Study Guide

SCHOOL OF INFORMATION SCIENCES
Department of Applied Informatics

Programme of Study 2015-2016

Applied Informatics (AI)
Technology Management (TM)
## Contents

### 1st Semester
- Algorithms With C (ΠΛ0102-3) ................................................................. 6
- Applied Mathematics I (ΠΛ0111) ................................................................... 7
- English I (ΞΓ0101) ......................................................................................... 8
- Introduction To Economics (ΠΛ0105-2) .......................................................... 9
- Introduction To Informatics (ΠΛ0101-2) .......................................................... 10
- Management Information Systems (ΠΛ0113) .................................................... 11
- Procedural Programming (ΠΛ0106-3) ............................................................... 12

### 2nd Semester
- Applied Mathematics II (ΠΛ0112) ................................................................. 13
- Data Structures (ΠΛ0201) ............................................................................. 14
- Discrete Mathematics (ΠΛ0108-3) ................................................................. 15
- English II (ΞΓ0102) ....................................................................................... 16
- Financial Accounting (ΠΛ0502-1) .................................................................. 17
- Introduction To Algorithm Analysis (ΠΛ0509-2) .............................................. 18
- Statistics I (ΠΛ0104) .................................................................................... 19

### 3rd Semester
- Computer Architecture (ΠΛ0304-1) ............................................................... 20
- Databases I (ΠΛ0501-1) ............................................................................... 21
- Digital Economics (ΠΛ0316) ......................................................................... 22
- English III (ΞΓ0103) ..................................................................................... 23
- Finance (ΠΛ0502) ......................................................................................... 24
- Object- Oriented Programming (ΠΛ0401) ....................................................... 25
- Statistics II (ΠΛ0202) ................................................................................... 26
- Computer Architecture (ΠΛ0304-1) ............................................................... 27
- Computer Networks (ΠΛ0503-2) .................................................................... 28
- Management And Technology (ΔΤ1301) ....................................................... 29
- Object- Oriented Programming (ΠΛ0401) ....................................................... 30
- Probability And Statistics (ΔΤ2101) ............................................................. 31
- Web Technologies (ΔΤ2703) ......................................................................... 32

### 4th Semester
- Computer Graphics And Virtual Reality (ΠΛ0419) ....................................... 33
- Databases II (ΠΛ0601) .................................................................................. 34
- English IV (ΞΓ0104) ...................................................................................... 35
- Linear And Network Programming (ΠΛ0313-2) .............................................. 36
- Macroeconomic Models And Policies (ΠΛ0403-2) ........................................ 38
- Operating Systems (ΠΛ0404) ....................................................................... 40
SOFTWARE ENGINEERING (ΠΛ0613) ........................................................................................................ 41
DATA ORGANIZATION AND MANAGEMENT (ΔΤ2202) .................................................................................. 42
DIGITAL TELECOMMUNICATIONS SYSTEMS (ΔΤ2701) ................................................................................. 43
INTERNET TECHNOLOGIES (ΔΤ2702) ...................................................................................................... 44
OPERATING SYSTEMS (ΠΛ0404) .............................................................................................................. 45
OPERATIONS RESEARCH (ΔΤ2102) .......................................................................................................... 46
PRODUCTION AND OPERATIONS MANAGEMENT (ΔΤ2301) .................................................................... 47

5th Semester ............................................................................................................................................... 48
COMPUTER NETWORKS (ΠΛ0503-2) ........................................................................................................ 48
COMPUTERIZED ACCOUNTING (ΠΛ0803) ................................................................................................ 49
ECONOMETRICS I (ΠΛ0504) .................................................................................................................... 50
MARKETING INFORMATION SYSTEMS (ΠΛ0114) .................................................................................... 51
MULTIMEDIA TECHNOLOGIES AND COMMUNICATIONS (ΠΛ0520) .................................................... 52
E-COMMERCE TECHNOLOGY (ΠΛ0521) ................................................................................................ 53
BUSINESS POLICY AND STRATEGY (ΔΤ3301) ....................................................................................... 54
DESIGN AND PRODUCTION TECHNOLOGIES (ΔΤ3502) ....................................................................... 55
DISTRIBUTED SYSTEMS (ΔΤ3601) ........................................................................................................... 56
ECONOMETRICS I (ΠΛ0504) .................................................................................................................... 57
INFORMATION SYSTEMS ANALYSIS AND DESIGN (ΔΤ3501) ................................................................. 58
NETWORK AND INTERNET APPLICATIONS SECURITY (ΠΛ0825) .......................................................... 59

6th Semester ............................................................................................................................................... 60
ARTIFICIAL INTELLIGENCE (ΠΛ0701) ..................................................................................................... 60
DECISION SUPPORT SYSTEMS (ΠΛ0805-1) ............................................................................................ 61
ECONOMETRICS II (ΠΛ0709) .................................................................................................................. 62
INFORMATION AND SYSTEMS SECURITY (ΠΛ0713-2) ......................................................................... 63
INFORMATION TECHNOLOGY LAW (IT LAW) (ΠΛ0617) .......................................................................... 64
EMBEDDED SYSTEMS (ΔΤ3602) ............................................................................................................... 65
ENTERPRISE ARCHITECTURES (ΔΤ3503) ................................................................................................ 66
MOBILE AND WIRELESS COMMUNICATIONS SYSTEMS (ΔΤ3702) ...................................................... 67
QUALITY ASSURANCE AND QUALITY CONTROL TECHNIQUES (ΔΤ3302) ....................................... 68
SUPPLY CHAIN MANAGEMENT (ΔΤ3303) .............................................................................................. 69
SYSTEMS DEVELOPMENT TECHNOLOGY (ΔΤ3504) .......................................................................... 70

7th Semester ............................................................................................................................................... 71
BUSINESS INNOVATION AND PRODUCTIVITY (ΠΛ0611-3) .................................................................... 71
COMPUTATION THEORY AND AUTOMATA (ΠΛ0506-1) ...................................................................... 72
CRYPTOGRAPHY (ΠΛ0618) ..................................................................................................................... 73
EDUCATIONAL PROGRAMMING ENVIRONMENTS AND LANGUAGES (ΠΛ0726) ............................... 74
GAME THEORY (ΠΛ0722) ....................................................................................................................... 75
INTERNATIONAL ECONOMICS (ΠΛ0309-2) ........................................................................................................... 76
INTERNET LAW (ΠΛ0725) ................................................................................................................................. 77
LOGISTICS INFORMATION SYSTEMS (ΠΛ0819) ............................................................................................... 78
NETWORKS AND INTERNET APPLICATIONS SECURITY (ΠΛ0825).................................................................. 79
OPERATIONS RESEARCH (ΠΛ0814-1) .............................................................................................................. 80
PARALLEL PROCESSING (ΠΛ0705-1) .............................................................................................................. 81
SPECIAL SUBJECTS IN ACCOUNTING (ΠΛ0510) ............................................................................................... 82
ADVANCED INFORMATION SYSTEMS (ΔΤ4504) ............................................................................................. 83
BUSINESS MODELLING (ΔΤ4502) ................................................................................................................... 84
COMBINATORIAL OPTIMIZATION (ΔΤ4302) ..................................................................................................... 85
COMPUTERIZED ACCOUNTING (ΠΛ0803) .......................................................................................................... 86
CONVERGENCE OF COMMUNICATION SYSTEMS (ΔΤ4702) ........................................................................ 87
DECISION MAKING MODELS (ΔΤ4303) .......................................................................................................... 88
DIGITAL MEDIA COMMUNICATION SYSTEMS (ΠΛ0731) ............................................................................. 89
DIGITAL SYSTEMS’ DESIGN AND PROGRAMMING (ΔΤ4601) ................................................................. 90
ENTREPRENEURSHIP AND TECHNOLOGY INNOVATION (ΔΤ4404) .......................................................... 91
INNOVATIVE SERVICE AND PRODUCT DEVELOPMENT (ΔΤ4401) ............................................................. 92
INTERNET LAW (ΠΛ0725) ............................................................................................................................... 93
PARALLEL PROCESSING (ΔΤ4603) .................................................................................................................. 94
SPECIAL CHAPTERS OF APPLIED STATISTICS AND QUALITY CONTROL (ΔΤ4304) .................................... 95

8th Semester ..................................................................................................................................................... 96

COMPUTATIONAL MATHEMATICS (ΠΛ0829) ................................................................................................. 96
COMPUTER NETWORKS DEPLOYMENT AND MANAGEMENT (ΠΛ0610-2) .................................................. 97
CONSTRAINT LOGIC PROGRAMMING (ΠΛ0828) ............................................................................................ 98
COSTING (ΠΛ0824) ........................................................................................................................................ 99
DISTRIBUTED SYSTEMS (ΠΛ0809) ................................................................................................................... 100
ELECTRONIC COMMERCE (ΠΛ0807) ............................................................................................................. 101
EUROPEAN INTEGRATION (ΠΛ0609) ............................................................................................................ 102
HUMAN-COMPUTER INTERACTION (ΠΛ0605) ............................................................................................... 103
KNOWLEDGE DISCOVERY FROM DATABASES (ΠΛ0823) .......................................................................... 104
MONEY AND CAPITAL MARKETS (ΠΛ0608) ................................................................................................. 105
NEURAL NETWORKS (ΠΛ0806) ....................................................................................................................... 106
PRODUCTION AND OPERATIONS MANAGEMENT (ΠΛ0416) ...................................................................... 107
PROGRAMMING LANGUAGES AND COMPILERS (ΠΛ0827-1) ............................................................... 108
SIMULATION TECHNIQUES (ΠΛ0614) ............................................................................................................ 109
SPECIAL TOPICS IN ECONOMETRICS (ΠΛ0815) ......................................................................................... 110
SYSTEMS PROGRAMMING (ΠΛ0730) ............................................................................................................ 111
TAXATION FOR INDIVIDUALS AND BUSINESS ENTITIES (ΠΛ0620) ....................................................... 112
TIME SERIES (ΠΛ0720) ............................................................................................................................... 113
VIRTUAL ENTERPRISES AND NEW TECHNOLOGIES (ΠΛ0724) .............................................................................. 114
WEB PROGRAMMING (ΠΛ0816) ...................................................................................................................... 115
WEB SERVICES AND TRANSACTIONS (ΠΛ0729) ......................................................................................... 116
BROADBAND COMMUNICATION TECHNOLOGIES AND SERVICES (ΔΤ4701) ...................................... 117
DIGITAL DESIGN - MODELING OF LOGIC CIRCUITS (ΔΤ4602) ................................................................. 118
ELECTRONIC COMMERCE (ΠΛ0807) ........................................................................................................ 119
ELECTRONIC GOVERNANCE (ΔΤ4503) ........................................................................................................ 120
ENTREPRENEURSHIP CASE STUDIES (ΔΤ4403) ....................................................................................... 121
MONEY AND CAPITAL MARKETS (ΠΛ0608) .......................................................................................... 122
NETWORK-CENTRIC SOFTWARE (ΔΤ4704) ............................................................................................... 123
PROJECT PLANNING AND MANAGEMENT (ΔΤ4301) ................................................................................ 124
SIMULATION TECHNIQUES (ΠΛ0614) ...................................................................................................... 125
SPECIAL ISSUES OF STRATEGIC MANAGEMENT (ΠΛ0830) ..................................................................... 126
TECHNOLOGICAL INNOVATION MANAGEMENT (ΔΤ4405) ..................................................................... 127
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</table>
ALGORITHMS WITH C (ΠΛ0102-3)

Coordinator: Sifaleras Angelo
Semester: 1st (Winter) | Orientation: Core Course | Compulsory | Weekly hours: 3 | ECTS: 5
Instructors: Sifaleras Angelo, Koloniari Georgia

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
Iterative Sorting Algorithms. Selection Sort, Bucket Sort, Bubble Sort, Radix Sort.
Searching Algorithms: Linear Search, Binary Search.
Data Structures: Stack, Queue, Cyclic queue, Linked lists (single and double), Heaps, Heap Sort.
Recursive Algorithms: Factorial, Fibonacci Numbers, Anoi Towers, Transformation from recursive to iterative.
Divide and conquer: Quick Sort, Merge Sort, Matrix Multiplication, Strassen Multiplication, Polynomial Multiplication.
Graph Algorithms: Depth First Search, Breadth First Search, Graph connectivity, Directed acyclic graphs.
Special Topics on Algorithms: On-line algorithms, Dynamic Programming, Greedy algorithms, Backtracking, Branch and Bound.
Laboratory. Implementation of basic sorting and searching algorithms using C.

Assessment
Written Final examination 100%
Coursework 30%

Course Bibliography
(One of the following):
Knuth, Donald Ervin. Η τέχνη του προγραμματισμού. Μεταφρ. Εμμανουήλ Ρουμελιώτης. Τόμ. τ. 1. Θεσσαλονίκη: Εκδόσεις Τζιόλα, c2009. 3 τόμ.
Τσούρους, Κωνσταντίνος-Κλαύδιος. Αλγόριθμοι, προγράμματα, εφαρμογές με FORTRAN και Visual Basic. Θεσσαλονίκη, c2009

Additional material
Instructor's Notes and Slides
APPLIED MATHEMATICS I (ΠΛ0111)

Coordinator: Stephanides George, Sifaleras Angelo
Semester: 1st (Winter) | Orientation: Core Course | Compulsory | Weekly hours: 3 | ECTS: 5
Instructors: Stephanides George

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

Course Content
Matrices (Definitions – Properties of Operations – Introduction to MATLAB)
Linear Systems
Vector Spaces – Applications
Projections – Linear transformations
Eigenvalues - Eigenvectors

Assessment
Written Final examination 100%

Course Bibliography
(One of the following):

Additional material
Instructor's Notes and Exercises
ENGLISH I (ΞΓ0101)

Coordinator: Kantaridou Zoe
Semester: 1st (Winter) | Orientation: Core Course | Foreign Language | Weekly hours: 4 | ECTS: 0
Instructors: Kantaridou Zoe

General Competences
English for Academic Purposes: Reading & Academic vocabulary. The course familiarizes students with the academic vocabulary in English and the skills and strategies needed to deal with academic texts in the fields of economics and informatics. It requires a minimum of B1 level of competence in English

Course Content
1. University campus and facilities
2. Great personalities in Computer Science
3. History of computers
4. Open source
5. Social networks
6. Introductions to Economics
7. Dealing with academic abstracts
8. Dealing with scientific articles
9. e-Business
10. Describing trends
11. Talking about Greece

Assessment

Course Bibliography
or

Additional material
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
- Fundamental concepts and methodological approach
- Economic scarcity and social choice
- The framework and the mechanism of the market
- The role of the state
- National product, Unemployment, Inflation
- Consumption, Saving, Investment
- Income determination
- Income equilibrium
- Monetary policy
- External sector
- Economic policies
- The theory of choice and consumer demand
- Production and cost
- Types of markets

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

Course Bibliography
(One of the following):
Πουρναράκης, Ευθύμιος και Γιώργος Χατζηκωνσταντίνου. Αρχές οικονομικής: μακροοικονομική και μικροοικονομική. 3η έκδ. Αθήνα: Εκδόσεις Σοφία, 2011.
Παυλίτσας, Κωνσταντίνος Χ και Γεωργία Α Χαριτούδη. Εισαγωγή στην οικονομία. Κοζάνη: Εκδόσεις Παπαδοπούλου, 2011.

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, Petridou Sofia

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

Course Content
Introduction. Turing model, von Neumann model, Computer components
Number System. Positional number systems, Nonpositional number systems
Storing Data. Data types, Storing numbers - text - audio - images - video
Operations on Data. Logic operations, Shift operations, Arithmetic operations
System organization. Central processing unit, memory, storing devices, peripherals, bus.
Programming Languages. Historical Review, Compilers, Interpreters.
Operation systems. Resource management.
Files and databases. Relational databases. SQL.
Data compression. Lossless and lossy compression methods
Security. Security fundamentals - attacks - services - techniques

Assessment
Written Final examination 100%
Coursework 30%

Course Bibliography
(One of the following):
Βενέρης, Γιάννης. Μίμησις πληροφορική: έννοιες και τεχνολογίες. Θεσσαλονίκη: Εκδόσεις Τζιόλα, 2007..

Additional material
Instructor's Notes and Slides
MANAGEMENT INFORMATION SYSTEMS (ΠΛ0113)

Coordinator: Manthou Vassiliki
Semester: 1st (Winter) | Orientation: Core Course | Compulsory | Weekly hours: 3 | ECTS: 5
Instructors: Manthou Vassiliki

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
Business information systems in the career
E-Business: How businesses use information systems
Achieving competitive advantage with information systems
Information technology infrastructure
Achieving Operational Excellence and Customer Intimacy: Enterprise applications
E-Commerce: Digital Markets, Digital Goods
Building and managing systems
Improved decision making and managing knowledge
Ethical and social issues in information systems

Assessment
Written Final examination 100%

Course Bibliography
(One of the following):
Wallace, Patricia M. Πληροφοριακά συστήματα διοίκησης: άνθρωποι, τεχνολογία, διαδικασίες. Μεταφρ. Πρόδρομος Χατζόγλου. Αθήνα, 2014

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
a) to understand the principles of procedural programming, b) to be able to develop programs on an integrated development environment, c) to obtain skills on the implementation of algorithms in the C programming language.

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

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

Course Bibliography
(One of the following):
Χατζηγιανάκης, Νίκος Μ. Η γλώσσα C σε βάθος: πλήρης οδηγός εκμάθησης της γλώσσας C με εκτενή αναφορά στις δομές δεδομένων. 3η έκδ., βελτ. Αθήνα: Κλειδάριθμος, 2009
Τσελίκης, Γιώργος Σ, Τσελίκας, Νίκος Δ. C: από τη θεωρία στην εφαρμογή. 2η έκδ. Αθήνα, 2012

Additional material
Course website
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

General Competences
Elements of Differential and Integral Calculus with Applications to Economics and Business.

Course Content
The study of basic results from Mathematical Analysis – introduction to differential and difference equations. Applications in Economics. Exploration of relevant computational tools using MATLAB.
Contents
Function differentiation - differentials
Differentiation of multivariable functions
Sequences, Series and Convergence
Taylor series and applications
Extrema of multivariable functions
Difference Equations – equilibrium points, stability
Differential Equations.

Assessment
Written Final examination 100%

Course Bibliography
(One of the following) :

Additional material
Instructor’s 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 purpose 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

Introduction to Data Structures.

Stacks, Basic operations, implementing stacks with arrays and records, application of stacks.

Queues, Basic operations, implementing Queues with arrays and records, application of Queues.

Lists, Basic operations, sequential storage implementation of Lists.

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.

Linked implementation of sparse polynomials.

Binary Trees, basic operations. A pointer-based implementation of Binary Trees. A recursive implementation of Binary trees.

Application of Binary Trees: Huffman Codes.

Hashing, open probing, Chaining.

B-Trees. AVL Trees, basic operations.

Assessment

Written Examination 80%

Compulsory Assignments 20%

Course Bibliography

(One of the following):

- Μισυρλής, Νικόλαος. Δομές Δεδομένων με C. Αθήνα, 2008.
- Τσούρος, Κωνσταντίνος-Κλαύδιος. Αλγόριθμοι, προγράμματα, εφαρμογές με FORTRAN και Visual Basic. Θεσσαλονίκη, c2009

Additional material

Course website
DISCRETE MATHEMATICS (ΠΛ0108-3)

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

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

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

Assessment
Written Final examination 100%

Course Bibliography
(One of the following):
Στεφανίδης, Γεώργιος Χρ. Διακριτά μαθηματικά. Θεσσαλονίκη: Ζυγός, 2015.

Additional material
ENGLISH II (ΞΓ0102)

Coordinator: Kantaridou Zoe
Semester: 2nd (Spring) | Orientation: Core Course | Foreign Language | Weekly hours: 4 | ECTS: 5
Instructors: Kantaridou Zoe

General Competences
Writing in English for Academic Purposes
The course provides extensive practice in writing in English for Academic Purposes. Rephrasing, summarizing, description of tables and graphs and argument support are mainly practiced through academic and journalistic texts on the topics of informatics and economics. The course requires a minimum B1 level of competence in English.

Course Content

Assessment

Course Bibliography


Additional material
FINANCIAL ACCOUNTING (ΠΛ0502-1)

Coordinator: Vazakidis Athanasios
Semester: 2nd (Spring) | Orientation: Core Course | Compulsory | Weekly hours: 3 | ECTS: 5
Instructors: Vazakidis Athanasios, Stavropoulos Antonios, Dasilas Apostolos

General Competences
This course is aiming to:
Enable students familiar and aware of the essentials of accounting. Enable students capable of posting entries 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 bookkeeping 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 bookkeeping (B' class) by the use of computer software.

Course Content

Assessment
Laboratory exams 35%
Final writing exams 65%

Course Bibliography
(One of the following):
Σταυρόπουλος, Αντώνιος, Αθανάσιος Βαζακίδης και Σταύρος Τσόπογλου. Χρηματοοικονομική λογιστική, λογιστικό σχέδιο. 2η έκδ. συμπληρωμένη και βελτ. Θεσσαλονίκη, 2010.
Καραγιάννης, Δημήτρης Ι, Ιωάννης Δ Καραγιάννης και Αικατερίνη Δ Καραγιάννη. Παραδείγματα εφαρμογής και ανάλυσης του γενικού λογιστικού σχεδίου: στην πράξη, 8η έκδ., ενημερωμένη με τους τελευταίους νόμους, Θεσσαλονίκη, 2011.

Additional material
INTRODUCTION TO ALGORITHM ANALYSIS (ΠΛ0509-2)

Coordinator: Satratzemi Maria
Semester: 2nd (Spring) | Orientation: Core Course | Compulsory | Weekly hours: 3 | ECTS: 5
Instructors: Satratzemi Maria

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

Course Content
Theory: The concepts of computational problem and algorithm, Asymptotic analysis (The asymptotic symbols O, Θ, Ω, o and ω, Properties of the asymptotic symbols, The value of Algorithm analysis), The concept of algorithm complexity (Worst, best and average case, Homogeneous and non homogeneous algorithms), Computational models, Analysis of iterative algorithms, Analysis of recursive and divide and conquer algorithms, Analysis of greedy algorithms, Analysis of dynamic programming algorithms, Graph algorithms (Breath first search, Depth first search, Topological order, Bipartite graphs, connectivity). Laboratory: Algorithm programming and computational studies to evaluate the practical complexity of algorithms.

Assessment
Written Final examination 100%

Course Bibliography
(One of the following):

Additional material
Course website
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 aims to introduce the basic rules in related fields of descriptive and inductive statistics, familiarity with the concept of one-dimensional random variable and the mean/variance and finally getting to know the major discrete and continuous distributions. As part of the course, there are various applications of probability theory that are of practical interest.

Course Content
Populations - samples, sampling, position and dispersion measures, propensities, tables, introduction to probabilities, random variable, theoretical and derived distributions.

Assessment
Written Final examination 100%

Course Bibliography
(One of the following):

Additional material
Instructor’s Notes and Slides
3rd Semester

COMPUTER ARCHITECTURE (ΠΛ0304-1)
Coordinator: Roumeliotis Manos
Semester: 3rd (Winter) | Orientation: AI | Compulsory | Weekly hours: 3 | ECTS: 5
Instructors: Roumeliotis Manos, Souravlas Stavros

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

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

Assessment
Optional programming assignment up to 2 additional marks

Course Bibliography
(One of the following):
Stallings, William. Οργάνωση και αρχιτεκτονική υπολογιστών. 8η Έκδοση. Θεσσαλονίκη : Εκδόσεις Τζιόλα, 2011.
Patterson, David A; Hennessy, John L; Γκιζόπουλος, Δημήτρης. Οργάνωση και σχεδίαση υπολογιστών : η διασύνδεση υλικού και λογισμικού. Αθήνα : Κλειδάριθμος, 2010.

Additional material
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):
Ramakrishnan, Raghu; Gehrke, Johannes. Συστήματα διαχείρισης βάσεων δεδομένων. 3η Έκδοση. Θεσσαλονίκη : Εκδόσεις Τζιόλα, c2012.
Connolly, Thomas M; Begg, Carolyn E., Βάσεις δεδομένων. Τόμος Α’. 4η Έκδοση. Αθήνα : Μ. Γκιούρδας, 2008.

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):
Στειακάκης, Εμμανουήλ. Ψηφιακή οικονομική. Θεσσαλονίκη : Ανικούλα, c2013.

Additional material
ENGLISH III (ΞΓ0103)

Coordinator: Kantaridou Zoe
Semester: 3rd (Winter) | Orientation: AI | Foreign Language | Weekly hours: 4 | ECTS: 5
Instructors: Kantaridou Zoe

General Competences
Business English The course familiarizes students with topics and conventions of speaking and writing in English in the international business environment. Students prepare their CVs and cover letters for selected real job advertisements and present the profile of a company in the field of informatics or graphics design. Professional skills such as telephoning, letter writing, emails, turn-taking in negotiations and intercultural communication awareness skills are practiced. Content

Course Content

Assessment

Course Bibliography
(One of the following):
Kantaridou, Z. (Zoe); Papadopoulou, Iris; Stefanou, Polyxeni. Business English for academic purposes. Θεσσαλονίκη: Ανικούλα, 2008

Additional material
FINANCE (ΠΛ0502)

Coordinator: Tsopoglou Stavros
Semester: 3rd (Winter) | Orientation: AI | Compulsory | Weekly hours: 3 | ECTS: 5
Instructors: Tsopoglou Stavros, 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. Ability to use these concepts as tools of analyzing the function of finance in firms.
3. Decision making based on the results of the specific financial analysis.
4. Competence in using spreadsheet type of software to solve problems in finance.

Course Content
1. BASIC CONCEPTS IN FINANCE AND THE FINANCIAL ENVIRONMENT.
2. COMPARATIVE ANALYSIS OF FINANCIAL STATEMENTS
3. SOURCES AND USES OF FUNDS
4. WORKING CAPITAL-REVENUE-COST PLANNING AND CONTROL
5. TIME VALUE OF MONEY AND CAPITAL BUDGETING
6. MONEY AND CAPITAL MARKETS (SOURCES OF FUNDS)
7. USE OF SPREADSHEETS (MS EXCEL TYPE) IN SOLVING PROBLEMS IN FINANCE
8. PREPARING AND COMPLETING A CASE STUDY (USE OF WEB BASED FINANCIAL DATABASES AND PRESENTATION OF A FINANCIAL ANALYSIS FOR A SPECIFIC ENTERPRISE)

Assessment
Written final examination 100%
Optional coursework (Case Study) 10%
Optional exercises 10%

Course Bibliography
(One of the following):
Weston, J. Fred (John Fred); Brigham, Eugene F. Βασικές αρχές της χρηματοοικονομικής διαχείρισης και πολιτικής. Αθήνα : Παπαζήσης, 1986.
Brealey, Richard A; Myers, Stewart C; Allen, Franklin. Αρχές χρηματοοικονομικής των επιχειρήσεων. Αγία Παρασκευή, [Αττική] : Ουτοπία, c2013.

Additional material
OBJECT- ORIENTED PROGRAMMING (ΠΛ0401)

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

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

Course Content

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

Course Bibliography
(One of the following):
Lervik, Else; Havdal, Vegard B. Java με UML: αντικειμενοστρεφής σχεδίαση και προγραμματισμός. Αθήνα : Κλειδάριθμος, c2004-2005
Roberts, Eric. Η τέχνη και επιστήμη της Java: μια εισαγωγή στην επιστήμη των υπολογιστών. Αθήνα : Κλειδάριθμος, c2008
Savitch, Walter. JAVA: μια εισαγωγή στην επίλυση προβλημάτων και στον προγραμματισμό. 7η Εκδοση. Θεσσαλονίκη: Εκδόσεις Τζιόλα, 2015

Additional material
STATISTICS II (ΠΛ0202)

Coordinator: Papanastasiou Demetrios
Semester: 3rd (Winter) | Orientation: AI | Compulsory | Weekly hours: 3 | ECTS: 5
Instructors: Papanastasiou Demetrios

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

Course Content
Statistical data (introduction to R, entry and presentation of data)
Basic Inference (sample, LLN, CLT, point estimation, confidence intervals for means, proportions and variances)
Hypothesis Testing (fundamental notions, testing for means, proportions and variances, \(\chi^2\)-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):
Κολυβά-Μαχαίρα, Φωτεινή; Μπόρα-Σέντα, Ευθυμία. Στατιστική : θεωρία, εφαρμογές. 2η Έκδοση βελτιωμένη και επαυξημένη. Θεσσαλονίκη : Εκδόσεις Ζήτη, c2013.
Papadimitriou, Γιάννης Δ. Στατιστική. Αθήνα : Τυπωθήτω - Γώργος Δαρδανός, 2005

Additional material
COMPUTER ARCHITECTURE (ΠΛ0304-1)

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

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

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

Assessment
Written final examination 100%

Course Bibliography
(One of the following):
Stallings, William. Οργάνωση και αρχιτεκτονική υπολογιστών. 8η έκδοση. Θεσσαλονίκη: Εκδόσεις Τζιόλα, 2011

Additional material
Instructor’s Website

-27-
COMPUTER NETWORKS (ΠΛ0503-2)

Coordinator: Fouliras Panayotis
Semester: 3rd (Winter) | Orientation: TM | Compulsory | Weekly hours: 3 | ECTS: 5
Instructors: Fouliras Panayotis

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

Course Content

Assessment

Course Bibliography
(One of the following):
Tanenbaum, Andrew S. και David J. Wetherall. Δίκτυα υπολογιστών. Αθήνα: Κλειδάριθμος, 2011.

Additional material
MANAGEMENT AND TECHNOLOGY (ΔΤ1301)

Coordinator: Fouskas Konstantinos
Semester: 3rd (Winter) | Orientation: TM | Compulsory | Weekly hours: 3 | ECTS: 5
Instructors: Fouskas Konstantinos

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

Course Content

Assessment

Course Bibliography
(One of the following):
Τζωρτζάκης, Κώστας Μ. και Αλεξία Τζωρτζάκη. Οργάνωση & διοίκηση: το μάνατζμεντ της νέας εποχής. 4η έκδοση. Αθήνα: Rosili, 2008.

Additional material
OBJECT- ORIENTED PROGRAMMING (ΠΛ0401)

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

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

Course Content

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

Course Bibliography
(One of the following):

Additional material
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.

ASSESSMENT

COURSE BIBLIOGRAPHY
(One of the following):
Κουτρουβέλης, Ιωάννης. Εφαρμοσμένες Πιθανότητες και Στατιστική. 2η έκδοση. Πάτρα: Gotsis, 2015.

ADDITIONAL MATERIAL
WEB TECHNOLOGIES (ΔΤ2703)

Coordinator: Kaskalis Theodorus
Semester: 3rd (Winter) | Orientation: TM | Compulsory | Weekly hours: 3 | ECTS: 5
Instructors: Kaskalis Theodoros

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

Course Content

Assessment

Course Bibliography
(One of the following):
Lemay, Laura και Rafe Colburn. Πλήρες Εγχειρίδιο της HTML 5 & CSS. Αθήνα: Μ. Γκιούρδας, 2011.

Additional material
COMPUTER GRAPHICS AND VIRTUAL REALITY (ΠΛ0419)

Coordinator: Manitsaris Athanasios

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

Instructors: Manitsaris Athanasios

General Competences

Course Content

Assessment
Written examination 100%

Course Bibliography
(One of the following):
Θεοχάρης, Θ. Α. Γραφικά και οπτικοποίηση : αρχές και αλγόριθμοι. Αθήνα : Συμμετρία, 2010

Additional material
Instructor’s Notes and Slides
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
DBMS Architecture
Storing Data: Disks and Files
File Structures and Indexes
Tree Indexes
Hash-based Indexes
External Sorting
Relational Operators
Query Optimization
Transaction Management/Concurrency Control
Recovery
DBMS Connectivity- PHP and MySQL

Assessment
Written Final examination 80%
Coursework 20%

Course Bibliography
(One of the following):
Elmasri, Ramez; Navathe, Sham. Θεμελιώδεις αρχές συστημάτων βάσεων δεδομένων. Αθήνα : Δίαυλος, c2012.
Silberschatz, Abraham; Korth, Henry F; Sudarshan, S. Συστήματα βάσεων δεδομένων. Αθήνα : Μ. Γκιούρδας, 2011.

Additional material
Instructor’s Notes and Slides
ENGLISH IV (ΞΓ0104)

Coordinator: Kantaridou Zoe
Semester: 4th (Spring) | Orientation: AI | Foreign Language | Weekly hours: 4 | ECTS: 5
Instructors: Kantaridou Zoe

General Competences
Oral presentations in English The course familiarizes students with the skills needed to prepare and deliver an oral presentation in English whether in the academic or work environment. Potential causes of speech apprehension (stage fright) are discussed and analysed. Model speeches are analysed and introductory/ concluding and techniques for attracting the audience attention are practiced.

Course Content

Assessment

Course Bibliography
(One of the following):
Mahili, Ifigenia. Public Speaking for University Students, 2η Έκδοση, Θεσσαλονίκη: Εκδόσεις Ανικούλα, 2015
Diamantis, Gabriel V. English for academic discussion classes. Αθήνα: Εκδόσεις Σταμούλη, 2008.

Additional material
LINEAR AND NETWORK PROGRAMMING (ΠΛ0313-2)

Coordinator: Samaras Nikolaos
Semester: 4th (Spring) | Orientation: AI | Compulsory | Weekly hours: 3 | ECTS: 5
Instructors: Samaras Nikolaos, Sifaleras Angelo

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

Course Content

Assessment
Written final examination 100%

Course Bibliography
(One of the following):
Παπαρρίζος, Κωνσταντίνος; Σαμαράς, Νικόλαος; Σιφαλέρας, Άγγελος. Δικτυακή βελτιστοποίηση. Θεσσαλονίκη: Ζυγός, 2009
Οικονόμου, Γιώργος Σ; Γεωργίου, Ανδρέας Κ. Ποσοτική ανάλυση για τη λήψη διοικητικών αποφάσεων. Αθήνα: Εκδόσεις Ε. Μπένου, 2006-2011.
Λουκάκης, Μανόλης. Γραμμικός προγραμματισμός, αριστοποίηση σε δίκτυα. Θεσσαλονίκη: Σοφία, 1994

Additional material
Instructor’s Notes and Slides
MACROECONOMIC MODELS AND POLICIES (ΠΛ0403-2)

Coordinator: Dritsakis Nikolaos
Semester: 4th (Spring) | Orientation: AI | Compulsory | Weekly hours: 3 | ECTS: 5
Instructors: Dritsakis Nikolaos, Dasilas Apostolos

General Competences
This course provides a comprehensive overview of macroeconomics. Students will understand principal macroeconomic concepts and comprehend the function of an open economy in a free market as well as in a gross economy. The aim of this course is to introduce the students with macroeconomic models given their forecasting influence, the exertion of economic policy and also the forecasting of future values in economic variables.

Course Content
1. OF MACROECONOMICS AND NATIONAL ACCOUNTS
   1.1 of Macroeconomics
   1.2 Aims and scope of Macroeconomics Policy
   1.3 Categories of Macroeconomic Variables
   1.4 Circular Flow Model
   1.5 Fundamental Macroeconomic Identities
   1.6 Gross Domestic Product
2. GROSS DOMESTIC PRODUCT (GDP)
   2.1 Definition
   2.2 Nominal, Real, Potential GDP
   2.3 Per capita GDP and Economic Well-Being
   2.4 Approaches used to measure GDP
   2.5 GDP: Expenditures Approach
   2.6 GDP: Income Approach
   2.7 GDP as Added Value
   2.8 Problems when using GDP
3. UNEMPLOYMENT, INFLATION, INTEREST RATES
   3.1 Introduction
   3.2 Unemployment
   3.3 Price level and Deflator
   3.4 Inflation
   3.5 Nominal and Real Interest Rates
   3.6 Consequences of Inflation
   3.7 Labour Productivity and Economic Growth
4. AGGREGATE DEMAND MODEL
   4.1 Aggregate Demand and its contents
   4.2 Consumption
   4.3 Investment
   4.4 Government Expenditure of Goods and Services
   4.5 Aggregate Demand Curve
5. AGGREGATE SUPPLY CURVE
   5.1 Introduction
   5.2 Equilibrium Product and Automatic Mechanism
   5.3 Stagflation
6. EQUILIBRIUM FROM DEMAND SIDE AND THE MULTIPLIER
   Equilibrium from demand side A simple Macroeconomic Model
   Multiplier of autonomous expenditure and autonomous taxes
   Multiplier of balanced budget
   The paradox of thrift
7. PUBLIC POLICY AND PUBLIC DEBT
   Definition and Problems of Public Policy
   Public deficit and debt
   Should the budget be balanced every year
8. MONEY
   Money supply function
   Money demand function
9. KEYNESIANISM AND MONETARISM
   Introduction
   Modern money theory (monetarism)
   Money demand function

Assessment
Written examination 100%

Course Bibliography
(One of the following):
Χατζηνικολάου, Δημήτρης. Εισαγωγή στη μακροοικονομική : με στοιχεία από την ελληνική οικονομία. Ιωάννινα : [χ.ό.], 2011.
Δημέλη, Σοφία Π. Μακροοικονομικά μεγέθη και ανάπτυξη της ελληνικής οικονομίας. Αθήνα : Εκδόσεις ΟΠΑ, 2010.
OPERATING SYSTEMS (ΠΛ0404)

Coordinator: Roumeliotis Manos
Semester: 4th (Spring) | Orientation: AI | Compulsory | Weekly hours: 3 | ECTS: 5
Instructors: Roumeliotis Manos, Souravlas Stavros

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

Course Content

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

Course Bibliography
(One of the following):
Tanenbaum, Andrew S. Σύγχρονα λειτουργικά συστήματα. Αθήνα: Κλειδάριθμος, c2009.

Additional material
Instructor’s website
SOFTWARE ENGINEERING (ΠΛ0613)

Coordinator: Chatzigeorgiou Alexander

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

Instructors: Chatzigeorgiou Alexander

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

Course Content

Assessment
Written examination 65%
Compulsory Group Assignment 35%

Course Bibliography
(One of the following):
Γερογιάννης, Βασίλης Χ; Φιτσιλής, Πάνος. Αντικειμενοστρεφής ανάπτυξη λογισμικού με τη UML. Αθήνα : Κλειδάριθμος, c2006.
Γιακουμάκης, Εμμ. Α; Διαμαντίδης, Νικόλαος Α. Τεχνολογία λογισμικού. Αθήνα : Αθ. Σταμουλής, c2009.

Additional material
DATA ORGANIZATION AND MANAGEMENT (ΔΤ2202)

Coordinator: Koloniari Georgia
Semester: 4th (Spring) | Orientation: TM | Compulsory | Weekly hours: 3 | ECTS: 5
Instructors: Koloniari Georgia

General Competences
The goal of this course is for students to learn the basic techniques for organizing data, as well as corresponding algorithms and languages for the management of this data. At the end of the course, the students should, given a specific application that requires the use of a database, be able to design and implement the application successfully.

Course Content
The course will cover the following topics:
• Review basic data structures (arrays, lists, trees)
• Introduction to Database Management Systems (DBMS)
• Entity-Relationship (ER) Model
• Relational Model
• ER to Relational Schema
• Relational Algebra
• SQL
• Functional Dependencies - Normal Forms
• Data Storage & Organization
• Indexes (tree-based, hashing)

Assessment

Course Bibliography
(One of the following):
Ramakrishnan, Raghu; Gehrke, Johannes. Συστήματα διαχείρισης βάσεων δεδομένων. Θεσσαλονίκη: Εκδόσεις Τζιόλα, c2012.
Elmasri, Ramez; Navathe, Sham. Θεμελιώδεις αρχές συστημάτων βάσεων δεδομένων. Αθήνα: Δίαυλος, c2012

Additional material
DIGITAL TELECOMMUNICATIONS SYSTEMS (ΔΤ2701)

Coordinator: Psannis Konstantinos
Semester: 4th (Spring) | Orientation: TM | Compulsory | Weekly hours: 3 | ECTS: 5
Instructors: Psannis Konstantinos

General Competences

Course Content

Assessment

Course Bibliography
(One of the following):

Additional material
INTERNET TECHNOLOGIES (ΔΤ2702)

Coordinator: Kaskalis Theodoros
Semester: 4th (Spring) | Orientation: TM | Compulsory | Weekly hours: 3 | ECTS: 5
Instructors: Kaskalis Theodoros, Xinogalos Stylianos

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

Course Content

Assessment

Course Bibliography
(One of the following):

Additional material
OPERATING SYSTEMS (ΠΛ0404)

Coordinator: Roumeliotis Manos
Semester: 4th (Spring) | Orientation: TM | Compulsory | Weekly hours: 3 | ECTS: 5
Instructors: Roumeliotis Manos, Souravlas Stavros

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

Course Content

Assessment

Course Bibliography
(One of the following):
Tanenbaum, Andrew S. Σύγχρονα λειτουργικά συστήματα. Αθήνα: Κλειδάριθμος, c2009

Additional material
OPERATIONS RESEARCH (ΔΤ2102)

Coordinator: Sifaleras Angelo
Semester: 4th (Spring) | Orientation: TM | Compulsory | Weekly hours: 3 | ECTS: 5
Instructors: Sifaleras Angelo

General Competences
This course aims to an introduction to the theory and applications of Operational Research (O.R.). Emphasis will be given to linear programming, mathematical modelling, algorithmic solution methodologies, and presentation of modern applications of decision making in the technology sector.

Course Content
The course covers the following topics: Graphical solution procedure of a linear model & special cases, linear programming applications – case studies, optimization software packages (e.g., AMPL, POM-QM for Windows, Excel Solver), the Simplex algorithm, duality theory and economic interpretation, sensitivity analysis. The transportation problem and its applications in practice.

Assessment

Course Bibliography
(One of the following):
Οικονόμου, Γιώργος Σ; Γεωργίου, Ανδρέας Κ. Επιχειρησιακή έρευνα για τη λήψη διοικητικών αποφάσεων. Αθήνα : Εκδόσεις Γ. Μπένου, 2011.

Additional material
PRODUCTION AND OPERATIONS MANAGEMENT (ΔΤ2301)

Coordinator: Stiakakis Emmanuil
Semester: 4th (Spring) | Orientation: TM | Compulsory | 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,
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,

Assessment

Course Bibliography
(One of the following):
Παππής, Κώστας Π. Διοίκηση παραγωγής : ο σχεδιασμός παραγωγικών συστημάτων. 2η Εκδοση. Αθήνα : Εκδόσεις ΑΘ. Σταμούλης, 2008

Additional material
COMPUTER NETWORKS (ΠΛ0503-2)

Coordinator: Fouliras Panayotis
Semester: 5th (Winter) | 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):
Comer, Douglas. Δίκτυα και διαδίκτυα υπολογιστών. 6η Έκδοση. Αθήνα : Κλειδάριθμος, c2014
Tanenbaum, Andrew S; Wetherall, David. Δίκτυα υπολογιστών. 5η Έκδοση. Αθήνα : Κλειδάριθμος, c2011

Additional material

Academic Year 2015-2016
COMPUTERIZED ACCOUNTING (ΠΛ0803)

Coordinator: Vazakidis Athanasios
Semester: 5th (Winter) | Orientation: AI | Compulsory | Weekly hours: 3 | ECTS: 5
Instructors: Vazakidis Athanasios, Stavropoulos Antonios

General Competences
This course is aiming to:

Enable students aware of the general accepted accounting principles (G.A.A.P.).
Enable students aware of the content and the way by which Greek General Chart of Accounts is operating (classes of accounts 1-8).
Enable students capable of posting entries in accounting books by using computers’ software.
Enable students aware of posting entries in relation to the opening and closing of the accounting books.
Enable students capable for the accounting treatment of individuals and business entities using the Greek Centre of Informational and Economics Affairs, the VAT, and the Greek Social Insurance Organization.
Enable students capable of reporting the basic financial statements such as the balance sheet and the income statement.

Content
Greek general accepted accounting principles and accounting standardization. Description and analysis of the Greek general chart of accounts using the eight classes (1st - 8th classes) of accounts classification. Understanding and using accounts such as: customers, vendors, creditors, accounts receivables, purchases and expenditures. Recognition of the existence of accounting errors in relation to the accounting doctrines and the results recorded in other accounts. Correct accounting errors, balancing their effects not only in the balance sheet but also in income statement, using counterbalancing and non counterbalancing approaches. Realization of concepts regarding tax subjects such as: direct and indirect taxes, tax bracket and gradual tax, value added tax (VAT) and its treatment in relation to the Greek legislation and general accepted accounting principles. Understanding and use of concepts related to insurance charges of employers and employees. Connection with Greek taxes net and accomplishment tax accounting tasks. Accounting 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):
Βαζακίδης, Αθανάσιος Π; Σταυρόπουλος, Αντώνιος Α; Χατζής, Αναστάσιος. Λογιστικό σχέδιο, μηχανογράφηση λογιστηρίου. Θεσσαλονίκη : [χ.ό.], 2010.
Γκινογλου, Δημήτρης; Ταχυνάκης, Παναγιώτης; Πρωτόγερος, Νικόλαος. Λογιστικά πληροφοριακά συστήματα : μηχανονοματική λογιστική. Κέρακας : Rosili, c2004.

Additional material
Instructor’s notes and slides
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): 
Δριτσάκη, Χάιδω Ν; Δριτσάκη, Μελίνα Ν. Εισαγωγή στην οικονομετρία : με τη χρήση του λογισμικού EViews. Αθήνα : Κλειδάρθμος, c2013.

Additional material
MARKETING INFORMATION SYSTEMS (ΠΛ0114)

Coordinator: Vlachopoulou Maro
Semester: 5th (Winter) | Orientation: AI | Compulsory | Weekly hours: 3 | ECTS: 5
Instructors: Vlachopoulou Maro

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

Course Content

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

Course Bibliography
(One of the following):
Δουκίδης, Γεώργιος Ι. Καινοτομία, στρατηγική, ανάπτυξη και πληροφοριακά συστήματα. Αθήνα : Ι. Σιδέρης, 2011.

Additional material
Instructor’s website
(Students will access literature references and all other course materials online)
MULTIMEDIA TECHNOLOGIES AND COMMUNICATIONS (ΠΛ0520)

Coordinator: Manitsaris Athanasios
Semester: 5th (Winter) | Orientation: AI | Compulsory | Weekly hours: 3 | ECTS: 5
Instructors: Manitsaris Athanasios

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):
Ξυλωμένος, Γεώργιος Β; Πολύζος, Γεώργιος Κ. Τεχνολογία πολυμέσων και πολυμεσικές επικοινωνίες. Αθήνα : Κλειδάριθμος, c2009.
Δημητριάδης, Σταύρος Ν; Πομπόρτσης, Ανδρέας Σ; Τριανταφύλλου, Ευάγγελος Γ. Τεχνολογία πολυμέσων : θεωρία και πράξη. Θεσσαλονίκη : Εκδόσεις Τζιόλα, c2004.

Additional material
Slides
E-COMMERCE TECHNOLOGY (ΠΛ0521)

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

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

Course Content

Assessment
Written final examination 80%
Optional coursework 20%

Course Bibliography
(One of the following):
Laudon, Kenneth C; Traver, Carol Guercio; Γκανζιάς, Γιώργος Κ. Ηλεκτρονικό εμπόριο 2014 : επιχειρήσεις, τεχνολογία, κοινωνία. 10η Έκδοση. Αθήνα : Παπασωτηρίου, 2014
Ince, Darrel; Μαργαρίτης, Κωνσταντίνος Γ. Κατανεμημένες εφαρμογές και ηλεκτρονικό εμπόριο. Θεσσαλονίκη : Εκδόσεις Πανεπιστημίου Μακεδονίας, c2007.

Additional material
Instructor’s notes and slides.
Instructor’s website.
BUSINESS POLICY AND STRATEGY (ΔΤ3301)

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):
Johnson, Gerry; Scholes, Kevan; Whittington, Richard. Βασικές αρχές στρατηγικής των επιχειρήσεων. Αθήνα : Κριτική, 2011.
Μιχαλόπουλος, Μιχάλης; Γρηγορούδης, Βαγγέλης; Ζοπουνίδης, Κωνσταντίνος. Στρατηγική των επιχειρήσεων. Αθήνα : Κλειδάρθμος, c2007.
Σιώμκος, Ι. Γιώργιος. Στρατηγικό μάρκετινγκ. Λιβάνη 2015.
Θερίου, Νικόλαος. Στρατηγική διοίκηση επιχειρήσεων. 3η Έκδοση. Αθήνα : Κριτική, 2014.
Παπαδάκης, Βασίλης Μ. Στρατηγική των επιχειρήσεων : ελληνική και διεθνής εμπειρία. 4η Έκδοση. Αθήνα : Εκδόσεις Ε. Μπένου, 2011.

Additional material

Academic Year 2015-2016 Course Orientation TM
DESIGN AND PRODUCTION TECHNOLOGIES (ΔΤ3502)

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

General Competences

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

Course Bibliography
(One of the following):
Μπιλάλης, Νικόλαος; Μαραβελάκης, Εμμανουήλ. Συστήματα CAD/CAM και τρισδιάστατη μοντελοποίηση. 2η Έκδοση. Αθήνα : Κριτική, 2014.

Additional material
DISTRIBUTED SYSTEMS (ΔΤ3601)

Coordinator: Margaritis Konstantinos
Semester: 5th (Winter) | Orientation: TM | Compulsory | Weekly hours: 3 | ECTS: 5
Instructors: Margaritis Konstantinos

General Competences

Course Content
Assessment
Written final examination 70%
coursework 30%

Course Bibliography
(One of the following):
Κάβουρας, Ι. Κ.; Μήλης, Ι.Ζ.; Ρουκουνάκη, Α.Α. Κατανεμημένα Συστήματα με Java. 3η Έκδοση. Αθήνα: Κλειδάριθμος, 2011.
Tanenbaum, Andrew S; Steen, Maarten van. Κατανεμημένα συστήματα : αρχές και υποδείγματα. Αθήνα : Κλειδάριθμος, 2006.

Additional material
Instructor’s website
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):
Δριτσάκη, Χάιδω Ν; Δριτσάκη, Μελίνα Ν. Εισαγωγή στην οικονομετρία : με τη χρήση του λογισμικού Eviews. Αθήνα : Κλειδάριθμος, c2013.

Additional material
INFORMATION SYSTEMS ANALYSIS AND DESIGN (ΔΤ3501)

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

General Competences
Life cycle software development models (waterfall model, phased model, prototype etc), requirement specification, object-oriented analysis and software design using UML language (use case diagrams, activity diagrams, class diagrams, deployment diagrams etc).

Course Content

Assessment
Written final examination 70%
coursework 30%

Course Bibliography
(One of the following):
Dennis, Alan; Wixom, Barbara Haley; Tegarden, David Paul. Ανάλυση και σχεδιασμός συστημάτων με τη UML 2.0 : μια αντικειμενοστρεφής προσέγγιση. 3η Έκδοση. Αθήνα : Κλειδάριθμος, c2010.
Γερογιάννης, Βασίλης Χ; Φιτσιλής, Πάνος. Αντικειμενοστρεφής ανάπτυξη λογισμικού με τη UML. Αθήνα : Κλειδάριθμος, c2006.

Additional material
NETWORK AND INTERNET APPLICATIONS SECURITY (ΠΛ0825)

Coordinator: Mavridis Ioannis

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

Instructors: Mavridis Ioannis

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

Course Content
Basic concepts (Network and Internet security issues, Types of attacks and countermeasures, Comparison of security technologies)
Introduction to Cryptography (Terminology, Types of cryptographic systems and features of their components, Key-stream generators)
Classic Cryptographic Algorithms and Cryptanalysis (Caesar, Vigenere, One Time Pad / Vernam, ROT13, Transposition algorithms, Substitution algorithms, Application examples with CRYPTOOL)
Modern Symmetric Cryptographic Algorithms and Cryptanalysis (DES, 3-DES, AES, IDEA, RC2, RC4, etc, Modes of Operation (ECB, CBC, OFB, CFB), Application examples with CRYPTOOL)
Modern Asymmetric Cryptographic Algorithms and Cryptanalysis (Diffie-Hellman, ECDH, RSA, ECC, Application examples with CRYPTOOL)
Integrity Mechanisms (CBC-MAC, HMAC, OWHF, CRHF, MDS, 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):
Πάγκαλος, Γεώργιος; Μαυρίδης, Ι. (Ιωάννης). Ασφάλεια πληροφοριακών συστημάτων και δικτύων. Θεσσαλονίκη : Ανικούλα, c2002.
Γκρίτζαλης, Στέφανος; Κάτσικας, Σωκράτης Κ; Γκρίτζαλης, Δημήτρης. Ασφάλεια δικτύων υπολογιστών : τεχνολογίες και υπηρεσίες σε περιβάλλοντα ηλεκτρονικού επιχειρείν και ηλεκτρονικής διακυβέρνησης. Αθήνα : Παπασωτηρίου, 2003.

Additional material
Instructor’s notes and slides
ARTIFICIAL INTELLIGENCE (ΠΛ0701)

Coordinator: Refanidis Ioannis
Semester: 6th (Spring) | Orientation: AI | Compulsory | Weekly hours: 3 | ECTS: 5
Instructors: Refanidis Ioannis, Sakellariou Ilias

General Competences
To be able to: (a) model search problems and use suitable search algorithms to solve them; (b) represent knowledge and reason over it; (c) model and solve planning problems.

Course Content
Intelligent agents.
Search algorithms. Blind search and informed search.
Planning. STRIPS representation. Progression and Regression. Partial order planning. Temporal planning and planning with resources.

Assessment
Written examination 80%
Optional coursework 20%

Course Bibliography
(One of the following):
Russell, Stuart J. (Stuart Jonathan); Norvig, Peter; Canny, John. Τεχνητή νοημοσύνη: μια σύγχρονη προσέγγιση. Αθήνα : Εκδόσεις Νέων Τεχνολογιών, 2005.
Βλαχάβας, Ιωάννης Π. Τεχνητή νοημοσύνη. Θεσσαλονίκη : Εκδόσεις Πανεπιστημίου Μακεδονίας, 2011.

Additional material
Instructor’s notes and slides
DECISION SUPPORT SYSTEMS (ΠΛ0805-1)

Coordinator: Hristou - Varsakelis Dimitrios
Semester: 6th (Spring) | Orientation: AI | Compulsory | Weekly hours: 3 | ECTS: 5
Instructors: Hristou - Varsakelis Dimitrios

General Competences
The course aims to a) expose the basic features of a decision support system (DSS) and b) show students how to formulate small-scale decision support models that could serve as the “core” of a DSS. We will discuss various techniques and tools from applied mathematics and optimization in order to solve a series of practical decision problems.

Course Content
Introduction to Decision Support Systems (DSS) – structure of DSS
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%
coursework 30%

Course Bibliography
(One of the following):
Φράγκος, Χρήστος Κ. Εισαγωγή στην επιχειρησιακή έρευνα : λήψη αποφάσεων με εφαρμογή μαθηματικών μοντέλων. Αθήνα : Σταμούλης, c2006.

Additional material
Instructor’s notes
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):
Χάλκος, Γεώργιος Εμμ. Οικονομετρία. Αθήνα : Gutenberg, c2011.

Additional material
INFORMATION AND SYSTEMS SECURITY (ΠΛ0713-2)

Coordinator: Mavridis Ioannis
Semester: 6th (Spring) | Orientation: AI | Compulsory | Weekly hours: 3 | ECTS: 5
Instructors: Mavridis Ioannis

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

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

Assessment
Written final examination 100%
Optional coursework 30%

Course Bibliography
(One of the following):
Πάγκαλος, Γεώργιος; Μαυρίδης, Ι. (Ιωάννης). Ασφάλεια πληροφοριακών συστημάτων και δικτύων .Θεσσαλονίκη : Ανικούλα, c2002
Κάτσικας, Σωκράτης Κ; Γκρίτζαλης, Δημήτρης; Γκρίτζαλης, Στέφανος. Ασφάλεια πληροφοριακών συστημάτων. Αθήνα : Εκδόσεις Νέων Τεχνολογιών, c2004.

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.

Content
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 examination 100%

Course Bibliography
(One of the following):
Χριστοδούλου, Κωνσταντίνος Ν. Δίκαιο προσωπικών δεδομένων. Αθήνα : Νομική Βιβλιοθήκη, [2013].

Additional material
EMBEDDED SYSTEMS (ΔΤ3602)

Coordinator: Kaskalis Theodoros
Semester: 6th (Spring) | Orientation: TM | Compulsory | Weekly hours: 3 | ECTS: 5
Instructors: Kaskalis Theodoros

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

Course Content

Assessment
Written final examination
Coursework

Course Bibliography
(One of the following):
Ashenden, Peter J; Ψαράκης, Μ. (Μιχαήλ); Κρανίτης, Ν. (Νεκτάριος); Γκιζόπουλος, Δημήτρης. Ψηφιακή σχεδίαση : ενσωματωμένα συστήματα με VHDL. Εκδόσεις Νέων Τεχνολογιών, c2010.
Wolf, Wayne; Βώρος, Νικόλαος Σπ; Κριθαρίδης, Δημήτρης Σ; Μασσέλος, Κωνσταντίνος Γ. Οι υπολογιστές ως συστατικά στοιχεία : αρχές σχεδίασης ενσωματωμένων υπολογιστικών συστημάτων. Αθήνα : Εκδόσεις Νέων Τεχνολογιών, c2008.

Additional material
ENTERPRISE ARCHITECTURES (ΔΤ3503)

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

General Competences

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

Assessment

Course Bibliography
(One of the following):

Additional material
MOBILE AND WIRELESS COMMUNICATIONS SYSTEMS (ΔΤ3702)

Coordinator: Psannis Konstantinos  
Semester: 6th (Spring) | Orientation: TM | Compulsory | Weekly hours: 3 | ECTS: 5  
Instructors: Psannis Konstantinos, Petridou Sofia

General Competences

Course Content

Assessment

Course Bibliography
(One of the following):
Θεολόγου, Μιχαήλ Ε. Δίκτυα κινητών και προσωπικών επικοινωνιών. Θεσσαλονίκη: Εκδόσεις Τζιόλα, c2010.

Additional material
QUALITY ASSURANCE AND QUALITY CONTROL TECHNIQUES (ΔΤ3302)

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 students are presented with some simple and other more developed quality control techniques for products or processes, which can be applied in any type of factory. During this course students get in touch with industries through case studies and exercises of the real world. Finally, students become familiar with the relevant software.

Course Content

Assessment
Written final examination 70%
Coursework 30%

Course Bibliography
(One of the following):
Παπαργύρης, Αθανάσιος; Παπαργύρης, Δημήτριος. Ποιοτικός έλεγχος παραγωγής . Θεσσαλονίκη : Εκδόσεις Ζήτη, c2010.

Additional material
SUPPLY CHAIN MANAGEMENT (ΔΤ3303)

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 50%
Coursework 50%

Course Bibliography
(One of the following):
Chopra, Sunil; Meindl, Peter. Διοίκηση εφοδιαστικής αλυσίδας: στρατηγική, προγραμματισμός και λειτουργία. Θεσσαλονίκη: Εκδόσεις Τζιόλα, c2014.
Harrison, Alan; Hoek, Remko I. van; Γιαννακόπουλος, Διονύσης; Μοσχούρης, Σωκράτης. Logistics μάνατζμεντ & στρατηγική: ανταγωνιστικό πλεονέκτημα μέσω της αλυσίδας εφοδιασμού. [Αθήνα]: Rosili, c2013.

Additional material
SYSTEMS DEVELOPMENT TECHNOLOGY (ΔΤ3504)

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):
Γιακουμάκης, Εμμ. Α; Διαμαντίδης, Νικόλαος Α. Τεχνολογία λογισμικού. Αθήνα: Αθ. Σταμούλης, c2009.

Additional material
BUSINESS INNOVATION AND PRODUCTIVITY (ΠΛ0611-3)

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

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

Content
Introduction 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):
Δουκίδης, Γεώργιος Ι. Καινοτομία, στρατηγική, ανάπτυξη και πληροφοριακά συστήματα. Αθήνα: Ι. Σιδέρης, 2011.
White, Margaret A. (Margaret Alice); Bruton, Garry D; Καλογήρου, Γιάννης; Πρωτόγερου, Αιμιλία; Κωνσταντέλου, Αναστασία. Η στρατηγική διαχείριση της τεχνολογίας και της καινοτομίας. Αθήνα: Κριτική, 2010.
Σαλαβού, Ελένη Ε. Καινοτομία και αλλαγή στο "επιχειρείν". [Αθήνα]: Rosili, 2013.

Additional material
Καραγιάννης, Η. Καινοτομία & Επιχειρηματικότητα: Θεωρία & πράξη, Αθήνα: Σοφία Α.Ε., 2010
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.

Content

Course Content
Assessment
Final examination 100%.
Optional coursework up to 30%

Course Bibliography
(One of the following):
Lewis, Harry R; Papadimitriou, Christos H; Σιδέρη, Μάρθα. Στοιχεία θεωρίας υπολογισμού. Αθήνα : Εκδόσεις Κριτική, 2005.

Additional material
CRYPTOGRAPHY (ΠΛ0618)

Coordinator: Stephanides George
Semester: 7th (Winter) | Orientation: AI | Elective | Weekly hours: 3 | ECTS: 5
Instructors: Stephanides George

General Competences
Introduction to modern cryptology.

Course Content

Assessment
Coursework - Oral examination

Course Bibliography
(One of the following):

Additional material
EDUCATIONAL PROGRAMMING ENVIRONMENTS AND LANGUAGES (ΠΛ0726)

Coordinator: Satratzemi Maria

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

Instructors: Satratzemi Maria

General Competences

The aim of the course is to present the necessity for the development of systems and methodologies for the support of learning and teaching of programming, and particularly the two prevailing programming examples: procedural and object-oriented. Content synopsis of difficulties, errors and erroneous perceptions/misapprehensions of students in introductory programming courses. Instructive situations to overcome the difficulties of novice programmers. Classification of various approaches of teaching programming and the educational tools that have been developed in the frame of each approach. Educational programming environments and micro-languages: Bluej, DrJava, JEROO, JGRASP, Karel the Robot, objectkarel, Alice, scratch- a programming language for all. Educational robotics, LegoMindstorms and programming language and environments

Course Content

Assessment
An Essay (a literature review and empirical research paper).
A Case study (presentation and writing)

Course Bibliography

Σατρατζέμη, Μαρία. Εκπαιδευτικά Προγραμματιστικά Περιβάλλοντα και Γλώσσες. Σημειώσεις.

Additional material
GAME THEORY (ΠΛ0722)

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

General Competences

Course Content

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

Course Bibliography
(One of the following):
Osborne, Martin J. Εισαγωγή στη θεωρία παιγνίων. Αθήνα: Κλειδάριθμος, c2010.

Additional material
Instructor’s notes and slides
INTERNATIONAL ECONOMICS (ΠΛ0309-2)

Coordinator: Katsouli-Katou Helen
Semester: 7th (Winter) | 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 International Economics
(b) Identify the main theories of International Economics
(c) Apply the methodologies of International Economics on real cases
(d) Use the tools of International Economics in decision-making

Content
- International economic exchange (theories and empirical foundations of international trade and factor movements, public barriers to trade and protection, developing the institutional framework of international trade, international enterprises)
- Trade and developing countries
- International monetary relationships (currency market, determination of exchange rate, balance of payments, adjustment mechanisms of the balance of payments, international monetary system)
- Current international economic problems

Course Content

Assessment
Written final examination 100%
Optional coursework

Course Bibliography
(One of the following):
Αγιομυργιανάκης, Γ. Μ. (Γιώργος Μ.); Vlassis, Minas; Thompson, Henry. Διεθνείς οικονομικές σχέσεις : διεθνείς εμπόριο. Αθήνα : Rosili, c2006.

Additional material
INTERNET LAW (ΠΛ0725)

Coordinator: Alexandropoulou Evgenia
Semester: 7th (Winter) | Orientation: AI | Elective | Weekly hours: 3 | ECTS: 5
Instructors: Alexandropoulou Evgenia

General Competences
The lesson aims to familiarize students with the basic legal framework related to the Internet. It concerns the rights and obligations of Internet users, the enforcement of legal sanctions in the case of infringement of this, as well as the role of the Internet as a means of communication.

Content
The content concentrates on: the basic legal framework related to e-communications and more specifically to the Internet; the confidentiality of e-communications; personal data protection in e-communications; legal issues concerning blogs and social networks; domain names; copyright and the Internet; e-crime.

Course Content

Assessment
Written final examination.
Optional coursework.

Course Bibliography
(One of the following):
Σιδηρόπουλος, Θεόδωρος Κ. Το δίκαιο του διαδικτύου. Εκδόσεις Σάκκουλα, 2008.

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):
Chopra, Sunil; Meindl, Peter. Διοίκηση εφοδιαστικής αλυσίδας : στρατηγική, προγραμματισμός και λειτουργία. Θεσσαλονίκη : Εκδόσεις Τζιόλα, c2015.
Βιδάλης, Μιχάλης. Εφοδιαστική (logistics) : μια ποσοτική προσέγγιση. Αθήνα : Κλειδάριθμος, c2009.
Μαρινάκης, Ιωάννης; Μυγδαλάς, Αθανάσιος. Σχεδιασμός και βελτιστοποίηση της εφοδιαστικής αλυσίδας. Θεσσαλονίκη : Εκδόσεις Σοφία, c2012.

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

Content
Basic concepts (Network and Internet security issues, Types of attacks and countermeasures, Comparison of security technologies)
Introduction to Crypology (Terminology, Types of cryptographic systems and features of its 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):
Πάγκαλος, Γεώργιος; Μαυρίδης, Ι. (Ιωάννης). Ασφάλεια πληροφοριακών συστημάτων και δικτύων. Θεσσαλονίκη : Ανίκουλας, c2002.
Γκρίτζαλης, Στέφανος; Κάτσικας, Σωκράτης Κ; Γκρίτζαλης, Δημήτρης. Ασφάλεια δικτύων υπολογιστών : τεχνολογίες και υπηρεσίες σε περιβάλλοντα ηλεκτρονικού επιχειρείν και ηλεκτρονικής διακυβέρνησης. Αθήνα : Παπασωτηρίου, 2003.

Additional material
OPERATIONS RESEARCH (ΠΛ0814-1)

Coordinator: Hristou - Varsakelis Dimitrios
Semester: 7th (Winter) | Orientation: AI | Elective | Weekly hours: 3 | ECTS: 5
Instructors: Hristou - Varsakelis Dimitrios

General Competences
To (a) understand some of the fundamental principles and theory which concern important classes of optimization problems, and (b) gain the ability to formulate and solve optimization problems using analytical and computational techniques.

Course Content
Linear vector spacesOptimizing functions of a vector variableOptimization with equality constraints - Langrange multipliersOptimization with inequality constraints - Karush-Kuhn-Tucker theoremInteger programming - Branch & Bound methodComputational OptimizationDiscrete-time dynamical systems - Dynamic Programming

Assessment
Midterm tests 30%
Written final examination 70%

Course Bibliography
(One of the following):

Additional material
PARALLEL PROCESSING (ΠΛ0705-1)

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

General Competences
Students must be able to: a) design simple parallel algorithms and transform them to programs using a parallel programming language b) use parallel programming environments, debugging and performance evaluation methods. c) understand the differences and similarities of the two basic parallel programming models, that is shared and distributed memory architectures. Programming in OpenMP and MPI, using Eclipse PTP for visualization and performance evaluation.

Course Content

Assessment
Midterm tests 50%
Courswork and oral examination 50%

Course Bibliography
(One of the following):
Μάργαρης, Αθανάσιος Ι. MPI θεωρία & εφαρμογές. Θεσσαλονίκη : Τζιόλας, c2008.
Πάντζιου, Γραμματή; Μάμαλης, Βασίλειος; Τομαράς, Αλέξανδρος Χρ. Εισαγωγή στον Παράλληλο Υπολογισμό. Αθήνα : Εκδόσεις Νέων Τεχνολογιών, c2003.

Additional material
SPECIAL SUBJECTS IN ACCOUNTING (ΠΛ0510)

Coordinator: Vazakidis Athanasios
Semester: 7th (Winter) | Orientation: AI | Elective | Weekly hours: 3 | ECTS: 5
Instructors: Vazakidis Athanasios, Stavropoulos Antonios

General Competences
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.

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

Course Content

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

Course Bibliography
(One of the following):
Карагианнис, Иоаннис Δ; Караигианнη, Αικατερίνη Δ; Καραγιάννης, Δημήτρης Ι. Εργατικά, μισθοδοσίες, ασφαλιστικά : παραδείγματα-δηλώσεις : στην πράξη. Θεσσαλονίκη : [χ.ό.], 2014.

Additional material
ADVANCED INFORMATION SYSTEMS (ΔΤ4504)

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

General Competences
In this course advanced technologies and applications are presented along with their influence in modern organizations. Lecturing is based on understanding state-of-the-art technologies along with their adoption by modern organizations as well as investigating relevant organizational change from this adoption. The technologies under investigation will be based on current technological progress and may include amongst others Web 2.0, Web 3.0, Semantic Web etc. Workshops will be based on relevant open source platforms and case studies.

Course Content

Assessment
Written final examination 50%
Coursework 50%

Course Bibliography
(One of the following):
Βακάλη, Αθηνά; Παπαμήτσιου, Ζαχαρούλα. Πληροφοριακά Συστήματα Παγκόσμιου Ιστού. Αθήνα : Εκδόσεις Νέων Τεχνολογιών, 2012.
Avison, D. E; Fitzgerald, G. (Guy); Βώρος, Νικόλαος Σπ. Προηγμένα πληροφοριακά συστήματα : από τη θεωρία στην πράξη. Αθήνα : Εκδόσεις Νέων Τεχνολογιών, c2006.

Additional material
BUSINESS MODELLING (ΔΤ4502)

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):
Γιαγλής, Γεώργιος Μ; Καραγιαννάκη, Αγγελική. Ποσοτική και ποιοτική μοντελοποίηση επιχειρηματικών διαδικασιών . Αθήνα : Εκδόσεις ΟΠΑ, c2012.

Additional material
COMBINATORIAL OPTIMIZATION (ΔΤ4302)

Coordinator: Sifaleras Angelo
Semester: 7th (Winter) | Orientation: TM | Elective | Weekly hours: 3 | ECTS: 5
Instructors: Sifaleras Angelo

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):
Παπαρρίζος, Κωνσταντίνος; Σαμαράς, Νικόλαος; Σιφαλέρας, Άγγελος. Δικτυακή βελτιστοποίηση. Θεσσαλονίκη: Ζυγός, 2009.
Μηλιώτης, Παναγιώτης Α; Μούρτος, Ιωάννης. Διακριτή βελτιστοποίηση. Αθήνα: Εκδόσεις ΟΠΑ, c2012.

Additional material
COMPUTERIZED ACCOUNTING (ΠΛ0803)

Coordinator: Vazakidis Athanasios
Semester: 7th (Winter) | Orientation: TM | Elective | Weekly hours: 3 | ECTS: 5
Instructors: Vazakidis Athanasios, Stavropoulos Antonios

General Competences

Course Content

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

Course Bibliography
(One of the following):
Βαζακίδης, Αθανάσιος Π; Σταυρόπουλος, Αντώνιος Α; Χατζής, Αναστάσιος. Λογιστικό σχέδιο, μηχανογράφηση λογιστηρίου. Θεσσαλονίκη : [χ.ό.], 2010.
Γκίνογλου, Δημήτρης; Ταχυνάκης, Παναγιώτης; Πρωτόγερος, Νικόλαος. Λογιστικά πληροφοριακά συστήματα : μηχανογραφημένη λογιστική. Γέρακας : Rosili, c2004.

Additional material
CONVERGENCE OF COMMUNICATION SYSTEMS (ΔΤ4702)

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

General Competences
Students are familiarized with the communication systems convergence: telecommunications and mass media convergence, the convergence of communications networks and value-added services, convergence of information and communication technologies, next-generation access networks convergence, the convergence of business models and high-speed networks, the challenges for enterprises in convergence of communication systems, TV-Computers-Networks convergence. Furthermore the new regulatory challenges, the pricing of new services, the impact of the new regulatory framework of the EU to the new network infrastructure and services, the effects on consumers, several examples of beneficial use of next-generation access networks, the impact of communication systems convergence in corporate strategy and governance systems will be presented in details. In the laboratory we will develop dynamic programming algorithms for efficient data transmission in convergent telecommunications systems. Also during the theoretical course special emphasis will be given in R&D projects in the area of communications systems convergence.

Course Content

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

Course Bibliography
(One of the following):
Βασιλόπουλος, Χρήστος. Δίκτυα πρόσβασης νέας γενιάς. Αθήνα: Κλειδάριθμος, c2010.

Additional material
DECISION MAKING MODELS (ΔΤ4303)

Coordinator: Sifaleras Angelo
Semester: 7th (Winter) | Orientation: TM | Elective | Weekly hours: 3 | ECTS: 5
Instructors: Sifaleras Angelo

General Competences
Introduction to problem solving and decision making in complex business problems, through the methodology of management science. The understanding of the decision models under risk and uncertainty, and their applications in technology management – case studies. Decision theory & criteria, expected value of perfect information, utility theory, decision trees & sensitivity analysis, introduction to game theory, performance measurement using data envelopment analysis (DEA). The student, apart from the methodology in each section, will learn how to use state-of-the-art software packages (e.g., Palisade DecisionTools Suite, DEA Solver).

Course Content
Assessment
Written final examination

Course Bibliography
(One of the following):
Μηλολιδάκης, Κωστής. Θεωρία παιγνίων : μαθηματικά μοντέλα σύγκρουσης και συνεργασίας. Θεσσαλονίκη : Εκδόσεις Σοφία, c2009.

Additional material
DIGITAL MEDIA COMMUNICATION SYSTEMS (ΠΛ0731)

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

General Competences

Course Content

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

Course Bibliography
(One of the following):
Ξυλωμένος, Γεώργιος Β; Πολύζος, Γεώργιος Κ. Τεχνολογία πολυμέσων και πολυμεσικές επικοινωνίες. Αθήνα : Κλειδάριθμος, c2009.

Additional material
DIGITAL SYSTEMS’ DESIGN AND PROGRAMMING (ΔΤ4601)

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

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

Course Content

Assessment
Midterm tests, final coursework, final examination

Course Bibliography
(One of the following):
Χατζηγκάιδας, Αθανάσιος Θ; Κουτσινού, Μαρία. Ηλεκτρονική σχεδίαση-κατασκευή & προσομοίωση τυπωμένων κυκλωμάτων. Τρίλοφος, Θεσσαλονίκη : Εκδόσεις Grapholine, c2011.

Additional material
ENTREPRENEURSHIP AND TECHNOLOGY INNOVATION (ΔΤ4404)

Coordinator: Fouskas Konstantinos  
Semester: 7th (Winter) | Orientation: TM | Compulsory | 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 60%  
Compulsory assignment/lab tests 40%

Course Bibliography
(One of the following):
Καραγιάννης, Η. Γ. (Ηλίας Γ.); Μπακούρος, Ιωάννης. Καινοτομία και επιχειρηματικότητα : θεωρία, πράξη. Θεσσαλονίκη : Σοφία, 2010.

Additional material
INNOVATIVE SERVICE AND PRODUCT DEVELOPMENT (ΔΤ4401)

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

General Competences
The importance of new products and services, organization for new products and services, parallel 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):

Κίτσιος, Φώτης Χ; Ζοπουνίδης, Κωνσταντίνος. Ανάπτυξη νέων υπηρεσιών : τουρισμός, υγεία, επιχειρηματικότητα, καινοτομία. Αθήνα : Κλειδάριθμος, c2008.

Αυλωνίτης, Γεώργιος Ι; Παπασταθοπούλου, Πολίνα. Αποτελεσματική διοίκηση χαρτοφυλακίου προϊόντων και υπηρεσιών . Αθήνα : Αθ. Σταμούλης, c2004.

Σιώμκος, Γεώργιος Ι; Τσιάμης, Ιωάννης Σ. Στρατηγικό μάρκετινγκ προϊόντων υψηλής τεχνολογίας. Αθήνα : Εκδόσεις Αθ. Σταμούλης, c2012.


Additional material
INTERNET LAW (ΠΛ0725)

Coordinator: Alexandropoulou Evgenia
Semester: 7th (Winter) | Orientation: TM | Elective | Weekly hours: 3 | ECTS: 5
Instructors: Alexandropoulou Evgenia

General Competences
The lesson aims to familiarize students with the basic legal framework related to the Internet. It concerns the rights and obligations of Internet users, the enforcement of legal sanctions in the case of infringement of this, as well as the role of the Internet as a means of communication.

Content
The content concentrates on: the basic legal framework related to e-communications and more specifically to the Internet; the confidentiality of e-communications; personal data protection in e-communications; legal issues concerning blogs and social networks; domain names; copyright and the Internet; e-crime.

Course Content
Assessment
Final examination.
Optional coursework

Course Bibliography
(One of the following):
Σιδηρόπουλος, Θεόδωρος Κ. Το δίκαιο του διαδικτύου. Αθήνα ; Θεσσαλονίκη : Εκδόσεις Σάκκουλα, 2008.

Additional material
PARALLEL PROCESSING (ΔΤ4603)

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

General Competences
Students must be able to: a) design simple parallel algorithms and transform them to programs using a parallel programming language b) use parallel programming environments, debugging and performance evaluation methods. c) understand the differences and similarities of the two basic parallel programming models, that is shared and distributed memory architectures.

Programming in OpenMP and MPI, using Eclipse PTP for visualization and performance evaluation.

Course Content
Introduction to Parallel Processing
Shared and Distributed Memory Parallel Systems Architecture.
Data and Functional Parallelism.
Data Partitioning.
Load Balancing.
Process Communication.
Synchronous Parallelism.
Replicated Workers.
Distributed Termination Detection.

Assessment
Midterm tests 50%
Final coursework and oral examination 50%

Course Bibliography
(One of the following):
Μάργαρης, Αθανάσιος Ι. MPI θεωρία & εφαρμογές. Θεσσαλονίκη: Τζιόλας, c2008.
Πάντζιου, Γραμματή; Μάμαλης, Βασίλειος; Τομαράς, Αλέξανδρος Χρ. Εισαγωγή στον Παράλληλο Υπολογισμό. Αθήνα: Εκδόσεις Νέων Τεχνολογιών, c2003.

Additional material
Instructor’s notes.
Instructor’s website.
SPECIAL CHAPTERS OF APPLIED STATISTICS AND QUALITY CONTROL (ΔΤ4304)

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 through the use of PCs and 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, using PCs. Finally, their knowledge is broadened through analyzing applied case studies.

Course Content
Introduction: discrete and continuous distributions, sampling distributions, central limit theorem, etc.

Assessment
Final examination 80%
Coursework up to 40%

Course Bibliography
(One of the following):
Παπαδήμας, Όθων; Κοίλιας, Χρήστος. Εφαρμοσμένη στατιστική. Αθήνα : Εκδόσεις Νέων Τεχνολογιών, c2002.
Λιώκη-Λειβαδά, Η. (Ηρώ); Ασημακόπουλος, Δ. Ν. (Δημοσθένης Ν.). Μαθήματα εφαρμοσμένης στατιστικής. Αθήνα : Συμμετείχα, 2010.

Additional material
8th Semester

COMPUTATIONAL MATHEMATICS (ΠΛ0829)

Coordinator: Stephanides George
Semester: 8th (Spring) | Orientation: AI | Elective | Weekly hours: 3 | ECTS: 5
Instructors: Stephanides George

General Competences

Course Content

Assessment
Written Final examination 100%

Course Bibliography
(One of the following):
Στεφανίδης, Γεώργιος Χρ; Σαμαράς, Νικόλαος. Υπολογιστικές μέθοδοι με το MATLAB. Θεσσαλονίκη : Ζυγός, 1999.

Additional material
Instructor’s Notes and Exercises
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):
Comer, Douglas. Δίκτυα και διαδίκτυα υπολογιστών. Αθήνα : Κλειδάριθμος, c2014.

Additional material
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 differs from the “classical” schools of imperative and object oriented programming. The course aims to (a) introduce to the students logic programming, offering a brief introduction to the theoretical foundations of First Order Predicate Logic and the resolution principle, (b) present in depth Prolog, (c) present the principles of constraint programming and their embedding in the LP platforms, that leads to powerful tools for solving problems, (d) present the applications classes in which LP and CLP offer significant advantages and finally, develop student programming skills, like recursion that are applicable to all programming schools.

Course Content

Assessment
Course Bibliography
(One of the following):

Additional material
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):
Καραγιάννης, Δημήτρης Ι; Καραγιάννη, Αικατερίνη Δ; Καραγιάννης, Ιωάννης Δ..Κοστολόγηση με την ομάδα 9 του Γ.Λ.Σ., μηνιαία κοστολόγηση, ετήσια κοστολόγηση, διακίνηση αποθήκης : στην πράξη. Θεσσαλονίκη : [χ.ό.], 2009.

Additional material
DISTRIBUTED SYSTEMS (ΠΛ0809)

Coordinator: Margaritis Konstantinos

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

Instructors: Margaritis Konstantinos

General Competences
Subjects covered: operation principles, design and programming of distributed systems. Emphasis is placed mainly on the implementation of distributed applications, the programming interfaces and middleware, not on distributed infrastructures and algorithms. Java is used as programming language. The student must be able to design and implement a distributed application in Java by means of application programming interfaces and middleware, focusing on internet based distributed information systems.

Course Content
Distributed Systems, Distributed ApplicationsInternet, TCP/IP and WWWClient-Server Model, Multi-Tier Architectures, Java AppletsConcurrency, Multithreaded Client-ServerData Base Servers, Data Replication, Distributed TransactionsRPC, RMI and Distributed ObjectsXML, XML-RPC, Web ServicesDistributed Systems Models and DesignBots, Agents and SpidersUbiquitous and Mobile Computing

Assessment
Midterm tests 50%
Final coursework and oral examination 50%

Course Bibliography
(One of the following):
Κάβουρας, Ι. Κ. Συστήματα υπολογιστών. Αθήνα : Κλειδάριθμος, c2011.
Tanenbaum, Andrew S; Steen, Maarten van. Κατανεμημένα συστήματα : αρχές και υποδείγματα. Αθήνα : Κλειδάριθμος, c2005.
Ince, Darrel; Μαργαρίτης, Κωνσταντίνος Γ. Κατανεμημένες εφαρμογές και ηλεκτρονικό εμπόριο. Εκδόσεις Πανεπιστημίου Μακεδονίας, c2007

Additional material
Instructor's website
ELECTRONIC COMMERCE (ΠΛ0807)

Coordinator: Vlachopoulou Maro
Semester: 8th (Spring) | Orientation: AI | Elective | Weekly hours: 3 | ECTS: 5
Instructors: Vlachopoulou Maro, Fouskas Konstantinos

General Competences
This course introduces students to:

a) the strategy, application and implementation of Electronic Commerce (EC) /E-Business (EB) and mobile commerce/business- Technology, business, and market aspects

b) practical approaches to implementing an EC/ EB and mobile commerce/business strategy. Case studies - best practices - business / industry applications.

Course Content

Assessment

Course Bibliography
(One of the following):

Βλαχοπούλου, Μάρω; Δημητριάδης, Σέργιος. Ελεκτρονικό επιχειρείν & μάρκετινγκ : καινοτόμα μοντέλα σε ψηφιακό περιβάλλον. [Αθήνα]: Rosili, 2014.


Γεωργιάδου, Ελισάβετ Γ; Τριανταφύλλου, Ευάγγελος Γ; Οικονομίδης, Αναστάσιος. Ε-οικονομία, εμπόριο, μάρκετινγκ, διακυβέρνηση. Θεσσαλονίκη : Εκδόσεις Τζιόλα, c2011.

Additional material
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):
Μάρδας, Δημήτρης. Από την ΕΟΚ στην ΕΕ. Θεσσαλονίκη: Ζυγός, 2013.

Additional material
HUMAN-COMPUTER INTERACTION (ΠΛ0605)

Coordinator: Mavridis Ioannis
Semester: 8th (Spring) | Orientation: AI | Elective | Weekly hours: 3 | ECTS: 5
Instructors: Mavridis Ioannis, Fouliras Panayotis

General Competences
The student will (a) gain familiarity with usability issues and the fundamentals of human computer interaction, (b) learn the basic techniques, processes, models, regulations and standards for analysis, design, implementation and evaluation of user interfaces, (c) acquire experience on applying the above knowledge in laboratory conditions.

Course Content
Introduction (Basic concepts. The importance of user interface)
Theoretical foundation (Cognitive models, Sensory perception, Attention and Memory, Knowledge organization)
Analysis and design of interactive systems (User-oriented Methods, HTA, GOMS)
Usability rules
Design guidelines
Development of interactive systems (state transition diagrams (STD), User Action Notation (UAN))
Fast prototyping and related development tools
Evaluation of interactive systems (Analytical Methods (Analysis keystrokes (KLM), Cognitive walkthrough, heuristic evaluation, check compatibility), Experimental methods, Exploratory methods, Questionnaire Construction Principles, Techniques of Statistical Processing and Data Analysis Methods of Assessment)
Case studies of development and evaluation of interactive systems

Assessment

Course Bibliography
(One of the following):
Dix, Alan; Γκαγκάτσιου, Ε. (Ελένη); Μανιτσάρης, Αθανάσιος; Μαυρίδης, Ι. (Ιωάννης). Επικοινωνία ανθρώπου-υπολογιστή. Αθήνα : Μ. Γκιούρδας, 2007.

Additional material
KNOWLEDGE DISCOVERY FROM DATABASES (ΠΛ0823)

Coordinator: Evangelidis Georgios
Semester: 8\textsuperscript{th} (Spring) | 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):
Roiger, Richard; Geatz, Michael. Εξόρυξη πληροφορίας : ένας εισαγωγικός οδηγός με παραδείγματα. Αθήνα : Κλειδάριθμος, c2008.
Bazargianis, Michalis; Kallidis, Maria. Εξόρυξη γνώσης από βάσεις δεδομένων και τον παγκόσμιο ιστό. Αθήνα : Τυπωθήτω, 2005.
Tan, Pang-Ning; Steinbach, Michael; Kumar, Vipin; Verikios, Basilis. Εισαγωγή στην εξόρυξη δεδομένων. Θεσσαλονίκη : Εκδόσεις Τζόλα, c2015

Additional material
MONEY AND CAPITAL MARKETS (ΠΛ0608)

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

General Competences

Course Content
The content of the course "Money and Capital Markets is:
1. The presentation and analysis of Money & Capital Markets as well as the construction and management of investment portfolios in these markets.
2. More specifically we examine the institutional characteristics of the Money & Capital Markets, the theoretical basis of their operation, the financial products/services offered in them, the methods of price/profitability measurement of these products and the means of risk aversion
3. Use of spreadsheet type software for the construction and management of money & capital product price-profitability Data Bases, the statistical analysis of these data, the construction and management of investment portfolios and the use of optimization models (risk-profit)

Assessment

Course Bibliography
(One of the following):
Θωμαδάκης, Σταύρος; Ξανθάκης, Μανώλης. Αγορές χρήματος & κεφαλαίου : θεωρία και πράξη. Εκδόσεις Αθ. Σταμούλη, c2011.
Σπύρου, Σπύρος Ι. Αγορές χρήματος & κεφαλαίου. Αθήνα: Εκδόσεις Γ. Μπένου, 2013.

Additional material
NEURAL NETWORKS (ΠΛ0806)

Coordinator: Refanidis Ioannis
Semester: 8th (Spring) | Orientation: AI | Elective | Weekly hours: 3 | ECTS: 5
Instructors: Refanidis Ioannis

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

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

Assessment

Course Bibliography
(One of the following):

Additional material
PRODUCTION AND OPERATIONS MANAGEMENT (ΠΛ0416)

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

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

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

Assessment

Course Bibliography
(One of the following):

Additional material
PROGRAMMING LANGUAGES AND COMPILERS (ΠΛ0827-1)

Coordinator: Sakellariou Ilias
Semester: 8th (Spring) | Orientation: AI | Elective | Weekly hours: 3 | ECTS: 5
Instructors: Sakellariou Ilias

General Competences
The student will (a) understand the main concepts and the theoretical foundations of Programming Language Compilers (b) learn techniques and algorithms applied in different stages of a compiler (lexical, syntactic, semantic analysis and code generation), (c) be able to develop 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

Course Bibliography
(One of the following):
Scott, Michael Lee. Πραγματολογία των γλωσσών προγραμματισμού. Αθήνα : Κλειδάριθμος, c2009.
Λάζος, Κωνσταντίνος Ε; Κατσαρός, Παναγιώτης Θ; Καραίσκος, Ζαφείρης Κ. Μεταγλωττιστές γλωσσών προγραμματισμού : θεωρία και πράξη. Θεσσαλονίκη : Π. Κατσαρός, 2004.

Additional material
SIMULATION TECHNIQUES (ΠΛ0614)

Coordinator: Roumeliotis Manos
Semester: 8th (Spring) | Orientation: AI | Elective | Weekly hours: 3 | ECTS: 5
Instructors: Roumeliotis Manos, Papanastasiou Demetrios

General Competences
This course is an extended introduction to computer aided simulation techniques from the construction of simulation models to the statistical analysis of the results.

Course Content
The course presents the simulation methodologies with both specialized tools, and with general programming languages. The material includes random number generation, sampling techniques, statistical analysis of the results, the Monte Carlo method, time world view, and simulation verification and validation.

Assessment

Course Bibliography
(One of the following):
Roumeliotis, Emmanuel; Sourablas, Staurlos I. Τεχνικές προσομοίωσης: Θεωρία και εφαρμογές. Θεσσαλονίκη: Τζιόλας, c2015.
Khoshnevis, Behrokh; Georgiadis, Panagiwits; Gystohtimos, Gi (Gyorgos). Προσομοίωση διακριτών συστημάτων. Αθήνα: Δίαυλος, 1999.

Additional material
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):
Δημέλη, Σοφία Π. Σύγχρονες μέθοδοι ανάλυσης χρονολογικών σειρών. Αθήνα : Εκδόσεις ΟΠΑ, 2013.

Additional material
SYSTEMS PROGRAMMING (ΠΛ0730)

Coordinator: Margaritis Konstantinos
Semester: 8th (Spring) | Orientation: AI | Elective | Weekly hours: 3 | ECTS: 5
Instructors: Margaritis Konstantinos

General Competences
Subject covered: basic and advanced concepts of Systems Programming. The student should be able to handle the programming interfaces that provide access to – and to develop applications that are based on – libraries and software modules of a modern operating system. Shell scripting and modern scripting languages are studied, as well as more traditional programming languages and application programming interfaces, in Unix environment. Content: Programming using Bash shell scripts. Modern scripting languages and systems programming applications. Interfaces and software development tools for systems programming in Unix environment. Files and directories: systems and processing. Process control, Interprocess communication (Interrupts, Signals, Message Queues, Semaphores, Shared Memory). Multithreaded (Concurrent) programming in C and Java.

Course Content

Assessment

Course Bibliography
(One of the following):
Kernighan, Brian W; Pike, Rob. Το περιβάλλον προγραμματισμού UNIX. Αθήνα : Κλειδάριθμος, c2011.

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 handwritten and the use of software.

Assessment

Course Bibliography
(One of the following):

Additional material
TIME SERIES (ΠΛ0720)

Coordinator: Papanastasiou Demetrios
Semester: 8th (Spring) | Orientation: AI | Elective | Weekly hours: 3 | ECTS: 5
Instructors: Papanastasiou Demetrios

General Competences
The student is introduced to the basic concepts of the statistical analysis of Time Series, TS, and forecasting techniques. At the end of the course, he/she should be able to model and produce forecasts for a real life series, using the free source software R or the SPSS package.

Course Content
Introduction (time series data, examples, graphical presentation using R or SPSS)
Conventional Decomposition of a TS and forecasting
Naive forecasting techniques (exponential smoothing, Holt-Winters method, etc)
ARIMA modelling (definitions, stationary series and autocorrelation function, SARIMA models and their properties, Box and Jenkins modelling approach, forecasting)
Case studies

Assessment

Course Bibliography
(One of the following):
Δημέλη, Σοφία Π. Σύγχρονες μέθοδοι ανάλυσης χρονολογικών σειρών. Αθήνα : Εκδόσεις ΟΠΑ, 2013.

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):
Δουκίδης, Γεώργιος Ι. Καινοτομία, στρατηγική, ανάπτυξη και πληροφοριακά συστήματα. Αθήνα : Ι. Σιδέρης, 2011.
White, Margaret A. (Margaret Alice); Bruton, Garry D; Καλογήρου, Γιάνης; Πρωτόγερου, Αιμιλία; Κωνσταντέλου, Αναστασία. Η στρατηγική διαχείριση της τεχνολογίας και της καινοτομίας. Αθήνα : Κριτική, 2010.

Additional material
WEB PROGRAMMING (ΠΛ0816)

Coordinator: Georgiadis Christos
Semester: 8th (Spring) | Orientation: AI | Elective | Weekly hours: 3 | ECTS: 5
Instructors: Georgiadis Christos

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

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

Assessment
Written final examination 50%
Compulsory coursework 50%

Course Bibliography
(One of the following):

Additional material
Instructor’s notes
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

Assessment

Course Bibliography
(One of the following):
Θεμιστοκλέους, Μαρίνος Γ; Μαντζάνα, Βασιλική Γ. Υπηρεσίες παγκόσμιου ιστού και υπηρεσιοστρεφείς αρχιτεκτονικές : web services and SOA.Πειραιάς : [χ-δ], 2010.

Additional material
BROADBAND COMMUNICATION TECHNOLOGIES AND SERVICES (ΔΤ4701)

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

General Competences

Course Content
Comprehensive introduction to Broadband Technologies, providing basic operation principles as well as technical details that will come in handy in understanding and evaluating relevant systems. The first part of the course covers Backbone networks technologies and protocols such as SONET, ATM, ETHERNET, TCP/IP along with wired (DSL) or wireless Access Technologies (WIMAX, WIFI). The course also includes a review of active or passive optical fibre networks elements and satellite access technologies, the accent being on HellasSat, the Greek satellite. The second part of the course describes Applications of Broadband Technologies, giving particular examples from international (e.g. NT Docomo/ Felica) or Greek experience (e.g., the metropolitan networks under construction in central Macedonia and their significance). Pricing examples of telecommunications services are given, too. The course is completed with a brief review of emerging broadband technologies (MIMO, 4G) and applications (widescale RFID).

Assessment

Course Bibliography
(One of the following):
Τσαουσίδης, Βασίλης Θ; Μαμάτας, Ελευθέριος; Ψαρράς, Ιωάννης κ.ά. Εργαστηριακά Μαθήματα στα Δίκτυα και Διαδίκτυα Υπολογιστών. Αθήνα: Εκδόσεις Κλειδάριθμο, 2010.
Βενιέρης, Ιάκωβος.. Δίκτυα ευρείας ζώνης : τεχνολογίες και εφαρμογές με έμφαση στο διαδίκτυο. Εκδόσεις Τζιόλα, c2013.

Additional material
DIGITAL DESIGN - MODELING OF LOGIC CIRCUITS (ΔΤ4602)

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):
Σουραβλάς, Σταύρος Ι; Ρουμελιώτης, Εμμανουήλ. Ψηφιακά συστήματα : μοντελοποίηση και προσομοίωση με την γλώσσα VHDL. Εκδόσεις Τζιόλα, c2008.
Brown, Stephen D; Vranesic, Zvonko G; Δημόπουλος, Μιχαήλ Γ. Σχεδίαση ψηφιακών συστημάτων με τη γλώσσα VHDL. Θεσσαλονίκη : Εκδόσεις Τζιόλα, c2012.

Additional material
ELECTRONIC COMMERCE (ΠΛ0807)

Coordinator: Vlachopoulou Maro
Semester: 8th (Spring) | Orientation: TM | Elective | Weekly hours: 3 | ECTS: 5
Instructors: Vlachopoulou Maro, Fouskas Konstantinos

General Competences
This course introduces students to:

a) the strategy, application and implementation of Electronic Commerce (EC) /E-Business (EB) and mobile commerce/business-Technology, business, and market aspects

b) practical approaches to implementing an EC/ EB and mobile commerce/business strategy. Case studies - best practices - business / industry applications.

Course Content

Assessment

Course Bibliography
(One of the following):


- Γεωργιάδου, Ελισάβετ Γ; Τριανταφύλλου, Ευάγγελος Γ; Οικονομίδης, Αναστάσιος. e-οικονομία, εμπόριο, μάρκετινγκ, διακυβέρνηση. Θεσσαλονίκη : Εκδόσεις Τζιόλα, c2011.

Additional material
ELECTRONIC GOVERNANCE (ΔΤ4503)

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

General Competences

Course Content
Use of state of the art technologies and digital connection of governmental information infrastructures for the modernisation of Public Administration, saving of resources and improvement of services to citizens and businesses. The technological and organisational foundations are examined as well as the international trends with an emphasis on the European Union. The areas covered include public service provision, one-stop government, interoperability and open government data using state of the art technologies, e.g. linked open data.

Assessment

Course Bibliography
(One of the following):

Αποστολάκης, Ιωάννης Α.; Λουκής, Ευριπίδης; Χάλαρης, Ι. (Ιωάννης). Ηλεκτρονική δημόσια διοίκηση: οργάνωση, τεχνολογία και εφαρμογές. Αθήνα: Παπαζήσης, 2008.


Additional material
ENTREPRENEURSHIP CASE STUDIES (ΔΤ4403)

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

General Competences
The Entrepreneurship Case Studies 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.

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 and entrepreneurship in rising economies.

Assessment

Course Bibliography
(One of the following):
Καραγιάννης, Η. Γ. (Ηλίας Γ.); Μπακούρος, Ιωάννης. Καινοτομία και επιχειρηματικότητα : θεωρία, πράξη. Θεσσαλονίκη : Σοφία, 2010.

Additional material
MONEY AND CAPITAL MARKETS (ΠΛ0608)

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

General Competences

Course Content
The content of the course “Money and Capital Markets is:
1. The presentation and analysis of Money & Capital Markets as well as the construction and management of investment portfolios in these markets.
2. More specifically we examine the institutional characteristics of the Money & Capital Markets, the theoretical basis of their operation, the financial products/services offered in them, the methods of price/profitability measurement of these products and the means of risk aversion
3. Use of spreadsheet type software for the construction and management of money & capital product price-profitability Data Bases, the statistical analysis of these data, the construction and management of investment portfolios and the use of optimization models (risk-profit)

Assessment

Course Bibliography
(One of the following):
Θωμαδάκης, Σταύρος; Ξανθάκης, Μανώλης. Αγορές χρήματος & κεφαλαίου : θεωρία και πράξη. Αθήνα : Εκδόσεις Αθ. Σταμούλη, c2011.
Σπύρου, Σπύρος Ι. Αγορές χρήματος & κεφαλαίου. Αθήνα : Εκδόσεις Γ. Μπένου, 2013.

Additional material
NETWORK-CENTRIC SOFTWARE (ΔΤ4704)

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

General Competences
Students must be able to distinguish between the various types of applications that can be developed using the technology of Java and choose the most appropriate type for each occasion. Also, students must be able to design and implement completed applications (autonomous and web-based applications, applets) in Java.

Content
Presentation of special topics on software design and engineering using the object-oriented programming technique and the network-centric programming language Java. Comparative presentation of the main characteristics and role of different types of programs in Java: applications, applets, servlets and JavaServer pages (JSP). Emphasis is given on designing and implementing a complete application in Java: conducting needs-requirements analysis, designing the application according to the principles of the object-oriented technique of designing programs, designing the UML class diagram of the application, implementing the user interface and the functionalities of the application, writing documentation.

Course Content
Introduction to Parallel Processing
Shared and Distributed Memory Parallel Systems Architecture.
Data and Functional Parallelism.
Data Partitioning.
Load Balancing.
Process Communication.
Synchronous Parallelism.
Replicated Workers.
Distributed Termination Detection.

Assessment

Course Bibliography
(One of the following):
Hall, Marty; Brown, Larry; Chaikin, Yaakov. Servlets και σελίδες διακομιστή Java: τεχνολογίες πυρήνα. Αθήνα: Κλειδάριθμος, c2006.
Λιακέας, Γιώργος. Εισαγωγή στην Java: καλύπτει και την έκδοση SE 8 (JDK 1.8). Αθήνα: Κλειδάριθμος, c2015.

Additional material
PROJECT PLANNING AND MANAGEMENT (ΔΤ4301)

Coordinator: Tambouris Efthimios
Semester: 8th (Spring) | Orientation: TM | Elective | Weekly hours: 3 | ECTS: 5
Instructors: Tambouris Efthimios, Mantas Michael

General Competences
The aim of this course is to provide students with the basic principles of Project Management as well as the challenges faced by managers of Information and Communication Technologies project.

Course Content
Project planning, design, implementation, review and evaluation. Project design techniques and methods include work breakdown structure, critical path analysis, Gantt chart, PERT, cost analysis, risk and change management.

Assessment
Course Bibliography
(One of the following):
Maylor, Harvey. Διαχείριση έργων. Αθήνα : Κλειδάριθμος, c2005.

Additional material
SIMULATION TECHNIQUES (ΠΛ0614)

Coordinator: Roumeliotis Manos
Semester: 8th (Spring) | Orientation: TM | Elective | Weekly hours: 3 | ECTS: 5
Instructors: Roumeliotis Manos, Papanastasiou Demetrios

General Competences
This course is an extended introduction to computer aided simulation techniques from the construction of simulation models to the statistical analysis of the results.

Course Content
The course presents the simulation methodologies with both specialized tools, and with general programming languages. The material includes random number generation, sampling techniques, statistical analysis of the results, the Monte Carlo method, time world view, and simulation verification and validation.

Assessment
Course Bibliography
(One of the following):
Ρουμελιώτης, Εμμανουήλ; Σουραβλάς, Σταύρος Ι. Τεχνικές προσομοίωσης: θεωρία και εφαρμογές. Θεσσαλονίκη: Τζιόλας, c2015

Additional material
SPECIAL ISSUES OF STRATEGIC MANAGEMENT (ΠΛ0830)

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

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

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

Assessment

Course Bibliography
(One of the following):
Γεωργόπουλος, Νικόλαος Β. Στρατηγικό μάνατζμεντ. Αθήνα: Εκδόσεις Γ. Μπένου, 2013.
White, Margaret A. (Margaret Alice); Bruton, Garry D; Καλογήρου, Γιάννης; Πρωτόγερου, Αιμιλία; Κωνσταντέλου, Αναστασία. Η στρατηγική διαχείριση της τεχνολογίας και της καινοτομίας. Αθήνα: Κριτική, 2010.
Deakins, David; Freel, Mark S; Πέκκα-Οικονόμου, Βικτωρία; Χατζηδημητρίου, Ιωάννης. Επιχειρηματικότητα και μικρές επιχειρήσεις: νεοφυείς επιχειρήσεις: μια δυναμική απάντηση των νέων στην ανεργία. Αθήνα: Rosili, 2015.

Additional material
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):

Παπαδάκης, Βασίλης Μ. Επίκαιρα θέματα στρατηγικής των επιχειρήσεων. Αθήνα : Εκδόσεις Ε. Μπένου, 2009.
Robbins, Stephen P; Judge, Tim; Σαχινίδης, Αλέξανδρος Γ; Robbins, Stephen P. Οργανωσιακή συμπεριφορά : βασικές έννοιες και σύγχρονες προσεγγίσεις. Αθήνα : Εκδόσεις Κριτική, 2011.
Yukl, Gary A; Αντωνίου, Αλέξανδρος-Σταμάτιος. Η ηγεσία στους οργανισμούς. Αθήνα : Κλειδάριθμος, c2009.

ADDITIONAL MATERIAL