Dear Reader,

The Department of Electronic and Computer Engineering (ECE) of the Technical University of Crete (TUC) was founded towards the end of the 1980’s and admitted its first incoming class of freshmen in 1990. Since then, the Department has grown substantially. Today, there are 28 full–time faculty members (25 serving and 3 under appointment).

The ECE Department offers high–level engineering education with emphasis in the four Divisions it is organized in: Computer Science, Electronics and Computer Architecture, Systems, and Telecommunications, areas around which the research activity of the department is organized. The program of graduate studies was initiated in 1993, is focused on research, and offers the M.Sc. and Ph.D. degrees in Electronic and Computer Engineering. Both degrees require (a) the registration, attendance, and successful examination in graduate courses of the Department (b) the completion of a research M.Sc. thesis or original Ph.D. dissertation under the supervision of a faculty member of the department. Especially for the Ph.D. degree, the dissertation must be an original body of research, published in peer–reviewed international journals and conferences. A total of 160 M.Sc. and 17 Ph.D. students have graduated from the ECE Department so far.

The departmental personnel are well–trained and highly–qualified. The majority of the faculty members have earned their Ph.D. degrees from top universities around the world and many have pursued careers as tenure track or tenured faculty members abroad before joining the ECE Department. The current high level of scientific activity, peer–reviewed publications, and competitive research funding of the ECE Department are due to the unrelenting efforts and talent of the graduate students and their close collaboration with the faculty of the Department,

as well as their active involvement in research projects run by the Department. The international recognition, which has been bestowed to the Department, can be attested by the numerous publications in top scientific journals and international conferences, several best paper awards which ECE faculty and student publications have earned from the Institute of Electrical and Electronic Engineers (IEEE) in journal publications and at international conferences, participation of the faculty in top journal editorial boards and top international conference program committees, etc. The Department has a demonstrable continuous improvement in academic quality which is due to the continuous efforts of the faculty, staff, and students of the Department.

Many students that have graduated with an M.Sc. or Ph.D. degree from the ECE Department currently serve as tenured or tenure–track faculty members at top US institutions (e.g. Georgia Tech), researchers at university research labs, national research and development labs, and the industry (e.g. Rice–U.S., NICTA–Australia, Telcordia–U.S.), and professional engineers in Greece, Europe, and the USA.

The present Graduate Program Catalog provides accurate and complete information about all aspects of the program of graduate studies in the ECE Department. Further information may be found on the website of the ECE Department (www.ece.tuc.gr).

For further inquiries you may contact the Secretariat of the Department (Vicky Grigoraki, 28210 37218, vicky@ece.tuc.gr) or the Chairman of the Department (Associate Professor Athanasios Liavas, 28210 37224, liavas@telecom.tuc.gr).

Athanasios Liavas
Associate Professor and Chairman
# Table of Contents

## The Technical University of Crete

## General Provisions

- The Department of Electronic and Computer Engineering
  - 4
- Departmental Structure
  - 4
- Faculty and Staff
  - 4
- Faculty
  - 5
- Laboratory Teaching Staff
  - 7
- Laboratory Technical Staff
  - 8
- Contracted Staff
  - 8
- Administrative Staff
  - 8
- Laboratory Infrastructure
  - 9
- University Research Institutes
  - 11

## Subject–Goals

- Graduate Degrees
  - 12
- Admission Procedure
  - 12
- Eligible Applicants
  - 13
- Selection Criteria
  - 13
- Admission Procedure
  - 13
- Progress, Grades and Evaluation
  - 14

## Master of Science (M.Sc.)

## Doctor of Philosophy (Ph.D.)

## Graduate Studies Regulations

- Obligations of Graduate Students
  - 17
- Financial Support
  - 17

## Graduate Courses

- Categories of Graduate Courses
  - 19

## Courses of Study

## Description of Graduate Courses

## Contact Information
The Technical University of Crete

The Technical University of Crete is Greece’s second technical university, devoted to engineering education. It was established in 1977 and admitted its first students ever at the Department of Production Engineering and Management in 1984. The mission of the Technical University of Crete is to advance education and research in new technologies, as well as the establishment of a high-quality scientific and technological institution which is in close cooperation with the production forces of the country.

There are six departments at the Technical University of Crete:

• Department of Production Engineering and Management
• Department of Electronic and Computer Engineering
• Department of Mineral Resources Engineering
• Department of Environmental Engineering
• Department of Architectural Engineering
• Department of Sciences

To this list soon will be added the newly founded Department of Civil Engineering and the School of Fine Arts.

General Provisions

The graduate studies are organized based on the Greek Law 2083/92 and consist of attendance at courses and seminars, contribution to the research and teaching activities of the Department, exams, and completion of a research-oriented thesis. The Department of Electronic and Computer Engineering organizes and operates, since academic year 2002-2003, a revised Program of Graduate Studies (PGS), according to the Greek Law 1812/7-12-04 τ.Β’ and Articles 10 and 12 of the Greek Law 2083/92.

The Department of Electronic and Computer Engineering

The Program of Graduate Studies of the Department of Electronic and Computer Engineering is governed by its General Assembly of Special Composition (GASC) and the Department Chairman who chairs the General Assembly of Special Composition. The General Assembly of Special Composition comprises of the faculty and two graduate student representatives. The responsibilities of the General Assembly, the Chairman, and the Department Secretary are determined by the Greek Laws 1268/82 (Higher Education Framework Law) and 2083/92, as well as their derivatives.

Department Chairman

The current Department Chairman is Associate Professor Athanasios Liavas and Associate Chairman is Associate Professor Dionisios Pnevmatikatos.

Department Secretary

Department Secretary (which is the official position of the supervisor of the administrative services of the Department) is Mrs. Vassiliki Grigoraki.

Departmental Structure

The Department is organized in four Divisions:

• Division of Computer Science
• Division of Electronics and Computer Architecture
• Division of Systems
• Division of Telecommunications

Faculty and Staff

The faculty and staff of the Department are in the following categories:

a. Faculty.

The tenure-track and tenured faculty members of the Department hold Ph.D. degrees and they fall
under four seniority ranks: Professors, Associate Professors, Assistant Professors, and Lecturers. In addition to the tenure-track and tenured faculty, there are also several adjunct assistant professors and visiting faculty members charged mostly with teaching responsibilities.

b. Laboratory Teaching Staff.
The laboratory teaching staff members perform laboratory and applied educational duties, which largely include the design, preparation, and administration of laboratory sessions and recitations for the courses taught in the Department. The laboratory teaching staff members hold university and/or graduate degrees.

c. Laboratory Technical Staff.
The laboratory technical staff members provide technical support to the Department by offering specialized technical services to the educational and research activities of the various laboratories in the Department. The laboratory technical staff members hold university and/or graduate degrees.

d. Contracted Staff.
The contracted staff members conduct research and/or administrative work under long-terms contracts with the goal of improving the educational and research activities of the Department. The contracted staff members hold university and/or graduate degrees.

e. Administrative Staff.
The administrative staff includes employees of various ranks reporting to the central administration of the Technical University of Crete. The administrative staff members support the administrative operations of the Department, such as management of student records, departmental archives, course registrations, grade reports, etc.

Faculty

DIVISION OF COMPUTER SCIENCE

Stavros Christodoulakis, Professor


Antonios Deligiannakis, Assistant Professor

Minos Garofalakis, Professor

Michail Lagoudakis, Assistant Professor

Katerina Mania, Assistant Professor

Euripides Petrakis, Associate Professor
Vassilios Samoladas, Assistant Professor

DIVISION OF ELECTRONICS AND COMPUTER ARCHITECTURE

Konstantinos Balas, Associate Professor

Matthias Bucher, Assistant Professor

Apostolos Dollas, Professor

Konstantinos Kalaitzakis, Professor

Ioannis Papaefstathiou, Assistant Professor

Dionisios Pnevmatikatos, Associate Professor

George Stavrakakis, Professor

DIVISION OF SYSTEMS

Emmanuel Christodoulou, Professor

Peter Stavroulakis, Professor
DIVISION OF TELECOMMUNICATIONS

Aggelos Bletsas, Assistant Professor

Vassilios Digalakis, Professor

George Karystinos, Assistant Professor

Polychronis Koutsakis, Assistant Professor

Athanasios Liavas, Associate Professor

Michael Paterakis, Professor

Alexandros Potamianos, Associate Professor

Nikos Sidiropoulos, Professor

Michael Zervakis, Professor

Laboratory Teaching Staff

Sotirios Bouros
B.Sc. in Computer Science and Engineering, University of Patras, Greece.

Emmanuel Doudounakis
B.Sc. in Electrical Engineering, National Technical University of Athens, Greece. M.Sc. in Production Engineering and Management, Technical University of Crete, Greece.

Markos Kimionis
B.Sc. in Electronic Engineering, Technological Education Institute of Crete, Greece.

George Markoulakis
B.Sc. in Electronic Engineering, Technological Education Institute of Crete, Greece.
Amalia Sergaki  

Laboratory Technical Staff

Spyros Argyropoulos  
B.Sc. in Computer Science and Engineering, University of Patras, Greece. M.Sc. in Electronic and Computer Engineering, Technical University of Crete, Greece.

Eftichios Koutroulis  

Contracted Staff

Stamatis Andrianakis  
B.Sc. in Electrical and Computer Engineering, Aristotle University of Thessaloniki, Greece.

George Anestis  

Polyxeni Arapi  
B.Sc. in Electronic and Computer Engineering, Technical University of Crete, Greece.

Vassilios Diakoloukas  
B.Sc. in Physics, University of Crete, Greece. Ph.D. in Electronic and Computer Engineering, Technical University of Crete, Greece.

Nektarios Gioldasis  
B.Sc. in Applied Computer Science, University of Macedonia, Greece. M.Sc. in Electronic and Computer Engineering, Technical University of Crete, Greece.

Fotis Kazasis  
B.Sc. in Computer Science and Engineering, University of Patras, Greece. M.Sc. in Electronic and Computer Engineering, Technical University of Crete, Greece.

Ioannis Marogoudakis  
B.Sc. in Electronic and Computer Engineering, Technical University of Crete, Greece. M.Sc. in Production Engineering and Management, Technical University of Crete, Greece.

Nektarios Moumoutzis  
B.Sc. in Computer Science, University of Crete, Greece. M.Sc. in Electronic and Computer Engineering, Technical University of Crete, Greece.

Kyprianos Papademetriou  

Nikolaos Pappas  
B.Sc. in Electronic and Computer Engineering, Technical University of Crete, Greece. M.Sc. in Electronic and Computer Engineering, Technical University of Crete, Greece.

Euripides Sotiriades  

Administrative Staff

Vasiliki Grigoraki  
Head Secretary.

Dimitra Athenaki  
Coordinator of Undergraduate Studies.

Eleni Stamatakis  
Coordinator of Graduate Studies.

Agapi Karakatsani  
Textbooks and Supplies Administrator.
Laboratory Infrastructure

The teaching and research activities within the Department of Electronic and Computer Engineering are supported by ten laboratories which are listed below.

1. Automation Laboratory
   Director: Professor M. Zervakis
   This laboratory operates under the Division of Systems and serves the educational and research needs in the discipline of Systems Theory and Automatic Control.

2. Digital Image and Signal Processing Laboratory
   Director: Professor M. Zervakis
   This laboratory operates under the Division of Telecommunications and conducts active research in applications related to the reception, identification, and diagnosis of operational problems in various signals used in Telecommunications, Industry, and Biomedicine.

3. Distributed Multimedia Information Systems and Applications Laboratory
   Director: Professor S. Christodoulakis
   This laboratory was established in 1990 and operates under the Division of Computer Science. It is a centre of research and development in the areas of distributed information systems, multimedia, graphics, human–computer interaction, large–scale web information systems, and business applications on the Internet.

4. Electric Circuits and Renewable Energy Sources Laboratory
   Director: Professor K. Kalaitzakis
   This laboratory operates under the Division of Electronics and Computer Architecture and is active in the field of electrical circuits and renewable energy. Its research equipment includes high-precision oscilloscopes, generators, and multimeters, electric power quality analyzer, meters for various quantities, and microprocessor, DSPs and FPGAs development systems, as well as a wind–generator, a photovoltaic array, and a meteorological station with data acquisition system for the measurement of related quantities.
health, security, billing, access, and energy saving. Biomedical and biomechanical units. Development of controlled inverters and electrical power converters.

5. Electronics Laboratory
   Director: Assistant Professor M. Bucher

The laboratory operates under the Division of Electronics and Computer Architecture and its activities include research, development, education, and technology transfer in the fields of opto–electronics and micro–nano–electronics. The Electronics Laboratory is equipped with tools for design, simulation, layout, prototype development, characterization and control of opto–electronic and microelectronic systems and devices.


6. Information and Computer Networks Laboratory
   Director: Professor V. Digalakis

This laboratory operates under the Division of Telecommunications and is active in the field of Information Theory and Coding with applications in Networks.


7. Intelligent Systems Laboratory
   Director: Associate Professor E. Petrakis

This laboratory was founded in 2001 and operates under the Division of Computer Science. The current research activities cover various aspects of Artificial Intelligence, Intelligent Agents, Bioinformatics, Information Retrieval, Machine Learning, and Robotics. The robotic equipment of the laboratory includes quadrupedal Sony Aibo robots and bipedal humanoid Aldebaran Nao robots, which also form the robotic soccer team “Kouretes”.


8. Microprocessor and Hardware Laboratory
   Director: Associate Professor D. Pnevmatikatos

This laboratory was founded in 1990 and operates under the Division of Electronics and Computer Architecture. Its activities revolve around issues of computer architecture and hardware. The laboratory is a member of the academic and research consortium EUROPRAC{T}E.

9. Software Technology and Network Applications Laboratory  
Director: Professor M. Garofalakis  
This laboratory operates under the Division of Computer Science and is a centre of research and teaching software systems’ technology and network applications. The research and teaching activities of the laboratory include operating and distributed systems, sensor networks, continuous data streams, large and distributed databases, and topics in algorithms and complexity.  

10. Telecommunications Laboratory  
Director: Professor N. Sidiropoulos  
This laboratory operates under the Division of Telecommunications and is active in the field of Telecommunications.  

The current laboratory infrastructure was funded in part with the amount of 66,757€ by the European Program EPEAEK II (ETPA).

University Research Institutes
The Telecommunication Systems Research Institute (T.S.I.) [www.tsi.gr] is a Greek Government–sponsored independent Research Institute established by the Greek Ministry of National Education in 1995. Among the objectives of the Institute is to promote graduate education, research and development in the broad areas of Telecommunications and Telecommunication Systems. The Institute provides technical support, space, research infrastructure, and access to cooperating faculty members and highly qualified R&D engineers with experience in project planning, execution, and management.

Subject–Goals
The Electronic and Computer Engineering Department of the Technical University of Crete, responding to the needs and challenges posed by the participation of Greece in the European Union and the corresponding international competition, has created and operates a full and state–recognized Program of Graduate Studies (PGS). This program aims at the graduate–level education of the engineers who will meet the demands of present–day job market.

The operation of Programs of Graduate Study in Greek universities is a basic prerequisite for Greek businesses, and as a result the Greek economy, to be competitive.

Computer Science, Electronics, Systems, and Telecommunications, which constitute the main fields of concentration of the Department, are today critical sectors of new technologies, and therefore, the education and specialization of engineers in these areas of concentration will allow for Greek high technology industries to create teams of highly competent engineers and managers, including those needed at higher levels of corporate hierarchy.

The ECE Department’s research areas are the following:

- Analog and Digital Electronics and Power Electronics
- Artificial Intelligence
- Automation and Production Systems
- Biomedical Systems
- Computer Network Systems
SUBJECT–GOALS

- Data Mining and Data Warehouses
- Databases
- Digital Signal and Image Processing
- Digital Telecommunications
- Electronic Commerce Applications (B2B, B2C)
- Fuzzy Logic and Neural Network Applications
- Implementation of Microelectronic Hardware Systems
- Machine Vision and its Applications
- Management of Images and Video Flows
- Microprocessor Systems
- Mobile Computing and Management of Mobile Information
- Multiagent Systems and their Applications on the Internet (retrieval, information unification and diffusion, electronic commerce)
- Multimedia Information Systems
- Operating Systems and Distributed Software Systems
- Renewable Energy Sources
- Robotics
- Sensors and Instrumentation
- Software and Applications Development for the Internet and Mobile Appliances
- Software Systems for the Internet (modeling, content unification and distribution on the Internet)
- Speech Processing and Voice Recognition
- Statistical Communication Theory
- VLSI Systems
- Wireless Mobile Communication Networks for Multimedia Information Transmission

Graduate Degrees

The Program of Graduate Studies offers the following degrees:

- **M.Sc. in Electronic and Computer Engineering**, and/or
- **Ph.D. in Electronic and Computer Engineering**.

Under the Greek Law N. 2083/92 the goal of the M.Sc. degree is the further education and training of a student, or his/her specialization in one of the Divisions of the Department. The aim of the Ph.D. degree is the development of scientists–researchers who will advance research and technology.

Admission Procedure

Required documents for admission application to the PGS of the ECE Department:

1. **Application deposited at the ECE Department Secretary’s Office.** The application should clearly indicate the desired Division of the Department in which the candidate is interested, as well as his or her research interests. The application form is available at the ECE Department Secretary’s Office as well as at the web site [http://www.ece.tuc.gr](http://www.ece.tuc.gr).

2. **A certified copy of the first university degree or diploma.** In case this degree originates from a corresponding non–Greek University, a certified copy of the equivalence certification granted by the DOATAP organization needs to be submitted as well.

3. **Certified copies** of Greek state–recognized graduate study titles, if such exist.

4. **Certified transcripts** with full information on courses taken and grades earned for previous undergraduate (and if applicable, graduate) studies.

5. **Certified copy** of relevant diplomas or certificates which proves adequate knowledge of the English language for Greek students or the Greek language for non–Greek students.

6. **Curriculum Vitae.** This should include the abstract of the diploma thesis (if such exists), and a short essay on the applicant’s scientific and professional interests, as well as the reasons for which the applicant is interested in graduate studies.
7. Copies of publications, honors, and proof of prior professional experience (if any of these exist).

8. Three (3) recommendation letters, of which two must be from the applicant’s undergraduate Department. The special recommendation form is available from the ECE Department Secretary’s Office and from the web site http://www.ece.tuc.gr. The recommendation letters can be sent directly by their writers to the address below:

   Technical University of Crete
   Department of Electronic and Computer Engineering
   Office of the Secretary
   University Campus
   GR–73100 Chania
   Crete, Greece

The ECE Department has the right to call the applicants for an interview.

Eligible Applicants

The PGS accepts students whose first degree is from Departments which include Computer Engineering, Computer Science, Electrical Engineering, Electronic Engineering, Physics, and Mathematics of Greek and non–Greek Universities, Technological Education Institutes (TEI), and University–level Military Academies, according to the provisions of Greek law N. 2916/2001, article 5.

Selection Criteria

The selection criteria which are evaluated in unison are the following.

- University Degree or Diploma Grades
- Coursework grades in the areas in which the applicant is interested for graduate studies
- Recommendation Letters
- Good knowledge of foreign languages and especially of the English language
- Subject and quality of the diploma thesis (or equivalent, if applicable)
- Other undergraduate–level projects and/or publications of the candidate from his or her undergraduate studies
- Prior research or professional experience
- Successful interview

Admission to the graduate program can be done for students who have not completed all undergraduate program graduation requirements, but are close to graduation. Successful applicants register at the PGS of the ECE Department within ten (10) working days from (a) the date of approval by the GASC of the Department if they have already graduated the date of approval or (b) the graduation date which has to be done within three (3) months from the approval of the candidate’s application by the GASC of the Department. Upon registration at the PGS, the applicant officially becomes a graduate student of the Department and maintains this status until (a) the maximum allowed number of semesters are completed starting from the student’s registration date, (b) the student graduates successfully from the PGS, or (c) the student looses the graduate student status due to insufficient progress which is determined based on the student’s grades on graduate courses, research work, and support work in undergraduate education, as described in the student’s annual progress report submitted by the end of each academic year. The student’s first academic semester is the current semester on the date the student registers at the PGS if the registration is made within ten (10) working days from the start of the current semester. Otherwise, the student’s first academic semester is the subsequent one.

Admission Procedure

Applications for admission to the Program of Graduate Studies (PGS) are reviewed by the Department’s Graduate Studies Committee (GSC), which makes recommendations to the General Assembly of Special Composition (GASC–a variant of the general assembly which deals with graduate and research issues and which has no undergraduate student representation), which in turn decides on each case. The procedure followed is the following.

1. Applications which do not indicate a faculty member as the requested research advisor are distributed to all faculty in order to determine a champion who would be interested to serve as the research advisor.

2. Those applications which indicate a requested research advisor (and those only) are forwarded to the Graduate Studies Committee. Applications
for which there is no faculty interested in serving as research advisor are placed on file with no further action and the applicant is informed by mail from the Department’s Secretary.

3. The GSC examines the complete application folder of each applicant and has the right to ask required documents which might have not been included with the application, additional material, as well as to call the applicant for an interview.

4. The GSC makes a recommendation to the General Assembly of Special Composition for acceptance or not of the applicant. The GSC has the right to recommend to the GASC a list of undergraduate courses which are deemed necessary for the coverage of basic education in the scientific area of the candidate.

5. The requested research advisor attends the GSC meeting and makes relevant recommendations. In his or her absence he or she makes a written recommendation in advance.

**Progress, Grades and Evaluation**

The program of graduate studies is governed by the General Assembly of Special Composition upon a proposal by the Graduate Studies Committee. Class attendance is mandatory. The program consists of semester courses, according to the Greek Law 2083/92. The courses are lectures or seminars and consist of homeworks, research subjects, presentations, and discussion. The weight of each graduate course is expressed in graduate credits. The method of examination of each courses is determined by the instructor. If a course contains a final exam, it is held only once, immediately after the end of classes of the corresponding semester. Grading is defined in the range of 0 to 10. The average grade is computed using weights/coefficients that are proportional to the graduate credits of the corresponding courses. Student’s progress in courses is considered satisfactory if the student receives

a. Grade at least six (6) in each course, and
b. An average at least seven and a half (7.5).

At the beginning of each semester, within the first ten (10) working days of the semester, each graduate student registers to the courses he/she will take, upon approval by the student’s advisor. Within the first twenty (20) working days of the semester, upon approval by the student’s advisor, the student can drop some of or all the courses he has registered to. If a student registers to a course and does not drop it within the above deadline, he/she receives a grade that corresponds to pass or fail. If a student completes a substantial part of the course but for a serious reason he cannot satisfy all requirements of the course, he may receive an “incomplete” grade by the instructor until the end of the corresponding academic year; an “incomplete” grade is substituted by a regular “pass” grade if the student satisfy all course requirements until the end of the academic year. Otherwise, the “incomplete” grade is substituted by a “fail.” A student that receives a “fail” in a course must take the same course in the next academic year. A student that receives two “fail” grades (in the same course or different courses) loses the graduate student status due to insufficient progress.

**Master of Science (M.Sc.)**

For the successful completion of the M.Sc. degree the following requirements must be met.

a. A minimum of two (4) and a maximum of six (6) semesters.

b. Satisfaction of basic education coursework, if it is required. The GASC can on occasion mandate for a student to take additional coursework of the Department’s Undergraduate Program in order to satisfy basic education requirements of the Department. Such courses may be in addition to basic courses (undergraduate or graduate) which the student might have to take upon admission in order to cover gaps in the required basic education needed for graduate studies.

c. Completion, with satisfactory progress of the coursework corresponding to:

**OPTION 1**

- At least three (3) graduate courses which correspond to fifteen (15) graduate credits. To maintain the graduate status, the student must register to and be examined successfully in at least two (2) graduate courses by the end of his/her second semester and at least three (3) graduate courses totally by the end of his/her fourth semester.
• Graduate (M.Sc.) research thesis, performed under the advice and supervision of a faculty advisor. The M.Sc. thesis is evaluated by a three-member committee, comprising of the faculty advisor and two other faculty members. The M.Sc. thesis is equivalent to thirty (30) graduate credits. A total of forty five (45) graduate credits are required for M.Sc. graduation.

OPTION 2
• At least seven (7) graduate courses which correspond to thirty five (35) graduate credits. To maintain the graduate status, the student must register to and be examined successfully in at least four (4) graduate courses by the end of his/her second semester and at least seven (7) graduate courses totally by the end of his/her fourth semester.

• Graduate (M.Sc.) research thesis, performed under the advice and supervision of a faculty advisor. The M.Sc. thesis is evaluated by a three-member committee, comprising of the faculty advisor and two other faculty members. The M.Sc. thesis is equivalent to ten (10) graduate credits. A total of forty five (45) graduate credits are required for M.Sc. graduation.

d. One presentation in the field of the graduate student’s research, which is announced to the Technical University of Crete community and is attended by faculty and students.

Note: Each graduate course corresponds to five (5) graduate credits.

The transcripts given upon completion of the degree to the M.Sc. graduate contain detailed information on coursework completed and grades earned and the title of the M.Sc. thesis.

Doctor of Philosophy (Ph.D.)

For the successful completion of the Ph.D. degree the following requirements must be met.

a. Prior completion of the M.Sc. degree, except for special cases, as these are defined in Greek Law N. 2083/92.

b. The duration of the studies aiming at the Ph.D. Degree are at least six (6) and no more than twelve (12) semesters, counting from the beginning of the student’s graduate studies in the Department. In case the graduate student already possessed a M.Sc. Degree from the
Department, or from a corresponding Department of another University, the duration of studies is at least four (4) semesters and no more than eight (8) semesters.

c. Satisfaction of the demand of basic education in the Department’s subjects. The General Assembly of Special Composition (GASC) can on occasion require of the student to take courses from the Department’s undergraduate curriculum in order to cover basic education in the Department’s subjects. These courses are in addition to the graduate courses that the student must take according to the Ph.D. Degree requirements.

d. For Ph.D. candidates who get accepted following M.Sc. studies, in addition to other requirements, the students need to complete with satisfactory performance at least three graduate courses, i.e. at least fifteen (15) graduate credits. It should be noted that these instructional units approximately correspond to two semesters of full-time study, but usually they are covered in a longer period of time and they overlap with other activities (support work in undergraduate education, research, etc.).

e. The progress evaluation of the Ph.D. candidate is done by a three-member advisory committee, appointed by the GASC, as defined under Greek Law N. 2083/92.

f. Following the completion of required coursework, and at the most two years after the initial registration in the Ph.D. program, the Ph.D. candidate needs to give his or her committee a document with an in-depth description of the proposed research area, and a documented recommendation of his or her research dissertation topic. Following this step, a presentation and oral examination of the student are done. In case the dissertation topic is rejected by the committee, the student has the right of one additional try within a year from the initial one. In case there is a second rejection, the student looses the status of a Ph.D. candidate.

g. During his or her studies, a Ph.D. candidate must give at least two research lectures which are announced to the Technical University of Crete community and are attended by faculty and students.

h. According to the provisions of Greek Law N. 2083, article 13, paragraph ζ, at the time when a Ph.D. candidate is at the final stage of completion of his or her doctoral dissertation, a seven (7)-member Examination Committee is appointed by the GASC. This committee includes the three (3) members of the advisory committee, as long as they are faculty members, and the remaining four (4), or, on occasion five (5) members are appointed by the GASC. At least three (3) members of the seven-member Committee must be at the rank of Professor. The members of the seven-member Examination Committee belong to the same or a relevant area of science as that of the candidate’s dissertation, and some members can be from a different Department of the same institution or from a different University.
The Ph.D. dissertation must be an original body of research, it has to include notable research results, and it has to demonstrate the Ph.D. candidate’s personal contribution.

The Ph.D. candidate defends his or her dissertation in public, against the examination committee, which in turn evaluates the originality of the dissertation, as well as whether it constitutes a contribution to science. At least five (5) of the seven members of the Examination Committee have to approve the defense and the doctoral dissertation in order for the Ph.D. candidate to successfully complete the Ph.D. program requirements, in addition to the above requirements.

Graduate Studies Regulations

• The student is allowed to request change of advisor, three-member advising committee, or thesis subject by applying to the General Assembly of Special Composition.

• In case the student’s advisor for any reason denies to continue advising the student, after an application to the GASC and upon agreement with the student, the GASC can assign a different advisor and three-member advising committee to the student. In any case the GASC will try to resolve the situation.

• If a student has not completed his/her graduate studies within the time that is determined by the Greek Law, he/she looses the graduate student status, except if he/she applies to the GASC for an extension and the GASC approves it.

Obligations of Graduate Students

The graduate students of the ECE Department that have registered to the M.Sc. or Ph.D. program have the following obligations.

• They register, attend, and are examined successfully in graduate courses of the Department and complete a research M.Sc. thesis or original Ph.D. dissertation, respectively, according to the rules that were described before.

• They offer support work in undergraduate education (exams, homework and test grading, teaching) which is determined by the instructors of the Department in collaboration with the Secretary of the Department.

• By the end of every academic year each graduate student prepares an annual progress report which describes the grades he/she received, a description of his/her research work, and the support work to the Department that the student offered during the corresponding academic year. The annual report is submitted to the Graduate Studies Committee within the first ten (10) working days of the following academic year and is approved initially by the GSC and later by the GASC. If a student does not submit the annual progress report by the above deadline or his/her progress is characterized insufficient based on the annual report he/she submitted, the student looses the graduate status.

Financial Support

Several graduate students are supported with fellowship, according to the budget of the University and the Department. The fellowship lasts for at most one (1) year and is provided upon application of the graduate students and approval by the General Assembly of Special Composition.

The financially supported graduate students offer teaching and research support work to the Department (development of projects and recitations, work in research projects), but their main responsibility is their graduate studies.

Fellowships are also offered by professors and researchers of the Department, upon application of the interested students to it. The fellows offer research or laboratory work to the professor/researcher.

Graduate Courses

The following table contains a comprehensive list of the areas of graduate courses that are offered in general by the Department. The courses that are actually offered constitute a subset of the following list and are determined in every semester by the research interests of the Department’s faculty members and the graduate students.
The Graduate Course Timetable is proposed by the Graduate Studies Committee and approved by the General Assembly of Special Composition. Class attendance is mandatory. The program consists of semester seminar—or lecture—courses that consist of homeworks, research subjects, presentations, and discussion. Each graduate course is equivalent to five (5) graduate credits.

Each student can take a limited number of graduate courses from the Graduate Study Program of a different Department at TUC or another Greek or non-Greek university, following the agreement of the student’s faculty advisor and the student’s three-member faculty committee. Course credit from approved courses taken from other Departments can be used towards the required graduate credits for a student’s graduation. The approval of graduate courses taken from a different Department’s Graduate Study Program is done by the General Assembly of Special Composition (GASC—a variant of the General Assembly which deals with graduate and research matters, and in which there is no undergraduate student representation), following the deposit by the student of the relevant paperwork (to demonstrate successful completion of the course, course syllabus, etc.). Each course corresponds to five (5) graduate credits. The maximum number of courses taken by other Departments which can count towards graduation is defined as follows:

- One (1) graduate course in the M.Sc. program [Option 1].
- Three (3) graduate courses for the M.Sc. program [Option 2] or for the Ph.D. program.

In order to facilitate the goals of the graduate study program, as described above, five scientific areas have been defined, under which the graduate courses are offered. These scientific areas are presented below.

### 1. APPLICATIONS OF THE INFORMATION SOCIETY [AIS]

The subjects covered in this area are office automation, distributed computing systems, human–computer interaction, information systems, and user interfaces. It is covered by the Computer Science Division.

### 2. COMPUTER SCIENCE [COMP]

The subjects covered in this area are programming principles, algorithms, data structures, programming languages, compilers, operating systems, databases, artificial intelligence, computer graphics, software and simulation technologies. It is covered by the Computer Science Division.

### 3. ELECTRONICS AND COMPUTER ARCHITECTURE [ACE]

The subjects covered in this area are the design of analog and digital electrical and electronic systems, computer hardware, computer architecture, microprocessors, real-time systems, the implementation of digital microelectronic systems and the development of CAD tools. It is covered by the Electronics and Computer Architecture Division.

### 4. SYSTEMS [SYS]

The subjects covered in this area are control systems theory, automatic control, image and voice processing, biomedical engineering and quality control. It is covered by the Systems Division.

### 5. TELECOMMUNICATIONS [TEL]

The subjects covered in this area are telecommunication systems, telephony systems, antennas, microwaves, information and coding theory, computer communication networks, wireless communication networks, voice recognition and speech processing. It is covered by the Telecommunications Division.
### Categories Of Graduate Courses

**Cross-listed with Undergraduate Courses**
These are courses which are offered in parallel with the corresponding undergraduate course. Graduate students interested in these courses ought to contact their research advisor for approval as well as the course instructor in order to find out additional obligations that they will have for graduate-level course credit.

**Independent Courses**
These are self-contained graduate courses. Graduate students interested in these courses must observe the entire course process and syllabus that has been determined by the instructor.

### Special Topics
These are self-contained graduate courses. The material determination is sufficiently broad in order for the instructor to adjust the course to state-of-the-art developments which evolve very rapidly in the Department’s areas of concentration. Graduate students interested in these courses must follow the entire course process and syllabus that has been determined by the instructor.

Graduate courses are numbered by the initial letters of the scientific areas that were described above, followed by a three-digit number. The first digit determines the level of the course. For graduate courses the first digit is always “6.” The following two digits uniquely identify the graduate course.

### Courses of Study

<table>
<thead>
<tr>
<th>Division of Computer Science</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1. AIS 601 Web Information Systems (Cross–listed with AIS 403)</td>
<td></td>
</tr>
<tr>
<td>2. COMP 602 Principles of Distributed Systems (Cross–listed with COMP 414)</td>
<td></td>
</tr>
<tr>
<td>3. AIS 603 Multimedia Management Methods (Cross–listed with AIS 404)</td>
<td></td>
</tr>
<tr>
<td>4. AIS 604 Information, Semantics and Services in the Web (Cross–listed with AIS 412)</td>
<td></td>
</tr>
<tr>
<td>5. COMP 605 Artificial Intelligence (Cross–listed with COMP 417)</td>
<td></td>
</tr>
<tr>
<td>6. AIS 606 Agent–based Internet Computing (Cross–listed with AIS 413)</td>
<td></td>
</tr>
<tr>
<td>7. COMP 607 Machine Vision (Cross–listed with COMP 405)</td>
<td></td>
</tr>
<tr>
<td>8. COMP 608 Software Engineering (Cross–listed with COMP 501)</td>
<td></td>
</tr>
<tr>
<td>9. AIS 609 Special Topics in Human–Computer Interaction (Cross–listed with AIS 502)</td>
<td></td>
</tr>
<tr>
<td>10. COMP 610 Advanced Topics in Computer Graphics (Cross–listed with COMP 418)</td>
<td></td>
</tr>
<tr>
<td>11. COMP 611 Theoretic Topics in Databases</td>
<td></td>
</tr>
<tr>
<td>12. COMP 612 Visualization and Virtual Reality</td>
<td></td>
</tr>
<tr>
<td>13. COMP 613 Machine Learning</td>
<td></td>
</tr>
<tr>
<td>14. COMP 614 Natural Language Processing</td>
<td></td>
</tr>
<tr>
<td>15.</td>
<td>COMP 615</td>
</tr>
<tr>
<td>16.</td>
<td>COMP 616</td>
</tr>
<tr>
<td>17.</td>
<td>COMP 617</td>
</tr>
<tr>
<td>18.</td>
<td>AIS 618</td>
</tr>
<tr>
<td>19.</td>
<td>COMP 619</td>
</tr>
<tr>
<td>20.</td>
<td>COMP 620</td>
</tr>
<tr>
<td>21.</td>
<td>AIS 621</td>
</tr>
<tr>
<td>22.</td>
<td>COMP 622</td>
</tr>
<tr>
<td>23.</td>
<td>AIS 623</td>
</tr>
<tr>
<td>24.</td>
<td>AIS 624</td>
</tr>
<tr>
<td>25.</td>
<td>COMP 625</td>
</tr>
<tr>
<td>26.</td>
<td>COMP 626</td>
</tr>
<tr>
<td>27.</td>
<td>COMP 627</td>
</tr>
<tr>
<td>28.</td>
<td>COMP 628</td>
</tr>
</tbody>
</table>

**Division of Electronics and Computer Architecture**

<p>| 1. | ACE 601 | Introduction to VLSI System Design (Cross–listed with ACE 501) |
| 2. | ACE 602 | Special Topics in Electric Measurements Systems |
| 3. | ACE 603 | Biomedical Electronics (Cross–listed with ACE 403) |
| 4. | ACE 604 | Special Topics in Analog CMOS Integrated Circuit Design |
| 5. | ACE 612 | Microelectronic System Implementation (Cross–listed with ACE 412) |
| 6. | ACE 613 | Parallel and Distributed Computer Architecture (Cross–listed with ACE 413) |
| 7. | ACE 614 | Optoelectronics (Cross–listed with ACE 414) |
| 8. | ACE 616 | Renewable Energy Sources (Cross–listed with ACE 416) |
| 9. | ACE 620 | Development of CAD Tools for the Design of Integrated Circuits |
| 10. | ACE 621 | Advanced Computer Architecture |
| 11. | ACE 622 | VLSI System Design |
| 12. | ACE 623 | Application Specific Processor Architecture |
| 13. | ACE 624 | Embedded Microelectronic Systems Implementation |
| 14. | ACE 625 | Packet and Network Processor Architectures |
| 15. | ACE 630 | Special Topics in Circuit and System Design |
| 16. | ACE 631 | Special Topics in Reconfigurable Logic |</p>
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACE 632</td>
<td>Special Topics in Computing Systems Design</td>
</tr>
<tr>
<td>ACE 633</td>
<td>Special Topics in Power Systems</td>
</tr>
<tr>
<td>ACE 634</td>
<td>Special topics in Optoelectronic Biomedical Technology</td>
</tr>
<tr>
<td>ACE 635</td>
<td>Special Topics in Electronic Systems for Energy Management</td>
</tr>
<tr>
<td></td>
<td>(Cross–listed with ACE 528)</td>
</tr>
</tbody>
</table>

**Division of Systems**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>SYS 601</td>
<td>Industrial Automatic Control Systems</td>
</tr>
<tr>
<td></td>
<td>(Cross–listed with SYS 311)</td>
</tr>
<tr>
<td>SYS 602</td>
<td>Digital Image Processing</td>
</tr>
<tr>
<td></td>
<td>(Cross–listed with SYS 312)</td>
</tr>
<tr>
<td>SYS 603</td>
<td>Advanced Topics in Optimal Control</td>
</tr>
<tr>
<td>SYS 604</td>
<td>Neural Networks</td>
</tr>
<tr>
<td>SYS 605</td>
<td>Nonlinear Systems</td>
</tr>
<tr>
<td>SYS 606</td>
<td>Stochastic Control</td>
</tr>
<tr>
<td>SYS 607</td>
<td>Reliability of Technological Systems and Their Applications</td>
</tr>
<tr>
<td>SYS 608</td>
<td>Adaptive Control</td>
</tr>
<tr>
<td>SYS 609</td>
<td>Multivariable and Stochastic Optimization</td>
</tr>
<tr>
<td>SYS 611</td>
<td>Video Standards and Applications</td>
</tr>
<tr>
<td>SYS 612</td>
<td>Quality Control in Production Systems in Real Time</td>
</tr>
<tr>
<td>SYS 613</td>
<td>Programming and Control of Production Systems</td>
</tr>
<tr>
<td>SYS 614</td>
<td>Principles of Biomedical Systems</td>
</tr>
<tr>
<td>SYS 616</td>
<td>Special Topics in Biomedicine</td>
</tr>
<tr>
<td>SYS 617</td>
<td>Special Topics in Linear Systems</td>
</tr>
<tr>
<td>Course Code</td>
<td>Course Title</td>
</tr>
<tr>
<td>------------</td>
<td>------------------------------------------------------------</td>
</tr>
<tr>
<td>SYS 618</td>
<td>Special Topics in Digital Control Based on Digital Signal Processors</td>
</tr>
<tr>
<td>SYS 620</td>
<td>Special Topics in Robotics</td>
</tr>
<tr>
<td>SYS 621</td>
<td>Special Topics in Adaptive Filters and Applications</td>
</tr>
<tr>
<td>SYS 622</td>
<td>Special Topics in Automation</td>
</tr>
<tr>
<td>SYS 623</td>
<td>Special Topics in Fuzzy Logic</td>
</tr>
</tbody>
</table>

**Division of Telecommunications**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>TEL 601</td>
<td>Probability and Random Processes</td>
</tr>
<tr>
<td>TEL 602</td>
<td>Telecommunication Systems II</td>
</tr>
<tr>
<td></td>
<td>(Cross-listed with TEL 311)</td>
</tr>
<tr>
<td>TEL 603</td>
<td>Estimation and Detection Theory</td>
</tr>
<tr>
<td>TEL 604</td>
<td>Statistical Signal Processing for Communications</td>
</tr>
<tr>
<td>TEL 605</td>
<td>Computer Network Protocols</td>
</tr>
<tr>
<td>TEL 606</td>
<td>Introduction to Asynchronous Transfer Mode Networks</td>
</tr>
<tr>
<td></td>
<td>(Cross-listed with TEL 525)</td>
</tr>
<tr>
<td>TEL 607</td>
<td>Advanced Topics in Speech Recognition</td>
</tr>
<tr>
<td>TEL 608</td>
<td>Information Theory</td>
</tr>
<tr>
<td>TEL 609</td>
<td>Pattern Recognition</td>
</tr>
<tr>
<td>TEL 610</td>
<td>Special Topics in Image Processing</td>
</tr>
<tr>
<td>TEL 611</td>
<td>Coding Theory</td>
</tr>
<tr>
<td>TEL 612</td>
<td>Convex Optimization</td>
</tr>
<tr>
<td>TEL 613</td>
<td>Special Topics in Telecommunication Systems</td>
</tr>
<tr>
<td>TEL 614</td>
<td>Special Topics in Signal and Natural Language Processing</td>
</tr>
<tr>
<td>TEL 615</td>
<td>Special Topics in Telecommunication Networks</td>
</tr>
</tbody>
</table>
Division of Computer Science

Web Information Systems  AIS 601


Principles of Distributed Systems  COMP 602


Multimedia Management Methods  AIS 603

Processing, archiving, and searching multimedia information including documents, one–dimensional signals, still and moving images (video) in information systems and the Internet. Classic models of information retrieval (binary, relational, probabilistic), information clustering and clustering algorithms (partitional, hierarchical, hybrid algorithms), clustering applications grouping in document collections. Visualization of one–dimensional signals and images in multimedia systems. Feature extraction (color, texture, shape, and spatial relationships) from images. Retrieval methods for one–dimensional signals and images. Indexing techniques in information systems for documents and multimedia information (inverted files, k–d rees, grid files, R–trees). Design of information systems on the Internet, management and analysis of information on the Internet (PageRank and HITS methods). Basic processing techniques and analysis of still and moving images (video) in information systems. Compression techniques, JPEG, MPEG–1, 2, 4, 7 standards. Video segmentation into shots, shot aggregates.

Information, Semantics and Services in the Web  AIS 604

Information models for the web, information integration from independent enterprises. XML, XML...


Artificial Intelligence COMP 605


Agent–based Internet Computing AIS 606


Machine Vision COMP 607


Software Engineering COMP 608


Special Topics in Human–Computer Interaction AIS 609

Advanced Topics in Computer Graphics COMP 610

Theoretic Topics in Databases COMP 611
This course covers traditional and modern topics of databases with emphasis on their theoretical foundation. Tools from math logic and algorithm theory are used. The covered topics are: Relational model and first-order logic, query languages and their semantics (relational algebra, calculus, Datalog and variations), computational complexity of the query answering problem, theoretical query optimization problems (minimization, equivalence etc). Databases with constraints, databases with incomplete information. Theoretical topics on unified access of databases and mediators. Theoretical topics on XML models and query languages for XML. Theoretical topics on RDF/Telos models and query languages for RDF/Telos. Theoretical topics on ontologies and relational languages (DML+OIL etc).

Visualization and Virtual Reality COMP 612
This course includes the basic technological principles of visualization and virtual reality systems. Moreover, it includes the appropriate software libraries towards implementing virtual reality systems. The lectures focus on the capabilities and restrictions of virtual reality systems, Simulation and human factors engineering, Immersive VR, Software (VRML, Blender, 3D Studio Max, Octaga, Java API), 3D visualization, 3D computer graphics, clipping, sensors, cameras, shadows, depth, texture, volume, 3D objects, rendering. Input and output devices for virtual reality systems (head mounted displays, trackers, displays).

Virtual reality applications (industrial, ergonomics, architectural visualization), Medicine, Entertainment, Art (virtual museums, virtual art exhibitions).

Machine Learning COMP 613

Natural Language Processing COMP 614

Mobile Computing COMP 615
Architecture of network systems for mobile computing. Mobile computing systems and application performance criteria. Information broadcasting models and architectures. Calculations and context knowledge models and architectures. Transaction processing algorithms in mobile information systems architecture in the presence of interruptions. Design and methodologies for the development of information systems for mobile computing.

Special Topics in Algorithms and Complexity COMP 616
Advanced topics in Algorithms and Complexity emphasizing on specific related research areas and related areas of interdisciplinary research.
Special Topics in Systems Software COMP 617
The aim of this course is to familiarize with the basic principles of low-level systems software development. The emphasis of this course is in programming assignments that will implement well-defined (but nontrivial) systems such as: System threads implementation at user level, communication protocol implementation, system driver implementation, embedded-system control program implementation. The lectures analyze in depth issues such as: Virtual memory, kernel structures, processes synchronization and threads connections, processes communication, storage, file systems, fault tolerance, distributed systems, system security.

Special Topics in Information Systems AIS 618
Advanced topics in information modeling and organization: metadata ontologies, contexts, digital libraries. Advanced topics in information retrieval, navigation, and finding: Advance information retrieval, interfaces for information browsing, the design of crawlers in the web. Advanced topics in information transformation and cleaning: transforms, wrappers, model-based transforms. Cooperative information systems. Information promotion models (push vs. pull vs. stereotype models). Models of information systems for user communities. Models of filtering information from societies. Trust building models.

Special Topics in Artificial Intelligence COMP 619
Advanced topics in Artificial Intelligence emphasizing on specific related research areas and related areas of interdisciplinary research.

Special Topics in Software Development COMP 620
Modern topics in information systems with emphasis on software and legacy systems re-engineering, requirements engineering, business process modeling and re-engineering.

Special Topics in Multimedia AIS 621
Topics in multimedia processing (static image, video, voice, text, metadata) such as compression and coding with emphasis on MPEG standards and the use of multimedia in the web (systems architectures, web search algorithms, systems performance, data update-compatibility). Query languages, relevance feedback, query types (range queries, nearest neighbor queries), data mining.

Special Topics in Databases COMP 622
This course covers a selection of the following topics: Design and implementation issues in databases. Design and implementation of relational systems. Design and implementation of object-oriented systems. XML databases. Query optimization in databases. Optimizing the performance of applications with design at the physical level, cost optimization for transactions, recovery. Distributed databases. Data Warehousing. Data mining on databases. Continuous Databases.

Economics of the Information Society AIS 623
The industry of the Information Society and the basic principles for starting and running successful businesses in this domain. The environment of high-tech industries and the environment of the information industry. Basic principles and procedures for the creation of a start-up company in the information domain, emphasizing creativity and technological innovation, focus on goals, opportunity and timing, technology development, marketing, financing, creation of partnerships. The economics of information, information cost, information pricing, business plans, financing, targets of opportunity, market planning, product planning, management of research and development, marketing, sales management, legal coverage for intellectual property rights on information, management and organization of human resources for delivering products and services. The influence of the Internet to the information industry. Market models for producing and distributing products in the market.

Society and Information Technology AIS 624
The importance of spreading information and communication technologies and their applications in society, the restructuring of societies, organizations and businesses, the risks of their misuse, and the legal framework (Greek and European) which governs the operation of enterprises and organizations. Applications of information technology in society:
e-government, e-commerce, e-tourism, e-health, e-learning, e-services, environmental monitoring. Integrated television and Internet services and applications. Basic principles of protection of personal information and individual rights, productivity, quality of work, monitoring, user communities, preservation of social groups. Mechanisms of encryption and security of personal data. Automation of business operations. Patents, intellectual property rights, ways of protecting and exploiting multimedia and software products. Legislation (Greek and European) for the operation and collaboration of businesses in research, creation, and marketing of multimedia products and information technology.


**Approximation Techniques for Massive Databases and Data Streams**  COMP 627  Techniques for effective compression of large amounts of data: sampling, histograms, wavelets. Approximate processing techniques. Data streams: basic models, problems and applications. Algorithms for processing data streams: stream sampling (reservoir and min-wise sampling), data stream sketches (AMS, FM stream sketching). Advanced issues: approximation techniques for XML data, techniques for distributed data streams, probabilistic data and data streams, graph and text streams.

**Multidimensional Data Management**  COMP 628  Multidimensional data: raster and vector representations, abstract data types, standard formats. Management of large datasets, performance issues. Storage and retrieval of data in main memory and hard disks. Main applications: GIS, CAD, graphics. Introduction to spatio-temporal databases, data models, languages for spatial, topological and temporal queries. Basic 2-d and 3-d geometry, coordinate systems, elements of cartography. Computational geometry, convex hull algorithms, triangulation, data structures for point location and segment intersection. Geometric data structures, range search, nearest neighbors, special cases, external data structures, distributed data structures. Query processing algorithms. High-dimensional data processing, metric spaces, similarity metrics, optimization problems, linear programming.

**Division of Electronics and Computer Architecture**

**Introduction to VLSI System Design**  ACE 601  Very Large Scale Integration (VLSI) circuit technology, Field Effect Transistor (FET) principles, processing technologies, design under scale, design flows and design rules. Basics of ratioed logic. Circuit and digital logic design of Complementary Metal Oxide Semiconductor (CMOS) circuits. The pass transistor and the CMOS switch, logic gates in fully complementary logic. Design methodology for Application Specific
Integrated Circuits (ASIC) and system design issues. Dynamic logic with precharge/evaluate circuits. Sequential logic with 2-phase and multi-phase clocks. Static and dynamic RAM design. Power distribution and clock distribution methodologies.

**Special Topics in Electric Measurements Systems** (ACE 602)


**Biomedical Electronics** (ACE 603)

Introduction to human physiology, biosignal production mechanisms, electrical, magnetic and optical properties of biological tissues and systems, interaction of electromagnetic radiation with tissues, bio–electrodes, electrochemical sensors, photonic sensors, bio–analytical sensors, implantable micro–sensors, ionizing and non–ionizing methods and devices for medical diagnosis and treatment, medical lasers, safety and compliance regulations of medical technology.

**Special Topics in Analog CMOS Integrated Circuit Design** (ACE 604)

Modern Introduction to radio–frequency integrated circuit (RFIC) design. Introduction to nanoscale CMOS technology. Scaling according to Moore’s law, roadmap of semiconductors. Bulk silicon MOSFET, new structures: SOI, double gate, FinFET. High–Voltage (HVMOS), Laterally Diffused (LDMOSFET) for high–volt-


**Microelectronic System Implementation** (ACE 612)

Design and implementation methodology, rapid system prototyping (RSP), the waterfall model. Project management with PERT and GANTT charts, system cost and time–to–market issues. System decomposition and partitioning, top–down and bottom–up design methodologies. Subsystem reusability, intellectual property (IP) cores, technology mapping, special–purpose architectures. Power analysis, thermal analysis, design for reliability. Intellectual property protection, patents, trade secrets. How to proceed from an initial idea to a final product, startup company issues. Semester project.

**Parallel and Distributed Computer Architecture** (ACE 613)


**Optoelectronics** (ACE 614)

Elements of optics and solid–state physics, modulation of light, display devices, Lasers and applications, photodetectors, fiber optics, optical communication systems, advanced topics on optoelectronics.

**Renewable Energy Sources** (ACE 616)

Introduction to the energy problem. Renewable energy sources categories. Wind energy (wind velocity measurement, estimation of the Weibull distribution parameters, types and operation principles of wind turbines, types and operation principles of electrical generators,
interconnection with the power grid, autonomous operation, power absorption maximization). Solar energy, incident solar energy calculations, solar thermal systems, passive solar systems, applications. Photovoltaic solar plants (basic principles, crystalline PV cells, thin film PVs, electrical characteristics of silicon PV cells, autonomous PV systems, grid connected PV systems, maximum power tracking systems, inverters, fundamentals of industrial electronics). Small hydro plants. Electric energy storage systems (batteries, pump storage hydro systems, fuel cells, etc.). Geothermal energy. Biomass. Tidal energy. RES applications. RES legislation elements. Environmental impact of RES.

**Development of CAD Tools for the Design of Integrated Circuits**  
ACE 620

Analysis and Design of algorithms for automatic synthesis, timing analysis, logic simulation, place and route, extraction and schematics entry. Presentation of the data structures needed for the implementations of those algorithms and the corresponding open research problems. The course project will involve the implementation one of the algorithms presented in the course.

**Advanced Computer Architecture**  
ACE 621


**VLSI System Design**  
ACE 622

Advanced VLSI circuit design, dynamic logic and clock distribution circuit design for advanced logic families, interconnection analysis and synthesis methodology, sequential circuit retiming, memory and register file circuit design, I/O and tri–state pad and pad frame design. Design methodologies for maximum performance, minimum area, and lowest power consumption and tradeoff evaluation in VLSI system design. Semester Project.

**Application Specific Processor Architecture**  
ACE 623

The need for special–purpose architectures. Examples from applications including compression, cryptography, image processing, real–time systems. Implementation technologies including Digital Signal Processors (DSP), Field Programmable Gate Arrays (FPGA), Very Large Scale Integration (VLSI) and conventional processors in unconventional systems (e.g. Deep Blue). Algorithm analysis and problem mapping to special–purpose architectures. Spatial and temporal parallelism. Pipelining, super–pipelining and systolic array architectures. Software–hardware codesign, I/O of application–specific architectures, case studies. Semester project.

**Embedded Microelectronic Systems Implementation**  
ACE 624

Introduction, definitions. Available technologies, ranging from 8–bit microcontrollers to reconfigurable logic with millions of gates. Design parameters and need for embedded systems, such as cost issues, power consumption, size, on/off line processing, I/O. Simultaneous exploitation of multiple technologies (e.g. VLSI, FPGA, embedded processors) in integrated systems (e.g. Triscend). Integrated products (e.g. Crusoe) and IP cores for embedded systems. Case studies. Semester project.

**Packet and Network Processor Architectures**  
ACE 625

Packet processing, flow classification sub–systems, packet scheduling, packet routing and buffering, high–level protocol execution. Customized architectures, balance between computational power and line speed. Parallel packet processing and its consequences on hardware design. Multi–level queue management, mapping of network protocols into hardware, HW/SW codesign. High–performance memory interfaces for packet buffering, routing tables, etc.

**Special Topics in Circuit and System Design**  
ACE 630

Analysis and synthesis of VLSI circuits and CAD tools based on state–of–the–art technology and applied to open research problems. Case studies. Semester project.
Special Topics in Reconfigurable Logic

Introduction, definitions, Reconfigurable logic as a means of computations. Historical examples (Splash 2, RaPiD, Piperench) and areas of applications (DNA sequencing, discrete mathematics problems, image processing, speech processing, etc.). Comparison of FPGA systems with other implementation technologies (DSP, VLSI and conventional computers). Evolution of CAD tools for synthesis and place and route of reconfigurable designs. Evolution of FPGA architectures. Granularity of subsystems and large hardcore subsystems (Embedded processors, BRAM, CAM, PLL/DLL, etc.). Dynamic reconfiguration and partial reconfiguration--opportunities and limitations. Semester project.

Special Topics in Computing Systems Design

Advanced techniques of design and implementation of computing systems. High-speed interfaces and buses, multi-level memory hierarchy design, I/O issues. Balanced designs, benchmarks and their effect on computing system design. Special-purpose processors, multimedia processors, supercomputers. Challenges in the design of computing systems, performance, efficiency, power consumption, expandability, ease of effective use issues. Examples from grid computers with hands-on mapping of applications to grid systems. Semester project.

Special Topics in Power Systems

Electric energy production, transmission and distribution. Electric machines, motors and generators, transformers, electric energy installations, energy management systems, energy saving systems, industrial electronic and control systems, energy storage systems, advanced applications. Deliberated electricity market, legislation and environmental issues of power systems.

Special topics in Optoelectronic Biomedical Technology

Structure and functionality of tissues, light–tissue interaction mechanisms, spectroscopic techniques and devices, tissue spectroscopy, medical microscopes and endoscopes, medical Lasers, novel optical imaging methods and devices, (hyper–) spectral imaging, optical tomography, optical biopsy, optical molecular imaging.

Special Topics in Electronic Systems for Energy Management


Division of Systems

Industrial Automatic Control Systems


Digital Image Processing

Similar to the corresponding undergraduate course, with more requirements. General principles on image creation and recording. Mathematical description of digital images, color representation, sampling. Two-dimensional transforms, vectors and vector operators. Image enhancement, smoothing and contrast increase. Image reconstruction with algebraic and stochastic methods, optimal filters. Image segmentation and coding.

Advanced Topics in Optimal Control

Non linear optimization theory constrained and unconstrained. Introduction to the calculus of variations for the minimization of functionals under various boundary conditions. Functionals optimization for non linear dynamic systems applications. Application to the solution of the general non linear multivariate optimal control problem with constraints. Presentation of the Pontryagin maximum principle.

**Neural Networks**  
SYS 604

We present the basic architectures of neural networks (perceptron, madaline, backpropagation, RBF, Hopfield etc.). Their operations are analyzed in their use for classification, system identification, prediction, associative memories, etc. Supervised and unsupervised learning laws are given.

**Nonlinear Systems**  
SYS 605

Introduction to the theory of non-linear dynamical systems [with their state space description by non-linear differential equations], and their study concerning existence and multiplicity of their solutions and their stability. Phase Plane and limit cycles. Input–output stability and Lyapunov stability via the use of nonlinear operators. Applications in robots and their dynamical equations. Introduction to the geometric theory of differentiable manifolds and use of non-linear geometry to the analysis and design of nonlinear systems.

**Stochastic Control**  
SYS 606

Stochastic processes and stochastic models. Dynamic programming and discrete time problem. Systems governed by stochastic signals. Stochastic LQG problems with Gaussian white noise. Separation of estimation and control. Theory of continuous stochastic differential equations and the innovation process. Continuous time domain, behavior and solution of LQG. Applications in real stochastic dynamical systems, e.g. robotic systems with unknown parameters, robot motion control in unknown environments etc.

**Reliability of Technological Systems and Their Applications**  
SYS 607

Introduction to reliability theory. Reliability indices. Statistical estimation of reliability indices. Markov methods, event trees, failure tree for the analysis of systems reliability. Applications in electrical energy systems, reliability hardware, software and reliability of communication systems.

**Adaptive Control**  
SYS 608

Introduction to adaptive control, dynamical systems models, definition of stability, input–output stability, Lyapunov stability, parameter estimation and system identification in real time with adaptive methods, linear, bilinear models, parameter estimators, adaptive observers, model reference adaptive control, model reference pole placement, robust adaptive laws, robust adaptive control laws, special software for adaptive systems, applications in industrial systems.

**Multivariable and Stochastic Optimization**  
SYS 609


**Video Standards and Applications**  
SYS 611

Image coding and compression, video standards, stochastic models for image estimation, movement computation in image and video time series, 3D models, projections and transverse sections, image registration and fusion. Creation and processing of panoramic images/video.

**Quality Control in Production Systems in Real Time**  
SYS 612


**Programming and Control of Production Systems**  
SYS 613

Industrial production systems, Scheduling and control. Cost reduction with quality improvement. Use

**Principles of Biomedical Systems**  
SYS 614  
Ionizing and non–ionizing radiation systems, ultrasound, wave propagation, effects in liquids and tissue, principles and devices for radiation detection, X–ray Computerized Tomography (CT), MRI (Magnetic Resonance Imaging) and NMR (Nuclear Magnetic Resonance–Principles and devices.

**Special Topics in Biomedicine**  
SYS 616  
Acquisition, processing and analysis of medical images; image reconstruction from CT signals. 2D projections and Radon transforms; analysis of MRI Fourier signal and MRI image reconstruction; Ultrasound wave transmission and image formation of tissue matter; geometrical correction and registration of multimodal images.

**Special Topics in Linear Systems**  
SYS 617  

**Special Topics in Digital Control Based on Digital Signal Processors**  
SYS 618  
Digital control systems and their implementations using the modern architecture of floating point signal processors. Theoretical and practical aspects. Industrial applications such as disk drive control, robot control, ABS and ESP automobile control.

**Special Topics in Robotics**  
SYS 620  

**Special Topics in Adaptive Filters and Applications**  
SYS 621  
This course covers the design and applications of adaptive filters. It contains basic and advanced algorithms for the design of adaptive filters and their implementation using contemporary hardware and software. Emphasis is placed on actual applications of industrial interest such as adaptive equalization, automatic gain control, etc.

**Special Topics in Automation**  
SYS 622  
Nonlinear adaptive control systems.

**Special Topics in Fuzzy Logic**  
SYS 623  
Modern applications of fuzzy logic in industrial applications.

**Division of Telecommunications**

**Probability and Random Processes**  
TEL 601  

**Telecommunication Systems II**  
TEL 602  
processes and linear time invariant systems. Cyclo-
stationary processes. Power spectral density of
cyclostationary processes. Signal transmission
through a bandlimited channel, intersymbol inter-
fERENCE, Nyquist pulses. Optimal receivers for ideal
bandlimited channels, square root raised cosine
pulses. Least squares, channel estimation. Linear
Equalization, equalization Viterbi. Adaptive algo-
rithms, adaptive equalization, LMS algorithm.
Phase synchronization (Phase−Locked−Loop, PLL).
Symbol synchronization. Frame synchronization.
Lowpass equivalent representation of signals and
channels. Elements of information theory (entropy,
mutual information), channel capacity. Link budget.

Estimation and Detection Theory TEL 603
Introduction to estimation theory. Minimum vari-
ance unbiased estimation (MVUE). The Cramer−Rao
lower bound (CRLB). Linear models. Best linear
unbiased estimation (BLUE). Sufficient statistics.
Maximum Likelihood Estimation (MLE).
Bayesian estimation. Linear MMSE estimation.
Introduction to detection theory. Hypothesis testing:
simple hypothesis testing (Bayes, minimax, and
Neyman−Pearson decision criteria), composite
hypothesis testing (generalized likelihood ratio).
Detection of signal in noise, detection of signal with
unwanted parameters.

Statistical Signal Processing for Communications TEL 604
Review of linear algebra tools: rank, span, nullspace,
Sylvester’s inequality, eigenvalue decomposition of
general square and Hermitian matrices, singular
value decomposition, properties and applications.
Rayleigh quotient, quadratic minimization, matrix
inversion Lemma. Spectral analysis: power spectral
density, the periodogram estimator and its statistical
properties. Line spectra estimation: parametric meth-
ods and applications in wireless communications
and array processing. Adaptive filtering: Gradient
descent, LMS, RLS and convergence analysis. Appli-
cations of adaptive filtering in channel equalization.

Computer Network Protocols TEL 605
Introduction to Computer Communication Networks
modelling using results from Queuing Theory (Lit-
tle’s result, the Markovian Queues M/M/1,
M/M/m/m, the M/G/1 queue with generalized cus-
tomer service time distribution and the M/G/1
queue with server vacations, priority queues, Jack-
son type open queuing networks). Design, model-
ling and performance evaluation of multiple access
protocols and transmission scheduling algorithms for:
1) wireless voice/data/video integrated access
networks, 2) packet radio networks and 3) wireline
broadband local/metropolitan area networks and
wireless local area networks.

Introduction to Asynchronous Transfer Mode Networks TEL 606
Brief introduction to Computer Communication Net-
works modelling using results from Queuing Theory.
Broadband Integrated Services Digital Networks, the
Asynchronous Transfer Mode. Characterization of
information sources in ATM networks and source traf-
fic models. Quality of Service metrics. Traffic Manage-
ment in ATM networks (admission control, traffic polic-
ing, congestion control). Routing in ATM networks.
Switching in ATM networks (switch architectures,
Banyan switches and their performance evaluation).

Advanced Topics in Speech Recognition TEL 607
Bayes decision theory and statistical pattern recogni-
tion. Classifier types and parameter estimation meth-
ods. Maximum likelihood estimation and the Expect-
tation−Maximization algorithm. Bayesian estimation,
discriminative training, maximum mutual information
estimation and minimum−error−rate estimation.
Statistical acoustic modeling: hidden Markov mod-
els, dynamical systems and Bayesian networks. Sta-
tistical inference and optimal search algorithms.
Adaptive estimation algorithms with applications in
speaker adaptation and robust speech recognition.
Statistical language modeling and parameter esti-
mation. Basic search algorithms and large−vocabu-
lary search algorithms for speech recognition.

Information Theory TEL 608
Entropy, relative entropy, mutual information: defini-
tions, properties. Data processing inequality, Fano
inequality. Entropy rate of stochastic processes.

**Pattern Recognition**  
TEL 609

**Special Topics in Image Processing**  
TEL 610

**Coding Theory**  
TEL 611
Introduction to algebraic codes: (a) Short introduction to algebra (groups, fields, polynomials and Euclidean algorithm, structure of finite fields), (b) Reed–Solomon and Bose–Chaudhuri–Hocquenhem codes (description of the structure of algebraic codes and their decoding through algorithms by Berlekamp–Welsh, Sudan, and Koetter–Vardy). Introduction to recursive codes (LDPC, low parity density codes, and turbo): (a) Recursive coding for the binary erasure channel, (b) Structure of recursive Gallager codes, repeat accumulate codes, and parallel–concatenated Turbo codes, (c) Decoding of Gallager codes through message passing, and (d) The algorithm BCJR.

**Convex Optimization**  
TEL 612

**Special Topics in Telecommunication Systems**  
TEL 613
Special topics in satellite, optical, and microwave telecommunication systems.

**Special Topics in Signal and Natural Language Processing**  
TEL 614
Special topics in signal processing with application to telecommunications and speech or natural language processing.

**Special Topics in Telecommunication Networks**  
TEL 615
Special topics in routing, coding, switching, modulation, multiplexing, stability analysis and performance of wireline and wireless telecommunication networks.
### Mailing Address of the ECE Department

Technical University of Crete  
Department of Electronic  
and Computer Engineering  
University Campus  
GR–73100 Chania, Crete, Greece

### Telephone and Fax Numbers

- **TUC Rector's Office**: 28210 37001
- **Departmental Administration Office**: 28210 37201  
  28210 37358, 28210 37218
- **Departmental Fax Number**: 28210 37542

### Faculty

<table>
<thead>
<tr>
<th>Name</th>
<th>Rank</th>
<th>Telephone*</th>
<th>E-mail address</th>
</tr>
</thead>
<tbody>
<tr>
<td>Konstantinos Balas</td>
<td>Assoc. Prof.</td>
<td>28210 37212</td>
<td><a href="mailto:balas@electronics.tuc.gr">balas@electronics.tuc.gr</a></td>
</tr>
<tr>
<td>Aggelos Bletsas</td>
<td>Assist. Prof.</td>
<td>–</td>
<td><a href="mailto:aggelos@telecom.tuc.gr">aggelos@telecom.tuc.gr</a></td>
</tr>
<tr>
<td>Matthias Bucher</td>
<td>Assist. Prof.</td>
<td>28210 37210</td>
<td><a href="mailto:mbucher@electronics.tuc.gr">mbucher@electronics.tuc.gr</a></td>
</tr>
<tr>
<td>Stavros Christodoulakis</td>
<td>Prof.</td>
<td>28210 37399</td>
<td><a href="mailto:stavros@ced.tuc.gr">stavros@ced.tuc.gr</a></td>
</tr>
<tr>
<td>Emmanuel Christodoulou</td>
<td>Prof.</td>
<td>28210 37204</td>
<td><a href="mailto:manolis@ece.tuc.gr">manolis@ece.tuc.gr</a></td>
</tr>
<tr>
<td>Antonios Deligiannakis</td>
<td>Assist. Prof.</td>
<td>28210 37415</td>
<td><a href="mailto:adeli@softnet.tuc.gr">adeli@softnet.tuc.gr</a></td>
</tr>
<tr>
<td>Vassilios Digalakis</td>
<td>Prof.</td>
<td>28210 37226</td>
<td><a href="mailto:vas@telecom.tuc.gr">vas@telecom.tuc.gr</a></td>
</tr>
<tr>
<td>Apostolos Dollas</td>
<td>Prof.</td>
<td>28210 37228</td>
<td><a href="mailto:dollas@mhl.tuc.gr">dollas@mhl.tuc.gr</a></td>
</tr>
<tr>
<td>Minos Garofalakis</td>
<td>Prof.</td>
<td>28210 37211</td>
<td><a href="mailto:minos@softnet.tuc.gr">minos@softnet.tuc.gr</a></td>
</tr>
<tr>
<td>Konstantinos Kalaitzakis</td>
<td>Prof.</td>
<td>28210 37213</td>
<td><a href="mailto:koskal@electronics.tuc.gr">koskal@electronics.tuc.gr</a></td>
</tr>
<tr>
<td>George Karystinos</td>
<td>Assist. Prof.</td>
<td>28210 37343</td>
<td><a href="mailto:karystinos@telecom.tuc.gr">karystinos@telecom.tuc.gr</a></td>
</tr>
<tr>
<td>Polychronis Koutsakis</td>
<td>Assist. Prof.</td>
<td>28210 37235</td>
<td><a href="mailto:polk@telecom.tuc.gr">polk@telecom.tuc.gr</a></td>
</tr>
<tr>
<td>Michail Lagoudakis</td>
<td>Assist. Prof.</td>
<td>28210 37244</td>
<td><a href="mailto:lagoudakis@intelligence.tuc.gr">lagoudakis@intelligence.tuc.gr</a></td>
</tr>
<tr>
<td>Athanasios Liavas</td>
<td>(Chairman) Assoc.</td>
<td>28210 37224</td>
<td><a href="mailto:liavas@telecom.tuc.gr">liavas@telecom.tuc.gr</a></td>
</tr>
<tr>
<td>Katerina Mania</td>
<td>Assist. Prof.</td>
<td>28210 37222</td>
<td><a href="mailto:k.mania@ced.tuc.gr">k.mania@ced.tuc.gr</a></td>
</tr>
<tr>
<td>Ioannis Papaefstathiou</td>
<td>Assist. Prof.</td>
<td>28210 37268</td>
<td><a href="mailto:ygp@mhl.tuc.gr">ygp@mhl.tuc.gr</a></td>
</tr>
<tr>
<td>Michael Paterakis</td>
<td>Prof.</td>
<td>28210 37225</td>
<td><a href="mailto:pateraki@telecom.tuc.gr">pateraki@telecom.tuc.gr</a></td>
</tr>
<tr>
<td>Euripides Petrakis</td>
<td>Assoc. Prof.</td>
<td>28210 37229</td>
<td><a href="mailto:petrakis@intelligence.tuc.gr">petrakis@intelligence.tuc.gr</a></td>
</tr>
<tr>
<td>Dionisios Pnevmatikatos</td>
<td>(Associate Chairman)</td>
<td>28210 37344</td>
<td><a href="mailto:pnevmati@mhl.tuc.gr">pnevmati@mhl.tuc.gr</a></td>
</tr>
<tr>
<td>Alexandros Potamianos</td>
<td>Assoc. Prof.</td>
<td>28210 37221</td>
<td><a href="mailto:potam@telecom.tuc.gr">potam@telecom.tuc.gr</a></td>
</tr>
<tr>
<td>Vassilios Samoladas</td>
<td>Assist. Prof.</td>
<td>28210 37230</td>
<td><a href="mailto:vsam@softnet.tuc.gr">vsam@softnet.tuc.gr</a></td>
</tr>
<tr>
<td>Nikos Sidirooulos</td>
<td>Prof.</td>
<td>28210 37227</td>
<td><a href="mailto:nikos@telecom.tuc.gr">nikos@telecom.tuc.gr</a></td>
</tr>
<tr>
<td>George Stavrakakis</td>
<td>Prof.</td>
<td>28210 37205</td>
<td><a href="mailto:gstavr@electronics.tuc.gr">gstavr@electronics.tuc.gr</a></td>
</tr>
<tr>
<td>Peter Stavroulakis</td>
<td>Prof.</td>
<td>28210 37333</td>
<td><a href="mailto:petehsi@yahoo.gr">petehsi@yahoo.gr</a></td>
</tr>
<tr>
<td>Michael Zervakis</td>
<td>Prof.</td>
<td>28210 37206</td>
<td><a href="mailto:michalis@systems.tuc.gr">michalis@systems.tuc.gr</a></td>
</tr>
</tbody>
</table>

* add +30 for international calls
Laboratory Teaching Staff

<table>
<thead>
<tr>
<th>Name</th>
<th>Telephone</th>
<th>E–mail address</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sotirios Bouros</td>
<td>28210 37391</td>
<td><a href="mailto:sotiris@telecom.tuc.gr">sotiris@telecom.tuc.gr</a></td>
</tr>
<tr>
<td>Emmanuel Doudounakis</td>
<td>28210 37382</td>
<td><a href="mailto:mdoudounakis@systems.tuc.gr">mdoudounakis@systems.tuc.gr</a></td>
</tr>
<tr>
<td>Markos Kimionis</td>
<td>28210 37262</td>
<td><a href="mailto:kimionis@mhl.tuc.gr">kimionis@mhl.tuc.gr</a></td>
</tr>
<tr>
<td>George Markoulakis</td>
<td>28210 37232</td>
<td><a href="mailto:geomark@electronics.tuc.gr">geomark@electronics.tuc.gr</a></td>
</tr>
<tr>
<td>Amalia Sergaki</td>
<td>28210 37214</td>
<td><a href="mailto:amalia@electronics.tuc.gr">amalia@electronics.tuc.gr</a></td>
</tr>
</tbody>
</table>

Laboratory Technical Staff

<table>
<thead>
<tr>
<th>Name</th>
<th>Telephone</th>
<th>E–mail address</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spyros Argyropoulos</td>
<td>28210 37342</td>
<td><a href="mailto:spyros@intelligence.tuc.gr">spyros@intelligence.tuc.gr</a></td>
</tr>
<tr>
<td>Eftichios Koutroulis</td>
<td>28210 37233</td>
<td><a href="mailto:efkout@electronics.tuc.gr">efkout@electronics.tuc.gr</a></td>
</tr>
</tbody>
</table>

Contracted Staff

<table>
<thead>
<tr>
<th>Name</th>
<th>Telephone</th>
<th>E–mail address</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stamatis Andrianakis</td>
<td>28210 37423</td>
<td><a href="mailto:sandrian@intelligence.tuc.gr">sandrian@intelligence.tuc.gr</a></td>
</tr>
<tr>
<td>George Anestis</td>
<td>28210 37408</td>
<td><a href="mailto:ganest@ced.tuc.gr">ganest@ced.tuc.gr</a></td>
</tr>
<tr>
<td>Polyxeni Arapi</td>
<td>28210 37431</td>
<td><a href="mailto:xenia@ced.tuc.gr">xenia@ced.tuc.gr</a></td>
</tr>
<tr>
<td>Vassilios Diakoloukas</td>
<td>28210 37220</td>
<td><a href="mailto:vdiak@telecom.tuc.gr">vdiak@telecom.tuc.gr</a></td>
</tr>
<tr>
<td>Nektarios Gioldasis</td>
<td>28210 37396</td>
<td><a href="mailto:nektarios@ced.tuc.gr">nektarios@ced.tuc.gr</a></td>
</tr>
<tr>
<td>Fotis Kazasis</td>
<td>28210 37396</td>
<td><a href="mailto:fotis@ced.tuc.gr">fotis@ced.tuc.gr</a></td>
</tr>
<tr>
<td>Ioannis Maragoudakis</td>
<td>28210 37390</td>
<td><a href="mailto:imarag@ced.tuc.gr">imarag@ced.tuc.gr</a></td>
</tr>
<tr>
<td>Nektarios Moumoutzis</td>
<td>28210 37395</td>
<td><a href="mailto:nektar@ced.tuc.gr">nektar@ced.tuc.gr</a></td>
</tr>
<tr>
<td>Kyprianos Papademetriou</td>
<td>28210 37219</td>
<td><a href="mailto:kpapadim@mhl.tuc.gr">kpapadim@mhl.tuc.gr</a></td>
</tr>
<tr>
<td>Nikolaos Pappas</td>
<td>28210 37393</td>
<td><a href="mailto:nikos@ced.tuc.gr">nikos@ced.tuc.gr</a></td>
</tr>
<tr>
<td>Euripides Sotiriades</td>
<td>28210 37219</td>
<td><a href="mailto:esot@mhl.tuc.gr">esot@mhl.tuc.gr</a></td>
</tr>
</tbody>
</table>

Administrative Staff

<table>
<thead>
<tr>
<th>Name</th>
<th>Telephone</th>
<th>E–mail address</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dimitra Athenaki</td>
<td>28210 37358</td>
<td><a href="mailto:athenaki@dpem.tuc.gr">athenaki@dpem.tuc.gr</a></td>
</tr>
<tr>
<td>Vassiliki Grigoraki (Head Secretary)</td>
<td>28210 37218</td>
<td><a href="mailto:vicky@ece.tuc.gr">vicky@ece.tuc.gr</a></td>
</tr>
<tr>
<td>Agapi Karakatsani</td>
<td>28210 37283</td>
<td><a href="mailto:akarakatsani@isc.tuc.gr">akarakatsani@isc.tuc.gr</a></td>
</tr>
<tr>
<td>Eleni Stamataki</td>
<td>28210 37201</td>
<td><a href="mailto:estamataki@isc.tuc.gr">estamataki@isc.tuc.gr</a></td>
</tr>
</tbody>
</table>

Το Μεταπτυχιακό Πρόγραμμα Σπουδών του Τμήματος Ηλεκτρονικών Μηχανικών & Μηχανικών Υπολογιστών του Πολυτεχνείου Κρήτης έχει ενταχθεί στο 2ο Επιχειρησιακό Πρόγραμμα Εκπαίδευσης και Αριθμ. Επαγγελματικής Κατάρτισης (ΕΠΕΑΕΚ ΙΙ) του Υπουργείου Εθνικής Παιδείας και Θρησκευμάτων, με τη συγχρηματοδότηση της Ευρωπαϊκής Ένωσης και του Ευρωπαϊκού Κοινωνικού Ταμείου (ΕΚΤ).