STUDENT GUIDE
2011-2012

September 2011

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Welcome to the Information Technology Department

The Department of Information Technology is one of the six Departments of the School of Technological Applications (S.T.EF.). The operation of the Department began in September 1987 and the first graduation took place in May 1991. Nowadays, more than 1.500 students are enrolled in the Department of Information Technology . Under the Law 3549/2007 all the Institutions of Higher Education are called Higher Educational Institutions (A.E.I). The A.E.I consist of two sector, the University sector (Universities) and the Technological sector (T.E.I).
The main goal of the Department of Information Technology is to supply the work market with high potential executives.

The studies main focus lies in the fields of:

- Computer Science and Computer Engineering, where emphasis is given to the general principles of computers and to the organization, operation and architecture of computational systems and networks.
- Information and Communication Systems, where of primary interest are subjects such as the human-machine interaction, the insertion of information technology and communication applications in companies or organizations and the general principles that should be followed for the effective development of these applications.

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School of Technological Applications

The Department

In this section you can find information on the following areas:

- Objectives
- Academic Organization
- Administration
- Staff
- Equipment
- Photo Gallery

Objectives

The Department of Information Technology is one of the six Departments of the School of Technological Applications (S.T.EF.). The operation of the Department began in September 1987 and the first graduation took place in May 1991. Nowadays, more than 1500 students are enrolled in the Department of Information Technology.

Object of Study

The main goal of the Department of Information Technology is to supply the work market with high potential executives. The studies main focus lies in the fields of:

- Computer Science and Computer Engineering, where emphasis is given to the general principles of computers and to the organization, operation and architecture of computational systems and networks,
- Information and Communication Systems, where of primary interest are subjects such as the human-machine interaction, the insertion of information technology and communication applications in companies or organizations and the general principles that should be followed for the effective development of these applications.

Title of Study

The Department of Information Technology awards the title of Information Technology Engineer. With the completion of their studies the graduates of the Department acquire all the necessary scientific and technological knowledge that will allow them to work in many computer related fields. The graduates of the Department of Information Technology can be occupied in the private sector, as well as in the public sector, in Computer Science and Information Technology fields such as development, management, research, education and training. They can work self-reliantly, or in collaboration with other professionals and scientists, in all the fields that relate to Information and Communication Systems, as well as issues related to development, management, applied research and education.

Structure of Studies and Basic Cognitive Objects

The duration of the studies in the Department of Information Technology is eight (8) semesters. The studies in the first seven (7) semesters include theoretical teaching, laboratory and tutorial exercises, project development and practical exercises, self-reliantly or in cooperation with other students. The 8th semester includes the conduct of Practical Training and the development of the Diploma Thesis.

The syllabus of the Information Technology Department includes Courses of General Infrastructure (e.g. Mathematics), courses of Expertise Infrastructure (e.g. Introduction of Informatics), specialization courses (e.g. Databases) and courses of Economy Administration, Legislation and Humanitarian Study (e.g. Didactic Methodology and Professional Ethics). The basic cognitive fields of the syllabus include the following:

- Algorithms and Data Structures
- Databases and Information Retrieval
- Programming Languages and Methodologies
- Information Systems and Applications
- Software Technology and Engineering
- Computational Systems and Network Technology
- Artificial Intelligence and Intelligent Systems
- Multimedia Technology
- Telecommunication Systems and Computer Networks

- Human-Computer Interaction
- Parallel and Distributed Systems
- Electronic Business
- Educational Technology and Information Didactics

Practical Training

The Practical Training is carried out in Public State or Private Organizations. The students are given the opportunity to work in real professional environments, participating in larger working groups, under the guidance of the hosting staff.

Diploma Thesis

The Diploma Thesis may either be of studying, development or research interest and is carried out by every student individually or as a part of a small team. By carrying out their diploma thesis the students gain invaluable experience.

Academic Organazation

The governing bodies of the Department consist of two Divisions; the Division of Analysis & Programming and the Division of Systems & Computer Technology. Each Division is responsible for teaching a specific number of modules from the course program. All the permanent staff members belong to one of the above Divisions. The decision-making bodies of each Division are the General Assembly and the Head of the Division. The General Assembly consists of the members of staff that belong to the Division and two student representatives.

Division of Analysis & Programming

It covers the subjects of Programming Languages and Methodologies, Information Systems and their Applications, Software Technology and Engineering, Human-Computer Interaction, Electronic Business, Business Organisation and Administration as well as Educational Technology. The current Head of the Division is Associate Professor . Siakas kerstin with sub-head Associate Professor Vasileios Kostoglou.

Course modules of the Division:

- Algorithms & Programming
- Object-oriented Programming
- Web Languages and Technologies
- Information Systems I
- Numerical Analysis & Scientific Application Programming
- Human-Computer Interaction & User Interface Development
- Programming Methodologies
- Artificial Intelligence: Languages and Techniques
- Information Systems II
- Software Engineering I
- Development of Internet Systems & Applications
- Operational Research
- Software Engineering II
- Development and Management of Integrated Information Systems and Applications
- Intelligent Systems
- e-gov, e-commerce, e-learning, e-health
- Computer Graphics

Division of Systems & Computer Technology

It covers the subjects of Algorithms and Data Structures, Databases and Data Mining, as well as Technologies of Information Systems, Networks, Multimedia and E-Commerce. The Division also covers the subjects of Mathematics and English Language. The current Head of the Division is Assist. Professor Hlioudis Christos with sub-head Professor Vitsas Vasileios.

Course modules of the Division:

- Introduction to Informatics
- Digital System
- Mathematical Analysis
- Communication Skills/Social Networks
- Introduction to Operating Systems
- Discrete Mathematics
- Data Structures and Analysis of Algorithms

- Computer Organization & Architercture
- Database Management Systems
- Telecommunication and Computer Networks
- Theory of Operating Systems
- Probability Theory and Statistic
- Computer Networks
- Security on Information Systems
- Multimedia Technology
- Advanced Computer Architectures & Parallel System
- Data Organization and Data Mining
- Special Network Topics I (CCNA)
- Special Network Topics II (CCNA)
- Wireless and Mobile Communication Networks
- Data base Technology

Administration

The Administration is exercised by the General Assembly, the Council and the Head of the Department.

Head of the Department: D. Dervos Professor
Deputy Head: I. Deligiannis , Professor

General Assembly:
The General Assembly consists of the Academic Staff members and student representatives.(40% to the total academic staff members)

Council:
The Council consists of the Head of the Department, the two Division Heads, a student representative and a representative of the Special Technical Staff.
The current composition of the Council is as follows:

Council Head: Head of the Department, D. Dervos, Professor
Members of the Council:

- The Head of Division of Analysis and Programming, K. Siakas, Assos. Professor,
- The Head of Division of Systems and Computer Technology, C. ilioudis, Assistant Professor
- The student representative
- The representative of the Special Technical Staff

Secretary: V. Serasidou

Equipment

The facilities (laboratories, classrooms, teacher offices housed in the main building of the Department (building 5 on map) which was built with specifications suitable for Department of Computer Science and a smaller building, which houses the laboratory 301, the multi-purpose room (302), and the offices of two teachers, and Network Operations Center (Building 18 on map). The theoretical studies carried out on the ground floor in rooms 101, 102, 109 and in the auditorium of the Department. The laboratory lessons, held in rooms 201, 202, 208, 210 211 and 301. The Laboratory of digital circuits is conducted in room 3019 in the old building of STEF (building 2 on map). The room 209 on the first floor of the main building accommodates the servers and networking equipment . For a look at the backbone of the Board follow the direction http://hydra.it.teithe.gr/netmap The training Equipments organized into six labs and is a local area network served by the following servers:

- aetos: central server for all members of the department (students-teachers) who provide services WEB, MAIL, DNS, etc.
- vserver: server that supports a host computer using virtual technology vserver
- medusa: server which supports a number of virtual computers using XEN technology
- tux: central firewall
- hydra: server for student services and management needs of the whole department
- gypas: server support services ghost, anivirus etc.
- iPv6: act as IPv6 Router for the whole section
- vod: server service video-on-demand
- nas, titanas, gigas: file servers to provide storage and backup
- erodios: server support research programs

These servers serve more than 190 workstations are allocated to six laboratories and offices of teachers:

- Operating Systems (Room 201) with 24 stations
- Programming II Room 202) with 24 stations
- Multimedia (Room 208) with 24 stations
- Programming I (Room 211) with 24 stations
- Network and Computer Graphics (Room 210) with 24 stations
- Internet Applications (Room 301) with 26 stations
- Laboratory to support research programs (Room 302) 10 stations
- Offices teachers and technical staff of 26 stations

All these stations are a single network, which is built on the philosophy of all-in-one. Each of these parties have structured wiring and served as a high level of networking equipment (Cisco Switches 3550, 2950). H management and monitoring equipment is mostly from software developed by our department or free software. The backbone of the department is structured with multi-mode optical fiber (gigabit) In this section we installed a wireless network that covers two floors of the main building and small building opposite. In our department has installed a network VPN, that teachers and students have access to specialized services (eg subscriptions to scientific journals, scores, etc.). Students and department staff may have access to the network of the Department, either through private connections via ADSL or dial-up free access to 64 ISDN Modem (Regional Call Number 8962504440).

Fotos from the facilities

Lab 210

Basement Corridor View

Information Technolgy main bilding

Lab 208

Lab 202

First floor Corridor View

Main Entrance

Student Service Office

Secontary Entrance

Typical Teaching Room

Amphitheatre

Computer Room

Computer Room

Computer Room

Typical Network Lab Concentrator

Lab 211

Structure of Studies

In this section you can find information on the following areas:

- Rules and Regulations
- Cources Sructure
- Cources table
- Final Thesis
- Practical Training
- Professional Rights
- Employment Potential

Newly students

Students in the Department o are those entered into after:

- Panhellenic Examinations
- As graduates from Universities and T.E.I. after local examinations
- Without examinations in accordance with the law (special cases)

Courses Structure

Structure of Studies

The duration of studies in the Department of Informatics is eight (8) semesters. The studies in the first seven (7) semesters include theoretical teaching, laboratory and tutorial exercises, project development and practical exercises, self-reliantly or in cooperation with other students. The 8th semester includes the conduct of Practical Training and the development of the Diploma Thesis.

Studies are organized on the basis of one-semester units, which fall into three categories: compulsory units, compulsory by choice units and optional units. All the course units of the first six (6) semesters are compulsory for all students. The compulsory by choice units are specialty units, which are selected by students from a variety of units. The course units of the 7th semester are compulsory by choice (except the unit "Development and Management of Applications" which is compulsory). Each student has to select and successfully complete four (4) of them in addition with the unit "Development and Management of Applications". Optional units provide either general education or more analytical knowledge of specific cognitive fields. These units don't correspond to any academic credits (A.C.) and are not taken into account when the final grade for the Degree is calculated.

Each module consists of either lectures (Theoretical) or Laboratory work or both theoretical and laboratory parts (mixed). Lectures dealing with theoretical analysis and synthesis are complemented by experiments or practice carried out in the laboratories, where there is a limited number of students attending the class (usually no more than twenty students).

If knowledge provided in a module is necessary to attend other modules, then that first module is a "prerequisite" for the second one and the student must pass it in order to undertake the following module. A module may have prerequisite modules and also modules which dependent on it, thus establishing "chains" of modules. All the prerequisite modules can be found in the corresponding table of modules for the Department of Informatics.

Each module corresponds to a specific number of academic credits (A.C.) that represent the educational load of the specific module. Each semester consists of thirty (30) academic units. Diploma Thesis and Practical training correspond to 15 academic units each.

Grading system

The grading system is numerical, 0 to 10 and for the successful completion of a module the student must obtain a grade higher than 5.0 which is considered as a "pass"-level grade. The performance of students in a module corresponds to their numeric grade for that module as follows:

- 10 to 8.5 = Excellent
- 8.4 to 7 = Very Good
- 6.9 to 5 = Good
- 4.9 to 0 = Fail

All grades are calculated and registered with an approximation of 1/10 of an integer unit.

Practice Training

Practice training lasts for six months and usually begins after the last semester of studies, during in which students apply themselves to problems in the work place under the supervision of Academic staff. The students can do the practical training provided that they have passed all the modules of the course with the exception of three (3) modules (not special ones).

Diploma Thesis

Students, being in the last semesters of their studies (provided that they have successfully completed 2/3 of their study course), are obliged to complete a Diploma Thesis in an area directly connected to specific problems or research issues related to Informatics. The Diploma Thesis may either be of studying, development or research interest and is carried out by every student individually or as a part of a small team. By carrying out their diploma thesis the students gain invaluable experience.

Courses Table

Semester 1

Code	Pr	Title	ECTS	Teaching Hours		Course Category
				T	L	
4101		Introduction to Informatics	6	4	2	Compulsory
4102		Algorithms & Programming	6	4	2	Compulsory
4103		Digital Systems	6	4	0	Compulsory
4104		Mathematical Analysis	6	5	0	Compulsory
4105		Communication Skills/Social Networks	6	5	2	Compulsory

Introduction to Informatics

Course Information	
Title	Introduction to Informatics
Course Code	4101
Hours per Week	6
Course Category	Compulsory
Credits ECTS	6
Language	Greek
Teaching Staff	Ilioudis Christos

Aims and Objectives

This course is an introduction to Computer Science. Students will be introduced to fundamental topics in Informatics while developing a basic understanding of Information. Theory Its goal is to help the students develop problem-solving skills, computational thinking, and acquire the fundamental programming skills necessary during the rest of the curriculum.
There is a computer laboratory that supplements the lecture materials.
Informatics is about problem solving with technology. We investigate what "problem solving" means as a process. We learn how to become better problem solvers by learning and applying different techniques. Students will also learn about IT from the bit to the internet. The laboratory works in concert with the lecture.

Key Contents

Introduction to the computer science.
Architecture of computers: low-level data representation and instruction processing.
Operating systems
Software development: problem decomposition, abstraction, data structures, implementation, debugging, testing.
Computer systems: programming languages, compilers, operating systems.
Algorithms: their design, specification, and analysis.
Computer Networks
Computers in the real world: networks, security and cryptography, artificialintelligence, social issues.

Algorithms & Programming

Course Information

Title	Algorithms & Programming
Course Code	4102
Hours per Week	6
Course Category	Compulsory
Credits ECTS	6
Language	Sfetsos Panagiotis http://aetos.it.teithe.gr/~sfetsos/index.html

Aims and Objectives

Course 4102 will take a student who has never programmed before and introduce her/him to fundamental concepts in algorithms and programming. The aims of this course are:

- to introduce the concepts and techniques of problem solving using algorithms and object-oriented approaches; and
- provide students with knowledge, skills and practical experience using Java; and
- to cultivate good programming style and discipline.

On completion of this course, students should be able to:
- analyse and solve problems using algorithms and object-oriented approaches; implement these solutions as quality programs using Java.
- design, code, and test a program by using appropriate tools; and
- know how objects communicate with each other to accomplish business processes, appreciating the importance of object-oriented programming.

Key Contents

Theory contents:
- ☐ Introduction to Algorithms and Object Oriented Programming
- ☐ Introduction to Java, simple programs
- ☐ Data types, variables, arithmetic, decision-making. Equality and relational operators
- ☐ Objects, Classes, access modifiers
- ☐ More on objects, classes. The essence of OOP using static members and methods
- ☐ More on methods, passing parameters
- ☐ Input - Output, Exceptions,
- ☐ Control Structures I : if - switch - ? operator,
- ☐ Control Structures II: while, do..while, for, break, continue, exit,
- ☐ Arrays
- ☐ Strings
- ☐ Vectors
- ☐ Review and Project Demonstration
- ☐ Comprehensive Final Exam

Digital Systems

Course Information	
Title	Digital Systems
Course Code	4103
Hours per Week	4
Course Category	Compulsory
Credits ECTS	6
Language	Greek
Teaching Staff	Dr D.N. Kleftouris Blackboard.teithe.gr

Aims and Objectives

Digital electronic systems are the engines of many consumer products that process information in a digital format and thus have a significant role in our everyday lives. In fact this present technological period is referred to, as the "digital age". Digital systems achievements are used in the construction of computer systems, communication equipment, medical appliances and in general in many commercial, industrial and scientific applications.
This course presents a basic treatment of digital systems and the fundamental concepts used in their design. It provides the student with a framework to understand how hardware works and the basic knowledge for the analysis and design of simple digital systems.
Students completing this course are expected to be able to:
1) Demonstrate an understanding of Binary Numbers, Boolean algebra, Basic Logic Gates, Study of Logic Functions and Gate Implementation.
2) Demonstrate an understanding of Combinatorial Logic, Synchronous Sequential Logic as well as the design of corresponding systems.
3) Demonstrate an understanding of the structure and the function of Registers, Counters as well as of Memory Units.

Key Contents

- Digital Systems and Binary Numbers.
- Boolean Algebra and Logic Gates.
- Gate Level Minimization.
- Combinatorial Logic.
- Synchronous Sequential Logic.
- Registers and Counters.
- Memory Units.

Mathematical Analysis

Course Information	
Title	Mathematical Analysis
Course Code	4104
Hours per Week	5
Course Category	Compulsory
Credits ECTS	6
Language	Greek
Teaching Staff	Antoniou E - blackboard.teithe.gr

Aims and Objectives

The aim of the course is to provide the students with the essential mathematical tools and techniques, in order to be able to handle a variety of problems related to many applications of computer science. Furthermore, the course provides the required skills and knowledge that serve as a mathematical background for other courses taught in later semesters.

Key Contents

- Sequences – Series: Sequences, Limits, Series, Convergence Criteria, Power Series.
- Differential Calculus: Real Functions, Limits, Continuity, Derivatives, Derivative Rules, Applications of the Derivatives, Taylor Series, Study of functions.
- Integral Calculus: Definite – Indefinite Integral, Applications of the Integral, Improper Integrals.
- Linear Algebra: Matrices, Determinants, Linear Systems.

Communication Skills/Social Networks

Course Information

Title	Communication Skills/Social Networks
Course Code	4105
Hours per Week	7
Course Category	Compulsory
Credits ECTS	6
Language	Greek
Teaching Staff	Kostoglou Basilis

Aims and Objectives

1) The student will come in contact with the English and Greek terminology of the Science of Information Technology (IT). After completing the course he/she will have developed the ability of reading scientific texts both in Greek and English languages.
2) Communication skills are developed by the use of written and oral presentations. The student works alone and in groups with the aims of writing and presenting scientific reports related to IT.
3) Particularly emphasis is given to search of sources and bibliography and the writing of references.
4) The use of electronic means and social media networking facilities are stressed for gaining familiarity with contemporary Information and Communication Technology (ICT) tools

Key Contents

The course aims to the development of basic communication skills (technical and interpersonal). The course contains the following parts:
Part 1: Communication skills: The meaning of communication, barriers in communication, improvement, body language, message transmission, asking questions, criticism, creation and evaluation of ideas, presentation of results, attitude comprehension, cross-cultural communication.
Part 2: Searching for scientific articles.
Part 3: Writing skills, design, preparation, structure, language, presentation, checking, rules, report presentation and time management, principles, analysis and structure, improvement.
Part 4: Presentation skills, presentation in a clear, brief and compelling way, so as the audience understands the meaning of connotation.
Part 5: Use of contemporary digital services and environments of social network.

Semester 2

Code	Pr	Title	ECTS	Teaching Hours		Course Category
				T	L	
4201		Object-oriented Programming	6	4	2	Compulsory
4202		Introduction to Operating Systems	6	4	2	Compulsory
4203		Discrete Mathematics	6	5	0	Compulsory
4204		Web Languages and Technologies	6	4	2	Compulsory
4205		Information Systems I	6	4	0	Compulsory

Object-oriented Programming

Course Information	
Title	Object-oriented Programming
Course Code	4201
Hours per Week	6
Course Category	Compulsory
Credits ECTS	6
Language	Greek
Teaching Staff	Adamidis Panagiotis http://aetos.it.teithe.gr/~adamidis/Prog_II.html

Aims and Objectives

This course continues developing Object Oriented Programming concepts and principles that have been introduced in the course \\\"Algorithms & Programming\\\".
It aims to provide an extensive understanding of object-oriented programming and the development of object-oriented thinking to solve computational and programming problems. Emphasis is given on teaching basic principles of object-oriented programming and their application using the JAVA programming language as well as understanding the capabilities of JAVA compared with other programming languages.
It also includes an overview of recursion and other advanced algorithms and techniques.
Programming is not just writting code. Developers should also make some compromises, to choose among alternative designs, different algorithms and different implementations. At the same time they have to deal with compatibility issues, performance and reliability and must also satisfy the specifications. Upon completion of this course, students should know basic searching and sorting algorithms and also be able to:

- develop, transform, verify, correct and execute Java applications using object-oriented features of Java,
- produce object-oriented programs using the basic library of Java,
- describe the object-oriented concepts and principles and their implementation using Java,
- have knowledge of the hierarchy of Java classes,
- use Java classes and derived classes in program development
- judge the quality of other proposed solutions
- co-operate with their fellow students in the joint development and implementation of programming solutions.

Key Contents

- Composition and Inheritance: composition, recursive classes, subclasses/derived classes, access modifiers, overloading and overriding fields and methods, class hierarchies, polymorphism, comparison of inheritance and composition
- Error Handling, Exceptions
- Enhanced class design: abstract classes and methods, interfaces, packages
- General approaches to the construction of efficient solutions to problems, recursion, searching and sorting.

Introduction to Operating Systems

Course Information	
Title	Introduction to Operating Systems
Course Code	4202
Hours per Week	6
Course Category	Compulsory
Credits ECTS	6
Language	Greek
Teaching Staff	Sidiropoulos Antonis http://www.it.teithe.gr/~asidirop/OS
Aims and Objectives	

This course is an introduction to Operating Systems and is specifically aimed at understanding the general principles of operating systems through the use and programming in UNIX.

The aim of this course is that students study and use an OS that was created for developers. Also students should learn the philosophy of an O.S. \\\"behind\\\" the Graphical Environment.

During the course it is discussed and explained how a shell can be used and how it interacts with the kernel of the operating system. The course aims to make an introduction to the student of how an operating system works and how they can use it.

During the course students have the opportunity to learn the strengths that a developer has by using a shell and learn the philosophy of \\\"doing complex actions by combining simple tools that communicate with each other.\\\"

Key Contents

1) Introduction to UNIX: Understanding the operating system UNIX, files, users, groups, users, processes, kernel.
2) Applications-Shell-Kernel: Introduction to the use of the shell, using basic commands, shell variables, environment variables, quotes, common commands-tools and basic editing.
3) File System: Access to file system, paths, permissions, file management, links, basic file system types of Unix and other operating systems (fat, ntfs, ext, ...), devices on UNIX.
4) Shell and files: using wildcards.
5) Processes: process management, properties, signals, the virtual directory /proc.
6) Process Communication: piping and redirection, useof filters.

7) Regular expressions and their use through tools of UNIX (grep, sed)
8) Programming the shell: command interpreters in UNIX, execution control, command operators, repetition structures

Discrete Mathematics

Course Information	
Title	Discrete Mathematics
Course Code	4203
Hours per Week	5
Course Category	Compulsory
Credits ECTS	6
Language	Greek
Teaching Staff	Antoniou E - blackboard.teithe.gr

Aims and Objectives

The course aims to introduce the students to the basic ideas of discrete mathematics such as basic formal logic, counting techniques, graph theory and their applications in computer science. The main goal of the course is to provide students with a good understanding of the basic theory and some applications of discrete mathematics.

Key Contents

Elements of Set Theory: Introduction, Definition of Sets, Set operations, Powersets, Enumerable – non Enumerable Sets, Cardinality of a Set, Relations and Functions, Equivalence Relations, Partial Order Relations.
Propositional Logic: Propositions - Syntax, Connectives – Truth Tables, Tautology – Contradiction, Tautological Equivalence.
Mathematical Induction: Basic and Strong form of Mathematical Induction.
Combinatorial Analysis: Sum and Product Rules, Permutations, Combinations, Balls and Bins.
Generating Functions: Ordinary Generating Functions, Properties, Exponential Generating Functions, Application to Combinatorial Analysis.
Recursive Relations: Recursive Sequences and Relations, Solution of Linear Recursive Relations using Generating Functions.
Elements of Graph Theory: Definitions - Terminology, Directed and Undirected Graphs, Vertex Degree , Paths , Connected Graphs, Subgraphs, Special types of Graphs, Isomorphic Graphs, Euler and Hamilton Cycles, Graphs and Matrices, Shortest Path and Dijkstra’s Algorithm, Trees, Rooted Trees, Weighted Trees, Minimum Spanning Tree, Binary Trees.

Web Languages and Technologies

Course Information	
Title	Web Languages and Technologies
Course Code	4204
Hours per Week	6

Course Category	Compulsory
Credits ECTS	6
Language	Greek
Teaching Staff	Tektonidis D. http://erodios.it.teithe.gr/econ/ + Blackboard

Aims and Objectives

The course is primarily intended to introduce students to the basic languages and web technologies and effective web design & development applications of high interactivity and usability. The course mainly focuses on technologies and methodologies of client-side (front-ends) applications for the WWW.

Key learning objectives are to familiarize with the basic features of web services, mainly in relation to the development of systems and applications. Historical evolution, generations and language development & web technologies, requirements and development needs. The web as a system, the WWW as a distributed hypermedia system. Components of the WWW as a system. Platforms Alerts. The main languages of the web HTML, XHTML. Cascading Style Sheets. The language Javascript. Javascript functions, non-class, prototype-based object orientation. Document Object Model (full in-depth analysis). Client-Side Scripting using Javascript. Techniques for debugging web applications (using debuggers-firebug etc). Introduction to XML (syntax, well-formed, valid, forms) without reference to the accompanying technologies. Using XML documents as data islands. Introduction of technology AJAX. What is web accessibility (web accessibility), measurement and evaluation of accessibility of websites.
More specifically the course\'s main purpose is:
1. The introduction to web programming by presenting the basic concepts, problems, features of internet programming with more than \"classic\" programming examples (eg desktop / console programming).
2. Understanding the different types of web programming, historical evolution, current developments and the reasons that differentiate the web.
3. The theoretical and in-depth understanding of the WWW. The presentation and study of the basic methods for simple web authoring using simple and more complex tools for designing and developing front-ends of web applications.
4. Detailed teaching client-side web programming using various programming languages related (mainly using javascript).
5. The study of problems, possible solutions and outputs front ends for web applications.
6. The study of technologies that constitute the next generation of interactive Web applications (Web 2.0 + & 3.0) as XML, AJAX.
7. The understanding of the issues of universal accessibility of WWW.

Key Contents

Upon completion of this course, students should gain:
- Knowledge of HTML & XHTML languages and technologies like DHTML, DOM, Cascading Style Sheets.
- Knowledge of effective WEB design & authoring.
- Knowledge of client-side (front-end) web programming using DOM + Javascript and generally any relevant language.
- Sufficient experience with the key issues / problems programming front-ends in a web environment and how they are treated.
- Ability to create web sites using appropriate tools (eg Expression Web, Dreamweaver, NetObjects Fusion)
- Knowledge technologies for developing interactive Web 2.0 + applications, XML & AJAX.
- The capability of developing accessible websites

Information Systems I

Course Information	
Title	Information Systems I
Course Code	4205
Hours per Week	4

Course Category	Compulsory
Credits ECTS	6
Language	Greek]
Teaching Staff	Siaka kerstin blackboard.teithe.gr

Aims and Objectives

The aim of the course is the introduction to Information Systems (IS) and the examination of the role of IS in supporting diverse functions of an organisation. The use of IS in supporting management processes, decisions and strategic initiatives and approaches is further analyses..
The Information Systems Life Circle is examined and suitable methods and techniques used during the different phases are analysed
The aims of the course are:

- The investigation of basic principles of Information Systems (IS).
- The study and comprehension of appropriate choice, application and utilization of Information and Communication Technologies (ICTs) for IS development.
- The comprehension of various types of IS that are used in organisations, how a suitable Information System is chosen, development techniques and approaches suitable of each type of system
- The study of the interdependence of IS and the organisation
- Development of skills for ICT determination and evaluation
- Study of real cases that are related to IS applications.

Key Contents

By the end of the course the students should be able to:

- know the role of Information Systems in the organisation
- comprehend the advantages and challenges of IS
- know how IS reshape the organisation and its administration.
- comprehend the changes ICTs introduce in the processes and the management of organisations
- recognise main IS applications and their characteristics

Indicative themes:

1. Introduction to Systems Theory.
2. The Meaning of Information System.
3. Business and Organisation Information Systems.
4. Life-Cycle Models, such as Waterfall model, Spiral model, V model, Win – Win etc.
5. Categories and types of Information Systems
6. Information Systems design and development.
7. Business models (E- Business and E- government)
8. Transaction processing systems
9. Enterprise Resource Planning (ERP)
10. Decision Support Systems (DSS)
11. Case Studies
12. WEB (2.0)

- Semantic Web and Information Systems Management.
- From WWW to Semantic Web ontology (Resource Description, Framework (RDF), Web Ontology Language (OWL).
- Knowledge Management in a contemporary organisation

Teaching Method:
Theory and application/exercises by the use of PowerPoint slides and PC/Internet.
Student group work.
Assessment
Final Exams are mandatory
Optional Intermediate Evaluation.

Semester 3

Code	Pr	Title	ECTS	Teaching Hours		Course Category
				T	L	
4301		Numerical Analysis & Scientific Application Programming	6	5	0	Compulsory
4302		Data Structures and Analysis of Algorithms	6	4	2	Compulsory
4303		Computer Organization & Architercture	6	5	0	Compulsory
4304		Human-Computer Interaction & User Interface Development	6	3	2	Compulsory
4305		Database Management Systems	6	3	2	Compulsory

Numerical Analysis & Scientific Application Programming

Course Information	
Title	Numerical Analysis & Scientific Application Programming
Course Code	4301
Hours per Week	5
Course Category	Compulsory
Credits ECTS	6
Language	Greek
Teaching Staff	Goulianas Lostas Blackboard.teithe.gr

Aims and Objectives

The main goal of the course is the familiarization of the students to the basic concepts of Numerical Analysis and the implementation of some experimental algorithms using the C language.

At the end of the course students should be able to :

- Understand the errors in computer arithmetic, the errors from using floating point arithmetic representation and the error propagation.
- Simulate basic mathematical functions (exp, sin, etc) by using series.
- Solve non-linear equations and systems of linear equations.
- Learn methods for Linear Interpolation, Numerical Integration and Eigenvalues and Eigenvectors calculation.
- The basic instruction set of C language.
- The implementation of representatives of the above methods in C.

Key Contents

1. Computer arithmetic and round-off errors
- Basic concepts in errors (Sources of errors, absolute – relative errors, rounding – chopping)
- Propagation of Errors
- Floating point representation (Position system, significant digits, machine unit, floating point arithmetic errors)

2. Implementation of series
- Elementary uses of series
- Estimating the remainder

3. Solution of non-linear equations and finding roots of polynomials
- Isolation of roots, Convergence, Rate of Convergence
- The Bisection method
- The Regula-Falsi method

- The general theory of iteration methods
- The Secant method
- The Newton-Raphson method

4. Solution of linear systems of equations
- Direct Methods (Diagonal systems, Triangular systems, Gaussian elimination)
- Iterative methods (Gauss-Seidel method, Jacobi method)

5. Linear Interpolation
- Finite differences and error estimates
- Newton interpolation
- Lagrange interpolation
- Error estimates in interpolation formulas

6. Eigenvalues and Eigenvectors
- The Power method
- Eigenvalues by equation solving

7. Numerical Integration
- The Trapezoidal formula
- Newton-Cotes quadrature formulas
- Simpson’s formula
- Gaussian quadrature formula

Data Structures and Analysis of Algorithms

Course Information	
Title	Data Structures and Analysis of Algorithms
Course Code	4302
Hours per Week	6
Course Category	Compulsory
Credits ECTS	6
Language	Ελληνική - Greek
Teaching Staff	Σταμάτης Δημοσθένης - Stamatis D.

Aims and Objectives

By the end of the course the students are expected to:
have acquired a good knowledge of the fundamental data structures, and be able to use them for the implementation of well designed and efficient programs.
have understood the notions of data abstraction and object orientation and their role in program development

Key Contents

types, classes, objects, methods, inheritance and polymorphism.

Linear data structures: Arrays, strings, stacks, queues and their array implementation, applications.

Dynamic data structures: Dynamic storage allocation, linked lists, linked stacks and queues.

Recursion: recursive algorithms, recursive data structures, recursion as a programming methodology.

Trees: Definitions and terminology, binary trees, data structures for binary trees, binary search trees, heaps, priority queues.

Graphs: Definitions and terminology, data structures for graphs, graph traversal

Files: File organisation, sequential files, direct access files, hashing.

Computer Organization & Architercture

Course Information	
Title	Computer Organization & Architercture
Course Code	4303
Hours per Week	5
Course Category	Compulsory
Credits ECTS	6
Language	Ελληνική - Greek
Teaching Staff	Κλεφτούρης Δημήτριος - Kleftouris D. Blackboard.teithe.gr
Aims and Objectives	

This course presents the structure and the function of computers. It provides the students with a framework to understand the nature and the characteristics of modern computer systems. Computer systems consist of a set of subsystems interconnected to each other. Architecture refers to those characteristics of the system that are visible to the programmer while organization refers to the functional units of the system and their interconnections that perform specifications of the architecture.

Students completing this course are expected to be able to:

1) Demonstrate an understanding of the organization and architecture of computer systems.

2) Demonstrate an understanding of the relationship of higher level, abstract ideas to the features of a machine's architecture.

3) Demonstrate an understanding of issues that influence designs of algorithms affecting the performance of subsystems such as cash memory etc.

4) Demonstrate an understanding of the central processing unit, the structure and operation of the processor as well as of computers of reduced instruction set.

Key Contents

1) Introduction and HW/SW/FW allocation.

2) Functional view and brief history.

3) Higher Level of machine operation and interconnection.

4) Cache memory.

5) Internal memory.

6) External memory.

7) Input / Output.

8) Processor structure and operation.

9)Reduced Instruction Set Computers.

Human-Computer Interaction & User Interface Development

Course Information	
Title	Human-Computer Interaction & User Interface Development
Course Code	4304
Hours per Week	5
Course Category	Compulsory
Credits ECTS	6
Language	Greek
Teaching Staff	Keramopoulos E. Blackboard.teithe.gr

Aims and Objectives

The Human-Computer Interaction & User Interface Development course studies the design, implementation and evaluation of Graphical User Interfaces. It consists of two parts:

A) The basic issues of Human Computer Interaction.

B) The development of GUI based on event-driven programming and visual programming approach.

Key Contents

At the end of this course, the student should:

- be familiar with the rules for universal design of interactive systems,
- have acquired basic knowledge about tools and techniques implementing user interfaces,
- have acquired basic knowledge of evaluation methods for interactive systems,
- be familiar with the basic Cognitive Models and Models of Communication and Cooperation
- have acquired basic knowledge of adaptive and adaptable systems.

Database Management Systems

Course Information

Title	Database Management Systems
Course Code	4305
Hours per Week	5
Course Category	Compulsory
Credits ECTS	6
Language	Greek
Teaching Staff	Sidiropoulos Antonios Blackboard.teithe.gr

Aims and Objectives

Introduction to the concepts and methodologies of data modeling, the design of a relational database schema, and to database administration. The course addresses the following four (4) groups of topics:

A) Data Models, Entity Relationship (ER) Diagrams, Data Normalization
B) Relational Algebra.
C) The Structured Query Language (SQL) standard: Data Definition (DML) and Data Manipulation Language (DML) command syntax, Views, Stored Procedures.
D) The Physical (Internal) Level of the Relational Database Management System (RDBMS), Indexing.

Key Contents

- Data Models: Physical and Logical RDBMS Data Model, ER Data Modeling, Extended ER (EER) Data Modeling, Other Data Modeling Methodologies
- Data Normalization: The Sythesis and the Decomposition Aproaches to Data Normalization, First, Second, and Third Normal Forms, ER-to-Relational Schema Mapping, Primary and Foreign Keys, Entity and Referential Data Integrity
- Relational Algebra: Relational Data Organization and Processing, Relational Algebra vs. Relational Calculus, Relational Operators, Atomic and Composite Relational Operators, User Queries and Algebraic Expressions
- Structured Query Language (SQL): SQL Stabdard, Database Schema Implementation, Data Integrity Constraints, the CONSTRAINT SQL Syntax Element, Triggers and Assertions, Domain Integrity Constraints, User Query Examples, Natural, Outer Join, and Division Operations, Nested Queries, Recursive SQL Command Syntax, Views and View Updatability of the RDBMS Data Content
- Stored Procedures: Creation of and Storing at the RDBMS Server, Procedure Calling and Re-Usability of, RDBMS- and 3GL- Initiated Cases
- The Physical (Internal) RDBMS Level: Intoduction to Datbase Indexing, Index Alternatives I, II and III, Clustered and Unclustered Indexes, Simple and Composite Index Search Key, ISAM and B+ Tree Index Impelemnations, B+ Tree Key Insertion and Deletion Algorithms, Indexes and the SQL Standard

Semester 4

Code	Pr	Title	ECTS	Teaching Hours		Course Category
				T	L	
4401		Programming Methodologies	6	4	2	Compulsory
4402		Artificial Intelligence: Languages and Techniques	6	3	2	Compulsory
4403		Telecommunication and Computer Networks	6	3	2	Compulsory
4405		Probability Theory and Statistics	6	3	2	Compulsory

Programming Methodologies

Course Information	
Title	Programming Methodologies
Course Code	4401
Hours per Week	6
Course Category	Compulsory
Credits ECTS	6
Language	Greek
Teaching Staff	Raptis P. - Δικτυακός Τόπος http:/aetos.it.teithe.gr/~praptis

Aims and Objectives

The course aims to present the principles of C++ and covers topics that are not presented or are faced differently in prior offered programming courses.

Key Contents

Issues that are covered in the course:

- C++ Programming Basics
- Bult-in Data Types & User Defined Types
- Structures, Classes and Objects
- Functions, Methods
- Macros and Inline functions
- References, Pointers, and Arrays
- Bit-wise operations
- Operator Overloading
- Inheritance, String
- Virtual Functions, Abstract Classes
- Streams and Files
- Templates
- Standard Template Library (STL)
- Function binding
- GUI and Graphics Libraries

Artificial Intelligence: Languages and Techniques

Course Information	
Title	Artificial Intelligence: Languages and Techniques

Course Code	4402
Hours per Week	5
Course Category	Compulsory
Credits ECTS	6
Language	Greek
Teaching Staff	Stamatis D. www.it.teithe.gr/~demos/teaching_gr.html

Aims and Objectives

By the end of the course the students are expected to:
have acquired good knowledge of the Prolog language, and be able to use it for the development of AI programs.
be able to comprehend the advantages of declarative programming as well as shortcomings in comparison with imperative languages.
have a good knowledge of the main concepts and application areas of Artificial Intelligence.

Key Contents

Introduction to Artificial Intelligence: definitions of AI, history and evolution of AI, philosophical issues, the Turing test, the

nature of problems suitable for AI, overview of the aims achieved so far,
Logic Programs: Horn clauses, syntax, declarative semantics, procedural semantics of Horn clauses, resolution, variables, bindings, unification, most-general unifier.

Prolog as a Logic Language: Syntax, clauses, facts and rules, terms, predicates, variables, atoms, queries, matching, SLD

and LUSH resolution, execution, backtracking, And/Or-tree.
Prolog Programming Methodology: Recursion, Top-Down, Bottom-Up development of Programs, incremental programming, non-deterministic programming.

List Processing: List representation, list processing, recursion.
Built-In Predicates: Negation as failure, arithmetic, comparison, I/O, file handling, etc.
Meta-programming: Higher Order Predicates/ meta-predicates
Applications: Examples of intelligent systems and their implementation – Expert Systems

Telecommunication and Computer Networks

Course Information	
Title	Telecommunication and Computer Networks
Course Code	4403
Hours per Week	5
Course Category	Compulsory
Credits ECTS	6
Language	Greek
Teaching Staff	Bitsas B. Δικτυακός τόπος : blackboard.teithe.gr

Aims and Objectives

This module is introductory in the field of Telecommunications and Computer Networks aiming at the understanding of the fundamental principles of transmission and transmission media of information with emphasis on the telecommunication networks and services.
More specifically, a detailed analysis is carried out about characteristics of interconnections and transmission techniques, parameters of telephone networks and lines as well as approaches to meeting specific communication requirements.
Moreover, the OSI and TCP/IP reference models are presented in order for the students to familiarize and comprehend the multi-layer architecture and the mechanisms that represent each of these layers.
Finally, the module targets on the understanding of concepts and protocols that concern the physical layer and the data-link layer of Computer Networks with emphasis on the architectures of wired and wireless local area networks, access techniques as well as the Ethernet technology.

Key Contents

- Introduction: Definition and history of communications, convergence, data communications, communication model.
- Transmission Issues: Codes, transmission techniques, synchronization, multiplexing, error detection and correction, cyclic
- codes, ARQ retransmission techniques, compression.
- Interconnections: Interconnection characteristic and examples (V.24, USB).
- Transmission media: Twisted pair and coaxial cables, optical fiber. Telephone lines, parameters for telephone lines,
- dial-up/dedicated telephone lines, voiceband and baseband modems.
- Transmission techniques: modulation of amplitude, frequency and phase, pulse code modulation (PCM), sampling theorem.
- Telephony: Telephone network, telephone centers, signaling, voice encoders.
- Network Architectures: Geographic classification, switching (circuit, message, packet), protocol layering, OSI and TCP/IP
- reference models.
- Local Area Networks: Definition, transmission medium, topologies and architectures (bus, star, ring, tree), medium access
- techniques (CSMA/CD, CSMA/CA, token bus, ALOHA), Ethernet technology, wireless local area networks.

Probability Theory and Statistics

Course Information	
Title	Probability Theory and Statistics
Course Code	4405
Hours per Week	5
Course Category	Compulsory
Credits ECTS	6
Language	Greek
Teaching Staff	Antoniou E - Blackboard.teithe.gr

Aims and Objectives

The aim of the theoretic part of the course is to make the students familiar with

- The key concepts and notions in the theory of Probability
- The techniques used to describe, analyze and solve problems involving probabilities.
- The notion of random variables, their usage and the role of distributions both in theoretical and practical level.

Furthermore, the laboratory part of the course focuses on

- The application of the basic methodologies of descriptive statistics
- The application Statistical hypothesis testing
- The notions linear correlation and Regression

Key Contents

- Random Experiment – Sample Space – Events – Event Operations and Polynomials.
- Definitions of Probability (Frequency based – Axiomatic)
- Tree diagrams – Repeated experiments
- Conditional Probability –Bayes Theorem – Stochastic Independence – System's Reliability.
- Probability computations using Combinatorics
- Random Variables – Probability functions (Probability Mass function - Probability density function - Cumulative distribution function)
- Expected Value and Variance
- Some useful Distributions and their Applications: Uniform – Bernoulli – Binomial – Geometric – Hypergeometric – Negative Binomial – Poisson – Exponential – Normal.
- Descriptive Statistics, Statistical hypothesis testing, Linear Correlation – Regression.

Semester 5

Code	Pr	Title	ECTS	Teaching Hours		Course Category
				T	L	
4501		Information Systems II	6	5	0	Compulsory
4502		Software Engineering I	6	3	2	Compulsory
4503		Computer Networks	6	3	2	Compulsory
4504		Development of Internet Systems & Applications	6	4	2	Compulsory
4505		Operational Research	6	5	0	Compulsory

Information Systems II

Course Information	
Title	Information Systems II
Course Code	4501
Hours per Week	5
Course Category	Compulsory
Credits ECTS	6
Language	Greek
Teaching Staff	Siakas Kerstin - Δικτυακός Τόπος Blackboard.teithe.gr

Aims and Objectives

Contemporary Informative Systems cover a wide spectrum of applications, from complicated operational processes and functions, organizational knowledge depositories and decision support, to systems of documentation creation and individualised information services.
This course is an introduction in Management of Information Systems (IS) and IS projects, as they are formed to recent economic, technological and social changes (rapid growth of Information and Communication Technologies (ICTs), globalisation of the economy, decentralisation of organisations, etc).
The components of an Information System are analysed and presented. In addition applications of various types of enterprises and organisations (particularly important are Decision Support Systems (DSS), Knowledge Management (KM), Electronic Governance and Electronic Enterprises) are presented. The course offers a systematic introduction in the analysis and design of Information Systems and covers theoretical, technical and methodological questions.
Learning Outcome:
By the end of the course the students should be able to:

- know the basic elements of the meaning, structure, design and usage of the most important Information Systems.
- possess knowledge and experience in designing and developing IS products.
- to comprehend the challenges of development and use of IS.
- to be able to implement known IS management techniques.
- to understand the role of analysis and design of IS and to be acquainted with the collection of information needed to create an IS.
- to know how to carry out a feasibility study and how to specify the functional and non functional system requirements.
- to have the skills required for project management including creation of effort and budget schedules, reviews and evaluation.

Key Contents

Contemporary Informative Systems cover a wide spectrum of applications, from complicated operational processes and functions, organizational knowledge depositories and decision support, to systems of documentation creation and individualised information services.
This course is an introduction in Management of Information Systems (IS) and IS projects, as they are formed to recent economic, technological and social changes (rapid growth of Information and Communication Technologies (ICTs), globalisation of the economy, decentralisation of organisations, etc).
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By the end of the course the students should be able to:

- know the basic elements of the meaning, structure, design and usage of the most

important Information Systems.

- possess knowledge and experience in designing and developing IS products.
- to comprehend the challenges of development and use of IS.
- to be able to implement known IS management techniques.
- to understand the role of analysis and design of IS and to be acquainted with the

collection of information needed to create an IS.

- to know how to carry out a feasibility study and how to specify the functional and non

functional system requirements.

- to have the skills required for project management including creation of effort and budget schedules, reviews and evaluation.

Software Engineering I

Course Information	
Title	Software Engineering I
Course Code	4502
Hours per Week	5
Course Category	Compulsory
Credits ECTS	6
Language	Greek
Teaching Staff	Deligiannis I. blackboard.teithe.gr

Aims and Objectives

Software engineering (SE) is concerned with developing and maintaining software systems that behave reliably and efficiently, are affordable to develop and maintain, and satisfy all the requirements that customers have defined for them. It is important because of the impact of large, expensive software systems and the role of software in safety-critical applications.
Within this framework, this course is concentrating in Object Oriented technology, providing the students with the background, ability and skills to perform as professionals in systems' development, as well as, in education and research.

Key Contents

Key Contents

☐ Complexity
☐ Object Oriented technology – Fundamentals
☐ Unified Modeling Language
☐ Rational Unified Process
☐ Use Cases, Use Case Diagram

- ☐ Use Case Point Estimation Effort
- ☐ Software Prototyping
- ☐ Conceptual model
- ☐ Activity Diagram
- ☐ System Sequence Diagram
- ☐ Contracts
- ☐ Sequence diagram
- ☐ General Responsibility Assignment Patterns
- ☐ Class Diagram, Class relationships
- ☐ State machine Diagram
- ☐ Package diagram
- ☐ Component diagram
- ☐ Deployment diagram

Computer Networks

Course Information	
Title	Computer Networks
Course Code	4503
Hours per Week	5
Course Category	Compulsory
Credits ECTS	6
Language	Ελληνική -Greek
Teaching Staff	Βίτσας Βασίλειος - Bitsas B.

Aims and Objectives

The aim of this module is the in-depth understanding of the TCP/IP reference model (mainly topics related to the network, transport and application layers) as well as the study of issues associated with the Internet services specification and supply.
More specifically, issues such as Internet addressing (subnet and supernet extensions, IP and ARP protocols), error reporting and correction (ICMP protocol) as well as routing (RIP, OSPF and BGP protocols) are studied in detail.
Furthermore, there is an emphasis on issues related to delivery service for information packets, transmission, flow and congestion control (UDP and TCP protocols).
Finally, the module presents the most important Internet services and applications, such as Electronic mail, file transfer (FTP protocol), World Wide Web (WWW), domain naming (DNS), Internet telephony (VoIP).
Upon completing this module students should be able to design and structure LAN και WAN networks utilizing simulation techniques, by effectively combining transmission media, network devices and network protocols targeting to solve real problems for small and medium scale networks.

Key Contents

Introduction: Internetworking, open system interconnection, Internet services and applications, history of Internet

Protocol Layering: Layering principle, ISO reference model, X.25 protocol, TCP/IP reference model.

Internetworking Architectural Model: Application-Level and Network-Level interconnection, Internet properties and architectures.

Classful Internet Addresses: Classful addressing scheme, subnet and supernet extensions, special IP addresses (broadcast, multicast, loopback).

Address Resolution Protocol (ARP): Mapping Internet addresses to physical addresses, direct mapping, dynamic binding, address resolution cache, ARP refinements, ARP implementation, ARP message format, Reverse Address Resolution Protocol (RARP).

Internet Protocol (IP): Connectionless datagram delivery system, IP philosophy, IP datagram format, IP header fields, packet fragmentation and reassembly, life-time, IP datagram options (route recording, selection of source route, timestamp), routing IP datagrams (direct and indirect delivery, next-hop routing).
Internet Control Messages Protocol (ICMP): Error reporting and correction, ICMP message delivery, ICMP message format, testing destination reachability and status (ping), congestion.

Routing in Internet: Static and dynamic routing, autonomous system concept, routing metrics and performance, routing tables, routing algorithms (shortest path, flooding, distance-vector, link-state), Routing Information Protocol (RIP), Open Shortest Path First Protocol (OSPF), Border Gateway Protocol (BGP).

User Datagram Protocol (UDP): Identifying the ultimate destination, format of UDP messages, UDP encapsulation and protocol layering, UDP multiplexing / demultiplexing, UDP port numbers.

Transmission Control Protocol (TCP): Reliable data stream delivery service, properties, sliding window, TCP ports, passive and active opens, sequence numbers, variable window size and flow control, TCP header format, maximum segment size option, establishment and disengagement of TCP connections, acknowledgements, timeout and retransmission, route time, congestion control (congestion window, avoid congestion by using multicative descrease, slow start, tail drop, random early discard), silly window syndrome, delayed acknowledgements.

Naming using the Domain Name System (DNS): Internet domain names, hierarchy and architectures of domain name servers, performance optimization, abbreviation of domain names.

Internet Service and Applications: Electronic mail. File transfer and access. World Wide Web. Remote login. Internet telephony.

Development of Internet Systems & Applications

Course Information	
Title	Development of Internet Systems & Applications
Course Code	4504
Hours per Week	6
Course Category	Compulsory
Credits ECTS	6
Language	Greek
Teaching Staff	Tektonidis D. - http://erodios.it.teithe.gr/ecom/ + Blackboard
Aims and Objectives	

The course provides the essential knowledge on technologies, programming languages and methods for developing web based applications and systems. The main focus is on the design and development of server-side web based systems and applications that are executed by web server or web applications servers. Students will gain the knowledge needed to create advanced Web applications using content management system (e.g. Joomla) or by the use of web programming frameworks and languages like PHP and MS ASP. NET. In addition, the course provides an introduction to methods for the

development of Web 2.0 + applications & systems, and advanced architectures for the development of web systems and applications (API, Service Oriented Architectures).

Key Contents

Upon completion of this course, students will learn about the following topics:

- Architectures for development of web systems and applications (client-server) and key infrastructure components for web applications (web servers).
- Basic concepts for the development of web systems (state, session, application, request, response).
- Server Side programming language using third generation (PHP).

CMS systems (Joomla, Drupal).

- Develop web applications using CMS systems. Manage, Optimize Applications.
- Frameworks for developing Ajax-based web systems (eg jQuery, Mootools). Rich Internet Applications.
- Development of web systems using. NET (using C #, VB).
- NET Framework Class Library related to the development of web applications and systems.
- Metadata and their management in the development of online systems.
- Topics; Scalability & Efficiency.
- Web Services

Operational Research

Course Information	
Title	Operational Research
Course Code	4505
Hours per Week	5
Course Category	Compulsory
Credits ECTS	6
Language	Greek
Teaching Staff	Kostoglou B. - www.it.teithe.gr/~vkostogl

Aims and Objectives

The main objective of this course is the familiarity of the students with the way of thinking and the logic of scientific management by understanding, using and practicing on models and techniques of Operational Research.
Upon completion of the course students are expected to:

- Understand the meaning and the logic of Operational Research models
- To gain theoretical and practical knowledge of the models and algorithms of the main Operational Research techniques
- To practice in analyzing and tackling real problems and case studies.
- To interpret and apply the results of the solutions of Operational Research problems

Key Contents

- Introduction to Operational Research (OR)
- The nature of the OR - Mathematical models and algorithms
- Project management through Network Analysis

(Time scheduling - PERT technique - CPM method - Resource planning)

- Linear programming

(mathematical model – problem formulation – configuration problems - case studies - Simplex method - sensitivity analysis - problem solving - case studies)

- Transportation problems

(mathematical model - methods for finding initial solution - solution algorithm - special cases - solving problems and applications)

- Stock control

(concept - role and importance – cost elements – deterministic inventory systems – solving problems - case studies)

Semester 6

Code	Pr	Title	ECTS	Teaching Hours		Course Category
				T	L	
4601		Security on Information Systems	6	4	2	Compulsory
4602		Machine Learning	6	3	2	Compulsory
4603		Data base Technology	6	4	2	Compulsory
4604		Software Engineering II	6	5	0	Compulsory
4605		Selected Course 1	6	0	0	Compulsory Selected

Security on Information Systems

Course Information	
Title	Security on Information Systems
Course Code	4601
Hours per Week	6
Course Category	Compulsory
Credits ECTS	6
Language	Greek
Teaching Staff	Ilioudis Ch. - Blackboard.teithe.gr

Aims and Objectives

Computer systems store, process and communicate a wide variety of data. Much of this data is private and the improper access to it can be very expensive. Securing computer systems against malicious attacks or even against inadvertent damage is vital.
This module will cover computer system security at the more general policy/strategy and overall system level. It will look not consider low level primitive mechanisms such as encryption algorithms or protocols as these are covered elsewhere. Practical work will involve the analysis or investigation of some security component using appropriate tools.
The material will be presented through a combination of lectures, tutorials/practical exercises (in groups of 20 students). Students will be expected to read around the lecture topics and to work on assignments in their own time.
This module uses a number of teaching methods to provide the student with appropriate knowledge and understanding of the material in the module. The continual practical work will assist the student in understanding the material presented and also to support the development of practical skills this module aims to achieve.
PREREQUISITES
Although it is currently indicated that there are no pre-requisites for this course, to benefit the most from the course, students taking this course are expected to have the following background:

- Basic knowledge of: Java programming, operating systems, data structures, database systems and networks.
- Basic mathematics: undergraduate mathematics, some knowledge about mathematical logic

Key Contents

Topics include:

- Introduction to information security
- security models,
- access control policies,
- risk analysis
- cryptographic algorithms, public-key cryptography
- Identification authentication (smart cards, biometrics, etc)
- Public Key Infrastructure,
- secure operating systems,

- secure database systems,
- secure electronic commerce
- web security
- privacy and anonymity on web
- legal framework on information security

Machine Learning

Course Information	
Title	Machine Learning
Course Code	4602
Hours per Week	5
Course Category	Compulsory
Credits ECTS	6
Language	Greek
Teaching Staff	Diamantaras K. & Goulianas K. Blackboard.teithe.gr

Aims and Objectives

The aim of the course is to give the student a global perspective of the field of machine learning through the study of the major models and learning methodologies with and without supervision. The course also offers the basic elements of learning theory so the student understands what are potentials and limitations of these models, and what are the constraints of learning.

Key Contents

The topics covered are:
Introduction
• Basic Concepts
Supervised Learning
• Mathematical background, gradient descent, LMS algorithm
• The Perceptron algorithm. Using nonlinear decision functions (step function, sigmoid).
• Major neural models: Back Propagation, Radial Basis Function networks
• Support vector machines
• Feature extraction
• Committee machines
Unsupervised Learning
• The Bayes theorem.
• Parametric and non-parametric Probability Distribution Estimation
• Clustering. The K-means algorithm
• Mixture of Gaussians. The EM algorithm
• Principal Component Analysis - PCA
• Unsupervised neural models: Self Organizing Maps, PC models
Learning theory elements
• Generalization. Over-modeling and under-modeling
• Estimating generalization performance: Cross-validation
• Regularization, growing and pruning methods

Theoretical part: Weekly lectures. In the laboratory part of the course there will be weekly assignments implementing

major neural models (Perceptron, Adaline, Back-propagation, RBF, SOM) and clustering methods (K-means) using MATLAB.

Data base Technology

Course Information	
Title	Data base Technology
Course Code	4603
Hours per Week	6
Course Category	Compulsory
Credits ECTS	6
Language	Ελληνική
Teaching Staff	dervos D. Keramopoulos E. - blakboard.teithe.gr

Aims and Objectives

This course is designed to cover issues on optimizing queries in the relational data model, examines in depth the SQL programming when it is incorporated in a third-generation programming language. The student practiced in modern database environments that implement / support the object-oriented and object-relational data model. Also, the student studies issues related to handling and controlling the execution of concurrent transactions, and the recovery of the DBMS after crash.

Key Contents

1. Programming SQL: Embedded SQL in Third Generation Programming Environment, ODBC and JDBC Technology, Development of Distributed Database Systems.
2. Αλγόριθμοι Υπολογισμού των Αιτημάτων: Συγχώνευση και Ταξινόμηση, Ελαχιστοποίηση του Κόστους I/O, Διαδρομές Πρόσβασης, Υπολογισμός των Διεργασιών της Επιλογής, της Προβολής και της Σύζευξης
3. Βελτιστοποίηση των Αιτημάτων: Σχέδιο Υπολογισμού, Μετακίνηση των Επιλογών, Χρήση Ευρετηρίων, Ισοδυναμίες στη Σχεσιακή Άλγεβρα
4. Data Web Services: The design of Data Web Services, the development of Data Web Services using stored procedures and SQL commands, Deploy Data Web Services.
5. Object-Oriented DB: New Data Types, Objects, Object Identity and Reference Types, Inheritance, the ODMG 3.0 standard, the object-oriented query language OQL,
6. Object-Relational DB and SQL: Design a database for an Object-Relational Database Management System, Extending the Relational Data Model, Nested collections, Comparison of the Relational with the Object-Oriented and Object-Relational Database model
7. Διαχείριση των Συναλλαγών και Επαναφορά του Συστήματος μετά από Βλάβη: Ιδιότητες ACID, Χρονοπρογράμματα, Προβλήματα κατά την Επικάλυψη των Επιμέρους στην Ταυτόχρονη Επεξεργασία, Κλείδωμα, Έλεγχος του Ταυτόχρονου, Επαναφορά από Βλάβη, ο Αλγόριθμος ARIES.

Software Engineering II

Course Information	
Title	Software Engineering II
Course Code	4604
Hours per Week	5

Course Category	Compulsory
Credits ECTS	6
Language	Greek
Teaching Staff	Deligiannis I. & Sfetsos P. - Blackboard.teithe.gr

Aims and Objectives

Software engineering (SE) is concerned with developing and maintaining software systems that behave reliably and efficiently, are affordable to develop and maintain, and satisfy all the requirements that customers have defined for them. It is important because of the impact of large, expensive software systems and the role of software in safety-critical applications.
Within this framework, the course is concentrating in Object Oriented technology, and particularly in advanced concepts as Object Oriented methods and techniques, including the Agile methods, Evaluation, and Testing, providing the students with the background, ability and skills to perform as professionals in architectural aspects of software systems, in design and code evaluation, and testing, as well as, in education and research.

Key Contents

Key Contents
- ☐ Design principles
- ☐ Software Design Patterns
- ☐ Measurement and Metrics
- ☐ Design heuristics
- ☐ Software Testing
- ☐ Reverse Engineering
- ☐ Software Refactoring
- ☐ Open Source
- ☐ Agile methods
- ☐ Application Program Interfaces

Selected Course 1

Course Information	
Title	Selected Course 1
Course Code	4605
Hours per Week	0
Course Category	Compulsory Selected
Credits ECTS	6
Language	Greek
Teaching Staff	

Aims and Objectives

Select from the list of compulsory courses to choose 801,802,803,804,805,806,807,808

All selection is required specialty courses

Key Contents

Semester 7

Code	Pr	Title	ECTS	Teaching Hours		Course Category
				T	L	
4701		Development and Management of Integrated Information Systems and Applications	6	4	2	Compulsory
4702		Multimedia Technology	6	3	2	Compulsory
4703		Selected Course 2	6	0	0	Compulsory Selected
4704		Selected Course 3	6	0	0	Compulsory Selected
4705		Selected Course 4	6	0	0	Compulsory Selected

Development and Management of Integrated Information Systems and Applications

Course Information	
Title	Development and Management of Integrated Information Systems and Applications
Course Code	4701
Hours per Week	6
Course Category	Compulsory
Credits ECTS	6
Language	Greek
Teaching Staff	Sidiropoulos A. - http://Backboard.teithe.gr/

Aims and Objectives

The course is the study and development of integrated software applications and information systems. Students during the course implement all the steps of development and implementation of an integrated application-information system: recording and analysis of requirements, design, implementation, debugging, documentation, development and maintenance.
Upon completion of the course the student should have developed by participating in working groups a complete application.

Key Contents

Source Code Management (source code management-SCM), revision (revision), version (version), version (release) management, History trees of revision-controlled projects.
Development of Libraries (APIs - Application Programming Interface and Web APIs)
Programming Applications based on Relational Databases.
Programming user interfaces (GUI programming, Advanced Forms, event driven programming, event handling techniques).
Techniques and methodologies for developing multi-threaded applications, web programming.

Preferred Prerequisites: Information Systems II, Programming Methodologies II, Human-Computer Interaction & User Interface Development, Database Technology,Web Languages and Technologies.

Multimedia Technology

Course Information	
Title	Multimedia Technology
Course Code	4702

Hours per Week	5
Course Category	Compulsory
Credits ECTS	6
Language	Greek
Teaching Staff	Klefturis D. - Δικτυακός τόπος : blackboard.teithe.gr

Aims and Objectives

The main learning objectives of this course are the following:

- To understand the basic concept of the multimedia
- Knowledge of the special characteristics, models and technologies that are related with the media
- Knowledge of the basic codification techniques of the media
- The understanding of the networked demands of the multimedia along with technologies for the transmission of multimedia applications over the network
- The understanding of the guaranteed quality of services as well as the mechanism of the multimedia transmission with guaranteed quality

The evolution of programming, communications and computer technologies have developed an interest to a multi type data process. Multimedia is defined as a combination of a united production of text, picture, sound, motion and video enhanced with the capability of interactivity with the user. The use of multimedia in today's society is widely spread. Multimedia is applied in the fields of industry, science, education and entertainment.
The course of Multimedia Technology defines the meaning of multimedia, describes the media that form the multimedia applications, analyze the theories and techniques for the transformation of the media into digital form appropriate for computation and finally presents the demands and techniques for the transmission of the multimedia applications to the web.

Key Contents

The content of the course is :

- The characteristics of the media, multimedia applications and multimedia systems
- Sound, graphics, picture, animation, video
- Data encoding, entropy, sound, picture and video encoding
- Multimedia synchronization
- Multicast, multimedia protocol transmission, multimedia streaming
- Teleconference
- Best effort services
- Guaranteed quality of service

Selected Course 2

Course Information	
Title	Selected Course 2
Course Code	4703
Hours per Week	0
Course Category	Compulsory Selected
Credits ECTS	6
Language	Greek

Teaching Staff	

Aims and Objectives

Select from the list of compulsory courses to choose 801,802,803,804,805,806,807,808

All selection is required specialty courses

Key Contents

-

Selected Course 3

Course Information	
Title	Selected Course 3
Course Code	4704
Hours per Week	0
Course Category	Compulsory Selected
Credits ECTS	6
Language	Greek
Teaching Staff	

Aims and Objectives

Select from the list of compulsory courses to choose 801,802,803,804,805,806,807,808

All selection is required specialty courses

Key Contents

-

Selected Course 4

Course Information	
Title	Selected Course 4
Course Code	4705
Hours per Week	0
Course Category	Compulsory Selected
Credits ECTS	6
Language	Greek
Teaching Staff	

Aims and Objectives

Select from the list of compulsory courses to choose 801,802,803,804,805,806,807,808

All selection is required specialty courses

Key Contents

-

Semester 8

Code	Pr	Title	ECTS	Teaching Hours		Course Category
				T	L	
4801		Intelligent Systems	6	5	0	Compulsory Selected
4802		Advanced Computer Architectures & Parallel Systems	6	5	0	Compulsory Selected
4803		Data Organization and Data Mining	6	5	0	Compulsory Selected
4804		Special Network Topics I	6	2	4	Compulsory Selected
4805		Special Network Topics II	6	2	4	Compulsory Selected
4806		e-gov, e-commerce, e-learning, e-health	6	5	0	Compulsory Selected
4807		Wireless and Mobile Communication Networks	6	5	0	Compulsory Selected
4808		Computer Graphics	6	5	0	Compulsory Selected

Intelligent Systems

Course Information	
Title	Intelligent Systems
Course Code	4801
Hours per Week	5
Course Category	Compulsory Selected
Credits ECTS	6
Language	Greek
Teaching Staff	Adamidis P. - http://aetos.it.teithe.gr/~adamidis/intelsys.html

Aims and Objectives

Intelligent Systems are systems that exhibit reasoning, learning, and skills of making logical decisions without human intervention. The aim of this course is to understand and the reproduction of how people, animals and other biological organisms evolve and develop skills to solve difficult problems. To design such systems outside the traditional numerical-symbolic processing of knowledge representation, some other technologies such as Evolutionary Algorithms (a problem solving tool based on natural evolution of species) Fuzzy Systems (which provide a methodology for handling non-specific information) neural Networks (which are treated in the same course) have been devised. These systems allow a new alternative approach to problem solving.
The course focus on: Evolutionary Computation, Fuzzy Systems but it also includes Intelligent Agents, Artificial Life, Swarm Intelligence and reference to other intelligent technologies.
This course also tries to get the students to be capable of solving problems using evolutionary computation and fuzzy systems. Therefore, they carry out two assignments on these technologies.

Key Contents

- Evolutionary Computation: Introduction, Types and models (genetic algorithms, evolutionary strategy, evolutionary programming, genetic programming). Mechanisms, operators, settings and configuration. Use of them in optimization, searching, and problem solving. Applications.
- Fuzzy Systems: Introduction, Fuzzy sets and arithmetic (complement, union, intersection, S-norms, T-norms, etc.). Fuzzy rules, fuzzy logic, approximate reasoning. Properties of fuzzy systems (fuzzy rule base, fuzzy inference, fuzzifiers and defuzzifiers, approximation). Design of fuzzy systems from input-outputdata (table look-up scheme, gradient descent training, least squares, clustering). Principles of fuzzy control. Algorithms and programs for developing applications.

- Intelligent Agents: Introduction, What are Agents, Architectures for Intelligent Agents, Agent Programming Languages
- Artificial Life: Investigation of complex systems that exhibit \"lifelike\" behavior to better understand the real (biological) life. Includes topics such as autonomous agents, Conway\'s \"Life\" as a calculating machine; The Edge of Chaos; Kauffman’s Origins of Order; The Iterated Prisoner\'s Dilemma; system Tierra; Lindenmeyer Systems; and Reaction-Diffusion systems.

Advanced Computer Architectures & Parallel Systems

Course Information	
Title	Advanced Computer Architectures & Parallel Systems
Course Code	4802
Hours per Week	5
Course Category	Compulsory Selected
Credits ECTS	6
Language	Greek
Teaching Staff	Diamantras K. - www.it.teithe.gr/~kdiamant Blackboard.teithe.gr

Aims and Objectives

The aim of the course is to introduce the student to the methods and architectural choices in modern computer design and to present the basic principles of parallel processing and the mapping of algorithms on parallel machines. The course is a natural sequel of Computer Architecture and Organization (2nd semester).
The laboratory exercises have the objective of introducing the student to the world of parallel programming based on the model of distributed memory and message passing. The student learns how to program in C using the MPI library in a computer cluster.

Key Contents

- Introduction: advanced architectures for parallel processing, computer system classification: SISD, MISD, SIMD, MIMD, classification based on memory access: UMA, NUMA, memory models (shared/distributed memory), message passing model, multiprocessors, multicomputers
- Memory Technology: memory hierarchy, cache organization, storing and retrieving data from the cache, cache performance, cache optimization, managing multiple caches, the cache coherence protocols: snooping, directory-based, main memory organization.
- Pipelining: The instruction pipeline, phases of instruction execution, the DLX educational processor, the DLX pipeline, pipeline hazards: structural hazards, data hazards, control hazards.
- Parallel Programming: Amdahl’s Law, semaphores, locking, synchronization, deadlocks and deadlock avoidance.
- Code Parallelization: Data dependence graphs, nested loops, algorithm mapping, linear mapping, scheduling, optimal scheduling for special cases, heuristic methods, systolic arrays, parallelizing nested loops
- Clusters και Grids: design option, the Google cluster

Data Organization and Data Mining

Course Information	
Title	Data Organization and Data Mining
Course Code	4803
Hours per Week	5

Course Category	Compulsory Selected
Credits ECTS	6
Language	Greek
Teaching Staff	Dervos D. & Keramopoulos E. - Blackboard.teithe.gr

Aims and Objectives

Introduction to the new trends that shape today\\\'s data organization, management and analytics framework that facilitates decision support. More specifically, the following technologies are considered: semi-structured data, data warehousing, online analytical processing, and knowledge discovery from databases

Key Contents

1. Introduction to the Semistructured Data Model: related technologies: XML, XML schema, resource description framework (RDF). Query languages: SQL2008, XQuery, Xpath, SPARQL. Store and data manipulation of XML documents in an ORDBMS.
2. Distributed Databases: data distribution, distributed processing, fragmentation: horizontal, vertical, mixed, induced fragmentation, data replication, master-slave scheme, synchronous and asynchronous replication, replication management, distributed concurrency control, two-phase commit protocol, tree two-phase commit protocol
3. Data Warehousing (DW): DW architecture, design, and implementation. Star- snowflake- and fact constellation-schemata. DW data loading. Decision support tasks: DW analytics
4. Online Analytical Processing (OLAP): The mutlidimensional data cube. Concept hierarchies. OLAP operations: slicing, dicing, drilling-down, rolling-up, pivoting. MS-Excel pivot tables. Pivot table, creation of. Hypothesis testing
5. Knowledge Discovery from Databases (KDD): Data types, data mining types, plans, tasks, and stages. Data mining algorithms, call parameters, methods and techniques. Understanding the data, and the data preparation stage. Data sources, data organization, cleaning, and transformation. Clustering, classifification (decision tree), and afinity analysis techniques. Output visualization and interpretation. Output organization and processing for decision support: the recommender system case study.

Special Network Topics I

Course Information	
Title	Special Network Topics I
Course Code	4804
Hours per Week	6
Course Category	Compulsory Selected
Credits ECTS	6
Language	Greek
Teaching Staff	Psaras N. Balckboard.teithe.gr

Aims and Objectives

In-depth teaching of the current networking and internetworking technologies. More specifically, the:
TCP/IP suite
Ethernet
IPv4 addressing
Static routing
Dynamic routing using RIP, OSPF and EIGRP

The acquisition of practical experience on:
Local networks using real networking devices
Routing
Troubleshooting
IOS usage which is found in over 90% of existing routers.

The course is teached using networking devices (switches and routers) and other networking infrastructure.
The course includes practice over the subjects that are teached using real networking devices in a specially created Department lab.

The equipment that is used includes 9 routers, 3 layer-2 switches and 3 layer-3 switches.
During the course, students obtain multiple hours of experience on usage and administration of networking devices, they deploy complex networking topologies and they face a number of real-world problems.

Key Contents

The course curriculum comprise of the first half of the official curriculum of the Cisco Certified Network

Associate (CCNA) certification and includes:
TCP/IP suite and OSI model
Ethernet technology
Physical mediums
IPv4 addressing
IP, TCP, UDP and ICMP protocols
Introduction to routing – routing table
Static routing
Dynamic routing
RIP, OSPF and EIGRP protocols
IOS

Special Network Topics II

Course Information	
Title	Special Network Topics II
Course Code	4805
Hours per Week	6
Course Category	Compulsory Selected
Credits ECTS	6
Language	Greek
Teaching Staff	Psaras N. - Δικτυακός Τόπος Blackboard.teithe.gr

Aims and Objectives

In-depth teaching of the current Local Area Network (LAN) and Wide Area Network (WAN) technologies. More specifically, the:
LAN design
Ethernet switching and related technologies
Wireless Networks
WAN Protocols (PPP, Frame Relay) and WAN technologies
Network security, Access Control Lists
Network Address Translation
IPv6

The axquisition of practical experience on:
Deployment of local area networks using real networking devices in a professional level
Troubleshooting
Combining different technologies and protocols for providing complete solutions.
Combining LAN technologies, WANs and routing protocols.

Key Contents

The course curriculum comprise of the second half of the official curriculum of the Cisco Certified Network Associate (CCNA) certification and includes:
Local Area Network (LAN) design
Ethernet switching: (Basic Configuration, Security -VLANs, Trunking, Cisco\'s VLAN Trunking Protocol (VTP) -Inter-VLAN Routing -Spanning-Tree Protocol (STP))

Point-to-Point Protocol (PPP)
Frame Relay
Network security, Access Control Lists
WAN technologies
Network Address Translation (NAT), Dynamic Host Configuration Protocol (DHCP)
IPv6

The course is the continuation of Advanced Networking I and builds on top of the knowledge that is obtained from that course. Teaching is performed using the exact same method, by using networking devices (switches and routers) and other networking infrastructure. The course includes practice over the subjects that are teached using real networking devices in a specially created Department lab. The equipment that is used includes 9 routers, 3 layer-2 switches and 3 layer-3 switches.
During the course, students obtain multiple hours of experience on usage and administration of networking devices, they deploy complex networking topologies and they face a number of real-world problems.

e-gov, e-commerce, e-learning, e-health

Course Information	
Title	e-gov, e-commerce, e-learning, e-health
Course Code	4806
Hours per Week	5
Course Category	Compulsory Selected
Credits ECTS	6
Language	Greek
Teaching Staff	lioudis ch. & Chatzimisios P. - Blackboard.teithe.gr

Aims and Objectives

The student should be able to:
- Describe and explain policy objectives around e-government, e-commerce, e-learning, e-health and e-services
- Describe and explain how the change towards e-services influences organisational activities
- Provide examples of current e-services and investigate these from a user perspective
- Describe and explain strategies, processes and technical solutions for implementation, preservation and accessibility to e-services
- Suggest and design new public e-services

At the end of the lecture the students understood the technologies and basic mechanisms behind service-based applications both, from a requester and a provider perspective. The fundamental architectural styles in this area are clear and can be related to standards like HTTP, SOAP, WSDL etc..

Key Contents

- Introduction to e-services
- Technology environment
  - The Web as a Middleware Platform
  - Web Protocols (HTTP, SMTP)
  - Dominant Architectural Styles (REST, SOA)

- o QoS at the Message Level (SOAP, WS-TX/BA)
- o Service Descriptions (WSDL, Policy)
- o Service Discovery (UDDI, MEX)
- E-government
- E-commerce, Electronic payment systems, E-banking
- E-learning
- E-health

Wireless and Mobile Communication Networks

Course Information	
Title	Wireless and Mobile Communication Networks
Course Code	4807
Hours per Week	5
Course Category	Compulsory Selected
Credits ECTS	6
Language	Greek
Teaching Staff	Chatzimisios P. Blackboard.teithe.gr

Aims and Objectives

The last decade has been an explosive growth in communications and networks that is driven by the huge success of mobile telephony and wireless communications. The penetration of communications into the world and Greek market creates new conditions both in terms of providing commercial services as well as with respect to the use of networks for business, residential and government applications.
The aim of this course is the extensive study of the concepts and techniques involved in modern research challenges in the wider scope of networks and telecommunications systems. The course covers a wide range of design knowledge and performance of networks and introduces students to recent technological advances and developments in telecommunications issues by briefly presenting various hot topics.
The students will be actively engaged with research issues for better understanding of the relevant thematic areas. The topics that will be discussed include legal and financial issues in telecommunications. Consideration will be also given tp significant technological developments in communication networks and wireless networks. Furthermore, new technologies and applications in telematics as well as in modern digital services requiring Quality of Service (QoS) we will be presented. Where appropriate, presentations of hot topics on communication networks will take place in order to inspire further pursuit and investigation.

Key Contents

- Institutional framework, financial and legal issues in Telecommunications:

European law for competition and telecommunications. National and international supervisory authorities. Licensing and spectrum management. Charge of network data services, congestion charging, sharing criteria of network resources, control flow models, charging the Internet.

- Introduction to Wireless Communications:

Basic features of wireless propagation, types of interference, multiplexing methods, Physical layer (PHY), Medium Access Control layer (MAC): Medium access and packet collision avoidance techniques (CSMA/CA, polling).

- Technologies for Wireless Networks:

Wireless networks, IEEE 802.16 (WiMAX). Wireless high-speed Local Area Networks (IEEE 802.11 a/b/e/g/n, HiperLAN, HomeRF, IrDA AIr). Wireless personal networks (UWB, Bluetooth, Zigbee, IrDA).

- Modern web services:

Quality of Service (QoS), flow control and congestion for computer networks. Coding, compression and real-time protocols. Real-time applications and services that use the Internet (i.e. VoIP, VoD, integrated voice, data, compressed video). Modern applications for telematics in education, medicine and administration.

- Technological advances in communications:

Optical fiber technologies (FTTx - Fiber To The x). Passive Optical Networks (PON). Cellular networks (GSM, GPRS, TETRA, 3G/4G). Wireless Sensor Networks. Vehicular Ad-Hoc Networks (VANETs).

Computer Graphics

Course Information	
Title	Computer Graphics
Course Code	4808
Hours per Week	5
Course Category	Compulsory Selected
Credits ECTS	6
Language	Greek
Teaching Staff	Raptis P. - Δικτυακός Τόπος http:/aetos.it.teithe.gr/~praptis

Aims and Objectives

This course provides an introduction to the area of computer graphics, including theory, applications, rendering systems, Computer Aided Design, and APIs. The main objective of this course is to give every student the appropriate knowledge and skills to understand the theoretical background of modern graphics systems. After the completion of the course, students are expected to be able to implement robust work on the design and programming of 2D & 3D applications. In more depth, the goals of the course are:

- To understand algorithms related to Computer Graphics (defining basic shapes in raster displays, back face removal and illumination models).
- To understand coordinate systems (homogeneous coordinates, Cartesian coordinates, sphere & pole coordinates) as well as the 2D and 3D transformations.
- To recognize and categorize graphics models, protocols and standardization.

The goals of the laboratory exercises are:

- To get familiarize with CAD interfaces and graphics programming. To get practical experience from CAD systems (command & strategic knowledge).
- To deploy abilities to combine various technologies and methodologies for individual & group projects.

Key Contents

The course is based on the following three axes:

- Hardware: Input devices like camera-driven, gyroscopes, 3D scanners, data gloves. Output devices like various screen types, Head-Mounded Displays and 3D Printers.
- Visualization techniques-Geometric Transformations: Defining basic shapes and surfaces, coloring polygons, antialiazing, coordinate systems and transformations, back face removal, coloring models, reflection, transparency, Texture Mapping, Phong, Gauraud, Ray tracing, Radiosity.
- Sketching and programming: Computer Aided Design software, protocols and architectures of graphics systems, Application Programming Interfaces (OpenGL/VRML), photorealistic rendering tools, Animationh, Game Engines, Physics Engines,

Final thesis

The thesis is design, development or research and data produced by each student, either individually or in small groups. An opportunity for students to gain significant experience in a comprehensive study in depth a subject of specialization.
A graduation project 15 ECTS credits

Practical Training

The practice training takes place after the last semester and if the student has successfully attended all courses of the curriculum of the IT department. By exception, students may have up to a maximum of three courses, however, ensuring in this way, the fullest possible knowledge of the purpose and nature of work prior to the training.

In practice representing 15 ECTS credits

The practice has six (6 months) duration and take place in two cycles / periods:

- From October 1 to March 31
- From April 1 to September 30

The practice training can be made in:

- Private enterprises
- Public services and public entities
- Cooperatives and Local Government (Local Authority)

Please note that enterprises and institutions are not primarily the subject of their work in computers, can employ teleiofoitous Department of Informatics, provided that the purpose and nature of the work of trainees, clearly related to the IT field, in the broad sense .

For more information on the procedures will be found at: www.it.teithe.gr/~placemnt and hydra.it.teithe.gr/praktiki/

Professional Rights

The main subject of the graduates of the Department covers the following major sections:

- Networking and Communication
- Information Systems
- Computer Programming and Development of applications and Systems Software

Employment Potentials

Supplied with the specialized scientific and technological knowledge, the Informatics Department graduates can work self reliantly or in conjunction with other scientists in the fields of Informatics services and Software development. More specifically, according to the relative Presidential Decree that concerns the professional rights, the graduates of the Department of Informatics can be occupied in the following sectors:

- Software Application Analysis
- System Analysis
- Database Administration
- Network Administration
- Software Application Programming
- Internet Application Programming
- Information Systems Programming
- Education
- Research

Contact us

In this section you can find information on the following areas:

- Address - Useful phones
- How to find us
- Staff Phone Directory
- Campus Maps
- virtual tour

Addrerss - Useful Phones

Address

A.T.E.I of Thessaloniki
Department of Information Technology
P.O BOX 141 GR
T.K 57 400 Thessaloniki, Greece

Useful Phones

- Greek phone code +30
- Thessaloniki phone code 2310
- Secretary +30 2310 791260 Fax +30 2310 791250
- Head of the department +30 2310 791285
- Main Lab +30 2310 791290 +30 2310 798727 Fax +30 2310 796256
- Phone center +30 2310 791111
- Library +30 2310 791604

More informations

- www.teithe.gr
- www.it.teithe.gr

How to find us

How to find the Alexander Technological Educational Institute of Thessaloniki (ATEITH)

By bus from the city center

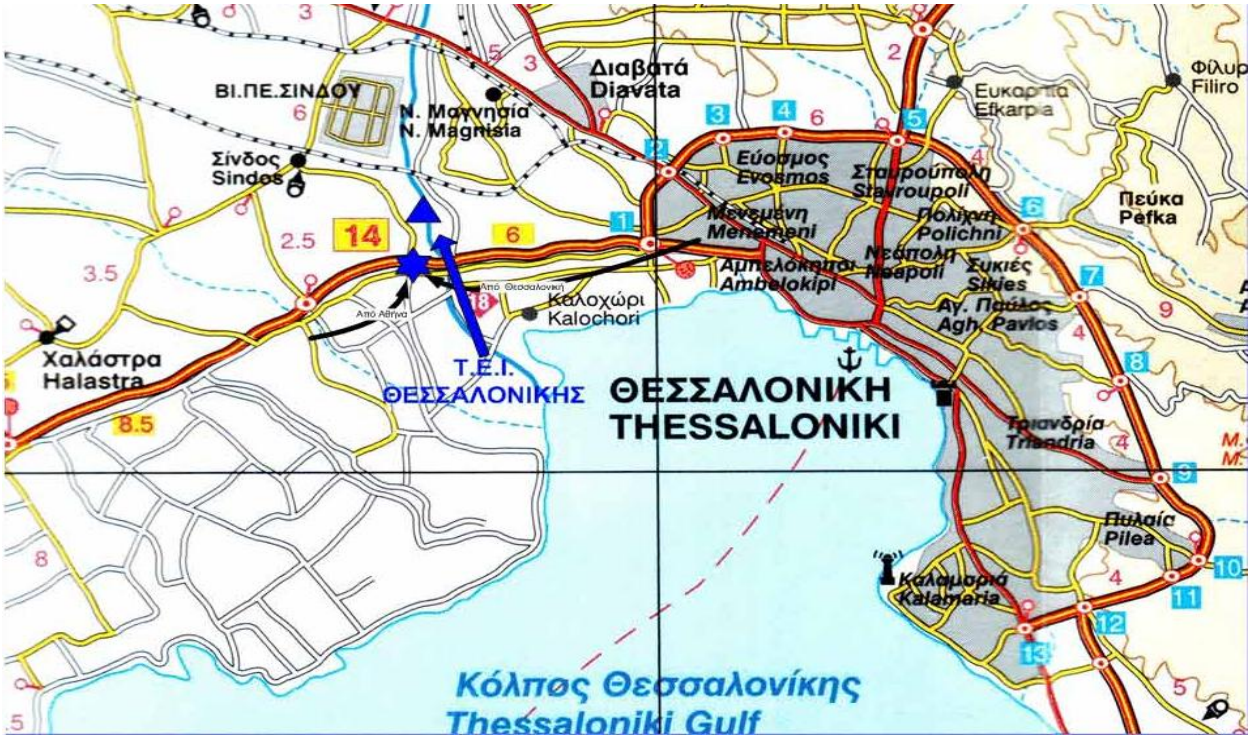
The Urban Transport Organization (OASTH) (http://www.oasth.gr) covers regular bus route from the railway station until ATEITH.
There are 2 bus lines with numbers 51 & 52.Πως θα βρείτε το ΑΤΕΙ ΘΕΣΣΑΛΟΝΙΚΗΣ

Line 52 Routes and Stops)

Line 51 (Routes and Stops)

By private car from the city center

Road map



Google Map

If you are coming from the center of Thessaloniki by car should follow the National Road Thessaloniki - Athens. At 9 km of the
road turn right (after the Galikos River Bridge) along the road to the industrial area of Sindos. At the first traffic
lights turn right and you will find the ATEITH to 100 meters.

If you are coming from the direction of Athens - Thessaloniki after 489 km you will see a bridge that leads the way
to Sindos and ATEITH. Turn right and go over the bridge. After the bridge, at first traffic lights turn right and you will
find the ATEITH to 100 meters.

Taxi
You can also come by taxi from Thessaloniki kentrio (although this will cost you about 30 Euros). Call one of the taxi companies
to mediate http://www.saloniki.org/gr/katalogos/taxi.htm

By Plane
Thessaloniki airport is located on the east side of town (The TEI. Located on the west) and is (the airport) about 35 km from
the ATETHI. The route from the airport to the TEI by car may take from 45 minutes to 1 hour depending on someone comes from the
ring road or the city center.
Using the outer ring road of Thessaloniki, you should follow the entire route of the ring road until you end up in turn to the
National Road Thessaloniki - Athens. Turn right onto National Road Thessaloniki / Thessaloniki - Athens and follow the
instructions above to access the TEITH by car.

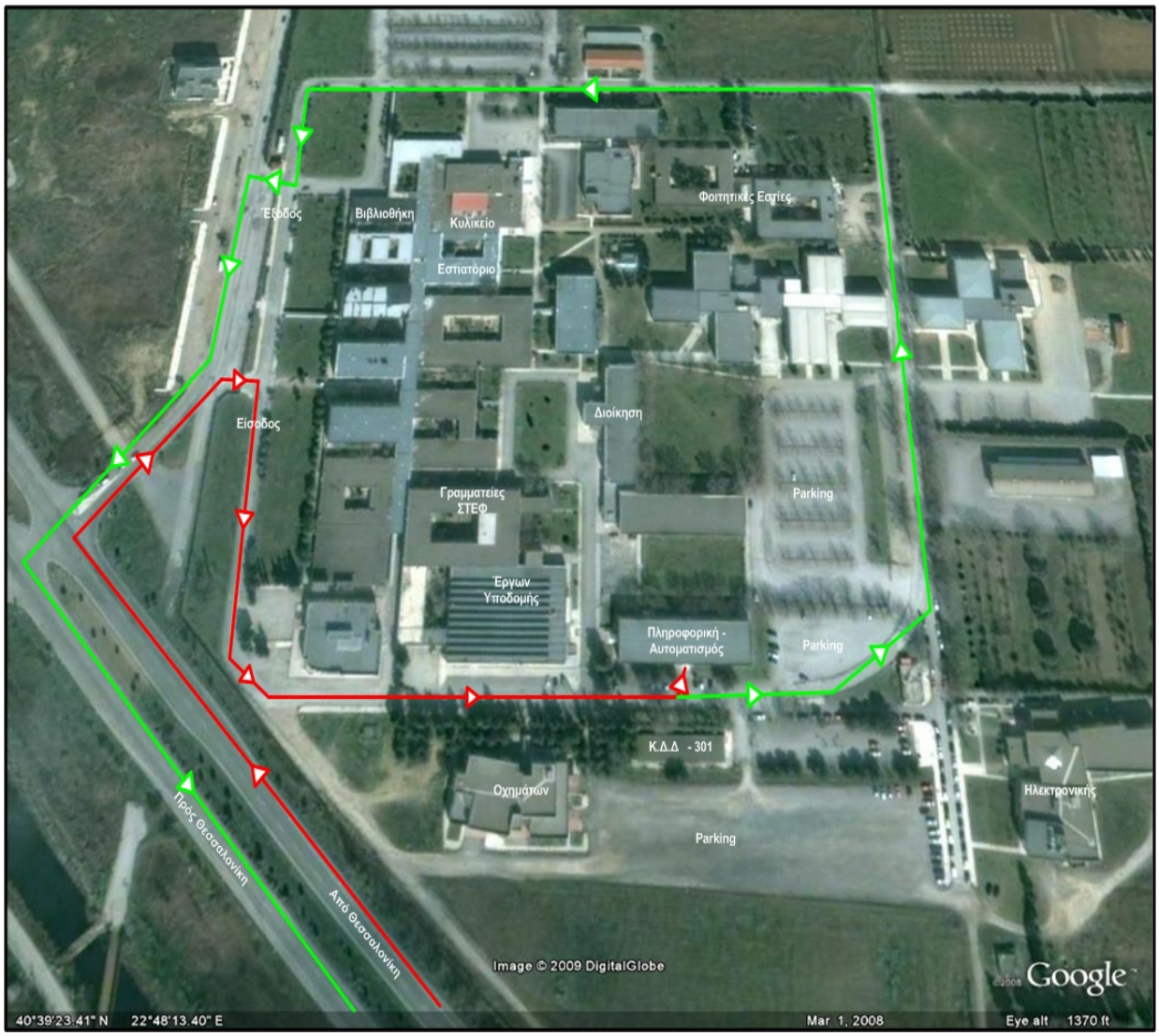
To get from the airport to the ATEITH through the city of Thessaloniki, you must cross the entire city from east to west. By way of
an October 26 street will be directed to the National Road Thessaloniki - Athens. Follow the instructions for

"access drive" to see
detailed instructions on how to get to the TEI.

By rail
The city is served by rail from the Hellenic Railways Organization (OSE). About the Railway routes to and from Thessaloniki you
can visit the website, www.ose.gr
The main railway station of Thessaloniki is located downtown near the Republic Square (about 800 meters west). To get to the TEI
should get on bus No. 51, which begins in front of the station.

How to find the building of the IT department

From the entrance of the ATEITH. follow the red signs on the map below to navigate at the entrance of the main building of the IT Department . The green signs will help you go back to Thessaloniki.



Staff Phone Directory

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1. ΔΙΟΙΚΗΣΗ

ΓΡΑΜΜΑΤΕΙΕΣ ΣΧΟΛΩΝ - ΤΜΗΜΑΤΩΝ

2. Σχολή Διοίκησης & Οικονομίας
3. Σχολή Επαγγελμάτων Υγείας & Πρόνοιας
4. Σχολή Τεχνολογίας Τροφίμων - Διατροφής
5. Σχολή Τεχνολογικών Εφαρμογών
6. Σχολή Τεχνολογίας Γεωπονίας

ΔΙΟΙΚΗΤΙΚΟΙ - ΚΟΙΝΟΧΡΗΣΤΟΙ ΧΩΡΟΙ

7. Γραφείο Διασύνδεσης
8. Γραφείο Σωκράτης
9. Κεντρική Βιβλιοθήκη

10. Εστία Φοιτητών
11. Εστιατόριο - Φοιτητών
12. Κεντρικό Κυλικείο
13. Μεγάλο Αμφιθέατρο
14. Μικρό Αμφιθέατρο
15. Αμφιθέατρο Γεώργιος Οικονόμου
16. Καινούργιο Αμφιθέατρο Σ.Ε.Υ.Π
17. Εστιατόριο Προσωπικού
18. Γυμναστήριο - Κέντρο Διαχείρισης Δικτύων
19. Γήπεδο Αθλοπαιδιών
20. Εκκλησία
21. Τεχνική Υπηρεσία
22. Ιατρείο Τ.Ε.Ι.-Θ.

ΑΙΘΟΥΣΕΣ ΔΙΔΑΣΚΑΛΙΑΣ - ΕΡΓΑΣΤΗΡΙΑ

Σχολή Διοίκησης & Οικονομίας
2α. Τμήμα Εμπορίας & Διαφήμισης
2β. Τμήμα Βιβλιοθηκονομίας
2γ. Τμήμα Λογιστικής
2δ. Τμήμα Τουριστικών Επιχειρήσεων

Σχολή Τεχνολογίας Γεωπονίας
3α. Τμήμα Διοίκησης Γεωργικών Εκμεταλλεύσεων
3β. Τμήμα Φυτικής Παραγωγής
3γ. Τμήμα Ζωϊκής Παραγωγής
3δ. Εργαστήριο Γεωργικών Μηχανημάτων

Σχολή Τεχνολογίας Τροφίμων - Διατροφής
4α. Τμήμα Τεχνολογίας Τροφίμων
4β. Τμήμα Διατροφής

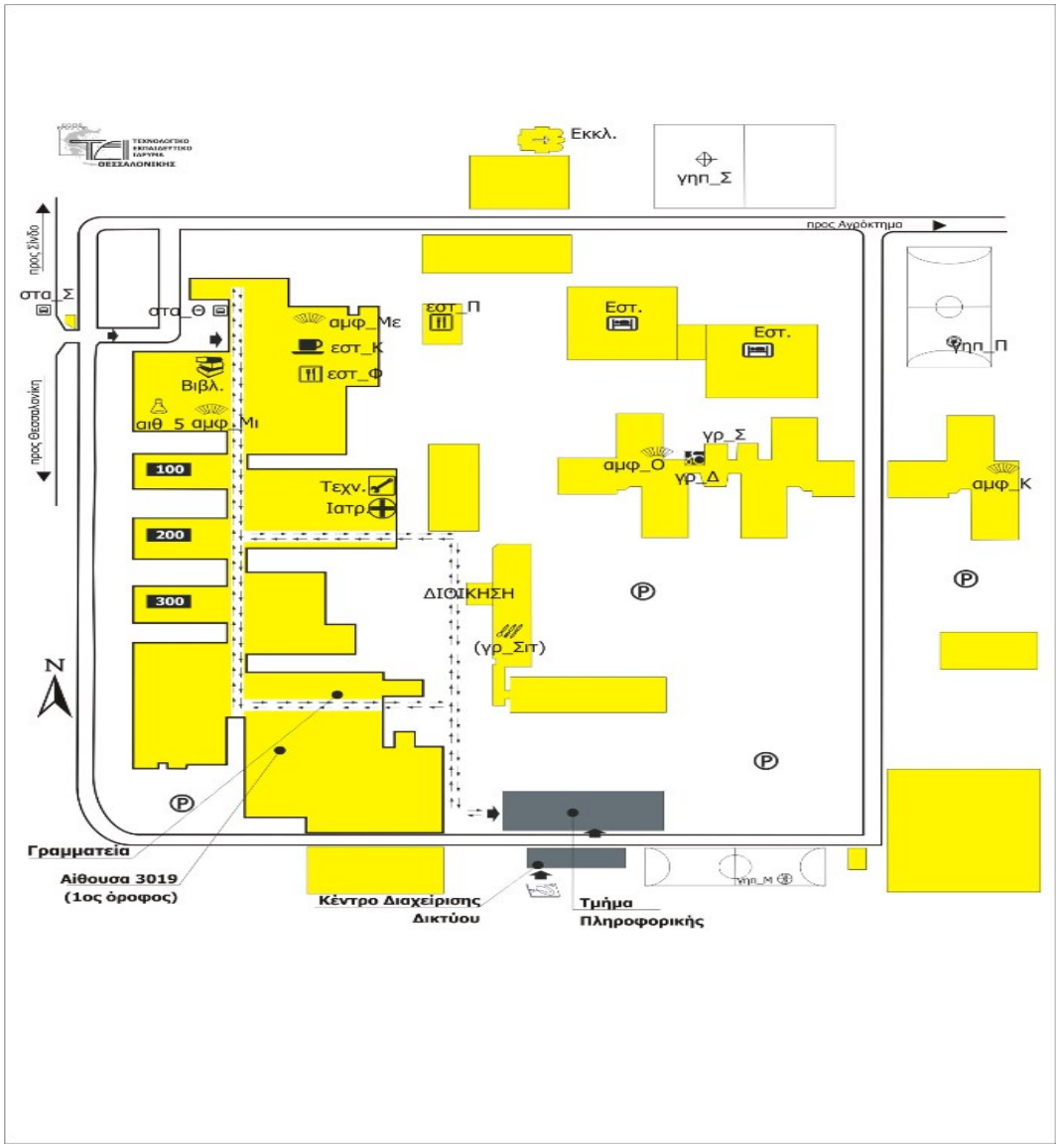
Σχολή Τεχνολογικών Εφαρμογών
5α. Τμήμα Πληροφορικής
5β. Τμήμα Ηλεκτρονικής
5γ. Γενικό Τμήμα
5δ. Τμήμα Οχημάτων
5ε. Τμήμα Αυτοματισμού
5δ. Τμήμα Έργων Υποδομής

Σχολή Επαγγελμάτων Υγείας & Πρόνοιας
6α. Τμήμα Αισθητικής
6β. Τμήμα Φυσικοθεραπείας
6γ. Τμήμα Τεχνολογίας Ιατρικών εργαστηρίων
6δ. Τμήμα Νοσηλευτικής
6ε. Τμήμα Μαιευτικής
6στ. Τμήμα Βρεφονηπιοκομίας

23. Αίθουσες Αγγλικών - Εργαστήρια Αγγλικών
24. Εργαστήρια Φυσικής - Χημείας

100. Αίθουσες Διδασκαλίας 101 - 121 (100άρες)
200. Αίθουσες Διδασκαλίας 201 - 221 (200άρες)
300. Αίθουσες Διδασκαλίας 301 - 321 (300άρες)

Χάρτης Υπηρεσιών (Θέσεις Τμήματων, Σχολών και Κοινοχρήστων χώρων)



Map of Services (Job Classes, schools,departments and public spaces)

1. ADMINISTRATION

SECRETARIAT OF SCHOOLS

2. School of Business and Economics
3. School of Health & Welfare
4. Faculty of Food Technology - Food
5. School of Applied Technology
6. School of Agricultural Technology

ADMINISTRATORS - PUBLIC AREAS
7. Liaison Office
8. Socrates Office
9. Central Library
10. Student Center
11. Restaurant - Students
12. Central Canteen
13. Grand Auditorium
14. Small Auditorium
15. Amphitheatre, George Economou
16. New Auditorium S.E.Y.P
17. Restaurant Staff
18. Network Operations Center

19. Playgrounds
20. Church
21. Technical Service
22. Health Clinic.

HALLS OF TEACHING - Workshop

School of Business and Economics
2a. Department of Marketing & Advertising
2b. Department of Library
2c. Department of Accounting
2d. Department of Tourism Management

School of Agricultural Technology
3a. Department of Farm Management
3b. Department of Crop Production
3c. Department of Animal Production
3d. Laboratory of Agricultural Machinery

Faculty of Food Technology - Food
4a. Department of Food Technology
4b. Department of Nutrition

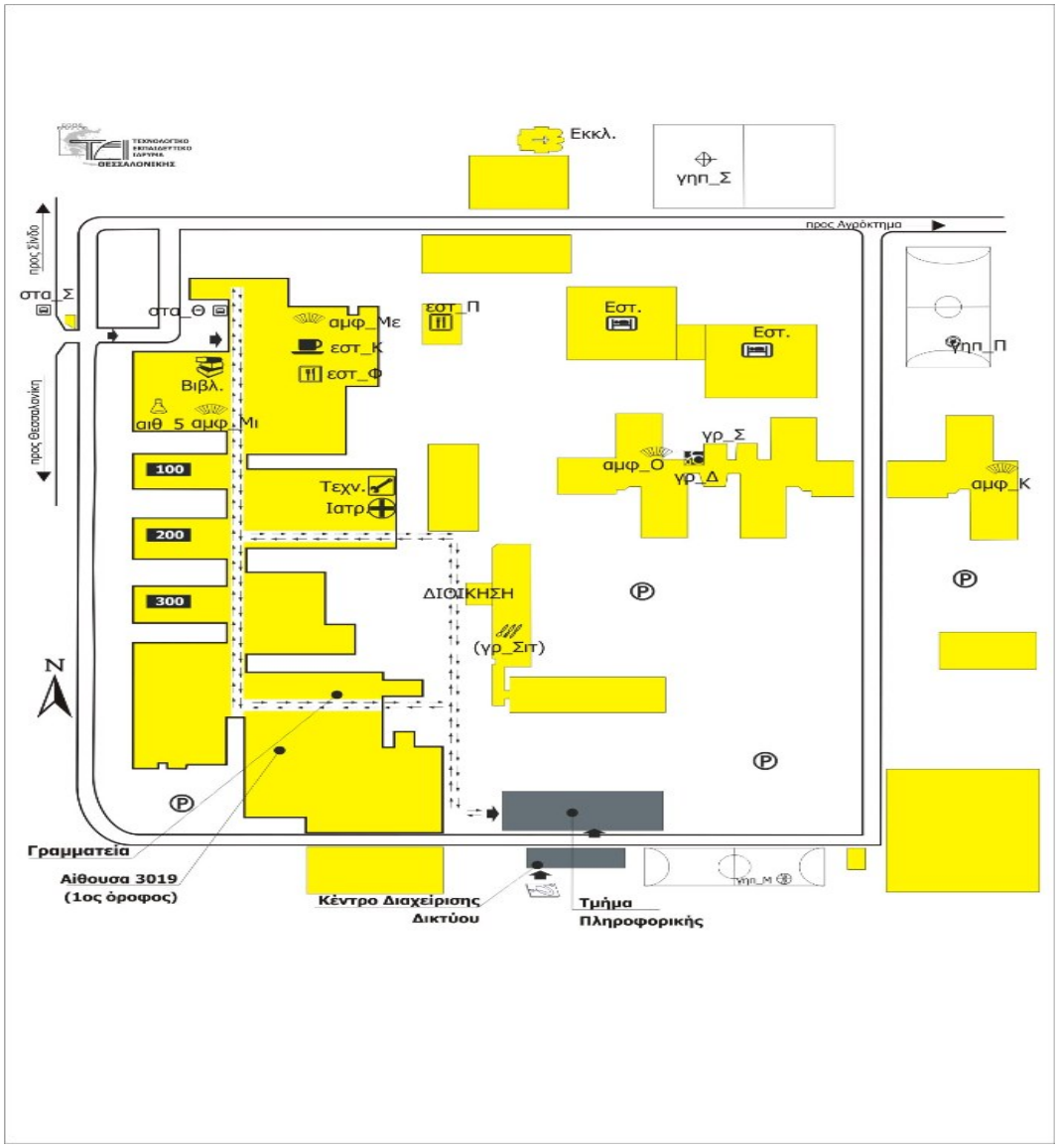
School of Applied Technology
5a. Department of Information Technology
5b. Department of Electronics
5c. Department of General Studies
5d. Department of Vehicle
5e. Department of Automation
5d. Department of Civil Engineering Infrastructure

2. School of Health & Welfare
6a. Department of Aesthetics
6b. Department of Physiotherapy
6c. Department of Medical Laboratory Technology
6d. Department of Nursing
6e. Department of Obstetrics
6f. Department of Early Childhood

23. Halls English - English Workshops
24. Laboratories of Physics - Chemistry

100. Classrooms 101 to 121
200. Classrooms 201 to 221
300. Classrooms 301 to 321

Map Services (Department of Posts, schools and public spaces)


Εκκλ.
γηπ_Σ
προς Αγρόκτημα
προς έξοδο
προς Θεσσαλονίκη
στα_Σ
στα_Θ
αμφ_Με
εστ_Κ
εστ_Φ
εστ_Π
Εστ.
Εστ.
γηπ_Π
Βιβλ.
αιθ_5 αμφ_Μι
γρ_Σ
αμφ_Ο
γρ_Δ
αμφ_Κ
100
200
300
Τεχν.
Ιατρ
ΔΙΟΙΚΗΣΗ
(γρ_Σιτ)
N
Γραμματεία
Αίθουσα 3019
(1ος όροφος)
Κέντρο Διαχείρισης
Δικτύου
Τμήμα
Πληροφορικής