Head of the Department:
Professor *K. TSOUROS*
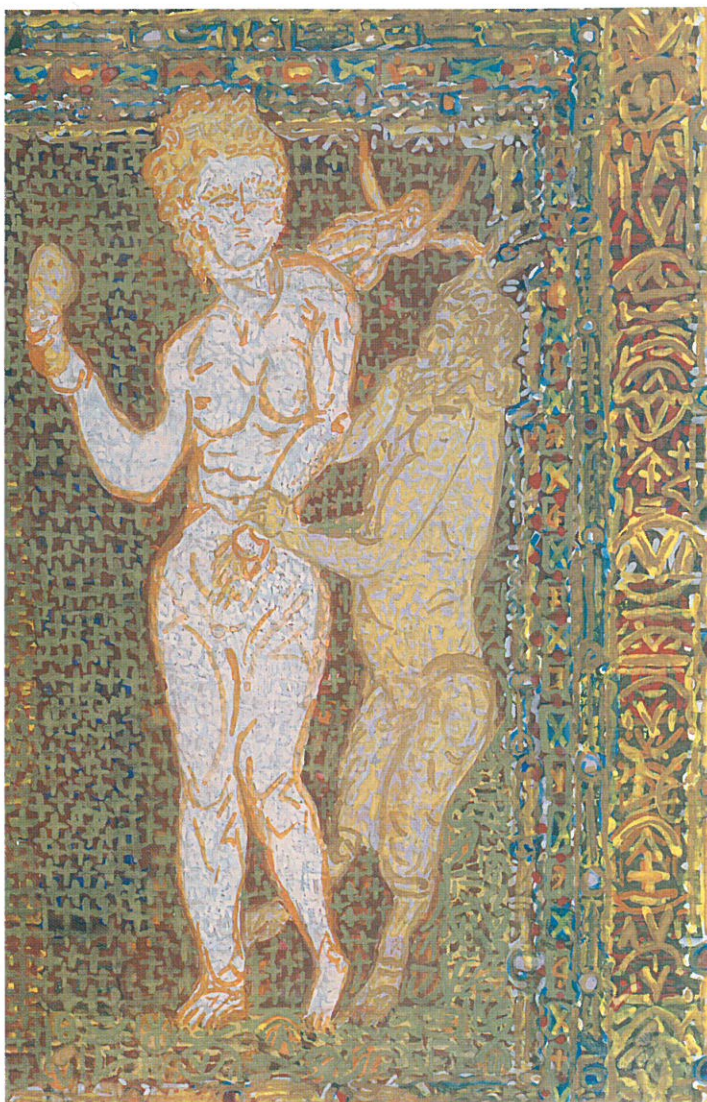
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UNIVERSITY OF MACEDONIA
ECONOMIC
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SCIENCES

Department of Applied Informatics

Faculty

• PROFESSORS

KATOS Anastasios

B.Sc. in Mathematics(1968), Aristotelian Univ. of Thessaloniki, GR. Doctorate in Economics (1973), Graduate Industrial School of Thessaloniki, GR. M.Sc. in Econometrics, Univ. of Southampton, U.K, (1974). Ph.D. in Econometrics, Univ. of Southampton, U.K., (1977).

PAPADIMITRIOU John

B.Sc. in Mathematics, Aristotelian Univ. of Thessaloniki, GR, (1969). DEA Statistiques, Universite de Paris VI, F, (1977). Doctorat 3e Cycle Matematiques Statistiques, Universite de Paris VI, F, (1978).

PAPARIZOS Konstantinos

B.Sc. in Mathematics, Aristotelian Univ. of Thessaloniki, GR, (1972). M.Sc. in Operations Research, Case Western Reserve Univ., U.S.A., (1981). Ph.D. in Operations Research, Case Western Reserve Univ., U.S.A., (1983).

PEKOS George

B.Sc. in Mathematics, Aristotelian Univ. of Thessaloniki, GR,(1968). B.Sc. in Economics, Graduate Industrial School of Thessaloniki, GR, (1975). Doctorate in Ecomomics, Graduate Industrial School of Thessaloniki, GR, (1978).

TSOUROS Konstantinos-Klaudius,
Head of Department

B.Sc. in Mathematics, Aristotelian Univ. of Thessaloniki, GR, (1972). Doctorate in Graph Theory Algorithms, Aristotelian Univ. of Thessaloniki, GR, (1980).

• ASSOCIATE PROFESSORS

GEORGANTA Zoe

B.Sc. in Economics,Graduate School of Economics and Business Studies, Athens, GR, (1971). M.A. in Economics, Univ. of Leeds, U.K., (1976). Ph.D. in Economics, Univ. of Leeds, U.K., (1980).

MARGARITIS Konstantinos

B.Sc. in Electrical Engineering, Aristotelian Univ. of Thessaloniki, GR. M.Sc. in Theory & Applications of Computation, Loughborough Univ. of Technology, U.K., (1985). Ph.D. in Computer Sciense, Loughborough Univ. of Technology, U.K., (1988).

• ASSISTANT PROFESSORS

CHARITOU Adamantios

B.Sc. in Mathematics, Aristotelian Univ. of Thessaloniki, GR, (1970). M.Sc. in Statistics, Brunel Univ., U.K., (1983). Doctorate from Dept. of Applied Informatics, Univ. of Macedonia, Thessaloniki, GR, (1992).

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DRITSAKIS *Nikolaos*

B.A. in Economics, Graduate Industrial School of Thessaloniki, GR, (1977). Doctorate from Dpt. of Applied Informatics, Univ. of Macedonia, Thessaloniki, GR, (1992).

KONSTANTOPOULOU *Chryssoula*

Maitrise on Sociology, Sorbonne Paris V, (1979). Sorbone in Public Law and Political Sciences, Univ. of Athens, GR, (1979). DEA Anthropologie Sociale, Univ. de Paris V, (1980). DEA Etudes Politiques, Univ. de Paris II, (1981). DEA Sciences de l' Information, Univ. de Paris II, F, (1982). DEA Sociology of Law, Univ. de Paris II, F, (1983). Doctorat 3e Cycle, Sociologie, Sorbone, F, (1982). Doctorat d' etat, Sociologie, Sorbone, F, (1990).

MAKRIDOU-BOUSSIOU *Despina*

B.A. in Economics, Graduate Industrial School of Thessaloniki, GR, (1979). Doctorate from Dept. of Applied Informatics, Univ. of Macedonia, Thessaloniki, GR, (1992).

PAPANASTASIOU *Demetrios*

B.Sc. in Mathematics, Aristotelian Univ. of Thessaloniki, GR, (1974). M.Sc. in Operations Research, Univ. of Aston Birmingam, England, (1977). Ph.D. in Statistics, Birkbeck College, Univ. of London, U.K., (1989).

ROUMELIOTIS *Manos*

Ph.D. in Computer Engineering, Virginia Polytechnic Institute and State University (Virginia Tech), Blacksburg VA, (1986). MS in Computer Engineering, Virginia Polytechnic Institute and State University (Virginia Tech), Blacksburg VA, (1983). Diploma in Electrical Engineering, Aristotle Univ. of Thessaloniki, GR, (1981).

TSOPOGLOU *Stavros*

B.A. in Business Economics, Ohio Univ., U.S.A., (1973). M.B.A. in General Business, York Univ., Canada, (1975). Doctorate from Dept. of Applied Informatics (1991), Univ. of Macedonia, Thessaloniki, Greece.

• LECTURERS

FRAGOPOULOU-MANTHOU *Vassiliki*

B.Sc. in Management and Administration, Louisiana State Univ., U.S.A., (1976). Doctorate from Dept. of Applied Informatics, Univ. of Macedonia, Thessaloniki, GR, (1991).

KATSOULI-KATOU *Helen*

B.A. in Economics, Graduate Industrial School of Thessaloniki, GR, (1978). Doctorate from Dept. of Applied Informatics, Univ. of Macedonia, Thessaloniki, GR, (1992).

MANITSARIS *Athanassios*

B.Sc. in Mathematics, Aristotelian Univ. of Thessaloniki, GR, (1975). DEA Matematiques

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Statistiques, Univ. de Paris VI, (1977). Doctorate from Dept. of Applied Informatics, Univ. of Macedonia, Thessaloniki, GR, (1992).

SATRATZEMI Maria-Katerina
B.Sc. in Mathematics, Aristotelian Univ. of Thessaloniki, GR, (1980). Doctorate from Dept. of Applied Informatics, Univ. of Macedonia, Thessaloniki, GR, (1991).

VLACHOPOULOU-NOUSSIA Maria
B.A. in Economics, Aristotelian Univ. of Thessaloniki, GR, (1978). Post Graduate Diploma in Business Studies, Aristotelian Univ. of Thessaloniki, GR, (1987). B.A. in Law, Aristotelian Univ.of Thessaloniki, GR, (1989). Doctorate from Dept. of Applied Informatics, Univ. of Macedonia, Thessaloniki, GR, (1992).

VOGIATZIS Alexander
B.A. in Economics, Aristotelian Univ. of Thessaloniki, GR, (1976). Doctorate from Dept. of Applied Informatics, Univ. of Macedonia, Thessaloniki, GR, (1992).

TEACHING AND RESEARCH ASSISTING STAFF

KARRA-ECONOMOPOULOU Maria Teaching Fellow.
B.A. in Economics, Graduate Industrial School of Thessaloniki, GR, (1966). Certificat d' Institut Textile de France (1974).

RESEARCH ASSISTANTS

STEPHANIDES George
B.Sc. in Mathematics, Univ.of Ioannina, GR, (1974).

VAZAKIDES Athanasios
B.A. in Economics, Graduate Industrial School of Thessaloniki, GR, (1977).

POSTGRADUATE STUDENTS UNDER SCHOOLARSHIP

FLOROU Giannoula
B.Sc. in Mathematics, Aristotelian Univ. of Thessaloniki, GR, (1989).

SIRPI Marina
B.Sc. in Mathematics, Aristotelian Univ. of Thessaloniki, GR, (1991).

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UNIVERSITY OF MACEDONIA
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AIMS OF THE DEPARTMENT AND PURPOSE OF THE PROGRAMME OF STUDIES

1. AIMS AND OBJECTIVES

According to the Establishing act of the Department of Applied Informatics, its mission is to promote and further develop the science of informatics, with special emphasis on the development of systems for managerial and economic applications and the training of high level executives for the country's needs.

In addition to the theoretical education offered to the students, particular attention is paid to their practical training on developing software for economic and managerial applications. The programme of studies includes courses from the disciplines of Computer Science, Economics and Business Administration. The department's graduates are well qualified to meet the demanding requirements of the modern business world.

2. CURRICULUM

The curriculum leads to a Bachelor's Degree in Applied Informatics after succesfully completing 167 credit hours. One credit hour corresponds to one hour of class attendance per week. The 167 credit hours include 121 credit hours of compulsory courses, 16 credit hours of English and 30 credit hours of electives. The compulsory and elective courses cover 11 areas. The following table gives the distribution of credit hours in each area.

3. THESIS

With the start of the 7th semester, a research topic is assigned to every student, and under the supervision of a member of the teaching staff. By the end of the 8th semester, the student has to submit for evaluation and present his/her thesis. A successful thesis corresponds to 6 semester-hours.

4. LABORATORIES

The department's computing facilities consist of the following labs:
- The microcumputer network lab which includes 40 DOS/WINDOWS based microcumputers connected to a Novell network server. This lab is used for teaching, software developement and thesis work.
- The multimedia lab which has facilities for video, audio and graphics processing to develop multimedia presentations. It is used for practical training and thesis preparation.
- The graduate student lab includes microcomputers for faculty and graduate student use.
- The parallel processing lab which includes Transputer based multiprocessor systems for teaching and research.
- The workstation lab which includes high performance DEC Alpha workstations for research and thesis preparation.

Department of Applied Informatics

AIMS OF THE DEPARTMENT AND PURPOSE OF THE PROGRAMME OF STUDIES

- A Linux lab which is used mainly for practical training, and TCP/IP applications.

All computers are connected through an EIA/TIA-568 telecommunications wiring standard to the University's FDDI backbone running at 100Mbps. Access to the Internet is provided though a router, while a 10 modem pool offers PPP incoming connections to students and faculty members.

5. ENGLISH LANGUAGE

Students have to study 4 hours of English language each week for the first four semesters. English is compulsory and corresponds to 16 semester-hours.

APPLIED INFORMATICS REQUIREMENTS				
AREA OF STUDY	**CORE**		**ELECTIVES**	
	Hours	**%**	**Lectures** **%** (2 hours/week)	
1 Computer Science	67	48,9	18	42,9
2 Mathematics	6	4,4	0	0,0
3 Operations Research	8	5,8	1	2,4
4 Statistics	10	7,3	3	7,1
5 Econometrics	6	4,4	1	2,4
6 Economics	9	6,6	3	7,1
7 Business Studies	6	4,4	1	2,4
8 Accounting-Finance	9	6,6	3	7,1
9 Social Sciences	0	0,0	6	14,3
10 Thesis	0	0,0	6	14,3
11 English Language	16	11,7	0	0,0
Total	**137**	**100,0**	**42**	**100,0**

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PROGRAMME OF STUDIES

1. 1st SEMESTER
COMPULSORY COURSES

1.1. INTRODUCTION TO INFORMATICS
K. Margaritis
3h/w 3c.h.

1.2. ALGORITHMS
K. Tsouros
3h/w 3c.h.

1.3. PROGRAMMING I
M. Satratzemi
4h/w 4c.h.

1.4. MATHEMATHICS I
G. Pekos G. Stephanides
3h/w 3c.h.

1.5. STATISTICS I
J. Papadimitriou G. Florou
4h/w 4c.h.

1.6. PRINCIPLES OF ECONOMICS
D. Makridou-Boussiou, E. Katsouli
3h/w 3c.h.

1.7. FOREIGN LANGUAGE
4h/w 4c.h.

2. 2nd SEMESTER
COMPULSORY COURSES

2.1. COMPUTER SYSTEMS ORGANIZATION
K. Margaritis
3h/w 3c.h.

2.2. DATA STRUCTURES
K. Tsouros
3h/w 3c.h.

2.3. PROGRAMMING II
M. Satratzemi
4h/w 4c.h.

2.4. MATHEMATICS II
G. Pekos G. Stephanides
3h/w 3c.h.

2.5. STATISTICS II
D. Papanastasiou G. Florou
3h/w 3c.h.

2.6. INTRODUCTION TO MANAGEMENT
M. Vlachopoulou
3h/w 3c.h.

2.7. FOREIGN LANGUAGE
4h/w 4c.h.

3. 3rd SEMESTER
COMPULSORY COURSES

3.1. ARCHITECTURE AND EVALUATION OF COMPUTERS
M. Roumeliotis
3h/w 3c.h.

3.2. COMPUTATIONAL MATHEMATICS
Visiting Professor
4h/w 4c.h.

3.3. FILE STRUCTURES
M. Satratzemi
3h/w 3c.h.

3.4. STATISTICS III
A. Charitou
3h/w 3c.h.

3.5. MICROECONOMIC ANALYSIS
Z. Georganta
3h/w 3c.h.

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PROGRAMME OF STUDIES

3.6. **FOREIGN LANGUAGE**
4h/w 4c.h.

ELECTIVE COURSES
(students select one course)

3.7. **OFFICE AUTOMATION**
V. Manthou
2h/w 2c.h.

3.8. **INTRODUCTION TO LAW**
Member of the faculty of the
International Economic and Political
Studies dpt.
2h/w 2c.h.

3.9. **INTERNATIONAL ECONOMICS-**
EUROPEAN INTEGRATION
E. Katsouli
2h/w 2c.h.

4. **4th SEMESTER**
COMULSORY COURSES

4.1. **OPERATING SYSTEMS**
M. Roumeliotis
4h/w 4c.h.

4.2. **GRAPH THEORY**
M. Satratzemi
3h/w 3c.h.

4.3. **SYSTEMS PROGRAMMING**
K. Margaritis
3h/w 3c.h.

4.4. **MACROECONOMIC ANALYSIS**
Z. Georganta
3h/w 3c.h.

4.5. **ACCOUNTING**
S. Tsopoglou A. Vazakides
3h/w 3c.h.

4.6. **FOREIGN LANGUAGE**
4h/w 4c.h.

ELECTIVE COURSES
(students select one course)

4.7. **TEACHING METHODS I**
D. Boussiou
2h/w 2c.h.

4.8. **PRODUCTION MANAGEMENT**
Member of the faculty of the
Business Administration dpt.
2h/w 2c.h.

4.9. **BUSINESS LAW**
Member of the faculty of the
International Economic and Political
Studies dpt.
2h/w 2c.h.

4.10. **APPLIED ECONOMICS**
A. Vogiatzis
2h/w 2c.h.

5. **5th SEMESTER**
COMULSORY COURSES

5.1. **DATA COMMUNICATION AND**
COMPUTER NETWORKS
M. Roumeliotis
3h/w 3c.h.

5.2. **DATA BASE THEORY**
Visiting Professor
3h/w 3c.h.

5.3. **COMPUTER GRAPHICS**
A. Manitsaris
3h/w 3c.h.

5.4. **ECONOMETRICS I**
A. Katos N. Dritsakis M. Sirpi
3h/w 3c.h.

5.5. **MANAGERIAL FINANCE**
S. Tsopoglou
3h/w 3c.h.

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PROGRAMME OF STUDIES

UNIVERSITY OF MACEDONIA
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ELECTIVE COURSES
(students select two courses)

5.6. **INTRODUCTION TO THE THEORY OF AUTOMATA**
Visiting Professor
2h/w 2c.h.

5.7. **ANALYSIS OF ALGORITHMS**
K. Tsouros, K. Paparizos
2h/w 2c.h.

5.8. **TEACHING METHODS II**
D. Boussiou
2h/w 2c.h.

5.9. **TIME SERIES ANALYSIS-FORECASTING TECHNIQUES**
D. Papanastasiou
2h/w 2c.h.

5.10. **SPECIAL ACCOUNTING ISSUES**
S. Tsopoglou A. Vazakides
A. Stavropoulos
2h/w 2c.h.

6. **6th SEMESTER**
COMPULSORY COURSES

6.1. **DATA BASE ANALYSIS AND DESIGN**
Visiting Professor
3h/w 3c.h.

6.2. **ANALYSIS AND DESIGN OF INFORMATION SYSTEMS**
V. Manthou
3h/w 3c.h.

6.3. **HUMAN COMPUTER INTERACTION**
A. Manitsaris
3h/w 3c.h.

6.4. **MARKETING**
M. Vlachopoulou
3h/w 3c.h.

6.5. **ECONOMETRICS II**
A. Katos N. Dritsakis N. Sirpi
3h/w 3c.h.

ELECTIVE COURSES
(students select two courses)

6.6. **COMPUTER NETWORKS ANALYSIS AND DESIGN**
Visiting Professor
2h/w 2c.h.

6.7. **SIMULATION TECHNIQUES**
M. Roumeliotis
2h/w 2c.h.

6.8. **3D GRAPHICS-ANIMATION**
A. Manitsaris
2h/w 2c.h.

6.9. **DATA ANALYSIS**
J. Papadimitriou G. Florou
2h/w 2c.h.

6.10. **MONEY AND FINANCIAL MARKETS**
S. Tsopoglou
2h/w 2c.h.

6.11. **ANALYSIS OF PRODUCTIVITY AND ECONOMIC EFFICIENCY**
Z. Georganta
2h/w 2c.h.

7. **7th SEMESTER**
COMPULSORY COURSES

7.1. **ARTIFICIAL INTELLIGENCE**
Visiting Professor
3h/w 3c.h.

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PROGRAMME OF STUDIES

7.2. **INFOMATION SYSTEMS MANAGEMENT**
V. Manthou
3h/w 3c.h.

7.3. **MATHEMATICAL PROGRAMMING**
K. Paparizos
4h/w 4c.h.

ELECTIVE COURSES
(students select either three courses and a Thesis or five courses)

7.4. **THESIS (START)**
3h/w 3c.h.

7.5 **PARALLEL PROCESSING**
K. Margaritis
2h/w 2c.h.

7.6. **COMPUTERS AND EDUCATION**
K. Tsouros
2h/w 2c.h.

7.7. **SOFTWARE ENGINEERING**
Visiting Professor
2h/w 2c.h.

7.8. **MULTIMEDIA**
A. Manitsaris
2h/w 2c.h.

7.9. **INFORMATION SYSTEMS SECURITY**
Visiting Professor
2h/w 2c.h.

7.10. **MARKETING INFORMATION SYSTEMS**
M. Vlachopoulou
2h/w 2c.h.

7.11. **TECHNOLOGY AND SOCIETY**
C. Konstantopoulou
2h/w 2c.h.

7.12. **COST ACCOUNTING**
S. Tsopoglou A. Vazakides
A. Stavropoulos
2h/w 2c.h.

7.13. **SPECIAL TOPICS IN ECONOMETRICS**
Z.Georganta
2h/w 2c.h.

8. **8th SEMESTER**
COMPULSORY COURSES

8.1. **EXPERT SYSTEMS**
Visiting Professor
3h/w 3c.h.

8.2. **ACCOUNTING SOFTWARE**
S. Tsopoglou A. Vazakides
A. Stavropoulos
3h/w 3c.h.

8.3. **OPERATIONS RESEARCH**
K. Paparizos
3h/w 3c.h.

ELECTIVE COURSES
(students select either three courses and a Thesis or four courses)

8.4. **THESIS (END)**
3h/w 3c.h.

8.5. **DISTRIBUTED SYSTEMS**
K. Margaritis
2h/w 2c.h.

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8.6.   **NEURAL NETWORKS**
Visiting Professor
2h/w 2c.h.

8.7.   **COMPILER DESIGN**
Visiting Professor
2h/w 2c.h.

8.8.   **IMPLEMENTATION CASE STUDIES OF INFORMATION SYSTEMS**
V. Manthou
2h/w 2c.h.

8.9.   **MANAGEMENT OF DATA PROCESSING PROJECTS**
Member of the faculty of the Business Administration dpt.
2h/w 2c.h.

8.10.   **DECISION SUPPORT SYSTEMS**
K. Paparizos
2h/w 2c.h.

8.11.   **CATEGORICAL DATA ANALYSIS**
A. Charitou
2h/w 2c.h.

8.12.   **COMPUTER INTEGRATED PRODUCTION SYSTEMS**
Visiting Professor
2h/w 2c.h.

8.13.   **COMMUNICATION AND INFORMATICS**
C. Konstantopoulou
2h/w 2c.h.

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BRIEF DESCRIPTION OF SUBJECTS

1.1.   INTRODUCTION TO INFORMATICS

K. Margaritis
3h/w 3c.h.

Evolution of computers and computing (hardware, software, applications). Structure of computer systems and their main functional units. Overview of Processor, Memory, Peripheral units, types and organization of modern computer systems. Introduction to computer communications and networks. Information representation. Number systems. Computer arithmetic (integer, fixed and floating point). Character sets. Error detection and correction.

1.2.   ALGORITHMS

K. Tsouros
3h/w 3c.h.

Introduction to the algorithmic way of thinking for solving problems with the use of computers. The concept of algorithm, algorithmic symbolism, data representation. Repetitive processes, recursive structure, design of algorithms.

1.3.   PROGRAMMING I

M. Satrazemi
4h/w 4c.h.

Basic Pascal (data types, assignment statement, Input/Output). Selection structures (if, case). Repetition structures (while, repeat, for). Arrays, strings, ordinal data types.

1.4.   MATHEMATHICS I

G. Pekos G. Stephanides
3h/w 3c.h.

Mathematical theory (introduction, set theory, algebraic vector calculus, combinational analysis). Theory of functions(basic concepts, different forms of functions, limits, inequalities). Linear Algebra (Matrix Theory, theory of determinants, linear systems of equations). Applications to Economics and Business.

1.5.   STATISTICS I

J. Papadimitriou G. Florou
4h/w 4c.h.

Collection, classification and presentation of statistical data. Empirical distributions. Measures of location, dispersion and shape. Elements of probability theory: Definition and foundamental properties of probability of events. Total probability, conditional probability. Baye's rule. Random variables: Probability distribution of a random variable. Distribution function. Function of random variables. Expected value of a random variable, variance, coraviance. Theoretical distributions. Discrete: Binomial, Poisson, etc. Continuous: Normal, Uniform, Gamma, Beta, etc. Sampling distributions.

1.6.   PRINCIPLES OF ECONOMICS

E. Katsouli D. Makridou-Boussiou
3h/w 3c.h.

Basic concepts and methodology in economics. Scarcity and choice. The market. The role of the government. National Product. Unemployment. Inflation. Consumption, savings and investment. Determination of national income. Income equilibrium. Fiscal and monetary policies. External sector. Demand and Supply of goods. Production and costs. Market structures.

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1.7.   FOREIGN LANGUAGE
4h/w 4c.h.

2.1.   COMPUTER SYSTEMS ORGANIZATION
K. Margaritis
3h/w 3c.h.
Logical circuits and Boolean algebra. Logical functions and combinatorial circuits. Encoders-decoders, Multiplexers-Demultiplexers. Simple ALUs. Simple sequential circuits. Flip-flops. Registers. RAM, ROM organization. Implementation of an elementary control unit. Microprogramming. Machine level programming. Peripheral control. Interrupts and traps.

2.2.   DATA STRUCTURES
K. Tsouros
3h/w 3c.h.
Arrays, strings. Linear lists: stacks, queues, double linked linear lists. Non linear lists: Trees. Principal methods of searching and sorting.

2.3.   PROGRAMMING II
M. Satrazemi
4h/w 4c.h.
Subprograms (procedures, functions, units). Pointers, implementing data structures (lists, stacks, binary tree) using dynamic storage. Recursion. Files. Applications.

2.4.   MATHEMATICS II
G. Pekos G. Stephanides
3h/w 3c.h.
The derivative (definition, rules). Partial differentiation. Studying a function by using derivatives (analysis, maximum and minimum points of a function with and without restrictions). Basic concepts of integral calculus (definition, rules). Differential equations. Elements from the theory of differences. Applications to Economics and business.

2.5.   STATISTICS II
D. Papanastasiou G. Florou
3h/w 3c.h.
Laws of large numbers. Central limit theorems. Point estimation: Fundamental notions. The method of moments. The method of maximum likelihood. Examples. Confidence intervals (of mean, proportion, variance, difference of means and proportions, ratio of variances). Hypothesis testing: foundamental notions. Tests concerning means, proportions, variances, difference of means and proportions, equality of variances. X2-tests for goodness of fit, independence and homogeneity. Non-parametric tests.

2.6.   INTRODUCTION TO MANAGEMENT
M. Vlachopoulou
3h/w 3c.h.
An overview of Business Studies. Forms of business organizations. Business and Economic Studies (Relations, Differences). The choice of legal form, location and financial sources. The basic functions of business organizations: Management and Organization, Personell Management, Production, Marketing, Finance. The Environmental Analysis. Strategic Policy.

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BRIEF DESCRIPTION OF SUBJECTS

2.7.   FOREIGN LANGUAGE
4h/w 4c.h.

3.1.   ARCHITECTURE AND
EVALUATION OF
COMPUTERS
M. Roumeliotis
4h/w 4c.h.

This course studies machine organization and design. Register organization, comparative study of machine instruction sets and formats, primary memory organization and access, internal and external bus structures are also covered. Emphasis is given on high performance techniques like cache memory, virtual memory, pipeline and RISC architectures. Parallel processing and distributed systems are also presented.

3.2.   COMPUTATIONAL
MATHEMATICS
Visiting Professor
4h/w 4c.h.

Errors. McLaurin series. Iterative methods for elementary mathematical functions. Root finding for non-linear equations. Numerical linear algebra. Numerical solution of linear equations. Eigenvalues and eigenvectors. Difference equations. Interpolation theory. Calculation of derivatives. Numerical integration. Numerical methods for differential equations. Applications using FORTRAN and MATHEMATICA.

3.3.   FILE STRUCTURES
M. Satrazemi
3h/w 3c.h.
Basic file concepts. Physical devices, a "Generic" file

system. Sequential files (description-organization, primitive operations, algorithms). Relative files (description-organization, primitive operations, algorithms). Ordered files (description-organization, primitive operations, algorithms). Direct access files (description-organization, primitive operations, hashing functions structures and algorithms for handling synonyms), extendible hashing (description-organization, primitive operations, algorithms). Indexed sequential files (description-organization, primitive operations, algorithms). Tree Indexes (B-tree, B+tree). Multi-indexed files. Applications.

3.4.   STATISTICS III
A. Charitou
3h/w 3c.h.
One way ANOVA. Two way ANOVA (with/without interaction). The Latin square and other experimental designs. Regression theory: Simple and Multiple linear regression (estimation, testing, partial correlation coefficient, model selection procedures). Polynomial regression. Regression with categorical response variables. Non-linear regression.

3.5.   MICROECONOMIC ANALYSIS
Z. Georganta
3h/w 3c.h.
Concepts of demand and supply. Equilibrium. Distribution. Consumer preferences and utility. Engel curves. Assets. Risk and uncertainty. Production and technology. Profit maximization. Cost minimization. Perfect competition. Monopoly. Oligopoly. Productivity. Game theory.

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3.6.   FOREIGN LANGUAGE
4h/w 4c.h.

3.7.   OFFICE AUTOMATION
V. Manthou
2h/w 2c.h.
Basic concepts for the computerization of an office (files, storage etc). Basic concepts of ergonomy. Organization issues. Types of office information. Means of computerization (technical, storage, information management, etc). Security of information. Local systems of information. Applications.

3.8.   INTRODUCTION TO LAW
Member of the faculty of the International Economic and Political Studies dpt.
2h/w 2c.h.
Introduction to the basic concepts and distinctions of Law (legal acts, legal relations, legal persons and objects, law and government). Introduction to the various sectors of Law (Civil, public, national and European legal order).

**3.9.   INTERNATIONAL ECONOMICS
- EUROPEAN INTEGRATION**
E. Katsouli
2h/w 2c.h.
International monetary relationships (currency market, determination of exchange rate, balance of payments, international monetary system). International trade (theories and empirical foundations of international trade and factor movements, public barriers to trade, trade and developing countries, international enterprices).

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 E.E.C. and the rest of the world.

4.1.   OPERATING SYSTEMS
M. Roumeliotis
4h/w 4c.h.
This course offers an introduction to the fundamental principles and techniques employed in the design of operating systems. The concepts an operating system is based upon are covered in detail.

4.2.   GRAPH THEORY
M. Satratzemi
3h/w 3c.h.
Basic concepts of graph theory, graph representations. Connectivity, tree, minimum spanning trees, shortest paths and corresponding algorithms. Independent sets, dominating sets, matching, centers and medians.

4.3.   SYSTEMS PROGRAMMING
K. Margaritis
3h/w 3c.h.
Introduction to C language -pointers, memory management, preprocessor commends, separate compilation, libraries, make files, abstract data

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types, program portability. Aspects of assembly level programming for 80x86 computers - programming model, system interrupts, interopearbility with C. Applications -text editing, peripheral control, graphics, menu and icon driven programs.

4.4. MACROECONOMIC ANALYSIS
K. Tsouros, *Z. Georganta*
3h/w 3c.h.

National accounts. Economic development and growth. Inflation and unemployment. Aggregate demand and supply. Keynesian theory. Metakeynesian theoretical developments. Monetary theory. Rational expectations. Cycles. Public deficits and expenditures. Supply economics.

4.5. ACCOUNTING
S. Tsopoglou A. Vazakides
3h/w3c.h.

Purpose, nature and types of Accounting. Generally accepted accounting principles. Double-entry accounting system. Valuation of inventory methods. Depreciation. Preparation of Financial Statements (Journal, Ledger, Trial Balance, Balance Sheet, Income Statement). Adjusting and closing entries.

4.6. FOREIGN LANGUAGE
4h/w 4c.h.

4.7. TEACHING METHODS I
D. Boussiou
2h/w 2c.h.

Basic concepts. Learning theories. Content analysis of specific subjects. Lesson plan. Teaching process and evaluation. Use of computer. Micro-teaching by students.

4.8. PRODUCTION MANAGEMENT
Member of the faculty of the
Business Administration dpt
2h/w 2c.h.

Productivity and competitiveness, forecasting demand, product and service design, location planning and facilities layout process design and capacity planning, aggregate planning, inventory management, operations scheduling, quality control and advanced technologies for production and operations management.

4.9. BUSINESS LAW
Member of the faculty of the
International Economic and Political
Studies dpt.
2h/w 2c.h.

Public enterprices (definitions, legal status, administration and functioning). Private enterprices (definitions, legal status, administration and functioning).

4.10. APPLIED ECONOMICS
A. Vogiatzis
2h/w 2c.h.

The dimensions of the greek agricultural sector in the E.E.C. Administration of agricultural firms (planning, implementation and control, profit factors, investment appraisal). Marketing of agricultural products (economic environment, Characteristics, analysis, organization). The trade system in Greece. The Common Agricultural Policy in the E.E.C. Applying information systems in agriculture (national and international).

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5.1. DATA COMMUNICATION AND COMPUTER NETWORKS

M. Roumeliotis
3h/w 3c.h.

This course introduces students to the basic concepts of data communications. It includes description of the OSI model, digital communication techniques and the importance of protocols and standards for efficient communication. Error detection and correction codes are presented and analyzed. The course also includes in depth examination of local area networking standards with emphasis on Ethernet. Finally, the internetworking techniques are presented along with some network topologies.

5.2. DATA BASES THEORY

Visiting Professor
3h/w 3c.h.

Introduction to data base management systems, data modeling, hierarchical network and relational model, relational algebra, predicate calculus, S.Q.L., Q.B.E., Normalization, 1st, 2nd, 3rd normal forms. Applications to modeling business environments.

5.3. COMPUTER GRAPHICS

A. Manitsaris
3h/w 3c.h.

Introduction to Computer Graphics (software, hardware, applications). Fundamental algorithms for 2D graphics primitives. Data structures for Computer Graphics. Projection of the 3D space. Curves.

Application development: Interactive 2D Computer Graphics with Visual (Event Driven or Object Oriented) Programming.

5.4. ECONOMETRICS I

A. Katos N. Dritsakis M. Sirpi
3h/w 3c.h.

Simple and multiple regression. Basic assumptions of the regression models. Properties of estimators of regression models. Statistical inference (regression coefficients, regression equation). Forecasting. Special regression forms and the full maximum likelihood method. Violation of the basic assumptions of the classical regression model (multicollinearity, heteroscedasticity, autocorrelation, specification). Applications using various packages.

5.5. MANAGERIAL FINANCE

S. Tsopoglou
3h/w 3c.h.

Analysis of the financial environment of the company. Role and function of managerial finance. The time-value of money. The interest factor in financial decisions (compound and present value, compound and present value of an annuity). Analysis of financial statements (financial ratios, inflation, cost-expense-depreciaton). Sources and uses of funds statement. Sources of short-term financing. Sources of long-term financing. The nature of the budgeting process. Cash budgeting.

5.6. INTRODUCTION TO THE THEORY OF AUTOMATA

Visiting Professor
2h/w 2c.h.

The course is aimed to introduce the basic concepts

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and principles of the various model machines which are used in the theoretical computer science.

5.7.   ANALYSIS OF ALGORITHMS
K. Tsouros, K. Paparizos
2h/w2c.h.

Basic parameters evaluating algorithms. Complexity. Complexity of some searching, sorting and graph theory algorithms. Methods of efficient programming. NP-Complete and NP-Hard problems.

5.8.   TEACHING METHODS II
D. Boussiou
2h/w 2c.h.

Instructional objectives (Bloom's taxonomy). Teaching models and adaptation of teaching methods in economics and social studies. Coordination of teaching methods and aids. Pre-conceptions and misunderstandings in the content of subjects in secondary and higher education with emphasis on basic principles. Application in teaching and analysis of economic issues with emphasis on the use of Computer.

5.9.   TIME SERIES ANALYSIS-FORECASTING TECHNIQUES
D. Papanastasiou
2h/w 2c.h.

Definition and examples of Time Series (TS). Stationarity. Autocorrelation function and spectral density of a series. TS forecasting techniques (exponential smoothing, Holt-Winters etc). ARIMA models: Definitions, properties, identification, estimation, diagnostic checking and forecasting. The State Space Model and the Kalman filter. Estimating and forecasting TS models cast in State Space form. Special problems (missing values, outliers, etc). Experience with analysing/forecasting real life (economic) series.

5.10.   SPECIAL ACCOUNTING ISSUES
S. Tsopoglou A. Vazakides
A. Stavropoulos
2h/w 2c.h.

This course will follow the recent developments in the production and use of software applications for general and cost accounting problem solving. Due to the rapid changes in accounting software it is necessary to redefine constantly the scope and purpose of this course.

6.1.   DATA BASE ANALYSIS AND DESIGN
Visiting Professor
3h/w 3c.h.

E-R model, semantic modeling, logic-based models, query processing, transactions processing, recovery, security, distributed data bases. Object Oriented models, applications (knowledge-bases, G.I.S.).

6.2.   ANALYSIS AND DESIGN OF INFORMATION SYSTEMS
V. Manthou
3h/w 3c.h.

Basic concepts in system's theory. Information Systems in economic and management science. Means for the development of an Information System (software, hardware). Analysis and design of Information Systems (data, request, data flow diagram). Applications.

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6.3. HUMAN COMPUTER INTERACTION

A. Manitsaris
3h/w 3c.h.

Introduction. Analyzing users. Analyzing user tasks. Constructing an object model. User interface system-level design. User interface metaphor design. Object oriented graphical user interface. Contextual graphical user interface design. Graphical user interface software.

Application development: Graphics User Interface (G.U.I.) with Visual (Event Driven or Object Oriented) programming (Windows, X-Windows).

6.4. MARKETING

M. Vlachopoulou
3h/w 3c.h.

An Introduction to Marketing. The Marketing Management Process, Marketing Concept, Marketing Organization. The Environment of Marketing. Developing a Target Market. Market Segmentation. Buyer Behavior. The Marketing Mix. Product Planning and Development. Product Policy. Pricing (Strategies and Policies). Channels of Distribution. Physical Distribution. Promotion (Advertising, sales promotion, public relations, selling and sales management, sponsoring). Planning and managing the Marketing Mix. Marketing in Special Fields. Case studies.

6.5. ECONOMETRICS II

A. Katos N. Dritsakis N. Sirpi
3h/w 3c.h.

Generalized method of least squares. The method of instrumental variables. The method of principle components. The method of using simultuneous cross - section and time-series data. Simultaneous-equations methods (assumptions, forms, identification). Estimation methods (ILS, 2SLS, K-Class, LIML, 3SLS, FIML). Applications using various packages.

6.6. COMPUTER NETWORKS ANALYSIS AND DESIGN

Visiting Professor
2h/w 2c.h.

6.7. SIMULATION TECHNIQUES

M. Roumeliotis
3h/w 3c.h.

The course presents the principles of system modeling and the simulation techniques used for the evaluation of systems. Topics include: system characteristics, types of system models, world view and time advance mechanisms, computer simulation algorithms and methodology, random number generation, analysis of simulation languages and tools, Monte Carlo simulation, analysis of simulation output, models validation and verification.

6.8. 3D GRAPHICS MODELS-ANIMATION

A. Manitsaris
2h/w 2c.h.

Curves and Surface Modeling. Visible Surface Determination (Hiden Line/ Surface Removal algorithms). Illumination and Shading. Elements of Fractal geometry. Animation.

Application development: Interactive 3D Computer Graphics and Animation with Visual (Event Driven or Object Oriented) programming.

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6.9.   DATA ANALYSIS
J. Papadimitriou G. Florou
2h/w 2c.h.

Revision of linear Algebra. Eigenvalues and eigenvectors of matrices. Applications of the principles of linear algebra in the analysis of multivariate data. Contingency Tables. The analysis in principal components. The factorial analysis of correspodences. Automatic classification.

6.10.   MONEY AND FINANCIAL MARKETS
S. Tsopoglou
2h/w 2c.h.

Financial markets and institutions. Valuation of bonds (state and corporate) and stocks. Stock-exchange indexes. Capital market theory. Factors which influence the price of stocks. Portfolio management. Security price changes. Investment and mutual fund firms. Structure and organization of the banking system.

6.11.   ANALYSIS OF PRODUCTIVITY AND ECONOMIC EFFICIENCY
Z. Georganta
2h/w 2c.h.

7.1.   ARTIFICIAL INTELLIGENCE
Visiting Professor
3h/w 3c.h.

Basic concepts. Computers and artificial intelligence. Basic concepts, knowledge representation, logic-based representation, problem solving as searching, search algorithms, semantic networks, logic, production systems, objects/frames, declarative versus procedural. Artificial Intelligence languages: Prolog, Lisp. Search and computational complexity in Artificial Intelligence systems.

7.2.   INFORMATION SYSTEMS MANAGEMENT
V. Manthou
3h/w 3c.h.

Strategic management. Strategy planning for Management Information Systems. Frameworks for integrating Information Systems strategies with business strategies. Management Information Systems strategy implementation. The role and nature of Information Systems managers. Information value and Information Systems investment.

7.3.   MATHEMATICAL PROGRAMMING
K. Paparizos
4h/w 4c.h.

Linear Programming (problem formulation, Simplex algorithm, the two face method, duality theory, dual Simplex algorithm, sensitivity analysis, applications). Network optimazation (shortest path problem, max flow problem, minimum cost capacitated flow problem, Critical path method, applications). Integer Programmming (problem formulation, Cutting plain methods, enumeration algorithms). Non linear Programming (problem formulation, convexity theory, Optimization conditions, Unconstraint and constraint optimization).

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7.4.   THESIS (START)
3h/w 3c.h.

7.5.   PARALLEL PROCESSING
K. Margaritis
2h/w 2c.h.

Evolution of parallel systems, fundamental models of parallelism. Architecture and programming models of modern parallel systems. Levels of parallelism and parallel programming languages. Performance analysis. Programming in parallel languages using simulators or special environments. Analysis and design of parallel algorithms. Application specific VLSI and processor array architectures. Current issues of parallel processing.

7.6.   COMPUTERS AND EDUCATION
K. Tsouros
2h/w 2c.h.

Computers and Teaching. Using a computer in the Classroom. Principles of educational software design. Construction of educational software. Teaching programming: "models" of programming. Imperative programming, functional programming computer aided and design of systems for education/training.

7.7.   SOFTWARE ENGINEERING
Visiting Professor
2h/w 2c.h.

Introduction. Principles of design of software maintenance. Structural design, tools of structural design, segmented programming, data dictionaries, work flow. Documentation, maintenance, evaluation and software comparison.

7.8.   MULTIMEDIA
A. Manitsaris
2h/w 2c.h.

Hypertext-Hypermedia Systems: introduction, architecture, management, analysis, navigating, usability, user interface, interactive flowchart, design. Hardware-Software: multimedia extensions. Scanning, image, image processing (Photoshop), sound theory, sound (wav - midi). Graphics (Corel Draw), computer painting, 3D modeling (3D-Studio), animation (Autodesk-3DFX). Video theory video processing (Adope premier). Platforms: Windows, Mac, X-Windows. Multimedia Data Base: design, queries, relationships. Distributed Hypermedia Systems: networks, architecture, protocols, video conferencing, compression. Publishing Hypermedia Titles. Hypermedia Systems Development (Windows, Mac, X-Windows) in Education, in G.I.S., in Marketing, in Business with Visual (Event Driven or Object Oriented) programming (Visual Basic, Delphi and Borland C++) or Interactive Authoring tools (Authorware, Director, Toolbook).

7.9.   INFORMATION SYSTEMS SECURITY
Visiting Professor
2h/w 2c.h.

Threats and security objectives. Physical security. Data security. Cryptography and cryptanalysis. Security role of the subsystems of an Information System (hardware, software, operating system, communications etc.). Implementing security controls during the design phase. Security aspects of the operation of Computer Center facilities.

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Privacy and data protection legislation. Protection of proprietary software.

7.10. MARKETING INFORMATION SYSTEMS

M. Vlachopoulou
2h/w 2c.h.

Information for Marketing Decisions. Sources of Marketing Information (Transaction Processing Data. Marketing Research Data. Marketing Intelligence Data - Information about the strategies of competitors. External Environment Data. Strategic Plan). Types of Marketing Information Systems. Data Support Systems. Data-base Marketing. Types of Reports. Decision Support Systems and Executive Support Systems (Types of MKT models). Expert Systems. The use of Information Systems in special areas of Marketing (Allocation of the marketing budget, sales forecasting, product planning, price planning, distribution planning, promotional planning). Modeling Marketing Phenomena. Cost - benefit analysis. Practical use of Marketing Information Systems.

7.11. TECHNOLOGY AND SOCIETY

C. Konstantopoulou
2h/w 2c.h.

Technological growth and its impact on society (technological progress and social progress, science and technology, trends of new technology, new allocation of labour). Technological revolution (technology-growth-ideology, international interaction). Informatics (society of information, sociological impact of new technology-robotics, unemployment).

7.12. COST ACCOUNTING

S. Tsopoglou A. Vazakides
A. Stavropoulos
2h/w 2c.h.

The nature and concepts of cost and cost accounting. Cost terms and clsassifications (fixed and variable cost). Product cost accumulation systems (job-order and process costing). Cost centers. Full and variable costing. Historical and standard costing. Price and cost decision making. Software applications for cost accounting.

7.13. SPECIAL TOPICS IN ECONOMETRICS

Z.Georganta
2h/w 2c.h.

Methods of non-linear regression. Monte Carlo methods. Model specification and aggregation problems. Rational expectation models. Induction tests. Advanced topics in the violation of the assumptions of the regression model. Simulation methods (static and dynamic). Sensitivity analysis. Applications using various packages.

8.1. EXPERT SYSTEMS

Visiting Professor
3h/w 3c.h.

Introduction of Expert Systems, knowledge representation techniques, inference systems, rule-based Expert Systems, Forward chaining, Backward chaining, reasoning with uncertainty, knowledge acquisition and eliciation, Expert Systems programming languages and development tools, applications.

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8.2.   ACCOUNTING SOFTWARE
S. Tsopoglou A. Vazakides
A. Stavropoulos
3h/w 3c.h.

The accounting plan. Software applications in general and cost accounting. Organization of Inventory, Notes Receivable, Notes Payable, Sales and Purchases accounts in files. Accounting trouble-shooting (prevention, searching and solving of mistakes). The adjusting and closing process. Preparation of year-end financial statements.

8.3.   OPERATING RESEARCH
K. Paparizos
3h/w 3c.h.

Dynamic Programming (DP) (examples, characteristics of DP, deterministic DP, stochastic DP). Inventory theory (an inventory model, inventory deterministic models, inventory stochastic models, multi period stochastic models). Qeueuing theory (examples, basic structure of the queuing model, exponential distribution of queuing models, queuing networks).

8.4.   THESIS (FINISH)
3h/w 3c.h.

8.5.   DISTRIBUTED SYSTEMS
K. Margaritis
2h/w 2c.h.

Distributed systems architectures and their relation to OSI model. The Client-Server model and some implementations -Unix sockets, Remote Procedure Call. Threads and their applications. The Master-Worker model, implementations and applications.

Examples of distributed operating systems, Distributed file systems and data bases.

8.6.   NEURAL NETWORKS
Visiting Professor
2h/w 2c.h.

Fundamentals of Artificial Neural Networks. Elements of Learning Theory. Peceptrons. Adaline. Madaline. Back error Propagetion. Kohonen Network. Counterpropagation Networks. Hopfield Nets (Associative Memory, Max Net). Hamming Networks. Statistical Methods. Bidarectional Associative Memories. Art Theory. Applications.

8.7.   COMPILER DESIGN
Visiting Professor
2h/w 2c.h.

The compilation process, languages and machines, language definition, syntax and semantics, grammars, lexical analysis, context-free grammars and top-down syntax analysis, bottom-up syntax analysis, symbol and type tables, storage allocation, code generation. Generation of machine code, writing reliable compilers.

8.8.   IMPLEMENTATION CASE STUDIES OF INFORMATION SYSTEMS
V. Manthou
2h/w 2c.h.

Selection of a strategy for the development of an information system. Software quality control and control of the development of an information system. Development of a complete application.

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8.9. MANAGEMENT OF DATA PROCESSING PROJECT

Member of the faculty of the Business Administration dpt.
2h/w 2c.h.

Special topics on the development of application systems (i.e. fourth generation languages, introduction to CASEs, quality assurance reviews etc.). Aims to provide the students with experience in analyzing, designing, implementing and evaluating information systems.

8.10. DECISION SUPPORT SYSTEMS

K. Paparizos
2h/w 2c.h.

Prototyping of decision states. Hierarchical decision models. Models of utilization and evaluation of decision. Interactive decision models. Collective decision models. Introduction to D.S.S. The main parts of D.S.S. (Subsystem of man-machine interface, subsystem of database management and retrieval, subsystems of decision models, users). Development of D.S.S. Utilization of integrated D.S.S. Applications.

8.11. CATEGORICAL DATA ANALYSIS

A. Charitou
2h/w 2c.h.

Introduction, describing and inference for two-way contingency tables. Models for binary response variables. Loglinear models and Logit models. Building and applying loglinear models using computer software to analyze categorical data.

8.12. COMPUTER INTEGRATED PRODUCTION SYSTEMS

Visiting Professor
2h/w 2c.h.

8.13. COMMUNICATION AND INFORMATICS

C. Konstantopoulou
3h/w 3c.h.

Community-Communication. Symbolic networks of communication, structures of communication, mass media. The nature of the medium and the message. The society of information and informatics (possibilities, risks, values and culture).