑΛΗΣ ΜΙΧΑΛΟΠΟΥΛΟΣ, ΕΥΑΓΓΕΛΟΣ ΓΡΗΓΟΡΟΥΔΗΣ, ΚΩΝΣΤΑΝΤΙΝΟΣ ΖΟΠΟΥΝΙΔΗΣ, 2007, ΕΚΔΟΣΕΙΣ ΚΛΕΙΔΑΡΙΘΜΟΣ ΕΠΕ, ISBN: 978-960-461-069-3

Additional material

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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.
• Distringusih between multiple, theoretical and applied / programming constructs for task communication and coordination..
• Distringuish 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):

12533080 ΚΑΤΑΝΕΜΗΜΕΝΑ ΣΥΣΤΗΜΑΤΑ ΜΕ JAVA, Τύπος: Σύγγραμμα, Ι. Κ. ΚΑΒΟΥΡΑΣ, Ι. Ζ. ΜΗΛΗΣ, Α. Α. ΡΟΥΚΟΥΝΑΚΗ, Γ. Β. ΞΥΛΩΜΕΝΟΣ, 2011, ΕΚΔΟΣΕΙΣ ΚΛΕΙΔΑΡΙΘΜΟΣ ΕΠΕ, ISBN: 978-960-461-463-9

13777 ΚΑΤΑΝΕΜΗΜΕΝΑ ΣΥΣΤΗΜΑΤΑ: ΑΡΧΕΣ ΚΑΙ ΥΠΟΔΕΙΓΜΑΤΑ, Τύπος: Σύγγραμμα, ANDREW S. TANENBAUM, MAARTEN VAN STEEN, 2006, ΕΚΔΟΣΕΙΣ ΚΛΕΙΔΑΡΙΘΜΟΣ ΕΠΕ, ISBN: 960-209-924-0

4621 ΚΑΤΑΝΕΜΗΜΕΝΕΣ ΕΦΑΡΜΟΓΕΣ ΚΑΙ ΗΛΕΚΤΡΟΝΙΚΟ ΕΜΠΟΡΙΟ (ΠΕΡΙΕΧΕΙ CD), Τύπος: Σύγγραμμα, INCE DARREL, 2007, ΕΚΔΟΣΕΙΣ ΠΑΝΕΠΙΣΤΗΜΙΟΥ ΜΑΚΕΔΟΝΙΑΣ, ISBN: 978-960-8396-34-0

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):

32997757 ΕΙΣΑΓΩΓΗ ΣΤΗΝ ΟΙΚΟΝΟΜΕΤΡΙΑ ΜΕ ΤΗ ΧΡΗΣΗ ΤΟΥ ΛΟΓΙΣΜΙΚΟΥ EVIEWS, Τύπος: Σύγγραμμα, ΧΑΪΔΩ Ν. ΔΡΙΤΣΑΚΗ, ΜΕΛΙΝΑ Ν. ΔΡΙΤΣΑΚΗ, 2013, ΕΚΔΟΣΕΙΣ ΚΛΕΙΔΑΡΙΘΜΟΣ ΕΠΕ, ISBN: 978-960-461-544-5

2047 ΟΙΚΟΝΟΜΕΤΡΙΑ, Τύπος: Σύγγραμμα, ΤΖΑΒΑΛΗΣ ΗΛΙΑΣ, 2008, ΟΠΑ, ISBN: 978-960-98566-0-7

Additional material

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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: Γ. Τζίτζικας), Εκδ. Κλειδάριθμος, 2010

M. Fowler, Εισαγωγή στη UML, Εκδόσεις Κλειδάριθμος, 2006

Β. Γερογιάννης κ.α., 2006, Αντικειμενοστραφής Ανάπτυξη Λογισμικού με τηUML, 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

R. Pressman, 2015, Software Engineering: A practitioner's approach, 8thed., R. S. Pressman & Associates, Inc.

Additional material

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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):

5425 ΑΣΦΑΛΕΙΑ ΠΛΗΡΟΦΟΡΙΑΚΩΝ ΣΥΣΤΗΜΑΤΩΝ, Τύπος: Σύγγραμμα, ΠΑΓΚΑΛΟΣ ΓΕΩΡΓΙΟΣ,ΜΑΥΡΙΔΗΣ Ι., 2002, ΑΝΙΚΟΥΛΑ, ISBN: 9605160188

9675 Ασφάλεια Δικτύων Υπολογιστών, Τύπος: Σύγγραμμα, Γκρίτζαλης Στέφανος,Γκρίτζαλης Δημήτρης Α.,Κάτσικας Σωκράτης, 2003, Παπασωτηρίου, ISBN: 978-960-7530-45-5

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

1. Burke, R., Project Management: Planning and Control Techniques, 5thEdition, John Wiley & Sons, 2013.

2. Larson, E.W. and C.F. Gray, Project Management: The Managerial Process, 5thEdition, McGraw-Hill/Irwin, 2011.

3. Shtub, A., J.F. Bard and S. Globerson, Project Management: Processes, Methodologies, and Economics, 2ndEdition, Prentice Hall, 2004.

4. Kerzner, H.R., Project Management: A Systems Approach to Planning, Scheduling, and Controlling, 10thEdition, Wiley, 2009.

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

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6th SEMESTER

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

Introduction to Artificial Intelligence. Problem representation - Search tree. Search algorithms. Blind search and informed search. Constraint satisfaction problems. Arc consistency. Constraint propagation.
Adversary games. Minimax search and alpha-beta pruning. Games with chance.
Knowledge and reasoning. Propositional logic. First order logic. Proof procedures and the Resolution Principle. Rule Based Systems.
Planning. STRIPS representation. Progression and Regression. Partial order planning. Temporal planning and planning with resources.

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.

13909 ΤΕΧΝΗΤΗ ΝΟΗΜΟΣΥΝΗ: ΜΙΑ ΣΥΓΧΡΟΝΗ ΠΡΟΣΕΓΓΙΣΗ, Τύπος: Σύγγραμμα, STUART RUSSELL, PETER NORVIG, 2005, ΕΚΔΟΣΕΙΣ ΚΛΕΙΔΑΡΙΘΜΟΣ ΕΠΕ, ISBN: 960-209-873-2

12867416 ΤΕΧΝΗΤΗ ΝΟΗΜΟΣΥΝΗ, Τύπος: Σύγγραμμα, ΒΛΑΧΑΒΑΣ Ι.,ΚΕΦΑΛΑΣ Π.,ΒΑΣΙΛΕΙΑΔΗΣ Ν.,ΚΟΚΚΟΡΑΣ Φ.,ΣΑΚΕΛΛΑΡΙΟΥ Η., 2011, ΕΚΔΟΣΕΙΣ ΠΑΝ/ΜΙΟΥ ΜΑΚΕΔΟΝΙΑΣ, ISBN: 978-960-8396-64-7

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):

1150 ΣΥΓΧΡΟΝΗ ΟΙΚΟΝΟΜΕΤΡΙΑ, Τύπος: Σύγγραμμα, ΒΑΜΒΟΥΚΑΣ ΓΕΩΡΓΙΟΣ, 2007, ΟΠΑ, ISBN: 978-960-86157-9-3

161413 Οικονομετρία, Τύπος: Σύγγραμμα, Χάλκος Γεώργιος, 2011, Gutenberg, ISBN: 978-960-01-1394-5

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)
IS Security Models and Policies (Clark-Wilson, Harrison-Ruzzo-Ullman, Graham-Denning, Chinese Wall, Bell-La Padula, Biba, High-Level Security Policies).
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):

5425 ΑΣΦΑΛΕΙΑ ΠΛΗΡΟΦΟΡΙΑΚΩΝ ΣΥΣΤΗΜΑΤΩΝ, Τύπος: Σύγγραμμα, ΠΑΓΚΑΛΟΣ ΓΕΩΡΓΙΟΣ,ΜΑΥΡΙΔΗΣ Ι., 2002, ΑΝΙΚΟΥΛΑ, ISBN: 9605160188

2165 Ασφάλεια Πληροφοριακών Συστημάτων, Τύπος: Σύγγραμμα, Σωκτ. Κάτσικας - Δ. Γκρίτζαλης - Στεφ. Γκρίτζαλης, 2004, ΕΚΔΟΣΕΙΣ ΝΕΩΝ ΤΕΧΝΟΛΟΓΙΩΝ, ISBN: 960-8105-57-9

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):

59395808 ΠΡΟΣΩΠΙΚΑ ΔΕΔΟΜΕΝΑ, Τύπος: Σύγγραμμα, ΕΥΓΕΝΙΙΑ ΑΛΕΞΑΝΔΡΟΠΟΥΛΟΥ-ΑΙΓΥΠΤΙΑΔΟΥ, 2016, ΝΟΜΙΚΗ ΒΙΒΛΙΟΘΗΚΗ ΑΕΒΕ, ISBN: 978-960-562-609-9

33153104 ΔΙΚΑΙΟ ΠΡΟΣΩΠΙΚΩΝ ΔΕΔΟΜΕΝΩΝ, Τύπος: Σύγγραμμα, ΧΡΙΣΤΟΔΟΥΛΟΥ ΚΩΝΣΤΑΝΤΙΝΟΣ, 2013, ΝΟΜΙΚΗ ΒΙΒΛΙΟΘΗΚΗ ΑΕΒΕ, ISBN: 978-960-562-078-3

Additional material

See www.itlaw.uom.gr , www.dpa.gr , www.opi.gr ()

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):

59386820 Εισαγωγή στην Επιχειρησιακή Έρευνα, 10η Έκδοση, Τύπος: Σύγγραμμα, Hillier Frederick S., Lieberman Gerald J., Διαμαντίδης Αλέξανδρος (επιμέλεια), 2017, ΤΖΙΟΛΑ, ISBN: 978-960-418-604-4

59415056 Εισαγωγή στην Επιχειρησιακή Έρευνα, 10η Έκδοση, Τύπος: Σύγγραμμα, Taha A. Hamdy, 2017, ΤΖΙΟΛΑ, ISBN: 978-960-418-691-4

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.
• Distringusih between multiple, theoretical and applied / programming constructs for task communication and coordination.
• Distringuish 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 decompostion on algorithms and applications.
• Characteριzation of algorithms and applications based on their potential to be decompsoed for parallel and distributed computation and initial estimation of the performance of the proposed solution.
• Writiong of simple parallel and distributed applications including task creation, data distribution, comnputations, data collection and task termination. .
• Debugging of simple parallel and distributed applications at algorithmic anf 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 Paralel and Ditributed Computing: an Introduction

Assessment

• Laboratoty Exercises
• Written Examination

Course Bibliography

(One of the following):

50655947 Αρχές Προγραμματισμού με Ταυτοχρονισμό και Κατανομή Λογισμικού, 2η Έκδοση, Τύπος: Σύγγραμμα, Ben-Ari, 2015, ΤΖΙΟΛΑ, ISBN: 978-960-418-591-7

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

Embedded Systems' definition, characteristics, applications, demands. General and special purpose microprocessors, ASICs, Field Programmable Gate Arrays (FPGAs), Complex Programmable Logic Devices (CPLDs). Design, development, control and production methods. Electronic Design Automation tools. Proper function verification. Final product design and prototyping. Peripheral devices, serial and parallel communication. On-board and off-board circuit communication. Sensors, actuators. Conversion between analog and digital signals. Microcontrollers: families, characteristics, evolution, applications.

Assessment

Written final examination
Coursework

Course Bibliography

(One of the following):

64314 Ψηφιακή Σχεδίαση με VHDL, Τύπος: Σύγγραμμα, Peter J Ashenden, 2010, ΕΚΔΟΣΕΙΣ ΝΕΩΝ ΤΕΧΝΟΛΟΓΙΩΝ, ISBN: 978-960-6759-505

3409 Οι Υπολογιστές ως Συστατικά Στοιχεία, Τύπος: Σύγγραμμα, Wayne Wolf, 2008, Εκδόσεις Νέων Τεχνολογιών, ISBN: 978-960-6759-18-5

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):

22769685 ΔΙΑΧΕΙΡΙΣΗ ΕΠΙΧΕΙΡΗΣΙΑΚΩΝ ΔΙΑΔΙΚΑΣΙΩΝ: ΟΡΓΑΝΩΣΗ, ΑΝΑΔΙΟΡΓΑΝΩΣΗ ΚΑΙ ΒΕΛΤΙΩΣΗ, Τύπος: Σύγγραμμα, ΝΙΚΟΛΑΟΣ Α. ΠΑΝΑΓΙΩΤΟΥ, ΝΙΚΟΛΑΟΣ ΕΥΑΓΓΕΛΟΠΟΥΛΟΣ, ΠΕΤΡΟΣ ΚΑΤΗΜΕΡΤΖΟΓΛΟΥ, ΣΩΤΗΡΗΣ ΓΚΑΓΙΑΛΗΣ, 2013, ΕΚΔΟΣΕΙΣ ΚΛΕΙΔΑΡΙΘΜΟΣ ΕΠΕ, ISBN: 978-960-461-516-2

22769685 ΔΙΑΧΕΙΡΙΣΗ ΕΠΙΧΕΙΡΗΣΙΑΚΩΝ ΔΙΑΔΙΚΑΣΙΩΝ: ΟΡΓΑΝΩΣΗ, ΑΝΑΔΙΟΡΓΑΝΩΣΗ ΚΑΙ ΒΕΛΤΙΩΣΗ, Τύπος: Σύγγραμμα, ΝΙΚΟΛΑΟΣ Α. ΠΑΝΑΓΙΩΤΟΥ, ΝΙΚΟΛΑΟΣ ΕΥΑΓΓΕΛΟΠΟΥΛΟΣ, ΠΕΤΡΟΣ ΚΑΤΗΜΕΡΤΖΟΓΛΟΥ, ΣΩΤΗΡΗΣ ΓΚΑΓΙΑΛΗΣ, 2013, ΕΚΔΟΣΕΙΣ ΚΛΕΙΔΑΡΙΘΜΟΣ ΕΠΕ, ISBN: 978-960-461-516-2

68373062 Βασικές Αρχές της Διαχείρισης Επιχειρησιακών Διαδικασιών, Τύπος: Σύγγραμμα, Dumas Marlon, La Rosa Marcello, Mendling Jan, Reijers Hajo, 2017, BROKEN HILL PUBLISHERS LTD, ISBN: 9789963258918

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

Mobile and personal communications, Wireless mobile and personal communication systems, Design issues, Impact of mobility on communication networks, 3G and 4G mobile communication systems. The wireless environment in mobile communications, Radio Propagation and Propagation Path-Loss Models An Overview of Digital Communication and Transmission, Fundamentals of Cellular Communications, Multiple Access Techniques, Modulation Schemes, Antennas, Diversity, and Link Analysis, Spread Spectrum (SS) and CDMA Systems, Tele-traffic Engineering, Mobility management, Location management, Location update, Methods for mobile terminal positioning. Algorithms for mobile and wireless Communications Systems and their Applications, Security management, managerial and regulatory issues.

Assessment

Written final examination / Assignment/lab tests

Course Bibliography

(One of the following):

18548787 Δίκτυα κινητών και προσωπικών επικοινωνιών, Τύπος: Σύγγραμμα, Θεολόγου Μ., 2010, ΤΖΙΟΛΑ, ISBN: 978-960-418-278-7

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

Introduction, basic knowledge on Probability and Statistics. Basic knowledge on Quality. Quality management systems. Acceptance sampling for attributes. Acceptance sampling by variables. Process capability analysis. Control charts: general rules and principles. Control charts for attributes or variables. Advanced control charts. Design of a control chart. Basic knowledge on Quality Assurance Standards.

Assessment

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

Course Bibliography

(One of the following):

11368 Στατιστικός έλεγχος ποιότητας, Τύπος: Σύγγραμμα, Ταγαράς Γιώργος Ν., 2001, Ζήτη, ISBN: 960-431-706-7

123151 Ποιοτικός έλεγχος παραγωγής, Τύπος: Σύγγραμμα, Παπαργύρης Αθανάσιος, Παπαργύρης Δημήτριος, 2010, Ζήτη, ISBN: 978-960-456-238-1

Additional material

Introduction to Statistical Quality Control. D. Montgomery, Εκδ. Wiley, 1997 ()

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):

41955004 Διοίκηση Εφοδιαστικής Αλυσίδας, 5η Έκδοση, Τύπος: Σύγγραμμα, Chopra Sunil - Meindl Peter, 2014, ΤΖΙΟΛΑ, ISBN: 978-960-418-465-1

50659353 Logistics: Εφοδιαστική και διοίκηση δικτύων διανομής, Τύπος: Σύγγραμμα, Bowersox D., Closs D., Cooper M., Bowersox J., 2015, BROKEN HILL PUBLISHERS LTD, ISBN: 9789963258413

68379795 Logistics και διαχείριση εφοδιαστικής αλυσίδας, Τύπος: Σύγγραμμα, Christopher Martin, 2017, Κριτική, ISBN: 978-960-586-187-2

22679252 LOGISTICS Μάνατζμεντ και Στρατηγική, Τύπος: Σύγγραμμα, Alan Harrison,Remko Van Hoek,Δ. Γιαννακόπουλος,Σ. Μοσχούρης, 2012, Εκδοτικός Οίκος Rosili, ISBN: 978-960-89407-8-9

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):

68402214 Τεχνολογία λογισμικού, Τύπος: Σύγγραμμα, Γιακουμάκης Μανόλης, Διαμαντίδης Νίκος, 2017, UNIBOOKS ΙΚΕ, ISBN: 9786185304416

13625 ΒΑΣΙΚΕΣ ΑΡΧΕΣ ΤΕΧΝΟΛΟΓΙΑΣ ΛΟΓΙΣΜΙΚΟΥ, Τύπος: Σύγγραμμα, IAN SOMMERVILLE, 2009, ΕΚΔΟΣΕΙΣ ΚΛΕΙΔΑΡΙΘΜΟΣ ΕΠΕ, ISBN: 978-960-461-220-8

Additional material

()

7th SEMESTER

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.ContentIntroduction to the concepts of business innovation and productivity,New economy and innovation management (the importance of innovation management, the determinants of innovation, characteristics of an innovative company in the new economy),Technology, innovation, and economy (knowledge economy, the importance of technology in innovation development, technological progress, innovation and economic development),Productivity measurement methods (business inputs and outputs, methods and techniques for the measurement of productivity at micro level),Innovation and productivity as competitiveness empowerment tools (competitive advantage, competitiveness in the new economy, the ways in which innovation development and productivity increase contribute to competitive advantage establishment).

Course Content

Assessment

Compulsory assignment 100%

Course Bibliography

(One of the following):

14035 ΚΑΙΝΟΤΟΜΙΑ, ΣΤΡΑΤΗΓΙΚΗ, ΑΝΑΠΤΥΞΗ ΚΑ ΠΛΗΡΟΦΟΡΙΑΚΑ ΣΥΣΤΗΜΑΤΑ, Τύπος: Σύγγραμμα, Γεώργιος Δουκίδης, 2010, ΑΝΔΡΕΑΣ ΣΙΔΕΡΗΣ - ΙΩΑΝΝΗΣ ΣΙΔΕΡΗΣ & ΣΙΑ Ο.Ε., ISBN: 978-960-08-0528-4

32998194 Καινοτομία και αλλαγή στο επιχειρείν, Τύπος: Σύγγραμμα, Ελένη Ε. Σαλαβού, 2013, Εκδοτικός Οίκος Rosili, ISBN: 978-960-7745-31-6

11600 Η στρατηγική διαχείριση της τεχνολογίας και της καινοτομίας, Τύπος: Σύγγραμμα, White Margaret A.,Bruton Garry D., 2010, Κριτική, ISBN: 978-960-218-674-9

Additional material

Καραγιάννης, Η. Καινοτομία & Επιχειρηματικότητα: Θεωρία πράξη, Αθήνα: Σοφία Α.Ε., 2010
Burgelman, R.; Christensen, C. Wheelwright Strategic Management of Technology and Innovation, Boston, USA: McGraw-Hill, 2008 (Καραγιάννης, Η. Καινοτομία & Επιχειρηματ

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

Alphabets and languages. Regular expressions. Regular languages. Non-regular languages. Context-free grammars. Context-sensitive grammars. Automata. Finite automata. Deterministic and non-deterministic automata. Push-down automata. Turing machines. Church thesis. Turing decidable and acceptable languages. Universal Turing machine. Non-computability. Non-solvable problems. Complexity classes. Problem reduction. P, NP, NP complete classes.

Assessment

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

Course Bibliography

(One of the following):

Elements of the Theory of Computation, Harry R Lewis and Christos H Papadimitriou, 2nd edition, 1997, Prentice Hall.

Introduction to the Theory of Computation, Michael Sipser 2005, Course Technology.

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

Classical cryptography - simple cryptosystems. Cryptanalysis. Cryptographic hash functions. Symmetric cryptography. Asymmetric cryptography. Key management. Digital signatures. Cryptographic protocols.

Assessment

Coursework - Oral examination

Course Bibliography

(One of the following):

1746 ΤΕΧΝΙΚΕΣ ΚΡΥΠΤΟΓΡΑΦΙΑΣ & ΚΡΥΠΤΑΝΑΛΥΣΗΣ, Τύπος: Σύγγραμμα, ΚΑΤΟΣ Β., ΣΤΕΦΑΝΙΔΗΣ Γ., 2003, ΖΥΓΟΣ, ISBN: 960-8065-40-2

11068 Κρυπτογραφία, Τύπος: Σύγγραμμα, Πουλάκης Δημήτριος Μ., 2004, Ζήτη, ISBN: 960-431-926-4

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):

59386820 Εισαγωγή στην Επιχειρησιακή Έρευνα, 10η Έκδοση, Τύπος: Σύγγραμμα, Hillier Frederick S., Lieberman Gerald J., Διαμαντίδης Αλέξανδρος (επιμέλεια), 2017, ΤΖΙΟΛΑ, ISBN: 978-960-418-604-4

23100 Εισαγωγή στην επιχειρησιακή έρευνα, Τύπος: Σύγγραμμα, Φράγκος Χρήστος Κ., 2006, Σταμούλη Α.Ε., ISBN: 960-351-655-4

68402209 Διοικητική επιστήμη - Λήψη επιχειρηματικών αποφάσεων στην κοινωνία της πληροφορίας, Τύπος: Σύγγραμμα, Πραστάκος Γρηγόρης Π., 2017, UNIBOOKS ΙΚΕ, ISBN: 9786185304201

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

Game representation. Normal/Strategic form. Extended form. Strategies. Domination and its resolution. Nash equilibrium. Cournot duopoly. Cartels. The commons tragedy. Mixed strategies. Expected utility. Risk aversion. Games with non-concurrent actions. Backward induction. Perfect Nash equilibrium for subgames. Repeated games. Finite and infinite games. Firing strategies. Lenient strategies. The common theorem. Dynamic games.Moral hazard. Incentives theories. Games with incomplete information. Bayes-Nash equilibrium. Mechanism design. Revelation principle. Auctions. Algorithmic Game Theory. Game Theory and Social Networks.

Assessment

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

Course Bibliography

(One of the following):

An Introduction to Game Theory. Martin J. Osborne, 2003. Oxford University Press.

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 archietctures.
• 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 aplplications (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):

12279261 ΠΡΟΓΡΑΜΜΑΤΙΣΜΟΣ ΜΑΖΙΚΑ ΠΑΡΑΛΛΗΛΩΝ ΕΠΕΞΕΡΓΑΣΤΩΝ, Τύπος: Σύγγραμμα, DAVID B. KIRK, WEN-MEI W. HWU, 2010, ΕΚΔΟΣΕΙΣ ΚΛΕΙΔΑΡΙΘΜΟΣ ΕΠΕ, ISBN: 978-960-461-423-3

18548957 MPI, Τύπος: Σύγγραμμα, Μάργαρης Αθ., 2008, ΤΖΙΟΛΑ, ISBN: 978-960-418-145-2

33134125 Εισαγωγή στον Παράλληλο Υπολογισμό, Τύπος: Σύγγραμμα, Γραμματή Πάντζιου, Βασίλειος Μάμαλης, Αλέξανδρος Τομαράς, 2013, Εκδόσεις Νέων Τεχνολογιών, ISBN: 978-960-6759-89-5

50656351 ΕΙΣΑΓΩΓΗ ΣΤΟΝ ΠΑΡΑΛΛΗΛΟ ΠΡΟΓΡΑΜΜΑΤΙΣΜΟ, Τύπος: Σύγγραμμα, PETER S. PACHECO, 2015, ΕΚΔΟΣΕΙΣ ΚΛΕΙΔΑΡΙΘΜΟΣ ΕΠΕ, ISBN: 978-960-461-666-4

Additional material

• Course website (http://compus.uom.gr/INF120/)
• Τεχνικές Παράλληλου Προγραμματισμού, B.P.Lester (μτφ Κ.Γ. Μαργαρίτης), Πανεπιστημιακές Σημειώσεις (Ιστοτόπος μαθήματος.Τεχνικές Παράλληλου Προγραμματισμού, B.P.Lester (μτφ Κ.Γ. Μαργαρίτης), 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

Assignement, Oral presentations

Course Bibliography

(One of the following):

59376749 Διαχείριση του Περιβάλλοντος, Τύπος: Σύγγραμμα, Σ.Καρβούνης, Δ. Γεωργακέλλος, 2016, Εκδόσεις Βαρβαρήγου, ISBN: 978-960-7996-59-6

2331 Η ΟΙΚΟΝΟΜΙΚΗ ΕΠΙΣΤΗΜΗ ΚΑΙ ΤΟ ΠΕΡΙΒΑΛΛΟΝ, Τύπος: Σύγγραμμα, ΚΟΥΤΣΕΡΗΣ ΕΥΣΤΑΘΙΟΣ, 2007, ΕΡΩΔΙΟΣ, ISBN: 978-960-454-046-4

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):

13748 ΕΞΟΡΥΞΗ ΠΛΗΡΟΦΟΡΙΑΣ: ΕΝΑΣ ΕΙΣΑΓΩΓΙΚΟΣ ΟΔΗΓΟΣ ΜΕ ΠΑΡΑΔΕΙΓΜΑΤΑ, Τύπος: Σύγγραμμα, RICHARD J. ROIGER, MICHAEL W. GEATZ, 2008, ΕΚΔΟΣΕΙΣ ΚΛΕΙΔΑΡΙΘΜΟΣ ΕΠΕ, ISBN: 978-960-461-206-2

22768468 Εξόρυξη από Μεγάλα Σύνολα Δεδομένων, Τύπος: Σύγγραμμα, Anand Rajaraman, Jeffrey David Ullman, 2014, Εκδόσεις Νέων Τεχνολογιών, ISBN: 978-960-6759-83-3

18549105 Εισαγωγή στην εξόρυξη δεδομένων, Τύπος: Σύγγραμμα, Tan Pang - Ning,Steinbach Michael,Kumar Vipin, 2010, ΤΖΙΟΛΑ, ISBN: 978-960-418-162-9

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):

41955004 Διοίκηση Εφοδιαστικής Αλυσίδας, 5η Έκδοση, Τύπος: Σύγγραμμα, Chopra Sunil - Meindl Peter, 2014, ΤΖΙΟΛΑ, ISBN: 978-960-418-465-1

50659353 Logistics: Εφοδιαστική και διοίκηση δικτύων διανομής, Τύπος: Σύγγραμμα, Bowersox D., Closs D., Cooper M., Bowersox J., 2015, BROKEN HILL PUBLISHERS LTD, ISBN: 9789963258413

68379795 Logistics και διαχείριση εφοδιαστικής αλυσίδας, Τύπος: Σύγγραμμα, Christopher Martin, 2017, Κριτική, ISBN: 978-960-586-187-2

1053 ΣΧΕΔΙΑΣΜΟΣ ΚΑΙ ΒΕΛΤΙΣΤΟΠΟΙΗΣΗ ΤΗΣ ΕΦΟΔΙΑΣΤΙΚΗΣ ΑΛΥΣΙΔΑΣ, Τύπος: Σύγγραμμα, ΜΑΡΙΝΑΚΗΣ Ι. - ΜΥΓΔΑΛΑΣ Α., 2008, Εκδόσεις "σοφία", ISBN: 978-960-6706-17-2

Additional material

1. Jonsson, P., (2008), Logistics and Supply Chain Management, McGraw-Hill.

2. Chopra, S., and P. Meindl, (2013), Supply Chain Management: Strategy, Planning, and Operation, 5th Edition, Pearson Education.

3. Jacobs, F.R. and R.B. Chase
(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):

41960295 Android Προγραμματισμός, 2η Εκδοση, Τύπος: Σύγγραμμα, Paul Deitel, Harvey Deitel, Abbey Deitel, 2014, Χ. ΓΚΙΟΥΡΔΑ & ΣΙΑ ΕΕ, ISBN: 978-960-512-6780

41954973 Εισαγωγή στο Προγραμματισμό Android, Τύπος: Σύγγραμμα, Έλληνας Ιωάννης- Έλληνας Νικόλαος, 2014, ΤΖΙΟΛΑ, ISBN: 978-960-418-453-8

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 cryptology-based techniques for securing data processing and transmission over the Internet, (c) acquire experience on applying the above techniques in laboratory conditions.ContentBasic 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)

Course Content

Assessment

Written final examination and
Optional coursework

Course Bibliography

(One of the following):

5425 ΑΣΦΑΛΕΙΑ ΠΛΗΡΟΦΟΡΙΑΚΩΝ ΣΥΣΤΗΜΑΤΩΝ, Τύπος: Σύγγραμμα, ΠΑΓΚΑΛΟΣ ΓΕΩΡΓΙΟΣ,ΜΑΥΡΙΔΗΣ Ι., 2002, ΑΝΙΚΟΥΛΑ, ISBN: 9605160188

9675 Ασφάλεια Δικτύων Υπολογιστών, Τύπος: Σύγγραμμα, Γκρίτζαλης Στέφανος,Γκρίτζαλης Δημήτρης Α.,Κάτσικας Σωκράτης, 2003, Παπασωτηρίου, ISBN: 978-960-7530-45-5

Additional material

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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 - intrastat. ? 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.ContentThis 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):

22766791 Εργασιακές σχέσεις, Τύπος: Σύγγραμμα, Καρακιουλάφη Χ., 2012, ΕΚΔΟΣΕΙΣ ΠΑΠΑΖΗΣΗ, ISBN: 978-960-02-2810-6

59384960 ΕΡΓΑΤΙΚΑ - ΜΙΣΘΟΔΟΣΙΕΣ - ΑΣΦΑΛΙΣΤΙΚΑ - ΠΑΡΑΔΕΙΓΜΑΤΑ - ΔΗΛΩΣΕΙΣ ΣΤΗΝ ΠΡΑΞΗ, Τύπος: Σύγγραμμα, ΙΩΑΝΝΗΣ Δ. ΚΑΡΑΓΙΑΝΝΗΣ, ΑΙΚΑΤΕΡΙΝΗ Δ. ΚΑΡΑΓΙΑΝΝΗ, ΔΗΜΗΤΡΙΟΣ Ι. ΚΑΡΑΓΙΑΝΝΗΣ, 2015, ΙΩΑΝΝΝΗΣ ΚΑΡΑΓΙΑΝΝΗΣ ΚΑΙ ΑΙΚΑΤΕΡΙΝΗ ΚΑΡΑΓΙΑΝΝΗ Ο.Ε., ISBN: 978-960-9781-11-4

Additional material

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UNIFIED COMMUNICATIONS AND APPLICATIONS (ΠΛ0737)

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):

21391 ΔΙΚΤΥΑ ΠΡΟΣΒΑΣΗΣ ΝΕΑΣ ΓΕΝΙΑΣ, Τύπος: Σύγγραμμα, ΧΡΗΣΤΟΣ ΒΑΣΙΛΟΠΟΥΛΟΣ, ΔΙΑΜΑΝΤΗΣ ΚΩΤΟΥΛΑΣ, ΔΗΜΗΤΡΙΟΣ ΞΕΝΙΚΟΣ, ΠΕΤΡΟΣ ΒΟΥΔΔΑΣ, ΓΙΩΡΓΟΣ ΧΕΛΙΩΤΗΣ, ΓΙΩΡΓΟΣ ΑΓΑΠΙΟΥ, ΤΗΛΕΜΑΧΟΣ ΔΟΥΚΟΓΛΟΥ, 2010, ΕΚΔΟΣΕΙΣ ΚΛΕΙΔΑΡΙΘΜΟΣ ΕΠΕ, ISBN: 978-960-461-378-6

12270 Ασύρματες επικοινωνίες, Τύπος: Σύγγραμμα, Rappaport Theodore, 2006, Α. Γκιούρδα & ΣΙΑ ΟΕ, ISBN: 960-512-467-X

50659044 Συνεργατικές εφαρμογές στο διαδίκτυο, Τύπος: Σύγγραμμα, Αποστολάκης Ιωάννης, Τζαναβάρης Δημήτρης, 2015, ΕΚΔΟΣΕΙΣ ΠΑΠΑΖΗΣΗ, ISBN: 978-960-02-3139-7

50658783 Cloud Computing Αρχές, Τεχνολογία και Αρχιτεκτονική 1η Εκδ., Τύπος: Σύγγραμμα, Ricardo Puttini, Thomas Erl, Zaigham Mahmood, 2015, Χ. ΓΚΙΟΥΡΔΑ ΣΙΑ ΕΕ, ISBN: 978-960-512-6865

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

7983 Το Δίκτυο κινητής τηλεφωνίας GSM, Τύπος: Σύγγραμμα, Λούβρος Σπυρίδων - Κούγιας Ιωάννης, 2010, ΕΚΔΟΣΕΙΣ ΝΕΩΝ ΤΕΧΝΟΛΟΓΙΩΝ, ISBN: 978-960-6759-48-2

41963074 Το Δίκτυο LTE, Τύπος: Σύγγραμμα, Λούβρος Σπυρίδων, 2014, Εκδόσεις Νέων Τεχνολογιών, ISBN: 978-960-6759-16-1

18548787 Δίκτυα κινητών και προσωπικών επικοινωνιών, Τύπος: Σύγγραμμα, Θεολόγου Μ., 2010, ΤΖΙΟΛΑ, ISBN: 978-960-418-278-7

12401966 Θεωρία της Πληροφορίας, Τύπος: Σύγγραμμα, David Luenberger, 2011, Παπασωτηρίου, ISBN: 978-960-491-020-5

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%

Students are informed abo

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):

22769685 ΔΙΑΧΕΙΡΙΣΗ ΕΠΙΧΕΙΡΗΣΙΑΚΩΝ ΔΙΑΔΙΚΑΣΙΩΝ: ΟΡΓΑΝΩΣΗ, ΑΝΑΔΙΟΡΓΑΝΩΣΗ ΚΑΙ ΒΕΛΤΙΩΣΗ, Τύπος: Σύγγραμμα, ΝΙΚΟΛΑΟΣ Α. ΠΑΝΑΓΙΩΤΟΥ, ΝΙΚΟΛΑΟΣ ΕΥΑΓΓΕΛΟΠΟΥΛΟΣ, ΠΕΤΡΟΣ ΚΑΤΗΜΕΡΤΖΟΓΛΟΥ, ΣΩΤΗΡΗΣ ΓΚΑΓΙΑΛΗΣ, 2013, ΕΚΔΟΣΕΙΣ ΚΛΕΙΔΑΡΙΘΜΟΣ ΕΠΕ, ISBN: 978-960-461-516-2

77106790 Διαχείριση Επιχειρησιακών Διαδικασιών, 2η Έκδοση, Τύπος: Σύγγραμμα, Weske Mathias, Μάρω Βλαχοπούλου, Κωνσταντίνος Βεργίδης (επιμέλεια), 2018, ΤΖΙΟΛΑ, ISBN: 978-960-418-794-2

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):

6717 Λογιστικά Πληροφοριακά Συστήματα Μηχανογραφημένη Λογιστική, Τύπος: Σύγγραμμα, Δ. Γκίνογλου, Π. Ταχυνάκης, Ν. Πρωτόγερος, 2004, Εκδοτικός Οίκος Rosili, ISBN: 960-7745-09-4

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):

59386820 Εισαγωγή στην Επιχειρησιακή Έρευνα, 10η Έκδοση, Τύπος: Σύγγραμμα, Hillier Frederick S., Lieberman Gerald J., Διαμαντίδης Αλέξανδρος (επιμέλεια), 2017, ΤΖΙΟΛΑ, ISBN: 978-960-418-604-4

23100 Εισαγωγή στην επιχειρησιακή έρευνα, Τύπος: Σύγγραμμα, Φράγκος Χρήστος Κ., 2006, Σταμούλη Α.Ε., ISBN: 960-351-655-4

68402209 Διοικητική επιστήμη - Λήψη επιχειρηματικών αποφάσεων στην κοινωνία της πληροφορίας, Τύπος: Σύγγραμμα, Πραστάκος Γρηγόρης Π., 2017, UNIBOOKS ΙΚΕ, ISBN: 9786185304201

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

Product design and development cycle. Key principles for designing and manufacturing a product. Concepts of CAD, CAM, CIM, and CAE technologies. CAD (Computer Aided Design) tools for design studies, product concepts, reverse design, modelling, designing, simulation, computer-aided engineering tools (CAE). Edge models, surface models, solid models, solid models and parametric design, modelling examples. CAM tools for manufacturing a product. Workshop exercises in CAD, CAM, and CAE programs. New trends in Product Design and Manufacture Systems.

Course Content

Assessment

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

Course Bibliography

(One of the following):

41955474 Συστήματα CAD/CAM και τρισδιάστατη μοντελοποίηση - Νέα αναθεωρημένη έκδοση, Τύπος: Σύγγραμμα, Μπιλάλης Νικόλαος Α., Μαραβελάκης Εμμανουήλ, 2014, Κριτική, ISBN: 978-960-218-953-5

13624 ΒΑΣΙΚΕΣ ΑΡΧΕΣ ΣΥΣΤΗΜΑΤΩΝ CAD/CAM/CAE, Τύπος: Σύγγραμμα, KUNWOO LEE, 2009, ΕΚΔΟΣΕΙΣ ΚΛΕΙΔΑΡΙΘΜΟΣ ΕΠΕ, ISBN: 978-960-461-139-3

Additional material

(Οι διαφάνειες του μαθήματος, χρήσιμοι σύνδεσμοι (links) καθώς και επιπρόσθετο υλικό θα γίνεται διαθέσιμο μέσω της πλατφόρμας compus ())

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):

22769688 ΒΑΣΙΚΕΣ ΑΡΧΕΣ ΣΥΣΤΗΜΑΤΩΝ ΕΠΙΚΟΙΝΩΝΙΑΣ, Τύπος: Σύγγραμμα, MICHAEL P. FITZ, 2012, ΕΚΔΟΣΕΙΣ ΚΛΕΙΔΑΡΙΘΜΟΣ ΕΠΕ, ISBN: 978-960-461-515-5

77107676 Επικοινωνίες υπολογιστών και δεδομένων, 10η Έκδοση, Τύπος: Σύγγραμμα, Stallings William, Κατσαβούνης Στέφανος (επιμέλεια), 2018, ΤΖΙΟΛΑ, ISBN: 978-960-418-814-7

3235 ΑΛΓΟΡΙΘΜΟΙ & ΕΦΑΡΜΟΓΕΣ ΣΥΣΤΗΜΑΤΩΝ ΕΠΙΚΟΙΝΩΝΙΩΝ ΤΟΜΟΣ 1:ΣΗΜΑΤΑ & ΣΥΣΤΗΜΑΤΑ, Τύπος: Σύγγραμμα, NEVIO BENVENUTO,GIOVANNI CHERUBINI, 2004, ΕΚΔΟΣΕΙΣ ΠΑΝΕΠΙΣΤΗΜΙΟΥ ΠΑΤΡΩΝ, ISBN: 960-530-065-5

33197231 Ψηφιακά Συστήματα Επικοινωνιών, Τύπος: Σύγγραμμα, Simon Haykin, 2014, Παπασωτηρίου, ISBN: 978-960-491-088-5

50658783 Cloud Computing Αρχές, Τεχνολογία και Αρχιτεκτονική 1η Εκδ., Τύπος: Σύγγραμμα, Ricardo Puttini, Thomas Erl, Zaigham Mahmood, 2015, Χ. ΓΚΙΟΥΡΔΑ ΣΙΑ ΕΕ, ISBN: 978-960-512-6865

13753 ΕΠΙΧΕΙΡΗΣΙΑΚΗ ΔΙΑΔΙΚΤΥΩΣΗ, Τύπος: Σύγγραμμα, ΓΙΩΡΓΟΣ ΔΙΑΚΟΝΙΚΟΛΑΟΥ, ΑΘΑΝΑΣΙΑ ΑΓΙΑΚΑΤΣΙΚΑ, ΗΛΙΑΣ ΜΠΟΥΡΑΣ, 2007, ΕΚΔΟΣΕΙΣ ΚΛΕΙΔΑΡΙΘΜΟΣ ΕΠΕ, ISBN: 978-960-461-062-4

Additional material

ebooks, papers, Demonstrations, Virtual Labs , Experiments (http://compus.uom.gr) (1. Korte B. & Vygen J., Combinatorial Optimization: Theory and Algorithms, 4th ed., Springer-Verlag Berlin Heidelberg, Series: Algorithms and Combinatorics (Vol

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

Digital systems' development: rationale, methodology and characteristics. Common practice methods, life cycle, practical matters regarding the necessary human resources and hardware infrastructure. Prototype development through FPGAs and microcontrollers. Schematic and PCB design through EDA tools. Enclosure design through CAD modelling tools. PCB and final product ordering and assembling. Microcontroller programming in C and assembly. Physical computing and issues of Human-Computer Interfacing. Development boards and kits and real-life prototype production.

Assessment

Midterm tests, final coursework, final examination

Course Bibliography

(One of the following):

45471 Συστήματα Μικροϋπολογιστών, ΤΟΜΟΣ ΙΙ: Μικροελεγκτές AVR και PIC, Τύπος: Σύγγραμμα, Τόμος: Τόμος 2, Πεκμεστζή Κιαμάλ, 2009, Συμμετρία, ISBN: 978-960-266-269-4

33147 Ηλεκτρονική σχεδίαση-κατασκευή & προσομοίωση τυπωμένων κυκλωμάτων, Τύπος: Σύγγραμμα, Χατζηγκάιδας Α., Κουτσινού Μ., 2010, Α. Χατζηγκάιδας, ISBN: 978-960-92653-4-8

Additional material

(Διαφάνειες μαθήματος, Προτεινόμενα sites, ιστοσελίδα μαθήματος (http://compus.uom.gr/MT184))

ENTREPRENEURSHIP AND TECHNOLOGY INNOVATION (ΠΛ0739)

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):

59382654 Καινοτομία και Επιχειρηματικότητα, Τύπος: Σύγγραμμα, Bessant J. -Tidd J., Κουλουριώτης Δημήτρης (επιμ.), 2016, ΤΖΙΟΛΑ, ISBN: 978-960-418-603-7

1104 ΚΑΙΝΟΤΟΜΙΑ & ΕΠΙΧΕΙΡΗΜΑΤΙΚΟΤΗΤΑ, Τύπος: Σύγγραμμα, ΚΑΡΑΓΙΑΝΝΗΣ ΗΛΙΑΣ, ΜΠΑΚΟΥΡΟΣ ΙΩΑΝΝΗΣ, 2010, Εκδόσεις "σοφία", ISBN: 978-960-6706-33-2

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

Assignement, Oral presentations

Course Bibliography

(One of the following):

59376749 Διαχείριση του Περιβάλλοντος, Τύπος: Σύγγραμμα, Σ.Καρβούνης, Δ. Γεωργακέλλος, 2016, Εκδόσεις Βαρβαρήγου, ISBN: 978-960-7996-59-6

2331 Η ΟΙΚΟΝΟΜΙΚΗ ΕΠΙΣΤΗΜΗ ΚΑΙ ΤΟ ΠΕΡΙΒΑΛΛΟΝ, Τύπος: Σύγγραμμα, ΚΟΥΤΣΕΡΗΣ ΕΥΣΤΑΘΙΟΣ, 2007, ΕΡΩΔΙΟΣ, ISBN: 978-960-454-046-4

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 Fwtios*

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):

68389614 Στρατηγική Διοίκηση Καινοτομίας, Τύπος: Σύγγραμμα, Tidd Joe, Bessant John, 2017, BROKEN HILL PUBLISHERS LTD, ISBN: 9789963274703

13595 ΑΝΑΠΤΥΞΗ ΝΕΩΝ ΥΠΗΡΕΣΙΩΝ: ΤΟΥΡΙΣΜΟΣ - ΥΓΕΙΑ - ΕΠΙΧΕΙΡΗΜΑΤΙΚΟΤΗΤΑ - ΚΑΙΝΟΤΟΜΙΑ, Τύπος: Σύγγραμμα, ΦΩΤΗΣ Χ. ΚΙΤΣΙΟΣ, ΚΩΝΣΤΑΝΤΙΝΟΣ ΖΟΠΟΥΝΙΔΗΣ, 2008, ΕΚΔΟΣΕΙΣ ΚΛΕΙΔΑΡΙΘΜΟΣ ΕΠΕ, ISBN: 978-960-461-119-5

59391294 Η Στρατηγική Διοίκηση της Τεχνολογικής Καινοτομίας, Τύπος: Σύγγραμμα, Schilling A. Melissa, 2016, BROKEN HILL PUBLISHERS LTD, ISBN: 9789963258864

22630 Αποτελεσματική διοίκηση χαρτοφυλακίου προϊόντων και υπηρεσιών, Τύπος: Σύγγραμμα, Αυλωνίτης Γεώργιος Ι., Παπασταθοπούλου Πολίνα, 2004, Σταμούλη Α.Ε., ISBN: 960-351-518-3

50657960 Μάρκετινγκ Υπηρεσιών, Τύπος: Σύγγραμμα, Αυλωνίτης Γ.,Τσιότσου Ρ.,Γούναρης Σ., 2015, BROKEN HILL PUBLISHERS LTD, ISBN: 9789963258567

18548838 Σχεδιασμός και Ανάπτυξη Προϊόντων, Τύπος: Σύγγραμμα, Ulrich K., Eppinger S., 2015, ΤΖΙΟΛΑ, ISBN: 978-960-418-489-7

Additional material

(())

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):

41960295 Android Προγραμματισμός, 2η Εκδοση, Τύπος: Σύγγραμμα, Paul Deitel, Harvey Deitel, Abbey Deitel, 2014, Χ. ΓΚΙΟΥΡΔΑ & ΣΙΑ ΕΕ, ISBN: 978-960-512-6780

41954973 Εισαγωγή στο Προγραμματισμό Android, Τύπος: Σύγγραμμα, Έλληνας Ιωάννης- Έλληνας Νικόλαος, 2014, ΤΖΙΟΛΑ, ISBN: 978-960-418-453-8

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):

3365 Εφαρμοσμένη Στατιστική, Τύπος: Σύγγραμμα, Όθωνας Παπαδήμας, Χρήστος Κοίλιας, 2002, Εκδόσεις Νέων Τεχνολογιών, ISBN: 960-7981-01-4

45452 Μαθήματα Εφαρμοσμένης Στατιστικής, Χρήση του Microsoft Excel (με ασκήσεις), Τύπος: Σύγγραμμα, Λιώκη-Λειβαδά Ηρώ,Ασημακόπουλος Δημοσθένης Ν., 2010, Συμμετρία, ISBN: 978-960-266-290-8

Additional material

1. «Εφαρμοσμένη Στατιστική», Όθωνας Παπαδήμας, Χρήστος Κοιλιάς, και
2. «Μαθήματα Εφαρμοσμένης Στατιστικής με χρήση του Microsoft Excel (με ασκήσεις)», Λιωκη-Λειβαδα Ηρώ, Ασημακόπουλος Δημοσθένης Ν.

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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):

21392 ΔΙΚΤΥΑ ΠΡΟΣΒΑΣΗΣ ΝΕΑΣ ΓΕΝΙΑΣ, Τύπος: Σύγγραμμα, ΧΡΗΣΤΟΣ ΒΑΣΙΛΟΠΟΥΛΟΣ, ΔΙΑΜΑΝΤΗΣ ΚΩΤΟΥΛΑΣ, ΔΗΜΗΤΡΙΟΣ ΞΕΝΙΚΟΣ, ΠΕΤΡΟΣ ΒΟΥΔΔΑΣ, ΓΙΩΡΓΟΣ ΧΕΛΙΩΤΗΣ, ΓΙΩΡΓΟΣ ΑΓΑΠΙΟΥ, ΤΗΛΕΜΑΧΟΣ ΔΟΥΚΟΓΛΟΥ, 2010, ΕΚΔΟΣΕΙΣ ΚΛΕΙΔΑΡΙΘΜΟΣ ΕΠΕ, ISBN: 978-960-461-378-6

12270 Ασύρτες επικοινωνίες, Τύπος: Σύγγραμμα, Rappaport Theodore, 2006, Α. Γκιούρδα & ΣΙΑ ΟΕ, ISBN: 960-512-467-X

50659044 Συνεργατικές εφαρμογές στο διαδίκτυο, Τύπος: Σύγγραμμα, Αποστολάκης Ιωάννης, Τζαναβάρης Δημήτρης, 2015, ΕΚΔΟΣΕΙΣ ΠΑΠΑΖΗΣΗ, ISBN: 978-960-02-3139-7

50658783 Cloud Computing Αρχές, Τεχνολογία και Αρχιτεκτονική 1η Εκδ., Τύπος: Σύγγραμμα, Ricardo Puttini, Thomas Erl, Zaigham Mahmood, 2015, Χ. ΓΚΙΟΥΡΔΑ ΣΙΑ ΕΕ, ISBN: 978-960-512-6865

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

7983 Το Δίκτυο κινητής τηλεφωνίας GSM, Τύπος: Σύγγραμμα, Λούβρος Σπυρίδων - Κούγιας Ιωάννης, 2010, ΕΚΔΟΣΕΙΣ ΝΕΩΝ ΤΕΧΝΟΛΟΓΙΩΝ, ISBN: 978-960-6759-48-2

41963074 Το Δίκτυο LTE, Τύπος: Σύγγραμμα, Λούβρος Σπυρίδων, 2014, Εκδόσεις Νέων Τεχνολογιών, ISBN: 978-960-6759-16-1

18548787 Δίκτυα κινητών και προσωπικών επικοινωνιών, Τύπος: Σύγγραμμα, Θεολόγου Μ., 2010, ΤΖΙΟΛΑ, ISBN: 978-960-418-278-7

Additional material

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

8th SEMESTER

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.
3. Hadoop: Architecture and tools, Hadoop cluster.
4. Introduction to MapReduce. Algorithm design with MapReduce.
5. Data storage. NoSQL Systems. Cassandra. Hbase.
6. Big Data Algorithms - Clustering: Hierarchical, K-means.
7. Big Data Algorithms - Classification: Naive Bayes, Decision.
8. Big Data Algorithms - Recommendations: Content based recommendations, dimensionality reduction.
9. Big Data Algorithms Association - Rules: Frequent itemsets, the a-priori algorithm.
10. Stream Data Analysis: Sampling, Counting Distinct Elements in a Stream.
11. Graph and Social Graph Analysis: Clustering, Graph Summarization, Discovery of Communities.
12. Large Scale Machine Learning: SVMs.
13. Web Advertising. The matching problem. The AdWords Problem.

Assessment

30% Exercises
50% Project
20% Final exam

Course Bibliography

(One of the following):

22768468 Εξόρυξη από Μεγάλα Σύνολα Δεδομένων, Τύπος: Σύγγραμμα, Anand Rajaraman, Jeffrey David Ullman, 2014, Εκδόσεις Νέων Τεχνολογιών, ISBN: 978-960-6759-83-3

18549105 Εισαγωγή στην εξόρυξη δεδομένων, Τύπος: Σύγγραμμα, Tan Pang - Ning,Steinbach Michael,Kumar Vipin, 2010, ΤΖΙΟΛΑ, ISBN: 978-960-418-162-9

31391 Εξόρυξη γνώσης από βάσεις δεδομένων και τον παγκόσμιο ιστό, Τύπος: Σύγγραμμα, Βαζιργιάννης Μιχάλης, Χαλκίδη Μαρία, 2005, Τυπωθήτω, ISBN: 978-960-402-116-8

395 DATA MINING, Τύπος: Σύγγραμμα, Margaret H. Dunham, 2004, ΕΚΔΟΣΕΙΣ ΝΕΩΝ ΤΕΧΝΟΛΟΓΙΩΝ, ISBN: 960-8105-72-2

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):

50658783 Cloud Computing Αρχές, Τεχνολογία και Αρχιτεκτονική 1η Εκδ., Τύπος: Σύγγραμμα, Ricardo Puttini, Thomas Erl, Zaigham Mahmood, 2015, Χ. ΓΚΙΟΥΡΔΑ ΣΙΑ ΕΕ, ISBN: 978-960-512-6865

12250 Cloud computing Μια πρακτική προσέγγιση, Τύπος: Σύγγραμμα, Velte Anthony T.,Velte Toby J.,Elsenpeter Robert P., 2010, Α. Γκιούρδα & ΣΙΑ ΟΕ, ISBN: 978-960-512-597-4

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):

1827 ΔΙΚΤΥΑΚΗ ΒΕΛΤΙΣΤΟΠΟΙΗΣΗ, Τύπος: Σύγγραμμα, ΠΑΠΑΡΡΙΖΟΣ Κ., ΣΑΜΑΡΑΣ Ν., ΣΙΦΑΛΕΡΑΣ Α., 2009, ΖΥΓΟΣ, ISBN: 978-960-8065-68-0

22762766 ΔΙΑΚΡΙΤΗ ΒΕΛΤΙΣΤΟΠΟΙΗΣΗ, Τύπος: Σύγγραμμα, ΜΗΛΙΩΤΗΣ ΠΑΝΑΓΙΩΤΗΣ, ΜΟΥΡΤΟΣ ΙΩΑΝΝΗΣ, 2012, ΟΠΑ, ISBN: 978-960-9443-13-5

11031 Εφαρμοσμένος μαθηματικός προγραμματισμός, Τύπος: Σύγγραμμα, Βασιλείου Παναγιώτης - Χρήστος, 2001, Ζήτη, ISBN: 960-431-716-4

Additional material

Ιστοσελίδα του μαθήματός (διαθέσιμη μετά από εγγραφή στο CoMPUs): http://compus.uom.gr/MT178 (1. Korte B. & Vygen J., Combinatorial Optimization: Theory and Algorithms, 4th ed., Springer-Verlag Berlin Heidelberg, Series: Algorithms and Combinat

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):

1834 ΔΙΚΤΥΑ ΥΠΟΛΟΓΙΣΤΩΝ, Μια Πρακτική Προσέγγιση, Τύπος: Σύγγραμμα, ΦΟΥΛΗΡΑΣ ΠΑΝΑΓΙΩΤΗΣ, 2009, ΖΥΓΟΣ, ISBN: 978-960-8065-66-6

Ελεύθερο Σύγγραμμα

320059 ΑΝΑΠΤΥΞΗ ΚΑΙ ΔΙΑΧΕΙΡΙΣΗ ΔΙΚΤΥΩΝ ΥΠΟΛΟΓΙΣΤΩΝ, Τύπος: Ηλεκτρονικό Βιβλίο, ΦΟΥΛΗΡΑΣ ΠΑΝΑΓΙΩΤΗΣ, 2016, , ISBN: 978-960-603-191-5

Additional material

(Εργαλεία παρακολουθήσεως 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

Introduction to Logic Programming. Declarative Programming, First Order Predicate Logic and Logic Programs. Prolog Syntax, facts, rules. Program Execution-queries. Logic Variables and Scope. Terms and Unification. Resolution. Execution Mechanism. Debugging. Recursion. Prolog Arithmetic. Lists, cut and control of execution. Higher Order predicates (all solutions, variable call, negation as failure, term composition and decomposition, Prolog DB). Files. Graphs. Natural Language Processing and Grammars. Constraint Satisfaction Problems. The notion of constraints over Variables. Domains. Solving Constraint Satisfaction problems. Filtering algorithms on binary and higher order constraints. The Eclipse programming language. Example problem classes (scheduling, resource allocation).

Assessment

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

Course Bibliography

(One of the following):

41958366 Prolog: Programming in Logic for Artificial Intelligence, Type: textbook, Manolis Marakakis, 2014, New Technology Publications, ISBN: 978-960-6759-98-7

5417 Programming in Logic- PROLOG, Type: textbook, Notopoulos Panagiotis, Anikoula, 2008, ISBN: 9789608729384

Free Access Textbooks

320042 Logic Programming Techniques, Type: e-Book, Sakellariou Ilias, Vassiliadis Nikolaos, Kefalas Petros, Stamatis Dimosthenis, 2016, , ISBN: 978-960-603-246-2

320266 Logic and Functional Programming, Type: e-Book, Panagiotis Stamatopoulos, 2016, , ISBN: 978-960-603-335-3

320266 ΛΟΓΙΚΟΣ ΚΑΙ ΣΥΝΑΡΤΗΣΙΑΚΟΣ ΠΡΟΓΡΑΜΜΑΤΙΣΜΟΣ, Τύπος: Ηλεκτρονικό Βιβλίο, ΠΑΝΑΓΙΩΤΗΣ ΣΤΑΜΑΤΟΠΟΥΛΟΣ, 2016, , ISBN: 978-960-603-335-3

Additional material

Apt, Krzystof R. ;Wallace, Mark G. "Constraint Logic Programming Using ECLiPSe", Cambridge University Press, 2007.
Bratko, Ivan. Prolog Programming for Artificial Intelligence, (3rd edition), Addison Wesley, 2001.
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 process 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):

7939 ΚΟΣΤΟΛΟΓΗΣΗ ΜΕ ΤΗΝ ΟΜΑΔΑ 9 ΤΟΥ Γ.Λ.Σ. - ΜΗΝΙΑΙΑ ΚΟΣΤΟΛΟΓΗΣΗ - ΕΤΗΣΙΑ ΚΟΣΤΟΛΟΓΗΣΗ - ΔΙΑΚΙΝΗΣΗ ΑΠΟΘΗΚΗΣ ΣΤΗΝ ΠΡΑΞΗ, Τύπος: Σύγγραμμα, ΔΗΜΗΤΡΙΟΣ ΚΑΡΑΓΙΑΝΝΗΣ, ΙΩΑΝΝΗΣ ΚΑΡΑΓΙΑΝΝΗΣ, ΑΙΚΑΤΕΡΙΝΗ - ΕΙΡΗΝΗ ΚΑΡΑΓΙΑΝΝΗ, 2009, ΚΑΡΑΓΙΑΝΝΗ & ΣΙΑ ΟΕ, ISBN: 978-960-98515-2-7

13656 ΔΙΟΙΚΗΤΙΚΗ ΛΟΓΙΣΤΙΚΗ, Τύπος: Σύγγραμμα, RAY H. GARRISON, ERIC W. NOREEN, 2006, ΕΚΔΟΣΕΙΣ ΚΛΕΙΔΑΡΙΘΜΟΣ ΕΠΕ, ISBN: 960-209-930-5

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

• Introductiom, Processes, Services and Communication
• Architecture and Design of Dustributed 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

• Laboratoty Exercises
• Written Examination

Course Bibliography

(One of the following):

12533080 ΚΑΤΑΝΕΜΗΜΕΝΑ ΣΥΣΤΗΜΑΤΑ ΜΕ JAVA, Τύπος: Σύγγραμμα, Ι. Κ. ΚΑΒΟΥΡΑΣ, Ι. Ζ. ΜΗΛΗΣ, Α. Α. ΡΟΥΚΟΥΝΑΚΗ, Γ. Β. ΞΥΛΩΜΕΝΟΣ, 2011, ΕΚΔΟΣΕΙΣ ΚΛΕΙΔΑΡΙΘΜΟΣ ΕΠΕ, ISBN: 978-960-461-463-9

13777 ΚΑΤΑΝΕΜΗΜΕΝΑ ΣΥΣΤΗΜΑΤΑ: ΑΡΧΕΣ ΚΑΙ ΥΠΟΔΕΙΓΜΑΤΑ, Τύπος: Σύγγραμμα, ANDREW S. TANENBAUM, MAARTEN VAN STEEN, 2006, ΕΚΔΟΣΕΙΣ ΚΛΕΙΔΑΡΙΘΜΟΣ ΕΠΕ, ISBN: 960-209-924-0

4621 ΚΑΤΑΝΕΜΗΜΕΝΕΣ ΕΦΑΡΜΟΓΕΣ ΚΑΙ ΗΛΕΚΤΡΟΝΙΚΟ ΕΜΠΟΡΙΟ (ΠΕΡΙΕΧΕΙ CD), Τύπος: Σύγγραμμα, INCE DARREL, 2007, ΕΚΔΟΣΕΙΣ ΠΑΝΕΠΙΣΤΗΜΙΟΥ ΜΑΚΕΔΟΝΙΑΣ, ISBN: 978-960-8396-34-0

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 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

E-Commerce /E-Business Strategy and applications. Business process integration and E-Business plan. Definition approaches and introduction to: Electronic Commerce (EC) /E-Business (EB) and mobile commerce/business, e-services, Internet, World Wide Web. The E-commerce environment. The impact on information systems within a business, impact on business development and strategy on the industries and markets.BPR and E-Business plan and strategy.E- M- Business Models (Business innovation), e-shops, e-auctions, e-marketplaces, portals, dynamic pricing models, affiliate marketing, viral marketing models, e.t.c... E- M-Business Applications: e/m-Health, learning, banking, tourism, etc business/ industry sectors.The extended enterprise, synergies, networks' development and management, e-supply chain management, Virtual organizations/enterprises, social networks.E/M-Business plan strategy and development, The strategy of Web site- shop - portal (e- business model) development, evaluation and management. Case Studies.

Assessment

Course Bibliography

(One of the following):

50656360 ΨΗΦΙΑΚΕΣ ΕΠΙΧΕΙΡΗΣΕΙΣ ΚΑΙ ΗΛΕΚΤΡΟΝΙΚΟ ΕΜΠΟΡΙΟ: ΣΤΡΑΤΗΓΙΚΗ, ΥΛΟΠΟΙΗΣΗ ΚΑΙ ΕΦΑΡΜΟΓΗ, Τύπος: Σύγγραμμα, DAVE CHAFFEY, 2016, ΕΚΔΟΣΕΙΣ ΚΛΕΙΔΑΡΙΘΜΟΣ ΕΠΕ, ISBN: 978-960-461-671-8

32997535 Ηλεκτρονικό Επιχειρείν και Μάρκετινγκ, Τύπος: Σύγγραμμα, Βλαχοπούλου Μάρω ,Δημητριάδης Σέργιος, 2013, Εκδοτικός Οίκος Rosili, ISBN: 978-960-7745-32-3

12536563 Ηλεκτρονικό εμπόριο 2010, Τύπος: Σύγγραμμα, Turban Efraim,King David,,Lee Jae,Ting-Peng Liang, Turban Deborah, 2011, Α. Γκιούρδα & ΣΙΑ ΟΕ, ISBN: 978-960-512-605-6

18548694 e - Οικονομία-Εμπόριο-Μάρκετιγκ-Διακυβέρνηση, Τύπος: Σύγγραμμα, Γεωργιάδου Ε., Τριανταφύλλο Ευ., Οικονομίδης Αν., 2010, ΤΖΙΟΛΑ, ISBN: 978-960-418-242-8

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 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, 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):

1815 ΟΙΚΟΝΟΜΙΚΗ ΑΝΑΛΥΣΗ ΤΗΣ ΕΥΡΩΠΑΪΚΗΣ ΕΝΩΣΗΣ, Τύπος: Σύγγραμμα, ΚΑΤΣΟΥΛΗ-ΚΑΤΟΥ ΕΛΕΝΗ, 2007, ΖΥΓΟΣ, ISBN: 978-960-8065-57-4

32998330 ΑΠΟ ΤΗΝ ΕΟΚ ΣΤΗΝ ΕΕ, Τύπος: Σύγγραμμα, ΜΑΡΔΑΣ ΔΗΜΗΤΡΙΟΣ, 2013, ΖΥΓΟΣ, ISBN: 978-618-5063-02-3

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):

12532681 ΕΙΣΑΓΩΓΗ ΣΤΗΝ ΑΝΑΚΤΗΣΗ ΠΛΗΡΟΦΟΡΙΩΝ, Τύπος: Σύγγραμμα, CHRISTOPHER D. MANNING, PRABHAKAR RAGHAVAN, HINRICH SCHUTZE, 2012, ΕΚΔΟΣΕΙΣ ΚΛΕΙΔΑΡΙΘΜΟΣ ΕΠΕ, ISBN: 978-960-461-456-1

41954965 Ανάκτηση Πληροφορίας, 2η Έκδοση, Τύπος: Σύγγραμμα, Baeza-Yates Ricardo, Ribeiro-Neto Berthier, 2014, ΤΖΙΟΛΑ, ISBN: 978-960-418-460-6

7753 Η ΜΕΘΟΔΟΣ PAGERANK ΤΗΣ GOOGLE ΚΑΙ ΑΛΛΑ ΣΥΣΤΗΜΑΤΑ ΚΑΤΑΤΑΞΗΣ ΙΣΤΟΣΕΛΙΔΩΝ, Τύπος: Σύγγραμμα, LANGVILLE AMY, MEYER CARL, 2010, ΙΤΕ-ΠΑΝΕΠΙΣΤΗΜΙΑΚΕΣ ΕΚΔΟΣΕΙΣ ΚΡΗΤΗΣ, ISBN: 978-960-524-313-5

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

Mobile and personal communications, Wireless mobile and personal communication systems, Design issues, Impact of mobility on communication networks, 3G and 4G mobile communication systems. The wireless environment in mobile communications, Radio Propagation and Propagation Path-Loss Models An Overview of Digital Communication and Transmission, Fundamentals of Cellular Communications, Multiple Access Techniques, Modulation Schemes, Antennas, Diversity, and Link Analysis, Spread Spectrum (SS) and CDMA Systems, Tele-traffic Engineering, Mobility management, Location management, Location update, Methods for mobile terminal positioning. Algorithms for mobile and wireless Communications Systems and their Applications, Security management, managerial and regulatory issues.

Assessment

Written final examination / Assignment/lab tests

Course Bibliography

(One of the following):

18548787 Δίκτυα κινητών και προσωπικών επικοινωνιών, Τύπος: Σύγγραμμα, Θεολόγου Μ., 2010, ΤΖΙΟΛΑ, ISBN: 978-960-418-278-7

Additional material

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

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):

50657709 Σύγχρονη Θεωρία Χαρτοφυλακίου και Ανάλυση Επενδύσεων, Τύπος: Σύγγραμμα, Edwin J. Elton, Martin J. Gruber, Stephen J. Brown, William N. Goetzmann, 2016, Utopia, ISBN: 978-618-81298-9-4

68380648 ΑΓΟΡΕΣ ΧΡΗΜΑΤΟΣ ΚΑΙ ΚΕΦΑΛΑΙΟΥ, Τύπος: Σύγγραμμα, ΝΟΥΛΑΣ Γ. ΑΘΑΝΑΣΙΟΣ, 2016, ΝΟΥΛΑΣ Γ. ΑΘΑΝΑΣΙΟΣ, ISBN: 9789609148740

Additional material

Θωμαδάκης, Σ. και Μ. Ξανθάκης, (2011). Αγορές Χρήματος και Κεφαλαίου, 2η έκδοση, Εκδόσεις Αθ. Σταμούλη, Αθήνα. (http://compus.uom.gr/INF158)

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

Machine leraning. Non-symbolic learning. Artificial neural model.
Supervised learning. Perceptron. The Delta rule. Feed-forward networks. Multi-layer networks and error backpropagation.
Recurrent networks.Non-supervised learning. Clustering. Kohonen rule.
Dynamic networks. Time series. Hopfield networks.
Radial networks. Probabilistic networks.
Control systems. Delay elements and linear neurons. Linear filters.Genetic algorithms.
Alternative learning models. Decision trees. Categorization rules. Association rules. Support vector machines.

Assessment

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

Course Bibliography

(One of the following):

Neural Networks and Learning Machines (3rd Edition), by Simon O. Haykin, 2008, Pearson.

Additional material

Lecture slides. Exemplary solved exercises. (http://compus.uom.gr/INF201/index.php)

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,
The use of information technologies in the production process – Computer Aided Design and Computer Aided Manufacturing – Flexible Manufacturing Systems – Computer Integrated Manufacturing – Robotics,
Demand and Capacity – Demand forecasting – Evaluation of forecasts – Facing the variations of demand,
Plant layout – Material handling methods – Minimizing the material handling cost – Computer aided layout design,
Production planning and control – Determining the size of production lots – Work allocation to productive means – Manufacturing execution planning,
Material Requirements Planning – Manufacturing Resources Planning – Just in Time – Kanban – Optimized Production Technology.

Assessment

Course Bibliography

(One of the following):

59382666 Διοίκηση Παραγωγής και Υπηρεσιών, Τύπος: Σύγγραμμα, Στειακάκης Εμμανουήλ- Κωφίδης Νίκος, 2016, ΤΖΙΟΛΑ, ISBN: 978-960-418-608-2

11513 Διοίκηση παραγωγικών συστημάτων, Τύπος: Σύγγραμμα, Δημητριάδης Σωτήριος Γ.,Μιχιώτης Αθανάσιος Ν., 2007, Κριτική, ISBN: 978-960-218-522-3

68402905 Διοίκηση Παραγωγής Ο Σχεδιασμός Παραγωγικών Συστημάτων - Β΄ Έκδοση, Τύπος: Σύγγραμμα, Παππής Κώστας Π., 2017, UNIBOOKS ΙΚΕ, ISBN: 9786185304218

Additional material

(Διοίκηση Συστημάτων Παραγωγής
Λ. Λιαρμακόπουλος
Αγραφιώτου Χρυσούλα, Αθήνα, 2010, ISBN: 960-91327-0-7
Διοίκηση Παραγωγής, Βασικές αρχές του προγραμματισμού και της ρύθμισης παραγωγής
S. Kiener, N. Maier-Scheubeck, R. Obermaier, M. Weib
Προπομπός, Αθήνα

PROFESSIONAL SKILLS IN ENGLISH (The course is taught in English) (ΠΛ0834)

Coordinator: **Kokkinou Ourania**

Semester: **8nd** (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):

4785 BUSINESS ENGLISH FOR ACADEMIC PURPOSES, Τύπος: Σύγγραμμα, ΚΑΝΤΑΡΙΔΟΥ ΖΩΗ, ΠΑΠΑΔΟΠΟΥΛΟΥ ΙΡΙΣ, ΣΤΕΦΑΝΟΥ ΠΟΛΥΞΕΝΗ, 2008, ΑΝΙΚΟΥΛΑ, ISBN: 9789608729391

41959807 RESEARCH READING AND WRITING SKILLS, Τύπος: Σύγγραμμα, PAPADOPOULOU IRIS, 2014, ΕΚΔΟΣΕΙΣ ΠΑΝΕΠΙΣΤΗΜΙΟΥ ΜΑΚΕΔΟΝΙΑΣ, ISBN: 978-960-8396-92-0

Additional material

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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 suck 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):

12713790 Compilers, type: Textbook, Alfred V. Aho, Monica S. Lam, Ravi Sethi, Jeffrey D. Ullman, 2011, New Technology Editions, ISBN: 978-960-6759-72-7

13858 Programming Language Pragmatics, type: Textbook, MICHAEL L. SCOTT, 2009, Kleitharithmos, ISBN: 978-960-461-230-7

68383471 Programming Language Compilers: Theory & Practice, type: Textbook, Konstantinos Lazos, Panagiotis Katsaros, Zafiris Karaiskos, 2004, Self-publication, ISBN: 960-87723-4-6

77108866 Engineering a Compiler, type: Textbook, Keith D. Cooper, Linda Torczon, 2018, Crete University Press, ISBN: 978-960-524-519-1

Additional material

Flex Manual, Fast Lexical Analyser (http://flex.sourceforge.net/)
Bison Manual, GNU Parser Generator http://www.gnu.org/software/bison/
Course Web page: http://compus.uom.gr/INF139/index.php (Flex Manual, Fast Lexical Analyser (http://flex.sourceforge.ne

SPECIAL TOPICS IN COMPUTER AND COMMUNICATION NETWORKS (ΠΛ0838)

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 5tth 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):

21493 ΕΡΓΑΣΤΗΡΙΑΚΑ ΜΑΘΗΜΑΤΑ ΣΤΑ ΔΙΚΤΥΑ ΚΑΙ ΔΙΑΔΙΚΤΥΑ ΥΠΟΛΟΓΙΣΤΩΝ, Τύπος: Σύγγραμμα, ΒΑΣΙΛΕΙΟΣ ΤΣΑΟΥΣΙΔΗΣ, ΕΛΕΥΘΕΡΙΟΣ ΜΑΜΑΤΑΣ, ΙΩΑΝΝΗΣ ΨΑΡΡΑΣ, ΕΥΣΤΡΑΤΙΟΣ ΚΟΣΜΙΔΗΣ, ΣΤΥΛΙΑΝΟΣ ΔΗΜΗΤΡΙΟΥ, 2010, ΕΚΔΟΣΕΙΣ ΚΛΕΙΔΑΡΙΘΜΟΣ ΕΠΕ, ISBN: 978-960-461-386-1

13954 ΔΙΚΤΥΑ ΥΠΟΛΟΓΙΣΤΩΝ: ΜΙΑ ΠΡΟΣΕΓΓΙΣΗ ΑΠΟ ΤΗ ΣΚΟΠΙΑ ΤΩΝ ΣΥΣΤΗΜΑΤΩΝ, Τύπος: Σύγγραμμα, LARRY L. PETERSON, BRUCE S. DAVIE, 2009, ΕΚΔΟΣΕΙΣ ΚΛΕΙΔΑΡΙΘΜΟΣ ΕΠΕ, ISBN: 978-960-461-266-6

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):

28308114 ΣΥΓΧΡΟΝΕΣ ΜΕΘΟΔΟΙ ΑΝΑΛΥΣΗΣ ΧΡΟΝΟΛΟΓΙΚΩΝ ΣΕΙΡΩΝ, Τύπος: Σύγγραμμα, ΔΗΜΕΛΗ ΣΟΦΙΑ, 2013, ΕΤΑΙΡΕΙΑ ΑΞΙΟΠΟΙΗΣΗΣ ΚΑΙ ΔΙΑΧΕΙΡΙΣΗΣ ΤΗΣ ΠΕΡΙΟΥΣΙΑΣ ΤΟΥ ΟΙΚΟΝΟΜΙΚΟΥ ΠΑΝΕΠΙΣΤΗΜΙΟΥ ΑΘΗΝΩΝ, ISBN: 978-960-9443-17-3

43350 ΟΙΚΟΝΟΜΕΤΡΙΚΑ ΥΠΟΔΕΙΓΜΑΤΑ ΚΑΙ ΕΦΑΡΜΟΓΕΣ ΜΕ ΤΟ EVIEWS, Τύπος: Σύγγραμμα, ΣΥΡΙΟΠΟΥΛΟΣ ΚΩΣΤΑΣ, Διονύσης Θ. Φίλιππας, 2010, ΑΝΙΚΟΥΛΑ, ISBN: 9789605160463

Additional material

(())

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):

59385627 ΦΟΡΟΛΟΓΙΚΑ-ΦΟΡΟΤΕΧΝΙΚΑ-ΥΠΟΛΟΓΙΣΜΟΣ ΤΟΥ ΦΟΡΟΥ ΕΙΣΟΔΗΜΑΤΟΣ-ΦΟΡΟΛΟΓΙΚΕΣ ΔΗΛΩΣΕΙΣ-ΠΑΡΑΔΕΙΓΜΑΤΑ & ΕΦΑΡΜΟΓΕΣ ΣΤΗΝ ΠΡΑΞΗ, Τύπος: Σύγγραμμα, ΙΩΑΝΝΗΣ Δ. ΚΑΡΑΓΙΑΝΝΗΣ, ΑΙΚΑΤΕΡΙΝΗ Δ. ΚΑΡΑΓΙΑΝΝΗ, ΔΗΜΗΤΡΙΟΣ Ι. ΚΑΡΑΓΙΑΝΝΗΣ, 2015, ΙΩΑΝΝΝΗΣ ΚΑΡΑΓΙΑΝΝΗΣ ΚΑΙ ΑΙΚΑΤΕΡΙΝΗ ΚΑΡΑΓΙΑΝΝΗ Ο.Ε., ISBN: 978-960-9781-13-8

68377911 Φορολογική Λογιστική τόμος Β 2η έκδοση, Τύπος: Σύγγραμμα, Τόμος: 2, Γκίνογλου Δημήτριος, 2017, BROKEN HILL PUBLISHERS LTD, ISBN: 9789963274826

Additional material

(())

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):

14035 ΚΑΙΝΟΤΟΜΙΑ, ΣΤΡΑΤΗΓΙΚΗ, ΑΝΑΠΤΥΞΗ ΚΑ ΠΛΗΡΟΦΟΡΙΑΚΑ ΣΥΣΤΗΜΑΤΑ, Τύπος: Σύγγραμμα, Γεώργιος Δουκίδης, 2010, ΑΝΔΡΕΑΣ ΣΙΔΕΡΗΣ - ΙΩΑΝΝΗΣ ΣΙΔΕΡΗΣ & ΣΙΑ Ο.Ε., ISBN: 978-960-08-0528-4

11600 Η στρατηγική διαχείριση της τεχνολογίας και της καινοτομίας, Τύπος: Σύγγραμμα, White Margaret A.,Bruton Garry D., 2010, Κριτική, ISBN: 978-960-218-674-9

Additional material

(Ηλεκτρονικό Επιχειρείν και Ηλεκτρονικό ΕμπόριοD. ChaffeyΚλειδάριθμος, Αθήνα, 2008, ISBN: 978-960-461-171-3Knowledge Management and Virtual OrganizationsY. MalhotraIdea Group Publishing, Hershey, USA, 2000, ISBN: 1-878289-73-X ())

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):

12543770 Προγραμματισμός Internet & World Wide Web 4η Έκδοση, Τύπος: Σύγγραμμα, Deitel & Deitel, 2011, Α. Γκιούρδα & ΣΙΑ ΟΕ, ISBN: 978-960-512-612-4

13690 ΕΙΣΑΓΩΓΗ ΣΤΙΣ PHP 6 ΚΑΙ MYSQL 5 ΜΕ ΕΙΚΟΝΕΣ, Τύπος: Σύγγραμμα, LARRY ULLMAN, 2009, ΕΚΔΟΣΕΙΣ ΚΛΕΙΔΑΡΙΘΜΟΣ ΕΠΕ, ISBN: 978-960-461-250-5

Additional material

Instructor's notes (Compus: http://compus.uom.gr/INF160/index.php) (Υλικό online μαθημάτων από το W3 schools (Compus: http://compus.uom.gr/INF160/index.php) (Compus))

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 CouplingXML markup language and Messaging Framework: SOAP, WS AddressingDescribing and Discovering Metadata: WSDL, WS Policy, UDDIQuality of Service - Transactions: Reliable Messaging, Classic and Business TransactionsQuality of Service - WS Security: Trust, WS Authorization, Security Policy Service Composition: Modeling Business Processes: BPEL, case studies

Assessment

Course Bibliography

(One of the following):

13613 ΑΡΧΙΤΕΚΤΟΝΙΚΗ ΠΛΑΤΦΟΡΜΑΣ ΥΠΗΡΕΣΙΩΝ ΙΣΤΟΥ, Τύπος: Σύγγραμμα, SANJIVA WEERAWARANA, FRANCISCO CURBERA, FRANK LEYMANN, TONY STOREY, DONALD F. FERGUSON, 2008, ΕΚΔΟΣΕΙΣ ΚΛΕΙΔΑΡΙΘΜΟΣ ΕΠΕ, ISBN: 978-960-461-086-0

Ελεύθερα συγγράμματα

320170 ΤΕΧΝΟΛΟΓΙΕΣ ΠΑΓΚΟΣΜΙΟΥ ΙΣΤΟΥ ΚΑΙ ΗΛΕΚΤΡΟΝΙΚΟΥ ΕΜΠΟΡΙΟΥ, Τύπος: Ηλεκτρονικό Βιβλίο, ΧΡΗΣΤΟΣ ΓΕΩΡΓΙΑΔΗΣ, 2016, , ISBN: 978-960-603-125-0

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) (Διαφάνειες 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.
3. Hadoop: Architecture and tools, Hadoop cluster.
4. Introduction to MapReduce. Algorithm design with MapReduce.
5. Data storage. NoSQL Systems. Cassandra. Hbase.
6. Big Data Algorithms - Clustering: Hierarchical, K-means.
7. Big Data Algorithms - Classification: Naive Bayes, Decision.
8. Big Data Algorithms - Recommendations: Content based recommendations, dimensionality reduction.
9. Big Data Algorithms Association - Rules: Frequent itemsets, the a-priori algorithm.
10. Stream Data Analysis: Sampling, Counting Distinct Elements in a Stream.
11. Graph and Social Graph Analysis: Clustering, Graph Summarization, Discovery of Communities.
12. Large Scale Machine Learning: SVMs.
13. Web Advertising. The matching problem. The AdWords Problem.

Assessment

30% Exercises
50% Project
20% Final exam

Course Bibliography

(One of the following):

22768468 Εξόρυξη από Μεγάλα Σύνολα Δεδομένων, Τύπος: Σύγγραμμα, Anand Rajaraman, Jeffrey David Ullman, 2014, Εκδόσεις Νέων Τεχνολογιών, ISBN: 978-960-6759-83-3

18549105 Εισαγωγή στην εξόρυξη δεδομένων, Τύπος: Σύγγραμμα, Tan Pang - Ning,Steinbach Michael,Kumar Vipin, 2010, ΤΖΙΟΛΑ, ISBN: 978-960-418-162-9

31391 Εξόρυξη γνώσης από βάσεις δεδομένων και τον παγκόσμιο ιστό, Τύπος: Σύγγραμμα, Βαζιργιάννης Μιχάλης, Χαλκίδη Μαρία, 2005, Τυπωθήτω, ISBN: 978-960-402-116-8

395 DATA MINING, Τύπος: Σύγγραμμα, Margaret H. Dunham, 2004, ΕΚΔΟΣΕΙΣ ΝΕΩΝ ΤΕΧΝΟΛΟΓΙΩΝ, ISBN: 960-8105-72-2

Additional material

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

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):

50658783 Cloud Computing Αρχές, Τεχνολογία και Αρχιτεκτονική 1η Εκδ., Τύπος: Σύγγραμμα, Ricardo Puttini, Thomas Erl, Zaigham Mahmood, 2015, Χ. ΓΚΙΟΥΡΔΑ ΣΙΑ ΕΕ, ISBN: 978-960-512-6865

12250 Cloud computing Μια πρακτική προσέγγιση, Τύπος: Σύγγραμμα, Velte Anthony T.,Velte Toby J.,Elsenpeter Robert P., 2010, Α. Γκιούρδα & ΣΙΑ ΟΕ, ISBN: 978-960-512-597-4

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):

1827 ΔΙΚΤΥΑΚΗ ΒΕΛΤΙΣΤΟΠΟΙΗΣΗ, Τύπος: Σύγγραμμα, ΠΑΠΑΡΡΙΖΟΣ Κ., ΣΑΜΑΡΑΣ Ν., ΣΙΦΑΛΕΡΑΣ Α., 2009, ΖΥΓΟΣ, ISBN: 978-960-8065-68-0

22762766 ΔΙΑΚΡΙΤΗ ΒΕΛΤΙΣΤΟΠΟΙΗΣΗ, Τύπος: Σύγγραμμα, ΜΗΛΙΩΤΗΣ ΠΑΝΑΓΙΩΤΗΣ, ΜΟΥΡΤΟΣ ΙΩΑΝΝΗΣ, 2012, ΟΠΑ, ISBN: 978-960-9443-13-5

11031 Εφαρμοσμένος μαθηματικός προγραμματισμός, Τύπος: Σύγγραμμα, Βασιλείου Παναγιώτης - Χρήστος, 2001, Ζήτη, ISBN: 960-431-716-4

Additional material

Ιστοσελίδα του μαθήματός (διαθέσιμη μετά από εγγραφή στο CoMPUs): http://compus.uom.gr/MT178 (1. Korte B. & Vygen J., Combinatorial Optimization: Theory and Algorithms, 4th ed., Springer-Verlag Berlin Heidelberg, Series: Algorithms and Combinat

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):

18548869 Ψηφιακά Συστήματα, Τύπος: Σύγγραμμα, Σουραβλάς Σταύρος Ι.,Ρουμελιώτης Μάνος, 2008, ΤΖΙΟΛΑ, ISBN: 978-960-418-155-1

18548944 Σχεδίαση Ψηφιακών Συστημάτων με τη Γλώσσα VHDL, Τύπος: Σύγγραμμα, Brown, Vranesic, 2011, ΤΖΙΟΛΑ, ISBN: 978-960-418-340-1

Additional material

(())

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

E-Commerce /E-Business Strategy and applications. Business process integration and E-Business plan. Definition approaches and introduction to: Electronic Commerce (EC) /E-Business (EB) and mobile commerce/business, e-services, Internet, World Wide Web. The E-commerce environment. The impact on information systems within a business, impact on business development and strategy on the industries and markets.BPR and E-Business plan and strategy.E- M- Business Models (Business innovation), e-shops, e-auctions, e-marketplaces, portals, dynamic pricing models, affiliate marketing, viral marketing models, e.t.c... E- M-Business Applications: e/m-Health, learning, banking, tourism, etc business/ industry sectors.The extended enterprise, synergies, networks' development and management, e-supply chain management, Virtual organizations/enterprises, social networks.E/M-Business plan strategy and development, The strategy of Web site- shop - portal (e- business model) development, evaluation and management. Case Studies.

Assessment

Course Bibliography

(One of the following):

50656360 ΨΗΦΙΑΚΕΣ ΕΠΙΧΕΙΡΗΣΕΙΣ ΚΑΙ ΗΛΕΚΤΡΟΝΙΚΟ ΕΜΠΟΡΙΟ: ΣΤΡΑΤΗΓΙΚΗ, ΥΛΟΠΟΙΗΣΗ ΚΑΙ ΕΦΑΡΜΟΓΗ, Τύπος: Σύγγραμμα, DAVE CHAFFEY, 2016, ΕΚΔΟΣΕΙΣ ΚΛΕΙΔΑΡΙΘΜΟΣ ΕΠΕ, ISBN: 978-960-461-671-8

32997535 Ηλεκτρονικό Επιχειρείν και Μάρκετινγκ, Τύπος: Σύγγραμμα, Βλαχοπούλου Μάρω ,Δημητριάδης Σέργιος, 2013, Εκδοτικός Οίκος Rosili, ISBN: 978-960-7745-32-3

12536563 Ηλεκτρονικό εμπόριο 2010, Τύπος: Σύγγραμμα, Turban Efraim,King David,,Lee Jae,Ting-Peng Liang, Turban Deborah, 2011, Α. Γκιούρδα & ΣΙΑ ΟΕ, ISBN: 978-960-512-605-6

18548694 e - Οικονομία-Εμπόριο-Μάρκετιγκ-Διακυβέρνηση, Τύπος: Σύγγραμμα, Γεωργιάδου Ε., Τριανταφύλλο Ευ., Οικονομίδης Αν., 2010, ΤΖΙΟΛΑ, ISBN: 978-960-418-242-8

Additional material

(Ιστότοπος 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, 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)

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):

68369937 Επιχειρηματικότητα και Κοινωνική Οικονομία, Τύπος: Σύγγραμμα, Σαρρή Κατερίνα, Τριχοπούλου Άννα, 2017, Τζιόλα, ISBN: 978-960-418-681-5

59367615 Μαθαίνω να επιπλέω, Τύπος: Σύγγραμμα, Goldman Seth, Nalebuff Barry, 2016, Κριτική, ISBN: 978-960-586-157-5

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):

12532681 ΕΙΣΑΓΩΓΗ ΣΤΗΝ ΑΝΑΚΤΗΣΗ ΠΛΗΡΟΦΟΡΙΩΝ, Τύπος: Σύγγραμμα, CHRISTOPHER D. MANNING, PRABHAKAR RAGHAVAN, HINRICH SCHUTZE, 2012, ΕΚΔΟΣΕΙΣ ΚΛΕΙΔΑΡΙΘΜΟΣ ΕΠΕ, ISBN: 978-960-461-456-1

41954965 Ανάκτηση Πληροφορίας, 2η Έκδοση, Τύπος: Σύγγραμμα, Baeza-Yates Ricardo, Ribeiro-Neto Berthier, 2014, ΤΖΙΟΛΑ, ISBN: 978-960-418-460-6

7753 Η ΜΕΘΟΔΟΣ PAGERANK ΤΗΣ GOOGLE ΚΑΙ ΑΛΛΑ ΣΥΣΤΗΜΑΤΑ ΚΑΤΑΤΑΞΗΣ ΙΣΤΟΣΕΛΙΔΩΝ, Τύπος: Σύγγραμμα, LANGVILLE AMY, MEYER CARL, 2010, ΙΤΕ-ΠΑΝΕΠΙΣΤΗΜΙΑΚΕΣ ΕΚΔΟΣΕΙΣ ΚΡΗΤΗΣ, ISBN: 978-960-524-313-5

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):

50657709 Σύγχρονη Θεωρία Χαρτοφυλακίου και Ανάλυση Επενδύσεων, Τύπος: Σύγγραμμα, Edwin J. Elton, Martin J. Gruber, Stephen J. Brown, William N. Goetzmann, 2016, Utopia, ISBN: 978-618-81298-9-4

68380648 ΑΓΟΡΕΣ ΧΡΗΜΑΤΟΣ ΚΑΙ ΚΕΦΑΛΑΙΟΥ, Τύπος: Σύγγραμμα, ΝΟΥΛΑΣ Γ. ΑΘΑΝΑΣΙΟΣ, 2016, ΝΟΥΛΑΣ Γ. ΑΘΑΝΑΣΙΟΣ, ISBN: 9789609148740

Additional material

Θωμαδάκης, Σ. και Μ. Ξανθάκης, (2011). Αγορές Χρήματος και Κεφαλαίου, 2η έκδοση, Εκδόσεις Αθ. Σταμούλη, Αθήνα. (http://compus.uom.gr/INF158)

NETWORK-CENTRIC SOFTWARE (ΠΛ0835)

Coordinator: Xinogalos Stylianos

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

Instructors: *Xinogalos Stylianos*

General Competences

After successfuly 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 sing 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 aaplications 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):

13578 SERVLETS ΚΑΙ ΣΕΛΙΔΕΣ ΔΙΑΚΟΜΙΣΤΗ JAVA: ΤΕΧΝΟΛΟΓΙΕΣ ΠΥΡΗΝΑ, Τύπος: Σύγγραμμα, MARTY HALL, LARRY BROWN, 2007, ΕΚΔΟΣΕΙΣ ΚΛΕΙΔΑΡΙΘΜΟΣ ΕΠΕ, ISBN: 978-960-461-001-3

50656340 ΕΙΣΑΓΩΓΗ ΣΤΗΝ JAVA, Τύπος: Σύγγραμμα, ΓΙΩΡΓΟΣ ΛΙΑΚΕΑΣ, 2015, ΕΚΔΟΣΕΙΣ ΚΛΕΙΔΑΡΙΘΜΟΣ ΕΠΕ, ISBN: 978-960-461-659-6

Additional material

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

PROFESSIONAL SKILLS IN ENGLISH (The course is taught in English) (ΠΛ0834)

Coordinator: **Kokkinou Ourania**

Semester: **8nd** (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):

4785 BUSINESS ENGLISH FOR ACADEMIC PURPOSES, Τύπος: Σύγγραμμα, ΚΑΝΤΑΡΙΔΟΥ ΖΩΗ, ΠΑΠΑΔΟΠΟΥΛΟΥ ΙΡΙΣ, ΣΤΕΦΑΝΟΥ ΠΟΛΥΞΕΝΗ, 2008, ΑΝΙΚΟΥΛΑ, ISBN: 9789608729391

41959807 RESEARCH READING AND WRITING SKILLS, Τύπος: Σύγγραμμα, PAPADOPOULOU IRIS, 2014, ΕΚΔΟΣΕΙΣ ΠΑΝΕΠΙΣΤΗΜΙΟΥ ΜΑΚΕΔΟΝΙΑΣ, ISBN: 978-960-8396-92-0

Additional material

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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):

68383883 ΣΤΡΑΤΗΓΙΚΟ ΜΑΝΑΤΖΜΕΝΤ, Τύπος: Σύγγραμμα, ΓΕΩΡΓΟΠΟΥΛΟΣ ΝΙΚΟΛΑΟΣ, 2013, ΓΕΩΡΓΙΑ ΜΠΕΝΟΥ, ISBN: 978-960-8249-95-0

59382654 Καινοτομία και Επιχειρηματικότητα, Τύπος: Σύγγραμμα, Bessant J. -Tidd J., Κουλουριώτης Δημήτρης (επιμ.), 2016, ΤΖΙΟΛΑ, ISBN: 978-960-418-603-7

68369937 Επιχειρηματικότητα και Κοινωνική Οικονομία, Τύπος: Σύγγραμμα, Σαρρή Κατερίνα, Τριχοπούλου Άννα, 2017, Τζιόλα, ISBN: 978-960-418-681-5

50656013 Διοίκηση Επιχειρήσεων, 11η Έκδοση, Τύπος: Σύγγραμμα, Bateman Shell, 2016, ΤΖΙΟΛΑ, ISBN: 978-960-418-534-4

77107332 Στρατηγικό Μάνατζμεντ-Μια Ολοκληρωμένη Προσέγγιση -Θεωρία και Μελέτες Περίπτωσης, Τύπος: Σύγγραμμα, Hill W.L. Charles, Schilling A. Melissa, Jones R. Gareth, 2018, Broken Hill Publishers Ltd, ISBN: 9789925563524

13256966 Marketing: Μια Στρατηγική Προσέγγιση, Τύπος: Σύγγραμμα, Perreault W., 2011, ΕΚΔΟΣΕΙΣ ΠΑΣΧΑΛΙΔΗΣ, ISBN: 9789604891504

Additional material

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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 5tth 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):

21494 ΕΡΓΑΣΤΗΡΙΑΚΑ ΜΑΘΗΜΑΤΑ ΣΤΑ ΔΙΚΤΥΑ ΚΑΙ ΔΙΑΔΙΚΤΥΑ ΥΠΟΛΟΓΙΣΤΩΝ, Τύπος: Σύγγραμμα, ΒΑΣΙΛΕΙΟΣ ΤΣΑΟΥΣΙΔΗΣ, ΕΛΕΥΘΕΡΙΟΣ ΜΑΜΑΤΑΣ, ΙΩΑΝΝΗΣ ΨΑΡΡΑΣ, ΕΥΣΤΡΑΤΙΟΣ ΚΟΣΜΙΔΗΣ, ΣΤΥΛΙΑΝΟΣ ΔΗΜΗΤΡΙΟΥ, 2010, ΕΚΔΟΣΕΙΣ ΚΛΕΙΔΑΡΙΘΜΟΣ ΕΠΕ, ISBN: 978-960-461-386-1

13954 ΔΙΚΤΥΑ ΥΠΟΛΟΓΙΣΤΩΝ: ΜΙΑ ΠΡΟΣΕΓΓΙΣΗ ΑΠΟ ΤΗ ΣΚΟΠΙΑ ΤΩΝ ΣΥΣΤΗΜΑΤΩΝ, Τύπος: Σύγγραμμα, LARRY L. PETERSON, BRUCE S. DAVIE, 2009, ΕΚΔΟΣΕΙΣ ΚΛΕΙΔΑΡΙΘΜΟΣ ΕΠΕ, ISBN: 978-960-461-266-6

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):

77121044 ΕΠΙΚΑΙΡΑ ΘΕΜΑΤΑ ΣΤΡΑΤΗΓΙΚΗΣ ΤΩΝ ΕΠΙΧΕΙΡΗΣΕΩΝ, Τύπος: Σύγγραμμα, ΠΑΠΑΔΑΚΗΣ ΒΑΣΙΛΕΙΟΣ, 2018, ΕΥΓΕΝΙΑ ΜΠΕΝΟΥ, ISBN: 978-960-359-138-2

50659772 Οργανωσιακή Αλλαγή, Τύπος: Σύγγραμμα, Senior B., Dr Swailes S., 2016, BROKEN HILL PUBLISHERS LTD, ISBN: 9789963258512

32998194 Καινοτομία και αλλαγή στο επιχειρείν, Τύπος: Σύγγραμμα, Ελένη Ε. Σαλαβού, 2013, Εκδοτικός Οίκος Rosili, ISBN: 978-960-7745-31-6

77109690 Οργανωσιακή συμπεριφορά, Τύπος: Σύγγραμμα, Robbins Stephen P., Judge Timothy A., 2018, Κριτική, ISBN: 978-960-586-233-6

13764 Η ΗΓΕΣΙΑ ΣΤΟΥΣ ΟΡΓΑΝΙΣΜΟΥΣ, Τύπος: Σύγγραμμα, GARY YUKL, 2009, ΕΚΔΟΣΕΙΣ ΚΛΕΙΔΑΡΙΘΜΟΣ ΕΠΕ, ISBN: 978-960-461-263-5

8591 ΔΙΟΙΚΩΝΤΑΣ ΤΙΣ ΑΛΛΑΓΕΣ, Τύπος: Σύγγραμμα, Μαρία Βακόλα, 2009, ΑΝΔΡΕΑΣ ΣΙΔΕΡΗΣ - ΙΩΑΝΝΗΣ ΣΙΔΕΡΗΣ & ΣΙΑ Ο.Ε., ISBN: 960-08-0348-X

68393817 ΟΡΓΑΝΩΣΙΑΚΗ ΣΥΜΠΕΡΙΦΟΡΑ, Τύπος: Σύγγραμμα, ΧΥΤΗΡΗΣ ΛΕΩΝΙΔΑΣ, 2017, ΕΥΓΕΝΙΑ ΜΠΕΝΟΥ, ISBN: 978-960-359-129-0

Additional material

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