ΔΙΕΘΝΕΣ
ΠΑΝΕΠΙΣΤΗΜΙΟ
ΤΗΣ ΕΛΛΑΔΟΣ

SCHOOL OF ENGINEERING
**DEPARTMENT OF COMPUTER, INFORMATICS AND
TELECOMMUNICATIONS ENGINEERING**

ACADEMIC GUIDE

DEPARTMENT OF COMPUTER, INFORMATICS AND TELECOMMUNICATIONS ENGINEERING

(2023-2024 Academic Year)

SERRES, 2023

EDITING GROUP

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FOREWORD

Dear students,

this Guide summarizes the Curriculum of the Department of Computer, Informatics and Telecommunications Engineering as it was established in 2019, partially modified in the following years and is valid for the 2023 – 2024 Academic Year. It also provides a brief overview of the structure and operation of the Department and the University. I believe that the information contained herein will make it a valuable resource for all of you. We hope that, especially for freshmen, this Guide will provide a means to become more easily familiar with the academic environment in which you have come to study.

So, on the occasion of this first contact with you, and representing the Department of Computer, Informatics and Telecommunications Engineering as a whole, I would like to congratulate you warmly on your choice and welcome you to the International Hellenic University, a modern and constantly developing higher educational institute, where I hope you will enjoy many creative and enjoyable moments during your studies.

Dear students, our goal is for you to acquire all necessary scientific skills for your subsequent professional career as fully-fetaured Computer, Informatics and Telecommunications Engineers, thus contributing to the technological development of the country and the well-being of our society. By attending the courses and actively participating in all the educational activities of the Department, interacting with your fellow students and cooperating with the members of the Faculty and Staff, as well as creatively intervening in all the issues of our academic community, you will acquire the necessary scientific knowledge, as well as critical and creative thinking, which will help you in your future professional career.

Updated information on the topics covered by the Academic Guide, as well as announcements regarding the daily operation of the Department, can be found on the Department's website: http://ict.ihu.gr/en/home .

I would like to assure you that all members of the permanent Faculty, in cooperation with the temporary Faculty, of the Department, as well as all members of the Technical and Administrative staff serving in the Department, will support you throughout your studies.

I wish you every success in your studies, being sure that you will demonstate endurance and good spirit for work!

Department Chair

Dimitrios Varsamis
Professor

1. THE INTERNATIONAL HELLENIC UNIVERSITY

1.1 General Information

The International Hellenic University (IHU) based in Thessaloniki, was founded by article 1 of Law 3391/2005 (Government Gazette 240/A΄/2005) and is organized and operates as a Higher Educational Institute (HEI) in the university sector, in accordance with paragraph 1 and indent a' of paragraph 2, article 1, Law 4485/2017 (Government Gazette 114/A΄/2017). With Law 4610/2019 (Government Gazette 70/A΄/7-5-2019) seven (7) Schools were established therein with corresponding Departments in each of them.

Additionally, there is a University Center for International Studies in IHU, based in Thessaloniki, which operates as an academic unit of the institution. The following Departments are established at the University Center for International Studies:

a) Humanities, Social and Economic Sciences, which is part of the School of Humanities, Social and Economic Sciences.

b) Science and Technology, which is part of the School of Science and Technology

The aforementioned Departments are located in various cities of Northern Greece. Most of them are mainly concentrated in four campuses: Thermi (where the University headquarters are also located), Sindos, Serres and Kavala.

1.2 Academic and Organizational Structure

According to the current legislation, each University is subdivided into Schools, which cover a set of related scientific disciplines, so that the necessary coordination for the quality of the education provided can be ensured. A School is subdivided into individual Departments which also constitute the basic academic units. The units in question cover the subject of a specific scientific field and award the corresponding degree/diploma. The Schools of the International Hellenic University - with their Departments - are as follows:

SCHOOLS	DEPARTMENTS
SCHOOL OF ECONOMICS AND BUSINESS ADMINISTRATION (Thessaloniki)	• Department of Business Administration (Serres) • Department of Economic Sciences (Serres) • Department of Supply Chain Management (Katerini) • Department of Accounting and Finance (Kavala) • Department of Business Administration, Marketing and Tourism (Thessaloniki) • Department of Accounting and Information Systems (Thessaloniki) • Department of Management Science and Technology (Kavala)
SCHOOL OF SOCIAL SCIENCE (Thessaloniki)	• Department of Library, Archive and Information Science (Thessaloniki) • Department of Early Childhood Education and Care (Thessaloniki)
SCHOOL OF HEALTH SCIENCE (Thessaloniki)	• Department of Biomedical Sciences (Thessaloniki) • Department of Nutritional Sciences and Dietetics

	(Thessaloniki)
	• Department of Midwifery Science (Thessaloniki)
	• Department of Physiotherapy (Thessaloniki)
	• Department of Nursing (Thessaloniki)
	• Department of Nursing (Didymoteicho Branch)
SCHOOL OF ENGINEERING (Serres)	• Department of Industrial Engineering and Management (Thessaloniki)
	• Department of Environmental Engineering (Thessaloniki)
	• Department of Information Technology and Electronic Engineering (Thessaloniki)
	• Department of Computer, Informatics and Telecommunications Engineering (Serres)
	• Department of Surveying and Geoinformatics Engineering (Serres)
	• Department of Mechanical Engineering (Serres)
	• Department of Civil Engineering (Serres)
SCHOOL OF DESIGN SCIENCE (Serres)	• Department of Creative Design and Fashion (Kilkis)
	• Department of Interior Architecture (Serres)
SCHOOL OF SCIENCE (Kavala)	• Department of Computer Science (Kavala)
	• Department of Physics (Kavala)
	• Department of Chemistry (Kavala)
SCHOOL OF GEOSCIENCE (Drama)	• Department of Agricultural Biotechnology and Oenology (Drama)
	• Department of Agriculture (Thessaloniki)
	• Department of Forestry & Natural Environment (Drama)
	• Department of Food Science and Technology (Thessaloniki)
SCHOOL OF HUMANITIES, SOCIAL SCIENCE AND ECONOMIC STUDIES (Thessaloniki)	• Department of Humanities Social Science and Economic Studies (Thessaloniki)
SCHOOL OF SCIENCE AND TECHNOLOGY (Thessaloniki)	• Department of Science and Technology (Thessaloniki)

The administrative body of each School is the Dean's Office which consists of:

-the School Dean,
- the Department Chairs and
-representatives of Special Technical Laboratory Staff (E.TE.P.), Special Teaching Laboratory Staff (E.D.I.P.), and students.

The Department is managed by:

- the Department Assembly
- the Management Board and
- the Department Chair

The Department Assembly consists of the Department Faculty, the Technical Staff representatives, undergraduate and postgraduate students. In cases where Sectors are representing course streams, Sector Directors are also assigned. The Assembly is made up of the Faculty members of each course stream and of student representatives.

1.3 The Serres Campus

The Technological Educational Institute (TEI) of Serres was founded in 1983 (which, according to the "Athina" Plan, based on the PD 102, F.E.C. 136/05-06 2013, was renamed to TEI of Central Macedonia with two original schools. Effective 2001, the TEI of Central Macedonia was incorporated to the Higher Educational Institutes (HEI) of Greece and was included in the Technological Sector of Higher Education (N.2916/2001, N.3549/2007, N.4009/2011 and N.4485/2017).

By Law 4610/2019 (FEK 70/A/7-5-2019) the TEI of Central Macedonia was abolished and all its staff, students and facilities were automatically affiliated with the International Hellenic University (IHU).

The Departments of the IHU at Serres are currently housed in an independent campus spanning an area of 25 hectares, located since 1993, southeast of the city of Serres in modern buildings and a beautiful surrounding area. The complex consists of the following buildings:

1. Two buildings with classrooms and four amphitheaters (Buildings A, B in the map)
2. Four Workshop buildings with two amphitheaters and educational staff offices (Buildings Γ, Δ, E, Z in the map)
3. Complex of buildings of Department of Informatics, Computers & Telecommunications and Department of Surveying & Geoinformatics (Building Σ)
4. Administration building where Registrar offices of the departments as well as University Administrative Services (Building K) are housed
5. Library (Building M)
6. Gym, properly equipped (Building Δ)
7. Conference Center with two auditoria and one conference room (Building Λ)
8. Open-air 1000-seat auditorium (Building Π)
9. Multipurpose building (Building O)
10. Student club (Building N)
11. Canteen (Building Π)

The Department of Computer, Informatics and Telecommunications Engineering features classrooms and laboratory spaces in the northern wing of building Σ, for the coverage of its educational and research activities,, while classrooms are also located in building B. The offices of the faculty and technical staff of the Department are located in building Σ, while its office of the Registrar is located in building K.
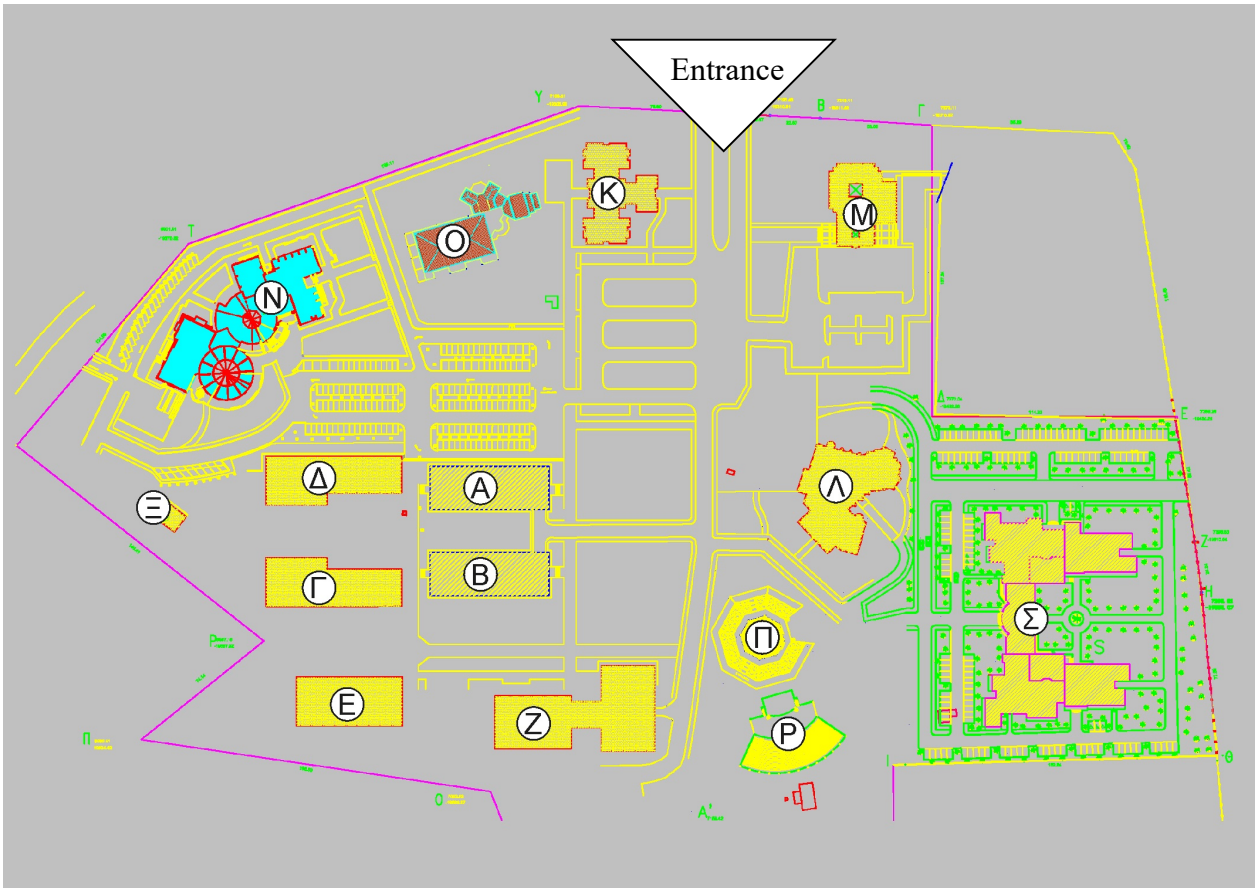
Figure 1. Map of IHU Campus, Serres

2. THE CITY OF SERRES

2.1   Geographical and Demographic Information

The Prefecture of Serres is one of the 7 prefectures of Central Macedonia and occupies its eastern part, extending from the Strymon Gulf in the south to the Greek-Bulgarian border in the north. To the east it borders the prefectures of Drama and Kavala and to the west it borders the prefectures of Thessaloniki and Kilkis. Serres has a coastline in the North Aegean along the Strymon Gulf (or Orfanos Bay).

The Prefecture of Serres belongs to the lowermost prefectures of the country, since 48% of its total area is characterized as lowland/semi-mountainous and is surrounded to the west by the Kerkini-Vertiskos-Kerdylion mountain ranges, to the east by Mt. Menoekion, southeast by Mt. Pangaeon, while to the north dominate the mountain ranges of Orvilos and Lailias (Vrondou). The prefecture of Serres is crossed by river Strymon which originates from Bulgaria and flows into the Strymon Gulf, with its main tributary, named Angitis, spanning the eastern part of the prefecture.

The total area of the prefecture is 3,790 square kilometers, encompassing approximately 4% of the territory of Greece. Of this area, 41% is agricultural land, which determines the main occupation of the inhabitants of the prefecture. Administratively the prefecture of Serres is divided into seven municipalities (Municipality of Serres, Sintiki, Visaltia, Nea Zichni, Irakleia, Amphipolis and Emmanuel Pappas).

2.2   Historical data
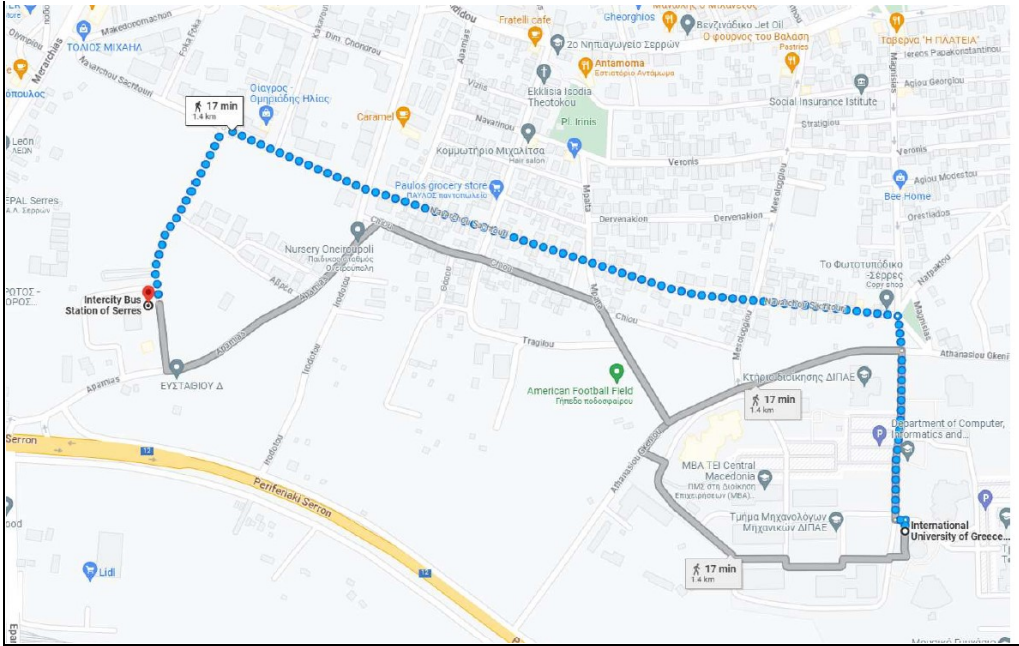
The city of Serres, built on one of the most turbulent crossroads of Europe, the passage of countless armies and peoples, is one of the few ancient cities of Greece that managed to maintain an uninterrupted life from the dawn of historical times until today. The city first appears in history in the early 5th century BC. Herodotus mentions it by the name of Siris and the national designation "Paeoniki", and the residents as Siropaeonians. After Herodotus, Theopemus mentions it as Sirra; later, Titus Livy calls it Siras. Finally, Stephanos Byzantius writes: "Siris in Paionia" and "Siriopeonians". The oldest epigraphical monument that survives the writing of "Sirraion Polis" dates from of Roman era and is located in the Archeological Museum of Serres. The name Serrae is mentioned since the 5th century AD and later with the Ferrae variant. The name Siris derives, perhaps, from the word Sirius = Sun.

In the 5th century AD, Serres was mentioned as the seat of a Bishopric, and in the 6th century it was one of the most important cities of the 7th Province of the Byzantine Empire. In the 8th century, Serres becomes a protagonist in Greek history and the city is considered as the most important settlement in the area defined geographically between rivers Nestos and Strymon.

In the Middle Ages, the city was heavily damaged and submitted to various conquerors, but ultimately survived. In autumn 1204, it surrendered to the Frankish crusaders. In 1205, the Bulgarian tsar John I conquered Serres. A few years later, in 1221, it was liberated by Theodore, the Despot of Epirus, but in 1230 Bulgarian tsar John II recaptured Serres. The city was temporarily handed to Nicaean Emperor John Vatatzes by the Bulgarian Commander Dragotas after a sudden attack in 1245. It was finally captured by the Turks, temporarily in 1373 and permanently in 1383.

During Ottoman rule it was the most prosperous city of Eastern Macedonia with a population of 50,000 inhabitants and many important schools which prepared the people of the city for the liberation struggle of 1821. The failure of the revolution hardened the stance of the Turkish conquerors, while the city suffered even more from the activities of the Bulgarians after 1872. In 1912 it was occupied by the Bulgarians, who abandoned it on 29 June 1913 in view of the advancing Greek Army, after burning it down. It was re-occupied during World War I by Germans and Bulgarians and remained as such until 1918. It suffered Bulgarian occupation again during World War II (1941-1944), after which it was finally liberated and since then it follows the rest of the country's path to progress in modern history.

2.3   Useful links (transportation, first aid, …)

Transportation	
Bus: Serres-Thessaloniki-Athens-Drama-Kavala, Nigrita-Sidirokastro-Iraklia (end of Amapia Str., 62124, Serres	2321022822 Website (online bookings): http://www.ktelserron.gr/
	The distance between the Serres IHU Campus and the Serres Bus Station is about 1.4 km and can be walked in about 17 minutes (on the map, on the left, the route that follows the main roads is marked). The connection is also served by the Serres Urban Bus Station via lines 14 and 10. Taxi's are also available.
Urban Buses Station (Emporiou Square)	2321022338
Urban Buses (Headquarters)	2321023572
Taxi	2321059100, 59422
Railway	2321059700, 59112, 59844, 59776
Maintenance	
COSMOTE	13888
Cyta Hellas	13811
FORTHNET	13731
WIND	13700
VODAFONE	13840
Electric Power: The Hellenic Electricity Distribution Network Operator (DEDDIE) is responsible for the development, maintenance and operation of the network.	The 800-400-4000 call center of DEDDIE receives fault reports on a 24/7/365 basis

Through the DEDDIE website, you can report a fault (power outage) using the online application for fault report.	
Water Supply	2321024444, 83800, 55555
First aid	
Urgent Assistance	166
Serres Hospital	2321094500- 2321351100
Serres Fire Department	199
Forest Fire Reports	191
Police	100
Security Police	2321090804-5
Traffic Police	23210 – 90809-10 & 90872

3. THE DEPARTMENT OF COMPUTER, INFORMATICS AND TELECOMMUNICATIONS ENGINEERING

The Department of Computer, Informatics and Telecommunications Engineering, School of Engineering, of the International Hellenic University, was established in May 2019 by Law 4610 (Government Gazette 90/Α΄/07-05-2019) "Synergies of Universities and T.E.I., access to higher education, experimental schools, General Archives of the State and other provisions". It absorbed the Department of Informatics Engineering of the former TEI of Central Macedonia.

The Department is organized in a way that gives emphasis to the following streams:
• Computer and Telecommunications Networks
• Software and Information Systems
• Hardware and Computational Systems

Figure 2. View of the Department's building

The Department offers three Postgraduate Studies Programs (PSP), awarding respectively a Postgraduate Degree in:

• Telecommunications and Computer Networks

• Applied Informatics

• Robotics

The vision of each PSP is to ensure that graduate students obtain a solid foundation of knowledge and principles, which will enable them to learn and improve themselves in a constantly changing working environment. It is estimated that this is the only way to fill the gap between the ever-increasing demands of the domestic (and foreign) industry for specialization and excellence on issues related to Information Technology, Telecommunications and Robotics, and the skills that the labor market is looking for today.

4. THE UNDERGRADUATE STUDIES PROGRAM

4.1   The aims of the Undergraduate Studies Program

The aim of the Department of Computer, Informatics and Telecommunications Engineering is to provide high-level education, creating engineers with high-level knowledge, skills and competences in science and in information technology, computers and telecommunications.

The Undergraduate Program of the Department aims to:

- achieve high quality higher education in accordance with internationally accepted standards,
- high-level theoretical and laboratory education,
- monitor and adapt the novel developments in science, research and technology,
- development of skills for graduates, enabling them to respond to (a) a competitive working environment, (b) post-graduate studies and (c) the needs of monitoring research and technology developments.

During undergraduate education the student obtains updated general and specific competencies as detailed below. General competencies include:

- Implementing procedures and analysis techniques for application and system design requirements.
- Identification of technologies and definition of specifications for the architectural design of information projects, applications or improvements of existing infrastructure.
- Hardware and software configuration.
- Compliance with the appropriate standards and control procedures to maintain integrity of the functionality and reliability of systems.
- Creation of integrated systems that meet organizational or business constraints.
- Compliance with security policies.

The main topics of the Curriculum include, among others:

1. Algorithms and Complexity
2. Human-computer interaction
3. IT security
4. Principles of Computing Systems
5. Databases
6. Programming languages and methodologies
7. Discrete Structures in Computing
8. Computer networks and telecommunications
9. Intelligent Energy Systems
10. Electronics and Power Electronics
11. Mobile communications
12. Operating Systems
13. Computer Organization and Architecture
14. Distributed Computing
15. Information Systems and Applications
16. Signals and Systems
17. Digital Systems Design
18. Artificial intelligence
19. Software Technology

All of the above cognitive areas are compatible and are covered by the respective disciplines proposed by the recommended curricula of Association for Computing Machinery (ACM), IEEE Communications Society and IEEE Computer Society.

In addition to acquiring basic knowledge in the aforementioned fields, Department graduates are expected to have skills that cannot be described as cognitive objects. Professionals in the field are characterized by a way of thinking and solving problems that originates from the experience gained by combined action of studying objects and professional practice. These skills, which can enhance their success and development as professionals in the field, must be instilled at least at some basic level in the graduates of the Department. Thus, the following features are included in the educational process, even if sometimes they are not mentioned.

Department graduates are expected to be familiar with common issues and principles such as abstraction of problems, complexity, the evolutionary nature of science/engineering, sharing of public resources and security. They should understand interaction of theory with practice, be able to inspect a problem at different levels of detail, and be able to make the generalization or abstraction required to not only see the distinct components of a system, but the system as a whole including its interaction with humans and the environment in which it operates. Although it may sound obvious, Department graduates must also have a sense of the impact ICT has on all aspects of human activity. They should be able to solve real problems, choose the optimal solution among many, and be able to communicate the solution and its benefits to third parties. To ensure that graduates posess some of the above abilities, they are invited, during their studies, to engage in at least one large-scale project, such as the preparation of a thesis. The constant evolution of the topics of the Department requires that its graduates understand and embrace the need for lifelong learning. The constant adaptation to the evolution of science, besides updating their knowledge, helps the graduates to manage their professional course on their own. Continuous training and self-improvement through seminars and certifications is common practice in the field. The ability to communicate and cooperate with third parties is an important component of professional progress. In a workplace it is necessary to be able to communicate with others adequately both electronically and in writing or face to face, and it is necessary to be able to organize and manage, in addition to third parties, your own time, priorities and progress. Finally, graduates must understand the social, legal, ethical and customary issues involved in ICT and that these may differ from country to country. They must recognize the interaction between ethics, technology and aesthetics and the role they play in the development of computer systems. They should know the limits the tools they use and understand personal and collective responsibility as well as the consequences of possible failure.

The Department Curriculum ensures to its graduates the appropriate knowledge background and the necessary skills required for a successful professional activity. The high absorption rate of Department graduates (about 80% of the total) in the labor market in previous years, attest to the above fact. The experience of the Department and its infrastructure, which are constantly modernizing, along with the elements of the Curriculum, are sure to improve even more the image of the Department and the educational work it provides.

4.2   Awarded title and level of qualification

Undergraduate studies at the International Hellenic University are conducted on the basis of the semester system and the minimum number of semesters required for the award of a degree or diploma, which is eight (8) semesters for 4-year programs and ten (10) semesters for 5-year programs (article 16, paragraph 1, of the IHU's Regulations of Studies).

The first cycle of studies at the Department of Computer, Informatics and Telecommunications Engineering of the School of Engineering of the International Hellenic University consists of the attendance of an Undergraduate Studies Program, which includes courses corresponding to at least 300 credit points (ECTS), typically lasts five (5) academic years and is currently completed with the award of a Level 6 degree. The design of the Department's undergraduate curriculum is such that it can be directly assigned to a Level 7 Diploma (integrated master) and the Department is seeking and claiming the issuance of a relevant governmental decision having submitted a request in this direction.

4.3   Career Prospects for Graduates

The Curriculum generally provides graduates with skills enabling them to be involved indicatively in study, design, analysis, construction, construction and operation supervision, assessment, maintenance, expert and certification of standards at their facilities and in their applications of all kinds in scientific/enginering fields:

(a) computers;
(b) telecommunications, telecommunications systems and computer networks;
(c) computer and information systems; and
(d) systems for automation, signal processing, image and sound processing, speech processing, graphics, etc.

The graduate engineers of the Department can be employed in the private and public sector, on the basis of their specialized scientific and technological knowledge, either in self-reliance or in cooperation with other scientists/engineers, in the fields of development and maintenance of hardware systems, development and maintenance of software systems, and design/management of electronic communications systems and services.

Graduates of the Department have the following additional rights:

(a) Working at all levels of public and private education, in accordance with the applicable legislation. They may also be employed as members of research teams on subjects of their specialization.

(b) Employment in the public sector and promotion to various levels of hierarchy, in accordance with the applicable legislation.

(c) Preparing or participating in projects, providing related services and work, in the categories covered by the subject matter of their specialty, both public and private, on the basis of the applicable legislation.

In terms of specific competencies, a graduate will be able, as a professional, to deal with:

- Small and large scale programming, system programming, development of software systems and databases, creation of user – software interfaces, ergonomic systems design, production of image analysis and synthesis software, design and installation of smart systems. Setting up real-time systems and controlled availability and security.

- Design, management and security of electronic communications networks and services, installation of communication software, communication resource management, installation of mobile computing systems, mobile computing resources management. Design, implementation, installation, maintenance and management of telecommunications facilities, networks and systems.

- Design, development, installation and maintenance of computer peripherals, embedded systems, complex sensor systems. Integrated circuits design and programming, computational systems design. Design, implementation, installation and maintenance of computer-supported industrial systems and production system software.

5. INFORMATION on the STUDIES CURRICULUM

5.1 Duration of Studies

The first cycle of studies in the Department of Computer, Informatics and Communications Engineering, School of Engineering of the International Hellenic University requires attending an Undergraduate Study Program (USP), which includes courses corresponding to a minimum of 300 credits (ECTS). Its standard duration is five (5) academic years and it culminates in the award of a degree. In each academic year, the student chooses educational activities corresponding to 60 credits (ECTS) (Para. 2b Article 30 LAW 4009/2011)

The USP studies are conducted with the system of semesters, divided into nine (9) instructional and the final one (1) that includes the preparation of a Diploma Thesis.

The **maximum duration of studies** in a first-cycle studies program consists of a minimum duration of ten (10) academic semesters for the award of the degree, increased by six (6) academic semesters. After the completion of the maximum period of study, the Board of Directors of the Department issues an act of deregistration (article 76, par. 1, Law 4957/2022).

Students who have not exceeded the upper limit of studies may, after applying to the Department Office of the Registrar, interrupt their studies for a period of time that does not exceed two (2) years. The right to interrupt studies may be exercised once or partially for a period of at least one (1) academic semester, but the duration of the interruption may not cumulatively exceed two (2) years, in case it is partially provided. Student status is suspended during the interruption of studies and participation in any educational process is not allowed (article 76, par. 4, Law 4957/2022).

5.2 Admission and Registration

Students are called those who are registered in the Department of Computer, Informatics and Telecommunications Engineering of the I.H.U. after passing the entrance exams to higher education, by transfer or by qualifying exams in accordance with the current regulations.

The registration of newly admitted students takes place at the Department's Office of the Registrar within the time limits defined each time by the Ministerial Decisions.

Successful candidates of the Panhellenic Examinations who completed their registration through the electronic application of the Ministry of Education and Culture must carry out the identity check at the Office of the Registrar in their Department, submitting the following supporting documents:
1. Application for registration (printed from the website of the Ministry of Education),
2. Photocopy of identity card (ID),
3. One (1) photo (ID type),

For the remaining categories of new entrants, the supporting documents required are announced on a case-by-case basis.

5.3 Academic Year Calendar

The academic year starts on September 1 every year and ends on August 31 of the following year. The educational work of every academic year is organized in two semesters, the winter semester and the spring semester, each of which comprises 13 weeks of teaching and one examination period (three weeks of exams). There are courses and workshops for which students are examined with progress tests and/or assignments; in that case, resit exams are not held again in September.

For the Department of Computer, Informatics and Telecommunications Engineering, the total number of semesters required to complete a course, as specified in the Curriculum, is ten (10).

Winter semester courses start in the last week of September and end in mid-January, followed by the first exam period of the winter semester. Spring semester courses start in late February and end in early June, followed by the first exam period of the spring semester. Exact dates are determined by the Executive Committee.

Every semester has two exam periods: Winter semester courses are examined during the exam period of January/February; resit exams are held in September. Spring semester courses are examined during the exam period of June; resit exams are held in September. Every semester, and before the beginning of each exam period, students have the right and obligation to evaluate their courses and instructors, aiming at the improvement of the quality of their studies.

More information is available at the website of the Quality Assurance Unit (QUA) and the website of their Department/School.

Courses or exams are not held in the two months of summer vacation (July and August). Holidays also include:

Christmas Holidays: December 24 to January 6

January 30: The Three Patron Saints of Education Day

"Pure" Monday: Beginning of Orthodox Lent

March 25: The Annunciation / National Anniversary of the 1821 Revolution against Turkish Rule

Easter Holidays: from Holy Monday to Thomas Sunday (one week before and one week after Easter Sunday)

May 1st: Labor Day

Holy Spirit Day: Monday after Pentecost

June 29: Anniversary of Serres liberation from Bulgarian rule

October 28: National celebration of resilience against WWII Axis Forces

November 17: Students' uprising in the National Technical University of Athens against the junta in 1973

5.4 Specific Arrangements for Recognition of previous Studies

According to the 12/21-4-2021 (Issue 5) decision of the Department's Assembly, students who are admitted to the Department and who have been proven to have successfully completed and passed some courses at their home Department in a domestic university, provided that these courses correspond to courses of the Curriculum of the Department of Computer, Informatics and Telecommunications Engineering, have the right to apply for their transfer, according to the terms and conditions specified below.

The student concerned shall submit an application to the Department's Registrar, in which he/she shall indicate the courses he/she wishes to be transferred and the course correspondence he/she wishes to have transferred. Attached to the application, the student submits the following documents:

1. Offical Transcripts from the Department of origin.

2. Syllabus from the Department of origin, with a description of the course for which credit transfer is sought (e.g. with a detailed course outline from the Department of origin academic guide, preferably of the applicant's years of study).

The maximum number of courses that can be transferred is 16 (30% of the total required for a degree). The grade the student will receive in case of course transfer will be the same as the grade the student received in the corresponding course of his/her home department.

A single course from the home department cannot be used to transfer more than one course in the host department. Prior to transfer, the lecturer in charge may take into account its academic weight according to the European Credit Transfer and Accumulation System (ECTS). If the student participates in an examination of the course in the Department, he/she automatically forfeits the right to apply for transfer and if he/she has already submitted an application, the transfer process is automatically discontinued. No transfer is provided for courses for which there was no pass grade in the qualifying examination.

The deadline for the submission of applications and necessary documents for the transfer of courses by the students concerned is announced annually by the Department.

In all other respects, the provisions of Article 23 of the IHU's internal regulations (Issue B 4889/06.11.2020) set out below shall apply.

Article 23 (Official Journal B 4889/06.11.2020)

COURSE CREDIT TRANSFER

1. Students who are admitted to a Department of the International Hellenic University may have courses transferred which have been demonstrably taught and successfully examined in their home Department at a domestic University, provided that these courses correspond to courses in the Curriculum of the host Department, in accordance with the terms and conditions specified in the Regulations of the Department concerned. The total number of transferred courses may not exceed 30% of the total number of courses in the curriculum of the host Department. The above also applies to students who transfer in accordance with the provisions in force at the time.

2. Courses credit transfer, according to the previous paragraph, shall be carried out by decision of the Department Assembly and students shall be exempted from the examination of the courses or exercises of the Curriculum of the host Department taught in the Department of origin according to the above and may join a different semester from the one of their registration.

3. For this purpose, the student shall submit an application with the supporting documents required for the courses from which he/she requests to be exempted. In order to be admitted to a different semester from that of his/her registration, the student must submit a request immediately after his/her registration for all the courses and required documents supporting the change of semester.

4. In particular, the student shall submit a written request to the Registrar of the host Department together with a transcript certified by the Registrar of the home Department, accompanied by the syllabus of the courses taught and the workshops in which he/she has

practiced. The application and the attached documents are forwarded to the lecturer in charge, who recommends to the Departmental Assembly the transfer or not of the courses and/or exercises for the applicant."

Approximately two weeks after the start of each semester, students must submit a course statement, which will include the courses they decided to attend in that semester. The course election has the effect of registration renewal. This is facilitated through the Information System Electronic Office of the Registrar of the IHU, at (https://egram.cm.ihu.gr).

Students are free to enroll in classes, however with some restrictions on the number of courses as well as on the standard semester where the courses belong to. In each semester, the student can elect a number n of courses of the current semester plus a maximum of 3 extra courses, i.e. n+3 courses in total. Of these courses the first n in line should be compulsorily chosen and priority should be given to those courses of previous years (and corresponding semester) that the student has not passed.

For example: let a student typically enroll in the 5th semester of his/her studies (winter with 6 mandatory courses, so n=6) and has not passed 3 classes of the 1st semester and 4 classes of the 3rd semester. Then he/she must elect the 3 courses of the 1st semester, then 3 out of the 4 courses of the 3rd semester (free choice) and finally the student may elect 3 additional courses of the 5th semester (free choice).

In case a sudent does not elect a course, he/she cannot take the corresponding exam. Statements of course election submitted after the dedline set by the Registrar shall not be accepted.

By electing courses each student is entitled to:

1. Apply for and receive teaching aids (books, notes, etc.)
2. Participate in the examination of the courses elected.

Students who do not renew their registration for two (2) consecutive or three (3) non-consecutive semesters are no more entitled to continue their studies at the University and are deleted from the Department's records.

5.5.1   Statement of Preference for Placement in Laboratory Classes

During the 1st week of each teaching semester (or the week before, according to related announcements) students who are planning to attend laboratory courses must reserve a slot in the laboratory group they prefer. Reservation in the laboratory groups is made by filling their choices in a special application form (e-labs: https://cm.ihu.gr/icd/labs/index.php) after an announcement by the Department.

It is emphasized that when booking a place, each student should make sure to choose a laboratory group that does not conflict with the rest of the courses of his/her individual studies program. It should also be noted that reservation of a place in a laboratory group is independent of the election of the laboratory as a course. In other words, each student must

both reserve a place in the laboratory group and elect the laboratory as a course (via the e-gram information system).

For all courses in the Curriculum that provide for laboratory practice, the laboratory part is compulsory. The course is indivisible and is considered as a whole, regardless of whether it consists of a theoretical and a laboratory part. In order to be eligible to take the theory examination for each course, the student must have met the requirements of the laboratory part as specified per course in the curriculum.

In particular, the following applies to attendance in laboratories for all courses: If there are up to four (4) lab classes, the student is required to attend all of them. Otherwise, at least 80% of the laboratory part must be successfully attended. If he/she misses the laboratory, he/she does not participate in the theory exams and has to attend the laboratory again the following year.

Specific requirements and rules apply to each laboratory part of a course and are presented on the Department's website http://ict.ihu.gr/odigoi_spoudwn under the topic "Managing Absences and Grades in Laboratories".

5.6   Academic ID- Student pass

Since 09/24/2012, undergraduate, postgraduate and doctoral students of all Universities in the country can electronically apply for the issuance of their academic identity card

Ηλεκτρονική Υπηρεσία Απόκτησης Ακαδημαϊκής Ταυτότητας - Informational Portal (minedu.gov.gr)

5.7   Teaching Aids and Resources

The educational work is supported by the corresponding coursebooks, which are provided free of charge to the students, through the Electronic Integrated Book Management Service (Eudoxus). Students, after submitting the electronic election of courses each semester, also make the corresponding election of books on the web portal of the "EUDOXUS" system (http://eudoxus.gr/), with which they apply for the coursebooks they wish to receive.

5.8   Course of Studies

The Curriculum supports 72 courses of which 40 are mandatory core courses, 27 are compulsory electives and 5 are optional General Education courses. Also, in the last (10th) semester students are required to author a Thesis, while they can optionally choose to carry out an Internship in Industry. In order to obtain the degree, the student must successfully pass 54 courses and complete a Diploma Thesis.

Compulsory courses are those that each student must attend, while optional compulsory courses are those that the student can choose from a list. Elective courses are chosen by the students based on their personal scientific interests and the specialization they want to receive during their studies. Those courses designated as Optional are neither taken into account in the degree Grade Point Average (GPA) nor in the total ECTS points, but should appear separately in the analytical and Diploma Supplement as courses taken and passed, and/or a separate certificate for them should be issued by the system. Except for the Optional courses, all courses up to the 5th semester are Compulsory.

In the 6th semester the first five (5) courses are mandatory (MC) and the student should choose one (1) of the remaining three elective compulsory (EC) courses. In the 7th semester the same applies, i.e. the first five (5) courses are mandatory (MC) and the student should choose one (1) of the remaining three elective compulsory (EC) courses. In the 8th and 9th semesters all courses are elective. A student may choose any six (6) of the courses offered in any semester.

Students may choose any elective course they wish without selecting any particular stream. The Department Assembly shall determine by resolution the maximum number of students who may choose an elective course and the method of allocation of students to electives. In the 10th semester the Thesis is compulsory for all.

The educational process of each course includes one or more of the following formats: Theory, Practice Exercises, Laboratory. Students attend all the courses of the Department's syllabus according to their enrollment. If the number of semester hours of instruction in a course is, for any reason, less than 2/3 of the time provided for in the Curriculum, the course is considered not to have been taught. This decision is made at the end of the semester by the Director of the Sector to which the course belongs, or by the Department Chairman if there are no Sectors, by act and responsibility.

Credits: Each course of the Department's Curriculum is characterized by a number of credits. The number of credits allocated to each course is a measure of the workload required by a student in order to complete the objectives of an Academic Program.

Course Grading: grades in all courses are expressed on a numerical scale of zero to ten (0 - 10), with a passing grade of five (5).

For successful completion of a laboratory course or the laboratory part of a mixed course, the student must have successfully completed: a) if there are up to 4 exercises, the student is required to complete all of them, b) otherwise, the student must successfully complete at least 80% of the laboratory part. In the last week of the semester, additional laboratory exercises may be conducted, if for some serious reason the minimum number of laboratory exercises has not been completed.

It is emphasized that if a student has not fulfilled the requirements above, he/she is not entitled to participate in the theory examinations and must attend the laboratory again the following year.

The grade of the laboratory course or laboratory part of a composite course is equal to (depending on the nature of the course): the weighted average of all the individual grades of the exercises that the student has successfully completed and/or the grades of midterm and final exams.

The final grade for a theory course is equal to the grade of the final examination in the course or the weighted average of the final and any midterm examinations (if applicable) .

The final course grade is equal to the grade of the final examination in the course or the weighted average of the final and any midterm examinations (if applicable), or is calculated by adding together the weighted grades of the theoretical and laboratory courses that make up the parts of the composite course, with coefficients set for each course by the Departmental

Assembly. These are presented on the Department's website http://ict.ihu.gr/odigoi_spoudwn under the topic: "Management of Absences and Grades in Laboratories".

A course is undivided and is considered as an entity, regardless of whether it is composite, i.e. consisting of a theoretical and laboratory part.

5.9   Examinations

In each Semester, there is one examination period and one re-examination for the courses held in that Semester. The typical duration of the examinations is three weeks for each examination period.

For the Winter Semester the examination period takes place immediately after the end of the course (end of January) and the resit period takes place in September.

For the Spring Semester the examination period takes place in June immediately after the end of the courses of the semester in question and, again, the resit exam takes place in September.

Each student is entitled to take the examinations for the courses he/she has chosen by means of the online course choice submitted at the beginning of each semester.

A student who has scored five (5) or higher in a course in a particular examination period shall not participate in the re-examination period.

5.10   Bachelor's Diploma Thesis

Students of the last formal semester (10th) are required to prepare a Thesis on a topic related to real problems of the subject of their studies. This Thesis is defended in front of a three-member Faculty committee, who decide on the grade to be awarded. The Diploma Thesis is compulsory for all students and is equivalent to thirty (30) credits.

For the preparation of the Thesis the University's premises and equipment, as well as any necessary financial resources of the University, shall be used, if necessary.

The Department Faculty propose Thesis topics, which are approved by the Assembly of the Department, and are announced in a timely manner on the Internet and to the students interested.

A shared Thesis topic may be assigned to a group of students, up to two (2) of them, with simultaneous allocation of the work to each of the students involved.

For the assignment of the Diploma Thesis, the students involved are required to submit to the Department Registrar the outline of the Diploma Thesis, which is co-signed by the Instructor who will supervise it and approved by the Assembly of the relevant Department. The whole process of approval and assignment of theses is managed electronically through an information system (*e-thesis*) that operates for this purpose in the Department: (http://ethesis.cm.ihu.gr).

The thesis is assigned to a student of the Department by decision of the Departmental Assembly under the following two conditions: (a) the student has completed at least eight (8) semesters

of study and (b) the student has passed 4/5 of the courses required for the degree (without counting the Thesis credits).

The standard duration of the Thesis is one academic semester. It may not exceed three (3) academic semesters and only with the agreement of the supervisor. In case of exceeding this limit, the topic is removed from the student, who is obliged to seek a new Thesis subject.

After the completion of the Diploma Thesis and after approval of the respective supervisor, the student submits an application for defense to the Department with an attached hard copy and four CDs of the text and accompanying files of this Diploma Thesis. The Diploma Thesis is presented to a three-member Examination Committee, composed of members of the Department faculty, one of whom must be the Supervisor.

If a Thesis is found to be incomplete, it is reassigned for further processing, at which point both the submission and defense procedures are repeated.

The detailed Regulations for the Preparation of a Diploma Thesis together with the template for authoring a diploma thesis can be found on the Department's website at http://ict.ihu.gr/odigoi_spoudwn.

5.11 Work placement (internship)

In the global education system, when it comes to applied sciences, a period of internship is foreseen for students in professional jobs corresponding to the discipline of the departments they are studying.

Students of the Department have the opportunity to carry out a three-month internship, which is, however, optional. Within the framework of Practical Training, students are given the opportunity to work in a real professional environment, participating in work groups under the guidance of the host institutions' executives, in order to develop a specific project together with other professionals in the field and to develop their individual skills through collaborative processes.

The traineeship has the following characteristics:

- It has a duration of twelve (12) weeks and can take place during or after the 8th semester of study
- In order to start it, the student intern must have passed 3/5 of the courses required for the degree
- It is supervised both by a Faculty member of the Department and by the company in which it is undertaken, and this means mentoring and supervision
- It is institutional, as evidenced by the intern's insurance with the IKA (Social Security Establishment)
- It is not a professional experience, since it is part of the studies

1) Purpose of the Internship

The internship is intended to complement the theoretical and applied knowledge provided by the Department, with the practice of students in a productive working environment. The

purpose of the internship is not limited to the students' first contact with a real working environment, which is similar to their studies, but much more extensive, since it perfects the knowledge of application and completes the process of introducing students to the workplace, through the acquisition of readiness to participate in the social economy.

More specifically, the Internship aims to:

- Provide the possibility of the face-to-face daily contact of the student trainees with the structures of their field of study, in a real economic and social working environment, under friendly conditions, less stressful than in situations of dependent work and under guidance and pedagogical supervision.
- The development of new skills.
- Smooth integration into working society.
- Promotion of initiative.
- To fill possible gaps or deficiencies in theoretical or practical training.

To be eligible for an internship, students of the Department must have gathered 180 credits and have completed at least the 7th semester.

Indicatively, the Internship concerns:

a) Design and management of data networks
b) Design, implementation, installation, maintenance and management of telecommunication facilities and systems
c) Small and large scale programming
d) Implementation of real-time systems, as well as availability and security controlled systems
e) Design, development, installation and maintenance of peripheral PCs, embedded systems, complex sensor systems
f) Design, implementation, installation and maintenance of computer-aided industrial systems and production systems software
g) Laboratory measurements and experiments in all areas of the relevant speciality
h) Participation in research projects in laboratories of higher education institutions

2) Internship Workplaces

The workplaces for the conduct of the Practical Training of the students of the Department belong either to the Public or the Private Sector. In particular, the Internship is carried out:

a) in public sector services, in public enterprises as well as in public utilities,
b) in private enterprises producing digital goods and services, preferably in enterprises manufacturing, managing and/or maintaining software, computer systems, office and industrial automation, telecommunication systems and data networks, etc.
c) in private or public laboratories and technical offices,
d) in general, in large-scale manufacturing or service-providing enterprises or establishments having a significant presence or a corresponding degree of expertise in the fields of specialization.

3) Internship Program

The Internship Supervisor in cooperation with the responsible Supervising Engineer of the unit, service or enterprise in question allocates the Internship time in all departments of the unit, so that the student intern gains experience covering as much as possible of the skills mentioned in the first paragraph of the outline. To this end, at the discretion of the Internship Committee, it is possible to move the student trainees to different units.

Internships shall be carried out in either the public or private sectors, as well as in technological institutions or enterprises of the European Union within the framework of the Erasmus and Erasmus+ programs.

To start the Internship, the student submits an application to the Department's Registrar, and if he/she meets the requirements, the relevant documents are issued, i.e: Internship Announcement, Internship Booklet, and three (3) copies of the Internship Contracts.

If, during this Internship, the student interns find that they are not engaged in topics of their specialty, they must report this fact in writing to the Internship supervisors, who will decide whether and to what extent there is a reason to interrupt and/or replace the Internship.

To complete the Internship, the student submits an application for approval of the Internship to the Department, the Internship Booklet and the IKA Stamps.

Students' Internships are remunerated according to the applicable provisions.

5.12 Degree Grade - Graduation

Undergraduate studies at the International Hellenic University are conducted on the basis of the semester system and the minimum number of semesters required for the award of a degree or diploma, which is eight (8) semesters for 4-year programs and ten (10) semesters for 5-year programs (article 16, paragraph 1, of the IHU's Regulations of Studies). The first cycle of studies at the Department of Computer, Informatics, and Telecommunications Engineering of the School of Engineering of the International Hellenic University consists of the attendance of an Undergraduate Studies Program (ASP), which includes courses corresponding to at least 300 credit points (ECTS), typically lasts five (5) academic years and is completed with the award of a degree.

The grades awarded range from zero (0) to ten (10), with gradations of one whole or half a point. In the tables of results, failure is indicated by marks from zero (0) to four and five tenths (4.50) and success by marks from five (5) to ten (10).

The degree grade is calculated with a weighting factor equal to the exact number of ECTS credits of each course, according to the following equation:

Degree Grade = (Course Grade 1 x ECTS Course 1 + Course Grade 2 x ECTS Course 2 + ...+ Thesis Grade x ECTS Thesis Grade)/Total ECTS of the degree of the particular student.

Note that the courses include the Diploma Thesis corresponding to 30 credits.

A student of the Department of Computer, Informatics and Telecommunications Engineering is declared as a Graduate if and when all the required requirements, i.e. 54 Courses and Diploma Thesis, are met.

The qualitative classification of the degree is as follows:

8.50	10.00	Excellent
6.50	8.49	Very Good
5.00	6.49	Good

5.13 Graduate Certificate - Transcript of Records –Diploma Supplement

All graduates of the Department of Computer, Informatics and Telecommunications Engineering of the School of Engineering of IHU, receive without any discrimination the Graduation Certificate, which is equivelent to a Diploma Copy and bears the title "Graduate Engineer in Computer, Informatics, and Telecommunications Engineering".

The Official Transcript, which each graduate is entitled to receive, shows in detail all the courses he/she has taken and his/her performance in each of them.

Graduates of the Department also receive a Diploma Supplement. The Diploma Supplement is a personal document issued to graduates of higher education institutions together with their diploma or degree. It is not a substitute for the diploma but is attached to it and helps to make it easier to understand, particularly outside the borders of the country of origin. It is an explanatory document containing information on the nature, level, general context, content and status of the beneficiary's studies.

The Diploma Supplement was designed by UNESCO and the Council of Europe and its implementation was adopted by the European Parliament in 2004 (Decision 2241/2004 of the European Parliament and of the Council on a single Community framework for the transparency of professional qualifications and competences).

5.14 Digital Skills Certificate

Judging from the name and the subject of the Department's studies it is obvious that its graduates have the essential and typical digital skills to occupy relevant positions in the labor market.

However, taking into account (a) P.D. No. 44 "Amendment of the provisions of P.D. 50/2001 "Determination of appointment qualifications for positions in public sector bodies", as replaced by P.D. No. 85/2022 "Determination of appointment qualifications in public sector bodies (Qualifications-Classification)" Issue A' 232/17.12.2022 and in force and (b) P.D. No. (b) The Department may issue for its students, upon their request during their studies, a "Certificate of Computer Science" for use in relevant competitions. A prerequisite is that the student must have passed the following courses:

1. Introduction to Computer Science
2. Operating Systems I
3. Internet Technologies
4. Databases
5. Programming I

6. DEPARTMENT PERSONNEL

6.1   The People

The personnel of the Department of Computer, Informatics and Telecommunications Engineering is divided into Faculty (D.E.P.), Special Technical Scientific Staff (E.DI.P.), Laboratory Teaching Staff (E.TE.P.) and Administrative Staff (A.S.) with corresponding responsibilities.

The Department is staffed with 17 D.E.P. , 3 E.DI.P. and 1 E.TE.P. members.

The Faculty belong to four academic ranks: Professors, Associate Professors, Assistant Professors and Lecturers, while their teaching work is supported by the members of Laboratory Teaching Staff and Special Technical Scientific Staff. At the same time, the educational process of the Department is also supported by temporary educational staff, which consists of Scientific Associates, Laboratory Associates and Academic Scholars.

TABLE of the FACULTY			
A/A	**FULL NAME**	**TITLE**	**SUBJECT AREA/ SPECIALTY**
1.	Dr. Anastasios Balouktsis	Professor Emeritus	Power Systems, Power Electronics and Renewable Energy Sources - Development of Software and Mathematical Methods in Electromechanical Problems
2.	Dr. Hristos T. Anastassiu	Professor	Computational Electromagnetics
3.	Dr. Constantinos S. Hilas	Professor	Technology and Security of Computer Networks
4.	Dr. Ioannis (John) Kalomiros	Professor	Embedded Systems and Semiconductors
5.	Dr. Spyridon Kazarlis	Professor	Evolutionary Hardware and Computer Architecture
6.	Dr. Anastasios Papatsoris	Professor	Communications
7.	Dr. Charalampos Strouthopoulos	Professor	Digital Processing and Image Recognition
8.	Dr. Stylianos Tsitsos	Professor	Microwave Device Technology
9.	Dr. Dimitrios Varsamis	Professor	Computational Methods in Control Theory and Programming for Scientific Applications
10.	Dr. Dimitrios Efstathiou	Associate Professor	Telecommunication Devices and Algorithms in Base and Intermediate Bands
11.	Dr. Athanasios A. Nikolaidis	Associate Professor	Multimedia Systems
12.	Dr. Alkiviadis Tsimpiris	Associate Professor	Knowledge Mining from Data Bases and Categorization
13.	Dr. Stavros Vologiannidis	Associate Professor	Mathematical Control Theory and Smart Systems
14.	Dr. Stylianos Basagiannis	Assistant Professor	Standard Methods in Software Development

15.	Dr. Anastasios Politis	Assistant Professor	Technology and Protocols of Computer Networks
16.	Dr. Ioannis (John) Vourvoulakis	Assistant Professor	Low Level Design and Programming of Computer Systems
17.	Mr. Evangelos Outsios	Lecturer	Computer Programming

TABLE of the Special Technical Laboratory Staff (E.TE.P.), Special Teaching Laboratory Staff (E.D.I.P.)			
A/A	**FULL NAME**	**CATEGORY**	**SUBJECT AREA/ SPECIALTY**
1.	Mr. Dimitrios Manos	Special Teaching Laboratory Staff	Telecommunications and Computer Networls Harware
2.	Mr. Abraham Patsiakos	Special Teaching Laboratory Staff	Computer Systems Hardware and Electronics
3.	Mr. Iodanis Ziogas	Special Teaching Laboratory Staff	Computer Programming
4.	Dr. Theodoros Lantzos	Special Technical Laboratory Staff	Software Development, Internet Applications and Data Bases

TABLE of the ADMINISTRATIVE STAFF		
A/A	**FULL NAME**	
1)	Mrs. Evlampia Marantidou	Registrar
2)	Mrs. Sofia Alvanoudi	Secretary
3)	Mrs. Eustratia Pantousi	Secretary (on leave)

Address: Department of Computer, Informatics and Telecommunications Engineering, International Hellenic University, Serres Campus, End of Magnisias Str., ZIP Code: GR-62124, Serres, Greece

Tel: +30-23210-49341
FAX : +30-23210-49128

e-mail : info@ict.ihu.gr
URL: http://ict.ihu.gr

6.2 Administration/Office of the Registrar: Duties and functionality

The Department Office of the Registrar is responsible for student and administrative matters.

Student services are provided on all working days, and between 11.00 am to 1.00 pm, at the Department's Office of the Registrar, located at the Administration Building (Building K), Office no. 3.

Student issues include:

• Registration Procedures
• Keeping the students' records, including their grades, registration renewals every semester, and information about scholarships,
• Granting Certificates and Degrees,
• Granting Certificates for legal use,
• Issuing paper forms required for the students' Internship,
• Creating/filling in student lists, according to their course enrolment form,
• Deregistration of students whose records show two consecutive failures to renew their registration or three non-consecutive failures to renew their registration.

Regarding freshman registrations, transfers and registration of those passing the qualifying exams in the Department, the following apply:

Registration Renewals - Course Election is carried out through the Electronic Registrar at the beginning of each Semester, and for a period of approximately fifteen (15) days. Each student has his/her own personal identification number, obtained from the Department's Office of the Registrar, with which s/he declares courses electronically.

After the lists of successful candidates in the National Examinations are announced by the Ministry of Education and Religious Affairs, the registration deadline for new entrants is set, which is the same for all higher education institutions in the country. This deadline should not be missed, otherwise there is no entitlement to register. Registration of new entrants takes place in September.

From November 1 to 15, relevant application forms are submitted for:
- Transfers for financial, social, health reasons, etc., as well as for children of large families, unless otherwise specified by law.
- Enrolment of Higher Education Graduates, who succeeded in qualifying exams, held every year, in the beginning of December.

6.3   The Role of the Academic Advisor (Tutor)

The position of the Academic Advisor (Tutor) has been established by the Department of Computer, Informatics, and Telecommuncations Engineering for a long time. Each year, by decision of the Department, a Faculty member is designated as Academic Advisor to every freshman for information and guidance in studies issues. The Academic Advisor informs the students about their role and invites them to an introductory meeting. Students are required and encouraged to communicate regularly with their Academic Advisor, discuss educational issues and utilize his/her knowledge and experience throughout all the years of their studies.

6.4   Evaluation of the Educational Project

The Department has institutionalized and integrated, within the framework of the preparation of its annual internal evaluation report, the evaluation of the educational work by the students. This process started in the Department in 2010 (when it was still a TEI department) and it was one of the first departments in Greece that volunteered to undergo an evaluation process.

After the implementation of the Quality Assessment System of the IHU, the process of evaluation of the educational work and services of the Institution by students was re-launched. The first evaluation period was the first semester of the 2020-2021 academic year. To participate in the online evaluation, students log on to the Website of the Institution's Quality Assessment System and proceed to the anonymous evaluation according to the instructions given by the lecturers. This assessment takes place each academic semester between the 8th and 10th week of classes.

The evaluation process of each academic institution, and of its Departments in particular, is coordinated by the Quality Assurance Unit (QAU) of each institution, while the Internal Evaluation Team (IET) of each Department is responsible for conducting the internal evaluation of the corresponding Department. An independent administrative authority, the National Authority for Higher Education (NAHE), certifies the quality of institutions and guarantees the transparency of operations. Specifically, the Internal Evaluation Team (IET) is established by the Assembly of each Department and is composed of Department Faculty, with recognized scientific work and preferably with experience in quality assurance procedures.

The IET is the competent body which:

- is responsible for conducting, in cooperation with the relevant QAU, the internal evaluation process in the academic unit,

- monitors the completion of the inventory forms and questionnaires and informs the institutions and members of the academic unit,

- draw up the internal evaluation/certification report of the academic unit, which is forwarded to the General Assembly of the department, the QAU and, through the latter, to the NAHE.

The IET is the coordinating body of the academic unit's evaluation procedures and is responsible for the preparation of the Internal Evaluation Report. The Internal Evaluation Report, once accepted by the General Assembly, is taken into account in the decision-making process by the competent bodies at all levels of the academic unit.

The QAU is the central coordinating body of all quality assurance and evaluation processes of the Institution. It is established by decision of the relevant higher collective body, whose decision also determines its organization, operation and responsibilities. It is responsible for ensuring and continuously improving the quality of the educational and research work of the

IHU, as well as for ensuring the quality related to the effective operation and performance of its services, in accordance with international practices, in particular those of the European Higher Education Area, and the principles and guidelines of the NAHE.

The Annual Internal Reports of all academic units of the relevant university are submitted annually to the QAU. On the basis of the Annual Internal Reports of the individual academic units, it prepares and submits the respective Internal Report to the highest collective body of the institution concerned. The Internal Evaluation Report shall be submitted to the institution's QAU and it shall be communicated to the NAHE, in order to activate the External Evaluation Process of the academic unit. The QAU cooperates with the IETs of the academic units undergoing evaluation and its role is supportive and advisory.

The National Authority for Higher Education (NEHA) is an independent administrative authority with the mission of ensuring high quality in higher education. It was established by Law 4653/2020 and is the successor of the Authority for Quality Assurance and Accreditation in Higher Education (AQAAHE), which was established and has been operating since 2006. It is governed by the President and the Supreme Council. It has administrative autonomy and is supervised by the Minister of Education, who exercises control over its legality. Within the framework of its mission, the NEHA (a) contributes to the formulation and implementation of the national strategy for higher education and the allocation of grants to Higher Education Institutions (HEIs) and (b) evaluates and certifies the quality of the operation of HEIs. . The Authority guarantees the transparency of all its actions and posts on its website the activities it develops and the decisions it takes. In order to fulfill its mission, the Authority maintains an integrated information system for the collection and management of data on higher education and cooperates with international networks and bodies that develop activities related to its mission. It is a member of the European Association for Quality Assurance in Higher Education (ENQA).

7. FACILITIES

7.1 Laboratory Spaces and Equipment

The Department has an excellent teaching, laboratory and research infrastructure. Since its foundation, it has been operating in the privately owned campus of IHU in Serres (formerly T.E.I. of Central Macedonia), covering an area of 25 hectares, located southeast of the town of Serres, in modern building facilities and a beautiful surrounding area.

The total surface area of the 17 teaching laboratories exceeds 1,200 square meters, while the 4 research laboratories occupy an area of at least 300 square meters.

Since its establishment, the Department has absorbed sufficient funds from state and European grants to equip its premises. In addition to the equipment for the daily laboratory practice of students, such as computer systems, development circuits, laboratory benches, measuring instruments, specialized software and teaching aids, the Department today can also boast of its research infrastructure. With investments exceeding 1,000,000 € all the above are currently in operation in the research and educational laboratories of the Department.

The equipment is installed in the 17 training laboratories and 3 other laboratory spaces of mainly research use, which are:

- Database Laboratory
- Programming Laboratory A
- Programming Laboratory B
- Software Technology Laboratory
- Digital Processing Laboratory
- Computer Network Technology and Security Laboratory
- Telecommunications Laboratory
- Mobile Communications Laboratory
- Microwave Technology Laboratory
- Laboratory of Telecommunication Systems

- Physics Laboratory
- Analog Circuits Laboratory
- Computer Architecture Laboratory
- Laboratory of Automatic Control and Robotics
- Operating Systems Laboratory
- Digital Design and Multimedia Laboratory
- Digital Systems Laboratory
- Software Engineering and Algorithms Research Laboratory
- Telecommunications and Networks Research Laboratory
- Computer Architecture and Industrial Applications Research Laboratory

7.2   Teaching Classrooms

Teaching facilities occupy at least 500 square meters including four (4) classrooms and auditoria. Additionally, there are 500 square meters of storage space and 400 square meters of faculty/staff offices, a conference room and a postgraduate office.

7.3   E-Learning

The Department promotes new methods of teaching and distance learning, with the use of specialized software and equipment. For a large percentage of the Department's courses, electronic learning materials are offered, available through the course websites and the distance learning environment (https://elearning.cm.ihu.gr/). Extensive self-assessment and preparation materials for course examinations are also included.

In addition, it is mentioned that a large proportion of the laboratory part of the course uses simulation software that allows students to carry out part of the laboratory assignments even outside the laboratory.

7.4   Institutional Research Laboratories

The Department features four (4) **Institutionalized Laboratories:**

- Informatics Laboratory under the subtitle "IT-Lab", re-established by the Government Gazette 4035/B/21-9-2020

- Telecommunications and New Technologies Laboratory under the distinctive title 'TNT-Lab', re-established by Government Gazette 4337/B/5-10-2020

- Robotics & Intelligent Systems Laboratory under the subtitle 'RiS-Lab', re-established by Government Gazette 4226/B΄/30-9-2020.

- Security and Networking Laboratory under the subtitle 'SECNETLab', established by Government Gazette 4288/B/2-10-2020.

The Curriculum of the Department is characterized by providing laboratory practice for about 80% of its courses. This fact emphasizes the laboratory practice of students which is consistent with the engineering studies offered.

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8. THE UNDERGRADUATE STUDIES PROGRAM (USP)

The Undergraduate Studies Program of the Department of Computer, Informatics, and Telecommunications Engineering of the International Hellenic University offers a modern Syllabus which is fully harmonized with the corresponding programs of Greek and international university departments, making use to a large extent of the experience of the Curriculum of the Department from which it evolved, since it is valid, competitive, compatible with the recommendations of reputable international organizations and meets the modern needs of Information science and engineering.

The duration of studies at the Department is five (5) years according to the Government Gazette 2657/B/1-7-2019. During each semester studies include theoretical teaching, laboratory exercises, practical exercises, seminars, visits to workplaces and preparation of assignments.

The Program:

- Through the elective courses introduced from the 6th semester of study, provides specialization in cognitive subjects, which meet both the needs of the national economy and the modern developments in the discipline of Computers, Informatics, and Telecommunications
- Meets international standards of study and the needs of students interested in the broader areas of (a) Computer Networks and Telecommunications, (b) Software and Information Systems, and (c) Hardware and Computer Systems
- Specializes the subject matter of the profession of Computers, Informatics and Telecommunications Engineer, so that it meets the needs of the labor market and Greek society.

Based on the Department Curriculum, a wide range of the scientific field of Computer Science and Telecommunications is covered at undergraduate level, which concerns the study, design, development, construction and operation of information systems, computer devices, wired and wireless telecommunication networks as well as service systems, IT project management and networking, with a view to economy and respect for the environment.

The USP development took into account the guidelines of the Quality Assurance Unit (QAU) and was based on the standard undergraduate curricula proposed by the international organizations Association for Computing Machinery (ACM) and IEEE Computer Society (CS), as well as on corresponding Greek and international undergraduate curricula. In addition, the opinion of scientific and professional bodies such as the Greek Association of Computer & Communications Enterprises (SEPE) and the Hellenic Society of Computer Scientists and Professionals (ASP) was taken into account.

The Curriculum supports 72 courses of which 40 are Mandatory core Courses (MC), 27 are compulsory Elective Courses (EC) and 5 are Optional (OC), General Education courses. Also, in the last (10th semester) students are required to complete a Thesis, while they can optionally choose to carry out an Internship in Industry. As it is obvious from the titles, all students attend the mandatoty courses (MC), they have to choose 14 out of the 27 elective courses (EC) depending on the cognitive area in which they want to deepen their knowledge, and finally, the optional courses (OC) are not required for the degree nor are they taken into account in the

final degree but offer specific knowledge in the fields of Management, Economics, Law and Humanities (MELH).

Based on the level of sophistication in each subject, the Department's USP is structured on the basis of three groups (types) of courses:

- The group of General Background (GB) courses, which aim to create the necessary cognitive background for the following semesters.

- The group of Special Background (SB) courses, which aims to train students in the basic subjects of the discipline they study.

- The group of Specialized General Knowledge, Skills Development courses (SD), which belongs to the Specialization Cycle of Studies of the Department.

The detailed Program of Studies that follows contains the titles and code numbers of the courses as well as the corresponding workload and credits (ECTS).

The credits of the Department's courses are fully aligned with the credit units of the European Credit Transfer System (ECTS-European Credit Transfer System), in order to favor student mobility, e.g. through Erasmus programs.

8.1 Table I. An Overview of the Undergraduate Study Program

Semester									ECTS	Semester	ECTS
1	2	3	4	5	6	7	8	9		10	
Introduction to Computer Science	Physics (Electromagnetics – Optics – Oscillations and Waves)	Operating Systems II	Internet Technologies	Database Systems	Telecommunication Systems II	Mobile Communication Networks	Elective course	Elective course	5	DIPLOMA THESIS	30
Fundamental Principles of Science	Computer Programming II	Computer Networks	Communication Systems I	Information Theory	Advanced Digital Systems	Microcontroller Programming	Elective course	Elective course	5		
Computer Programming I	Electric Circuits	Digital Circuits	Computer Architecture	Optical Communications	Programming Methodology	Software Engineering	Elective course	Elective course	5		
Logic Design	Operating Systems I	Data Structures	Object-oriented Programming	Software Development Environments	Automatic and Intelligent Control Systems	Network Security and Management	Elective course	Elective course	5		
Mathematics I	Mathematics II	Signals & Systems	Digital Signal Processing	Machine Learning	Special Topics in Databases	Internet Programming Applications	Elective course	Elective course	5		
Linear Algebra	Probability Theory and Statistics	Numerical Analysis and Scientific Programming	Analog Electronics	Intelligent Electric Energy Systems	Elective course	Elective course	Elective course	Elective course	5		
Technical English Terminology (facultative)		Business Administration (facultative)		Legislation and Cyber-ethics (facultative)	Teaching and Presentation Techniques (facultative)	Pedagogy (facultative)	Internship (facultative)				

Mandatory Courses (MC)	Elective Courses (EC)	Total Courses
40	14	54

General Background (GB)
Special Background (SB)
Specialized general knowledge, Skills Development (SD)

8.2 Table II. Elective Courses

They all belong to the "Specialized general knowledge, skills development" group (SD) , and they are presented herein for each stream.

semester	Stream 1 (Hardware)	Stream 2 (Networks)	Stream 3 (Software)	Modes of choice (ex. 1 of 3 courses)
6	Industrial Informatics	Microwave Communications Engineering	Linear Programming and Optimization	1 out of 3
7	Multimedia Systems	Wireless Communications	System Simulation and Recognition	1 out of 3
8	Introduction to Robotics	Selected Topics in Computer Networking	Data Mining	6 out of 10
8	Computer Graphics	Telecommunications Policy and Regulatory Environment	Digital Image Processing	6 out of 10
8	Measurement Systems	Satellite Communications	Compilers	6 out of 10
8	Electrical Machines and Power Eletronics			6 out of 10
9	Microelectronics and VLSI Design	Advanced Data Networking Technologies	Algorithms and Complexity	6 out of 11
9	Green Energy Technologies	Computational Electromagnetics	Augmented Reality	6 out of 11
9	Evolutionary Computation	Telecommunication Devices	Design and Development of Information Systems	6 out of 11
9		Broadband Networks	Human-Machine Interfaces	6 out of 11

LEGEND

GB: General Background
SB: Special Background
SD: Specialized general knowledge, skills Development
MELH: Management, Economics, Law and Humanities

MC: Mandatory Course
EC: Elective Course
OC: Optional Course

Semester 1

	CODE	COURSE	COURSE TYPE	theory	practice	Laboratory	Hours per week	Course load	ECTS
1	ΠΛΥ01013	Introduction to Computer Science	GB (MC)	2	1		3	125	5
2	ΠΛΥ01021	Fundamental Principles of Science	GB (MC)	2	1	1	4	125	5
3	ΠΛΥ01032	Computer Programming I	GB (MC)	1	1	2	4	125	5
4	ΠΛΥ01043	Logic Design	GB (MC)	2	1		3	125	5
5	ΠΛΥ01053	Mathematics I	GB (MC)	2	1		3	125	5
6	ΠΛΥ01063	Linear Algebra	GB (MC)	2	1	1	4	125	5
7	ΠΛΠ01071	Technical English Terminology (facultative)	GB (OC)	2			2	75	3

Semester 2

	CODE	COURSE	COURSE TYPE	theory	practice	Laboratory	Hours per week	Course load	ECTS
1	ΠΛΥ02011	Physics (Electromagnetics – Optics – Oscillations and Waves)	GB (MC)	2	1	1	4	125	5
2	ΠΛΥ02022	Computer Programming II	GB (MC)	1	1	2	4	125	5
3	ΠΛΥ02033	Electric Circuits	GB (MC)	2	1	2	5	125	5
4	ΠΛΥ02043	Operating Systems I	GB (MC)	2	1	1	4	125	5
5	ΠΛΥ02053	Mathematics II	GB (MC)	2	1		3	125	5
6	ΠΛΥ02061	Probability Theory and Statistics	GB (MC)	2	1		3	125	5

Semester 3

	CODE	COURSE	COURSE TYPE	theory	practice	Laboratory	Hours per week	Course load	ECTS
1	ΠΛΥ03011	Computer Networks	SB (MC)	2	1	1	4	125	5
2	ΠΛΥ03023	Operating Systems II	SB (MC)	2	1	1	4	125	5
3	ΠΛΥ03033	Digital Circuits	SB (MC)	2	1	2	5	125	5
4	ΠΛΥ03042	Data Structures	SB (MC)	2	1	1	4	125	5
5	ΠΛΥ03051	Signals & Systems	GB (MC)	2	1		3	125	5
6	ΠΛΥ03062	Numerical Analysis and Scientific Programming	GB (MC)	2	1	1	4	125	5
7	ΠΛΠ03073	Business Administration (facultative)	MELH (OC)	2			2	75	3

Semester 4

	CODE	COURSE	COURSE TYPE	theory	practice	Laboratory	Hours per week	Course load	ECTS
1	ΠΛΥ04011	Internet Technologies	SB (MC)	2	1	1	4	125	5
2	ΠΛΥ04021	Communication Systems I	SB (MC)	2	1	1	4	125	5
3	ΠΛΥ04033	Computer Architecture	SB (MC)	2	1	1	4	125	5
4	ΠΛΥ04042	Object-oriented Programming	SB (MC)	2	1	1	4	125	5
5	ΠΛΥ04052	Digital Signal Processing	GB (MC)	2	1		3	125	5
6	ΠΛΥ04063	Analog Electronics	SB (MC)	2	1	2	5	125	5

Semester 5

	CODE	COURSE	COURSE TYPE	theory	practice	Laboratory	Hours per week	Course load	ECTS
1	ΠΛΥ05012	Database Systems	SB (MC)	2	1	1	4	125	5
2	ΠΛΥ05021	Information Theory	GB (MC)	3			3	125	5
3	ΠΛΥ05031	Optical Communications	SB (MC)	2	1	1	4	125	5
4	ΠΛΥ05042	Software Development Environments	SB (MC)	2	1	1	4	125	5
5	ΠΛΥ05052	Machine Learning	SB (MC)	2	1	1	4	125	5
6	ΠΛΥ05063	Intelligent Electric Energy Systems	SB (MC)	2	1		3	125	5
7	ΠΛΠ05071	Legislation and Cyber-ethics (facultative)	MELH (OC)	2			2	75	3

Semester 6 (5 mandatory and 1 elective out of 3 offered)

	CODE	COURSE	COURSE TYPE	theory	practice	Laboratory	Hours per week	Course load	ECTS
1	ΠΛΥ06011	Telecommunication Systems II	SD (MC)	2	1	1	4	125	5
2	ΠΛΥ06023	Advanced Digital Systems	SD (MC)	2	1	1	4	125	5
3	ΠΛΥ06032	Programming Methodology	SD (MC)	2	1	1	4	125	5
4	ΠΛΥ06043	Automatic and Intelligent Control Systems	SD (MC)	2	1	1	4	125	5
5	ΠΛΥ06052	Special Topics in Databases	SD (MC)	2	1	1	4	125	5
6	ΠΛΕ06061	Microwave Communications Engineering	SD (EC)	2	1	1	4	125	5
7	ΠΛΕ06073	Industrial Informatics	SD (EC)	2	1	1	4	125	5
8	ΠΛΕ06082	Linear Programming and Optimization	SD (EC)	2	1	1	4	125	5
9	ΠΛΠ06092	Teaching and Presentation Techniques (facultative)	MELH (OC)	2			2	75	3

Semester 7 (5 mandatory and 1 elective out of 3 offered)

	CODE	COURSE	COURSE TYPE	theory	practice	Laboratory	Hours per week	Course load	ECTS
1	ΠΛΥ07011	Mobile Communication Networks	SD (MC)	2	1	1	4	125	5
2	ΠΛΥ07023	Microcontroller Programming	SD (MC)	2	1	1	4	125	5
3	ΠΛΥ07032	Software Engineering	SD (MC)	2	1	1	4	125	5
4	ΠΛΥ07041	Network Security and Management	SD (MC)	2	1	1	4	125	5
5	ΠΛΥ07052	Internet Programming Applications	SD (MC)	2	1	1	4	125	5
6	ΠΛΕ07062	System Simulation and Recognition	SD (EC)	2	1	1	4	125	5
7	ΠΛΕ07073	Multimedia Systems	SD (EC)	2	1	1	4	125	5
8	ΠΛΕ07081	Wireless Communications	SD (EC)	2	1	1	4	125	5
9	ΠΛΠ07091	Pedagogy (facultative)	MELH (OC)	2			2	75	3

Semester 8 (6 courses elected)

	CODE	COURSE	COURSE TYPE	theory	practice	Laboratory	Hours per week	Course load	ECTS
1	ΠΛΕ08012	Compilers	SD (EC)	2	1	1	4	125	5
2	ΠΛΕ08022	Data Mining	SD (EC)	2	1	1	4	125	5
3	ΠΛΕ08033	Introduction to Robotics	SD (EC)	2	1	1	4	125	5
4	ΠΛΕ08041	Selected Topics in Computer Networking	SD (EC)	2	1	1	4	125	5
5	ΠΛΕ08052	Digital Image Processing	SD (EC)	2	1	1	4	125	5
6	ΠΛΕ08061	Telecommunications Policy and Regulatory Environment	SD (EC)	3			3	125	5
7	ΠΛΕ08073	Computer Graphics	SD (EC)	2	1	1	4	125	5
8	ΠΛΕ08081	Satellite Communications	SD (EC)	2	1	1	4	125	5
9	ΠΛΕ08093	Measurement Systems	SD (EC)	2	1	1	4	125	5
10	ΠΛΕ08103	Electrical Machines and Power Eletronics	SD (EC)	2	1	1	4	125	5
11	ΠΛΠ0811Κ	Internship (facultative)	EC						10

Semester 9 (6 courses elected)

	CODE	COURSE	COURSE TYPE	theory	practice	Laboratory	Hours per week	Course load	ECTS
1	ΠΛΕ09013	Microelectronics and VLSI Design	SD (EC)	2	1	1	4	125	5
2	ΠΛΕ09023	Green Energy Technologies	SD (EC)	2	1	1	4	125	5
3	ΠΛΕ09033	Evolutionary Computation	SD (EC)	2	1	1	4	125	5
4	ΠΛΕ09041	Advanced Data Networking Technologies	SD (EC)	2	1	1	4	125	5
5	ΠΛΕ09051	Computational Electromagnetics	SD (EC)	2	1		3	125	5
6	ΠΛΕ09061	Telecommunication Devices	SD (EC)	2	1	1	4	125	5
7	ΠΛΕ09071	Broadband Networks	SD (EC)	2	1	1	4	125	5

	CODE	COURSE	COURSE TYPE					Course load	ECTS
8	ΠΛΕ09082	Algorithms and Complexity	SD (EC)	2	1		3	125	5
9	ΠΛΕ09092	Augmented Reality	SD (EC)	2	1		3	125	5
10	ΠΛΕ09102	Design and Development of Information Systems	SD (EC)	2	1	1	4	125	5
11	ΠΛΕ09112	Human-Machine Interfaces	SD (EC)	2	1		3	125	5

Semester 10

	CODE	COURSE	COURSE TYPE	Hours per week	Course load	ECTS
1	ΠΛΥ1001Κ	Diploma Thesis	SD (MC)		750	30

9. POSTGRADUATE PROGRAMS IN THE DEPARTMENT

The Department of Computer, Informatics and Telecommunications Engineering of the IHU School of Engineering currently offers three postgraduate programs.

1. MSc in Telecommunications and Computer Networks
2. MSc in Applied Informatics
3. MSc in Robotics

All three MSc programs operate as full-time or part-time. The duration prior the award of the Master's Degree is three (3) semesters for the full-time program, the third semester being allocated for the preparation of the Master's thesis. Similarly, six (6) semesters of study for the part-time program, the fifth and sixth semesters being devoted to the preparation of the Master's Thesis.

The maximum time allowed for completion of studies in the full-time MSc is set at three (3) academic years, while the maximum time allowed for completion of studies in the part-time MSc is set at four (4) years. After the expiry of the above mentioned period, the student is deregistered.

The Assembly of the Department may grant a temporary suspension of studies, the duration of which may not exceed two (2) consecutive semesters. The suspension shall be granted on the recommendation of the Board of Studies at the request of the student and the time it lasts shall not be counted towards the maximum duration of studies.

9.1 Postgraduate study program in Telecommunications and Computer Networks

The MSc in Telecommunications and Computer Networks was re-established in 2019 by the Government Gazette 3622/B/01-10-2019, as an MSc program of the IHU.

9.1.1 History

The Department of Informatics Engineering of the School of Technological Applications (STEF) of TEI of Central Macedonia by the General Assembly of Special Composition (GAES) of the Department at its meeting on 1/07-12-2011 approved a Postgraduate Studies Program (MSc) in English, entitled "Telecommunication and Information Systems", "MSc in Communication and Information Systems". The Postgraduate Program was approved by the Ministry of Education, Lifelong Learning and Religious Affairs by the Government Gazette No. 876/20-03-2012 (issue b). The Program has been operating in the Department since October 2012. Its operation was amended by the Government Gazette No. 3003/6-11-2014 (issue b) and since then the courses are conducted in Greek. The approval of the modification of the title and the course program of the Postgraduate Studies Program (MSc in Communication & Information Systems) was published in the Government Gazette 2286/25-7-2016, so that it would operate, starting from the 2016-2017 academic year with a new title "Telecommunications" (MSc in Telecommunications), providing specialization in the science of Telecommunications Engineering. Finally, incorporating the requirements of Law 4485/2017, it was re-established by the Government Gazette 2826/B/16-07-2018 as "MSc in Telecommunications and Computer Networks".

9.1.2 Goals and Objectives of the Postgraduate program

The **objective** of the Postgraduate Program (MSc in Telecommunications and Computer Networks) is to provide postgraduate level education in Telecommunications and Computer Networks, by offering and promoting specialized knowledge, know-how, methodologies, operational tools and research results in the broad scientific field of Telecommunications and Computer Networks.

The **goals** of the Program are:
(a) To advance knowledge and develop research in scientific areas whose development is based on the theory and application of the principles of Telecommunications, Computer Networks and Information Theory.
(b) Deepening the application of methods and technologies with appropriate software and hardware to produce integrated solutions.
(c) To provide the high level of knowledge necessary for the training of qualified engineers and managers capable of staffing the private, public and academic sectors in positions related to Telecommunications and Computer Networks.

The rationale of the MSc is to provide postgraduate students with the scientific foundations, knowledge, methods and basic principles that will make them capable of continuous learning and personal improvement in a constantly changing work environment.

9.1.3 The postgraduate degree awarded
The program awards an "MSc in Telecommunications and Computer Networks"

9.1.4 Admissions

Graduates of relevant specialization of higher education institutions of the Greek Federation or similar recognized institutions of foreign countries, whose degree has been recognized by the Inter-University Organization for the Recognition of Academic Titles & Information (ΔΟΑΤΑΠ) in accordance with Law 3328/2005 (Α΄80) or by an appropriate international body (e.g. Enic/Naric) in the case of foreign graduates. Indicatively, but not exclusively, the following are considered as relevant specializations: Engineers majoring in Computer Science, Information Technology and Telecommunications, Telecommunications, Networking, Electrical, Electronics, Automation and graduates of Schools of Math/Science (e.g. Mathematics or Physics). Those who hold a Master's degree in a related discipline are also eligible, even if their main degree is not relevant to the subject of Telecommunications and Computer Networks.

9.1.5 Duration of studies

The MSc program in "Telecommunications & Computer Networks" operates as full-time or part-time. Part-time attendance is intended mainly for working students. Normal duration of studies in the full-time program is three (3) semesters and corresponds to 90 credits (ECTS). Course teaching takes place during the first two semesters, while the last semester (the third) is allocated for the preparation of the Master's Thesis. For the part-time program the normal duration is extended by two (2) additional semesters. The maximum time allowed for completion of studies in the full-time MSc is set at three (3) academic years, while in the part-

time MSc it is set at four (4) years. After the expiry of the above mentioned period, the student is deregistered.

The Assembly of the Department may grant a temporary suspension of studies, the duration of which may not exceed two (2) consecutive semesters. Suspension shall be granted on the recommendation of the Board of Studies at the request of the student and the time it lasts shall not be counted towards the maximum duration of studies.

9.1.6 Course schedule per semester

During their studies, postgraduate students are required to attend and successfully complete the postgraduate courses and to prepare an MSc Thesis. For the full-time MSc, postgraduate students must attend a total of eight (8) offered courses. Each student is required to attend and successfully complete and pass the examination in courses corresponding to thirty (30) European Credit Transfer System (ECTS) credits per semester of study. Each course corresponds to seven and a half (7.5) ECTS credits. During the third semester students are required to complete a postgraduate thesis, which corresponds to thirty (30) ECTS credits.

Each semester of study corresponds to thirty (30) ECTS credits.

Ninety (90) ECTS credits are required for the MSc degree. The curriculum for the part-time MSc is the same as for the full-time program, except that the part-time postgraduate student attends and takes examinations in two (2) courses out of those offered, respectively, in the first and second semester of the full-time program. The thesis for the part-time student is assigned in the 5th semester of the part-time student's studies.

The languages of instruction of the program may be Greek (typically) and/or English. Every year and before the beginning of a new course of study, the official main language of instruction is announced.

POSTGRADUATE COURSES PER SEMESTER
SEMESTER 1

Code	Course Title	Type	Weekly teaching hours	ECTS
TA1	**Theory and Technology of Digital Communications**	Mandatory	3	7.5
TA2	**Internet of Things**	Mandatory	3	7.5
TA3	**Telecommunications Security and Data Analytics**	Mandatory	3	7.5
TA4	**Telecommunications and Computer Networks Lab I**	Mandatory	3	7.5
	Total		12	30

Code	Course Title	Type	Weekly teaching hours	ECTS
TB1	**Mobile Communication Networks and Applications**	Mandatory	3	7.5
TB2	**Optical Communication Networks**	Mandatory	3	7.5
TB3	**Advanced Computer Networks**	Mandatory	3	7.5
TB4	**Telecommunications and Computer Networks Lab II**	Mandatory	3	7.5
	Total		12	30

SEMESTER 3

Code		ECTS
TΓ1	**MSc Thesis**	30

9.1.7   Number of admissions

The yearly number of students admitted to the MSc is set at a maximum of twenty-one (21) students.

9.1.8   The staff

Teaching of the postgraduate courses is carried out by Faculty Members and Research Associates of the Department of Computer, Informatics and Telecommunications Engineering. In addition, Faculty of other departments of the IHU, Faculty of other universities in Greece and abroad, distinguished scientists, researchers and other categories of lecturers may participate in accordance with the provisions of Article 5 of Law 3685/2008 (A' 148). All lecturers must hold a PhD degree (Paragraph 8, Article 19, Law 4521/2018).

9.2   Postgraduate study Program in Applied Informatics

The MSc in Applied Informatics was re-established in 2019 by the Government Gazette 3579/B΄/26-09-2019, as an MSc program of IHU.

9.2.1   History

In February 2015, the General Assembly decided to organize and operate a second Master's Program in the Department in Applied Informatics. The MSc received the Official Gazette of Establishment and Operation (Vol. B 620/15-4-2015) and the first cycle of the MSc started in the 2015-2016 academic year.

9.2.2   Goals and Objectives of the Postgraduate program

The **objective** of the Postgraduate Program is to provide postgraduate level education in Applied Informatics/Computer Science, through the production and transfer of specialized knowledge, know-how, methodologies, functional tools and research results in the scientific field of applied computer science.

The **goals** of the Program are:

(a) Promotion of knowledge and the development of research in scientific/egineering areas in the field of applied computing.
(b) Synthetic approach to methodologies, software and hardware for the production of integrated applications.
(c) To provide the high-level knowledge necessary to produce qualified engineers and managers capable of staffing the private, public and academic sectors.

The main objective of the MSc is to provide postgraduate students with the specialized knowledge, methods and technologies of information technology applied to disciplines of science, technology and economics that will enable them to evolve scientifically and professionally in an ever-changing work environment.

9.2.3   The postgraduate degree awarded

The program awards an "MSc in Applied Informatics"

9.2.4   Admissions

Graduates of higher education institutions (Universities and Technical Universities) in Greece or similar recognized institutions abroad, whose degree has been recognized by the Inter-University Organization for the Recognition of Academic Qualifications & Information (ΔΟΑΤΑΠ) are admitted to the program.

9.2.5   Duration of studies

The MSc operates as a full-time or part-time program. Part-time attendance is intended mainly for working students. Non-working students who wish to follow the part-time program must obtain approval from the Program Board, after explaining their reasons for choosing part-time study. Such reasons may be a possibly long distance between the place of residence and Serres campus, health problems or serious family reasons.
Normal duration of a full-time MSc course is three semesters and corresponds to 90 credits (ECTS). Teaching takes place during the first two semesters, while the last semester (the third one) is devoted to the thesis. For the part-time program the normal duration is extended by two (2) additional semesters.
The maximum time allowed for the completion of studies in the full-time MSc is set at three academic years, while the maximum time allowed for the part-time MSc is set at four years. After the expiry of the above period, the student is deregistered from the MSc by a decision of the Assembly, following a recommendation of the MSc Board.

9.2.6   Course schedule per semester

During their studies, postgraduate students are required to attend and successfully complete the postgraduate courses and prepare a Postgraduate Thesis. For the full-time MSc, postgraduate students must attend a total of eight (8) courses (during the first semester four (4) mandatory courses and during the second semester they have the right to choose four (4) courses out of six (6) available). Each student is required to attend and successfully pass courses equivalent to thirty (30) credit hours per semester of study. Each course is equivalent to seven and a half (7.5) credit hours. During the third semester, students are required to complete a Postgraduate Thesis, which corresponds to thirty (30) credit hours. Ninety (90) credit hours are required for the MSc degree. The curriculum for the part-time MSc is the same as for the full-time program, except that the part-time postgraduate student attends and takes examinations

in two courses out of those offered, respectively, in the first and second semester of the full-time program. The Diploma Thesis for the part-time student corresponds to the 5th semester of the full-time student's studies. All courses in the program are taught in Greek.

POSTGRADUATE COURSES PER SEMESTER
SEMESTER 1

Code	Course Title	Type	Weekly teaching hours	ECTS
11	**Data Bases**	Mandatory	3	7.5
12	**Advanced Computer Networks**	Mandatory	3	7.5
13	**Software Development**	Mandatory	3	7.5
14	**Programming in Scientific Applications**	Mandatory	3	7.5
	Total		12	30

SEMESTER 2

Code	Course Title	Type	Weekly teaching hours	ECTS
21	**Statistics Analysis Tools**	Elective	3	7.5
22	**Remote Teaching Systems**	Elective	3	7.5
23	**Application Development in Mobile Devices**	Elective	3	7.5
24	**Parallel Programming**	Elective	3	7.5
25	**Smart Systems**	Elective	3	7.5
26	**Information and Network Security**	Elective	3	7.5
	Total	Elective	12	30

Code		ECTS
31	**MSc Thesis**	30

9.3   Postgraduate study Program in Robotics

The MSc in Robotics was re-established in 2019 by the Government Gazette 3624/B′/1-10-2019, as an MSc program of IHU.

9.3.1   History

In June 2016, the General Assembly decided to organize and operate a third Master's Program in the Department, this time in Robotics. The MSc received the Official Gazette of Establishment and Operation (Vol. B 2944/16-9-2016) and the first cycle of the MSc started in the 2017-2018 academic year.

9.3.2   Goals and Objectives of the Postgraduate program

The **objective** of the Postgraduate Studies Program is to provide graduate-level education in the theory and practice of robotic systems as studied in research and applied in industry.

The **goals** of the program are:
(a) To provide a comprehensive general and interdisciplinary background in robotic systems, ensuring the possibility of professional employment in the field of robotics in the modern industrial environment.
(b) To deepen the understanding of current relevant technologies and theories, so that knowledge acquired can be applied to real-world problems.
(c) To provide a high level of expert knowledge, in the key areas of robotics (robotic sensors, motion, autonomy, intelligence and control), that will enable graduates to work in academic, research or industrial environments.
The rationale of the MSc is to provide graduate students with the scientific foundation, knowledge and methods by which robotic automation is designed and operated in industry and studied in research, so that students will be able to meet the demands of modern industrial and research environments.

9.3.3   The postgraduate degree awarded

The program awards an "MSc in Robotics"

9.3.4   Admissions

Graduates of relevant specialization of higher education institutions in Greece or similar recognized institutions of foreign countries, whose degree has been recognized by the Inter-University Organization for the Recognition of Academic Qualifications & Information (ΔΟΑΤΑΠ) are admitted to the MSc program. Those holding a postgraduate degree in related disciplines are also eligible, even if their main degree is not related to the subject of robotics. Indicatively, but not exclusively, the following are listed as related disciplines: Computer Science, Networking/Electrical/Electronics/Automation/Mechanical Engineering and graduates of Schools of Science. Graduates from Schools of Education, which are related to educational robotics, may be admitted under certain conditions.

The duration for the award of the MSc is set at three (3) semesters for the full-time program, of which the third semester is allocated for the preparation of the postgraduate thesis. For the part-time program the duration is extended by two (2) additional semesters. The maximum time allowed for the completion of studies in the full-time MSc is set at three academic years, while the maximum time allowed for the part-time MSc is set at four years.

9.3.6   Course schedule per semester

1. The MSc consists of the following categories of courses and assignments, which are described below with the full-time program as a reference framework:

(a) Introductory courses. These are four (4) compulsory courses of the first semester, which form the background of the specialization program in Robotics. Each compulsory course is equivalent to 7.5 ECTS credits.

(b) Advanced knowledge courses. These are four (4) compulsory courses of the second semester. Each advanced knowledge course is equivalent to 7.5 ECTS credits.

(c) Postgraduate Diploma Thesis. It is compulsory for all students in the last (third or fifth for full-time or part-time students, respectively) semester of study and is equivalent to 30 ECTS credits.

2. The program of study for the award of the Master's degree is as follows:

POSTGRADUATE COURSES PER SEMESTER
SEMESTER 1

Code	Course Title	Type	Weekly teaching hours	ECTS
P101	**Embedded Systems**	Mandatory	3	7.5
P102	**Introduction to Robotics and Automatic Systems**	Mandatory	3	7.5
P103	**Design and Simulations of Robotic Systems**	Mandatory	3	7.5
P104	**Robotic Vision**	Mandatory	3	7.5
	Total		12	30

SEMESTER 2

Code	Course Title	Type	Weekly teaching hours	ECTS
P201	**Autonomous Robotic Systems**	Mandatory	3	7.5
P202	**Machine Learning**	Mandatory	3	7.5
P203	**High Performance Processing Systems (FPGAs, DSPs, GPUs)**	Mandatory	3	7.5
P204	**Virtual Reality and Computer Graphics**	Mandatory	3	7.5
	Total		12	30

SEMESTER 3

Code		ECTS
P301	**MSc Thesis**	30

10. DOCTORAL STUDIES in the DEPARTMENT

Doctoral studies at the Department of Computer, Informatics and Telecommunications Engineering of IHU aim to promote knowledge through the conduction of original academic research and lead to the award of a Doctoral Degree.

The Doctoral Degree is the highest academic title which certifies the mastery of research methodology through the completion of original academic research produced and the substantial contribution of its holder to the development of science/engineering and knowledge in the respective academic discipline.

The Regulation of Doctoral Studies (Decision ΔΦ 15/11782/28-7-2020 of the President of the Board of Directors of the IHU, Government Gazette 3494/B/24-8-2020) reflects the structure and the rules of operation of the Doctoral Studies Program of the Department of Computer, Informatics and Telecommunications Engineering of IHU.

The Doctoral Studies Program is organized and operated in accordance with the provisions of Law 4485/2017 and the relevant provisions and decisions in force.

Eligibility

1. Eligible to apply in the PhD program are students who:

    - Have graduated from a higher education institution (University or TEI) in Greece or a recognized as equivalent institution abroad and hold a Diploma of Postgraduate Studies (MSc) of a higher education institution in Greece, or a recognized institution abroad or a recognized type of title of a foreign institution, as provided for in Article 304 par. 4a) of Law No. 4957/2022,
    - Hold a diploma or a single and indivisible postgraduate degree in accordance with Article 78 of Law No. 4957/2022.

2. Suitability of qualifications and the backround skills of the candidate shall be examined by the three-member evaluation committee and approved exclusively by the Assembly of the Department.

Duration

1.   The duration of the Doctoral Degree program is at least three (3) full calendar years starting from the date of appointment of the Tripartite Advisory Committee.

2.   For doctoral candidates who are exceptionally admitted without holding an MSc, the minimum time limit for obtaining the Doctoral Degree shall be four (4) full calendar years starting from the date of appointment of the Tripartite Advisory Committee.

3.   The maximum time for completion of the dissertation is in any case set at six (6) years.

The aforementioned time may be extended through annual extensions by two (2) additional years, upon request of the candidate and a well-founded decision of the Departmental Assembly. Further information can be found on the Department's website and in the Regulations for Doctoral Studies.

11. SERVICES and STUDENT WELFARE OFFICE

11.1 European Programs Office (Erasmus)

LLP/ERASMUS (Lifelong Learning Programme) is an ambitious educational program of the European Union that gives the opportunity to higher education students to carry out part of their studies in a European institution or their internship, with full academic recognition. By participating in the Erasmus program, students acquire skills that enhance their future employability whereas teaching faculty/staff improve their career prospects. Higher education institutions are internationalizing their campuses, introducing new teaching methods and new services, building management capacity, strengthening research activities and creating links with businesses.

It aims to improve the quality of higher education, strengthen its European dimension, encourage mobility and promote access to education for all.

E R A S M U S is the acronym for European Region Action Scheme for the Mobility of University Students. It takes its name from the 15th century philosopher, theologian and humanist Erasmus of Rotterdam (1465-1536). Erasmus donated his entire fortune to the University of Basel and became the forerunner of mobility grants.

The IHU Serres Campus is a holder of the ERASMUS Extended University Chapter with the ERASMUS Extended University Chapter code: 31754-IC-2007-1-GR-ERASMUS-EUC-1 and the institution code GSERRES 01.

The National Coordination Unit for Greece is the State Scholarships Foundation (IKY), Lysikratous 14, 105 58 Athens, Greece (www.iky.gr). IKY manages the European Union funds and distributes them to the Institutions.

CONDITIONS & PROCEDURES FOR PARTICIPATION
Students can travel for studies for a period of 2 up to 12 months (or 24 months for 5-year study programs) in physical mobility, per study cycle, from the 1st year of study (the participation or not of students from the 1st year of study will depend on the selection criteria of the academic Erasmus coordinators of the departments). This period may include a complementary traineeship period, if planned, and may be organized in various ways: either consecutive or simultaneous activities. The combination shall follow the funding rules for study mobility.

Further information on the Erasmus program can be found on the University's Erasmus Office website (https://www.ihu.gr/monades/intprogrs#erasmus)

11.2 Library

The Library of the University of Serres Campus is housed in a three-storey building opposite the Administration building, with a total area of 2500 m^2, the construction of which was financed by the Europen Union. The library is stocked with 20 000 titles of books, both foreign and Greek, magazines and newspapers, as well as a collection of literature and CD-ROMs. The books are classified according to the DDC system, 21st edition.
Loan is valid for a period of 15 days and is made through the lending card supplied by the Library. There is also a photocopying machine available to students for a certain number of copies of the library materials. The Library has the following departments:

1) Borrowing Department
2) Information Department
3) Electronic Documentation and Dissemination Department
4) Audiovisual Department

The library of the University of Serres campus is open every working day, all year round, according to the following timetable:

September - June: 8:30 am to 8:00 pm.
July - August: 8:30 am to 2:00 pm.

Library Address:
International Hellenic University
Serres Campus - Library
End of Magnisias Str, 62 124 Serres
Tel: +30 23210-49265, +30 23210-49269
Fax: +30 23210-45405
e-mail: admin@lib.teicm.gr
web-site: http://lib.teicm.gr

11.3   Student Restaurant

Within the University of Serres campus, students can dine in a fully equipped facility, in a modern building which hosts the Student Club and the restaurant. Students of the University of Serres are generally entitled to free meals, depending on their family income (< 45.000 €). Relevant information can be obtained from the office of the Student Club (ground floor, library building).

11.4   Student Dormitory

Students stay in residences of their own choice. The University provides free accommodation to eligible students (housing allowance due to the lack of a Student Residence Hall) under the conditions set by the relevant legislation and the University. The Serres campus offers a residence hall for foreign students of the ERASMUS Program.
The State grants an annual housing allowance of 1,000 Euros to eligible students, under the conditions set by Law 3220/2004. The relevant certificate is provided by the Department's Registrar.

11.5   Student Health Care Service

All students have the same rights to health care and insurance. Students are provided with a special health booklet, which entitles them to free health care. The nearest hospital lies only 2 km away from the institution.

11.6   The University Gym

The Gym facilities provide the opportunity for all students, faculty and staff of the Serres campus to exercise. In the Gym there are:

- Weights room

- Gymnastics room
- Table tennis room
- Sauna

In addition, students can take part in folk or modern dance programs, as well as basketball, soccer, volleyball, table tennis, shooting, aerobics and self-defense.

11.7 Sports and Cultural Activities

All students, upon registration in the University's Departments, automatically become members of the Student Association, through which they are represented. The Association convenes student assemblies at regular intervals, where issues concerning them are discussed. The meetings are held once a year on a date identical to all universities in the country. The Association organizes excursions and visits of educational or recreational nature. Theater, music and cinema classes are also being developed.

11.8 Network Operations Center (NOC)– Electronic Services

The Network Operations and Management Center (NO&M Center) of the Serres campus is responsible for the smooth operation, maintenance and development of the equipment, interfaces and services of the campus Data Network.

The NO&M Center ensures the continuous upgrading and modernization of its infrastructure, the introduction and familiarization with cutting-edge technologies in the field of Information Technology and Telecommunications.

The Serres Campus has a remarkable telematics infrastructure based on modern network technologies and network services. The institution's Network and Telematics Services enable thousands of members of its academic community to easily and effectively access the internationalized information and knowledge society.

In addition, the IHU offers all members of its Academic Community modern Telematics Services to support their educational and research work. At the same time, these services are used by the administrative units of the Foundation, assisting the work of modernizing its administrative organization and operation.

The Telematics Network of the Serres campus currently covers eleven integrated buildings of the complex, both inside the buildings (Distribution Network) and in the interconnection of the buildings (Trunk Network). The main network infrastructure is based on Gigabit Ethernet technology (1Gbps). The central interconnection to the Internet is provided by the National Research and Technology Infrastructure Network S.A. o GRNET (formerly the National Research and Technology Network or EDET) and is of the order of 1 Gbps.

The NO&M Center provides and supports basic network services to the academic community of the Serres Campus, such as World Wide Web (WWW) Services, Domain Name Service (DNS), Directory Service (LDAP), Web Hosting, File Transfer Server (FTP), VPN Connection Service (OpenVPN), Accreditation Unit (PKI), Voice Over IP Service, but also other specialized services such as support for the campus remote education and videoconferencing infrastructure, as well as E-mail and Webmail, Web Hosting, Digital Certificates, WiFi, File Backup (Pithos), Okeanos Cloud Service, Computer Center, "Diode" Action, Access to Microsoft Office 365 through the DILOS 365 service, etc.

More information about the Network Operations Center and details on how to use the services can be found on the Center's website (http://noc.cm.ihu.gr/index.php?id=1).

12. INTERNATIONAL DIMENSION and PARTNERSHIPS

The Department cooperates in research with other Greek Institututions, such as the Aristotle University of Thessaloniki, University of Macedonia, University of Western Attica, National Technical University of Athens, Democritus University of Thrace, University of Patras, and obviously with other Departments of the IHU. Additionally, it retains close ties with Institutions abroad, such as the Universities of Manchester (UMIST) and York, UK, the University of Stockholm, Sweden, the University of North Carolina State University, USA and U. of Sydney, Australia. These cooperations are mostly research-based, through research projects, but there have also been invitations to academicians on both sides to give lectures.

The Department also shares a number of cooperation projects with productive institutions, services and organizations, such as with municipalities of its Prefecture, the Region of Central Macedonia, the Lake Kerkini Management Authority, etc., where it has offered expertise and services in Information & Communication Technologies. The results of these projects were publicized through workshops and conferences in order to inform and sensitize all stakeholders, public services, organizations, ecological organizations and industries in relation to issues related to the improvement of the quality of life in the wider region and are therefore considered as particularly important.

However, having now entered its maturity phase, it is seeking strategic alliances with companies and industry in general that are researching and developing products in Informatics and Telecommunications Technologies. Thus, the Department has active partnerships with Oracle and CISCO. In relation to the latter, the Department constitutes, among others, a Cisco Networking Academy.

The dominant route for students' contact with the international academic environment is the ERASMUS exchange program. The Department has ensured that credits are allocated in accordance with the ECTS (European Credit Transfer and Accumulation System). This ensures academic recognition of the courses taken by mobile students, while the curriculum is offered to students throughout Europe and is comparable with those of other institutions. In addition, all faculty members of the Department are able to teach in English in case the Department receives foreign students. Finally, given the fact that most of the teaching aids used in the Department are also available in English, homogeneity of the curriculum for all students is ensured.

12.1 Further Details on the European Programs Office (Erasmus)

The Erasmus program was launched in 1987 in the field of education. Since 2011, 33 countries have been participating in the program, i.e. the 27 EU Member States (Austria, Belgium, Bulgaria, the Czech Republic, Croatia, Denmark, Germany, Estonia, Greece, Spain, France, Ireland, Italy, Cyprus, Latvia, Lithuania, Luxembourg, Hungary, Malta, the Netherlands, Poland, Portugal, Romania, Slovenia, the Slovak Republic, Finland, Sweden), the remaining 3 countries of the European Economic Area – (Iceland, Norway, Liechtenstein), the United Kingdom, Turkey and Switzerland since 2011.

Today, over 180,000 supported students travel abroad every year. In mid-2009 the total number of people who went abroad as Erasmus students reached 2 million.

- Joint Study Programs

- 1987 ERASMUS - Inter-University Cooperation Programs
- 1995 enrichment and integration under the "Socrates umbrella"
- 1995 - 1999 SOCRATES 1 Erasmus Foundation Agreement
- 2000 - 2006 Socrates 2 Erasmus University Chapter
- 2007 - 2013 Lifelong Learning Program

What is ECTS?

ECTS is the European higher education credit system that assigns a numerical value to each course. The numerical value corresponds to the workload of the student to complete the course. The ECTS, i.e. European Credit Transfer System, was developed in the context of the ERASMUS program in order to facilitate the academic recognition procedures for studies abroad by valuing and/or transferring the work of the participating student (transfer of credits) between the partner institutions. ECTS is based on the principle of mutual trust between the participating institutions.

Conditions of participation

Students participating in the program should be:
1.   Enrolled in an official program of studies at the institution leading to a degree or other higher education qualification, including a doctorate, which is recognized in accordance with national procedures.
2.   Nationals of a country participating in the Erasmus+ program
3.   Nationals of other countries enrolled in a regular study program of the Foundation in accordance with the F. 151/20049/B6/20.02.2007 (Government Gazette 272B/01-03-07) Ministerial Decision and other applicable legislation, provided that they meet the eligibility and selection criteria set by the program and the Foundation respectively.

Participation procedure

1.   Students submit their applications in accordance with the announcements of their campuses.
2.   After the deadline, applications are evaluated and results are issued.
3.   Selected students will be informed by the Erasmus department of their campus about the supporting documents, how to submit them and relevant deadlines.

Evaluation and selection

After the deadline expirartion for the submission of supporting documents, applications are collected per Department and forwarded to the Erasmus Coordinator of each Department in order to proceed with the evaluation and selection process. In this process, the Erasmus Coordinators of the Departments will take into account the order of priority of the Universities you have indicated in your application in combination with the following criteria:

1.   50% of the total number of credits up to the current semester of study
2.   Sufficient knowledge of the language used in the program the student is planning to attend

3. The student's level of studies (undergraduate, postgraduate, doctoral)
4. Year of admission. Preference will be given to students without delays in their studies.
5. Academic performance (grade point average of courses passed by the student up to the time of application), and
6. CV (submitted to the academic Erasmus coordinator of the department) or interview.
7. Degree and duration of degree/postgraduate diploma in the case of a postgraduate student/doctoral candidate. In particular, for the selection of doctoral candidates, a reasoned recommendation of the Tripartite Advisory Committee is required, stating the topic of the thesis and confirming that the program the candidate will follow abroad will form part of his/her research work for the preparation of his/her doctoral thesis and that it will count towards the total time of his/her studies.

Prioritization of applications

1. Foreign Language Level: B1= 0 points B2= 10 points, C1= 20 points, C2= 30 points
2. Average score x10
3. CV or Interview up to 10 points
4. Students with limited opportunities will be awarded 20 points.

Course equivalence

Before departure, the student elects, with the help of the relevant advisor, the courses to be taken abroad from the curriculum of the host institution, the content of which is consistent with the courses in the curriculum of his/her Department. The period of study at the host institution is an integral part of the curriculum of the home institution.

Foreign language

It is essential that you have a good grasp of the language of the country you are visiting or the language in which the courses and communication will take place. Usually, your fluency in a foreign language is attested by the relevant certificates you hold (or, exceptionally, by the certificate of the relevant Faculty in charge of your department). For countries with less spoken languages, it is possible to attend a foreign language course in the host country before starting the course.

Housing

The IHU Public and International Relations Office, in cooperation with the respective office of the host institution, will ensure that accommodation is provided for you, either in student residences or in suitable rooms to let. Depending on the popularity of the destination country or the difficulty of finding accommodation, it may also be necessary to involve the person concerned.

Financial compensation

The financial support given to Erasmus students is simply additional financial support to cover the extra costs you will have to face during your stay abroad. The amounts are regulated each

year by the State Scholarship Foundation (IKY). The partnerships that have been established with institutions abroad for the Department under the Erasmus+ Program are as follows:

	COUNTRY	UNIVERSITY
1	ITALY	UNIVERSITA DEGLI STUDI DELLA CALABRIA
2	LITHUANIA	VILNIUS GEDIMINAS TECHNICAL UNIVERSITY
3	LITHUANIA	UTENA COLLEGE
4	GERMANY	H ZITTAU
5	GERMANY	UNIVERSITY F MANNHEIM
6	BULGARIA	SOUTH -WEST UNIVERSITY "NEOFIT RISKI" BLAGOEVGRAD
7	LATVIA	VENTSPILS UNIVERSITY COLLEGE
8	LATVIA	LIEPAJA UNIVERSITY
9	SPAIN	MONDRAGON UNIVERSITY

Further information on the Erasmus program can be found on the University's Erasmus Office website (https://www.ihu.gr/monades/intprogrs#erasmus)

13. REFERENCE to the DEPARTMENT and UNIVERSITY REGULATIONS

In addition to this academic guide, important and constantly updated information is provided through the Department's website: http://ict.ihu.gr

14. APPENDIX: DETAILED COURSES OUTLINE

In what follows, courses are described in detail per Semester and Stream.

**Department of Computer, Informatics and Telecommunications Engineering,
School of Engineering, International Hellenic University
Courses Title and Description in English**

- Semesters 1, 3, 5, 7, and 9 are Autumn/Winter Semesters. Autumn Semester usually starts in the end of September/first week of October.
- Semesters 2, 4, 6, 8, and 10 are Spring Semesters. Spring Semester usually begins in the second half of February.
- All Required courses are offered every year. Elective courses may not be offered every year (please contact the Department's Registrar).
- None of the Facultative courses is offered to Erasmus students.
- All courses marked with a YES (in column Erasmus) are offered to Erasmus students in Greek (Greek language Required B1). Those with the indication "English" in the next column are offered in English, most commonly through projects.
- All Erasmus students are welcomed to work on their Thesis in our Department. All work and communication with the supervisor will be conducted in English. Please, be advised, the Department offers a 5-year course and an Engineering Diploma, so the Diploma Thesis is expected to be at MSc level.

Course Number	A/A	Course Title (in Greek)	Course Title (in English)	Course Description	Erasmus offer	Language	Method	Characterization	Hours per week	ECTS
		Semester 1								
ΠΛΥ01013	1	Εισαγωγή στην Επιστήμη των Υπολογιστών	Introduction to Computer Science*	The main goal of this course is to introduce the fundamental concepts of computers and information science, focusing on basic notions of hardware and software design. During the class, the students get acquainted with the history and evolution of computers, the parts of a computer system, the different numeral systems, Boolean logic, the Von Neumann architecture, the main concepts of operating systems, algorithmic design and the structure of Internet and the different network protocols.	YES	Greek		Required	3	5
ΠΛΥ01021	2	Βασικές Αρχές της Επιστήμης	Fundamental Principles of Science	The course is an introduction to the principles and tools of the scientific method, and also presents the evolution of ideas in electricity and magnetism, acting as an introductory course on both. Inquiry of knowledge. Elements of the scientific method. The role of theory. Publicising the research findings, the role of the scientist, the editor and the reviewers. Physics and Measurements. Standards of Length, Mass, and time. Dimensional analysis. Conversion of Units. Estimates and Order-of-Magnitude Calculations. Significant Figures. Errors. Vectors. Coordinate Systems. Vector and Scalar Quantities. Some Properties of Vectors. Components of a Vector and Unit Vectors. Vector addition, substraction, multiplication.	NO			Required	4	5

				Electric Fields: properties of Electric Charges. Coulomb's Law. Gauss's Law: Electric Flux. Application of Gauss's Law. Electric Potential: Electric Potential and Potential Difference. Applications of Electrostatics Capacitance and Dielectrics. Electric Current and Resistance. Superconductors. Electrical Power Direct Currents Circuits: Electromotive Force. Kirchhoff's Rules. RC Circuits. Magnetic Fields. Analysis Model. Particle in a Field (Magnetic). Magnetic Force Acting on a Current-Carrying Conductor. The Hall Effect. Sources of Magnetic Fields. The Biot–Savart Law. Ampère's Law. The Magnetic Field of a Solenoid. Gauss's Law in Magnetism. Magnetism in Matter						
ΠΛΥ01032	3	Προγραμματισμός I	Computer Programming I	The course aims to provide the student with basic programming knowledge. The focus is on procedural programming, the main elements of which are the development of the program and the repeated use of subroutines, which either perform general tasks or address a part of the overall problem. The aim is to understand the principles of programming and to consolidate its philosophy, using the high level programming C language. After attending the course, students should: • Know and understand the basics of programming in the C programming language. • Analyze programming problems that require the use of variables, constants, operators, iterations, and branches. • Perform data entry-exit procedures. • Create and manage multidimensional arrays, strings and character arrays.	YES	Greek		Required	4	5

				• They create their own data types. • Utilize the ability to write code, compile and run a program that provides a complete development environment (IDE, free software). • Understand and implement simple data management algorithms.						
ΠΛΥ01043	4	Λογική Σχεδίαση	Logic Design*	Basic introduction to arithmetic systems, Algebra Boole, logic gates, logic design and circuit simplification. Introduction to the basic combinatorial structures (decoders, multiplexers, comparators and the basic arithmetic circuits). Binary codes.	YES	Greek		Required	3	5
ΠΛΥ01053	5	Μαθηματικά I	Mathematics I	Basic calculus of real functions of a single real variable. • Limits, properties, continuity • Derivative: definition, properties, physical interpretation, applications, indeterminate forms, de L' Hospital rule • Derivative of a composite function • Differential: definition and applications • Linear approximation of a function: Taylor and MacLaurin series • Function extrema, inflection points, concave and convex curves, asymptotes • Indefinite integral: integration methods, change of variables, integration by parts • Integration of rational functions • Definite integral and application in the computation of areas and volumes of bodies of revolution	YES	Greek		Required	3	5

Course Number	A/A	Course Title (in Greek)	Course Title (in English)	Course Description	Erasmus		Method	Characterization	Hours per week	ECTS
ΠΛΥ01063	6	Γραμμική Άλγεβρα	Linear Algebra	Basic concepts in Matrix Theory, Linear Systems, Eigenvalue Analysis and Complex numbers. • Set of complex numbers, complex plane, geometric representation, conjugate numbers, magnitude, phase • Cartesian and polar forms • Euler identity • Elementary operations (addition, subtraction, multiplication, division) and geometric interpretation thereof • Roots of complex numbers • Set of matrices, elementary operations, properties • Determinant, inverse, transpose, identity and zero matrices, special types of matrices • Solution of linear systems, inconsistent and indefinite systems, solution parameterization • Cramer method, Gauss elimination • Eigenvalues and eigenvectors, matrix diagonalization	YES	Greek		Required	4	5
ΠΛΠ01071	7	Ξένη Γλώσσα (προαιρετικό)	Technical English Terminology (facultative)		NO			Facultative	2	3
		Semester 2								
Course Number	A/A	Course Title (in Greek)	Course Title (in English)	Course Description	Erasmus		Method	Characterization	Hours per week	ECTS
ΠΛΥ02011	1	Φυσική (Ηλεκτρομαγνητισμός-Οπτική-Κυματική)	Physics (Electromagnetism – Optics – Oscillations	This course is an introduction to Electromagnetics – Optics – Waves and Semiconductors Faraday's Law of Induction. Lenz's Law. Induced emf and Electric Fields. Generators and Motors. Eddy Currents. Self-Induction and Inductance. RL Circuits. Energy in a Magnetic	NO			Required	4	5

| | | | and Waves) | Field. Oscillations in an LC Circuit. The RLC Series Circuit. Resonance in a Series RLC Circuit. The Transformer and Power Transmission.
Wave Motion: Propagation of a Disturbance. Traveling Wave. The Speed of Waves on Strings. Reflection and Transmission. The Linear Wave Equation.
Sound Waves. Speed of Sound Waves. Intensity of Periodic Sound Waves. The Doppler Effect. Superposition and standing waves. Resonance.
Electromagnetic Waves: Displacement Current and the General Form of Ampère's Law. Maxwell's Equations and Hertz's Discoveries. Plane Electromagnetic Waves. Energy Carried by Electromagnetic Waves. Momentum and Radiation Pressure. Production of Electromagnetic Waves by an Antenna. The Spectrum of Electromagnetic Waves.
The Nature of Light and the principles of ray Optics. Wave Under reflection. Wave Under refraction. Huygens's principle. Dispersion. Total Internal reflection.
Wave Optics. Young's Double-Slit Experiment. Waves in Interference. Diffraction and Polarization. Polarization of Light Waves
Elements of semiconductor physics. p-n junction, diode, transistor. | | | | | | |
| ΠΛΥ02022 | 2 | Προγραμματισμός II | Computer Programming II | The course aims to introduce the student to the logic of structured programming. The main aims are language constructions (repetition and branching sentences), functions, complex data types, input-output for files, direct access to memory through pointers and the creation of interconnected programs using headers. The goal is to understand the design of integrated programs, using the high level programming C language. | YES | Greek | | Required | 4 | 5 |

				After attending the course, students should: • Know and understand the use of programming functions in the programming C language. • Be familiar with the properties of pointers and their applications in calling function values, dynamic memory assignment and arrays and string management. • Know the properties and operation of binary files and text files, as well as the random access of binary files. • Implement complex algorithms using recursive programming functions. • Create interface and header files, as well as divide the code into individual files • Utilize the ability to write code, compile and execute multiple programs provided by a comprehensive development environment (IDE, free software).						
ΠΛΥ02033	3	Ηλεκτρικά Κυκλώματα	Electric Circuits	The course includes the fundamental principles, methods and laws that used in linear circuit analysis. Topics that covered are: fundamental electric circuit quantities, Ohm's law, Kirchhoff's current and voltage laws, series and parallel resistor combinations, voltage and current division, Thevenin and Norton equivalents, linearity and superposition, node and loop analyses in standard matrix format, Laplace Transform in circuit analysis and the transfer function in a circuit, transient response of simple RLC circuits, sinusoidal steady-state analysis, complex numbers,	YES	Greek		Required	5	5

				reactance and Impedance, ac power and power factor, resonance.						
ΠΛΥ02043	4	Λειτουργικά Συστήματα I	Operating Systems I	This course introduces the student to the Operating Systems theory and basic concepts. A brief description of each section is provided below. The concept of a process, processes states, process control block, race condition, methods for mutually exclusive operations, introduction to semaphores. Memory hierarchy, relocation, protection, partitioning, memory management (paging, segmentation), virtual memory, cache memory. File systems, basic concepts and role of file system, naming and file structure, file types, file access methods, file attributes, hard disks, partitions, tracks, sectors, clusters, logical disk management, FAT16, FAT32, i-node. I/O management, external devices and device controllers, device drivers, communication using interrupt mechanism, Interrupt Vector Table (IVT), Direct Memory Access (DMA), spooling, software independent from hardware. Case study MS-DOS, versioning, environment, commands, system files, boot sequence, Terminate and Stay Resident (TSR), executable files, Program Segment Prefix (PSP), conventional memory, Upper Memory Area (UMA), High Memory Area (HMA), extended memory, overlays, Expanded Memory System (EMS), File Allocation Table, Input/Output, device drivers. Case study Windows, versioning, Windows architecture, kernel, Executive, processes, memory, paging, NTFS, Master File Table (MFT), metadata, file attributes, NTFS directories, recovery from errors, volume management, important	YES	English	projects	Required	4	5

				Windows files.					
ΠΛΥ02053	5	Μαθηματικά II	Mathematics II	Discrete mathematics and basic calculus of real functions of a several real variables. Elementary discrete mathematics: sequences, series, recursive formulas, generating functions, difference equations Vectors, coordinate systems, elements of analytic geometry Functions of several variables, domains, limits, continuity Partial derivatives, composite and implicit functions, Jacobian Taylor series, extrema, saddle points Double integrals Triple integrals Vector analysis, gradient, divergence, rotation (curl), line integrals, surface integrals, Green/Gauss/Stokes theorems	YES	Greek	Required	3	5
ΠΛΥ02061	6	Θεωρία Πιθανοτήτων και Στατιστική	Probability Theory and Statistics	Fundamental probability theory and applications in statistics. Sample spaces, events, operations among events, mutually exclusive events Probability, definition, axioms, theorems, properties Permutations, combinations, permutations with dissimilar objects Conditional probability, multiplication theorem, total probability, Bayes theorem, statistical independence Random variables (discrete and continuous), probability mass and density functions, cumulative distribution function Mean value, variance Bernoulli, Binomial, Poisson, Hypergeometric distributions Uniform, exponential and Gaussian distributions Multivariate random variables	YES	Greek	Required	3	5

Course Number	A/A	Course Title (in Greek)	Course Title (in English)	Course Description	Erasmus		Method	Characteri zation	Hours per week	ECTS
		Semester 3								
ΠΛΥ03011	1	Δίκτυα Υπολογιστών	Computer Networks	The course provides an introduction to data networks. The basic principles and practices in computer networks are presented. Students are introduced to the concepts of : computer architectures, services and protocols, encapsulation, packet switching data encoding the data link layer, medium access techniques Local area networks technologies (Ethernet, Token Ring, Wireless LANs) The laboratory part of the course introduces students to the concept of: structured cabling networking commands Introduction to HTML	YES	Greek		Required	4	5
ΠΛΥ03023	2	Λειτουργικά Συστήματα II	Operating Systems II	The purpose of the course is to deepen the principles of operation, the inherent problems and the ways of dealing with them in modern Operating Systems. It aims to consolidate the basic algorithms that are applied to optimize the performance of PCs, and introduces the student to more complex concepts, problems and solutions. Issues such as process scheduling, deadlocks, memory management algorithms, advanced file system issues, and computer security issues are analyzed. It also delves deeper into the architecture, design and construction principles and the	YES	Greek		Required	4	5

				operation and capabilities of UNIX, for which a case study is performed. This study analyzes the history of Unix, its use and its basic commands, process implementation, process scheduling, memory, I/O, file system, Unix security, as well as selected administration issues.						
ΠΛΥ03033	3	Ψηφιακά Κυκλώματα	Digital Circuits	In this course, the student is introduced to the integrated circuits. The basic circuits of combinational and sequential logic are presented. Digital design using hardware description languages is introduced. A brief description of each section is provided below. TTL and CMOS integrated circuits, integrated circuits of typical logic gates. Implementation of combinational logic using integrated circuits, decoders (74138/9), coders (74148), multiplexers (74151), adders (7483), magnitude comparators (7485). Fast adders: carry look ahead, carry select, carry save. Multipliers, dividers, simulation of combinational logic. Brief introduction to hardware description languages, combination circuit design using VHDL. Sequential logic, latches, synchronous sequential logic, Flip-Flop type D (7474), Flip-Flop type JK/T (74112), counters (74192/3), shift registers (74194), Memories (ROM, Static RAM, Dynamic RAM). Algorithmic State Machines and Finite State Machines, simulation of sequential logic, sequential circuit design using VHDL. Digital circuit synthesis tools.	YES	Greek	(projects)	Required	5	5
ΠΛΥ03042	4	Δομές Δεδομένων	Data Structures	The course provides a systematic analysis of data structures, including linear lists, stacks, queues, pointers and dynamic data structures such as linked lists. Non-linear data structures such as binary trees, B-trees, tries are also analyzed. Memory	YES	Greek		Required	4	5

				demand is analyzed, the restrictions and efficiency of data structures are discussed. Comprehensive analysis of fast and slow sorting algorithms is presented, including bubble sort, insertion sort, selection sort, quicksort etc. Searching and recursive algorithms are explained. Hashing tables and graphs are also introduced. Finally, students will be given the opportunity to design and implement a program in C, using large data structures with random numbers and various sorting algorithms, testing the efficiency of each sorting technique.						
ΠΛΥ03051	5	Σήματα και Συστήματα	Signals & Systems	The students will study signals and systems of continuous and discrete time. • Definitions and categories of signals and systems • Periodic signals • Impulse response of linear systems • Convolution and properties of convolution for continuous time signals • Auto-correlation and cross-correlation • Stability in systems • Direct and inverse Fourier transform (properties, convergence) • Fourier series of periodic signals • Study of linear systems using the Fourier transform • Parseval theorem • Spectral power density • The Laplace transform and the inverse Laplace transform, Continuous time linear systems - Linear system transfer function. • Discrete time signals • Sampling theorem • Fourier series of discrete time signals (Properties)	YES	Greek		Required	3	5

ΠΛΥ03062	6	Αριθμητική Ανάλυση και Επιστημο-νικός Προγραμματι σμός	Numerical Analysis and Scientific Programming *	The course aims to provide students with the tools needed to solve well-known mathematical problems that cannot be solved in analytical ways (such as solving nonlinear equations, area calculation, data access problems, etc.). The use of the MATLAB software makes it possible to implement and study the methods presented in theory with scientific programming. After attending the course, the student will be able: • to manage floating point numbers in algorithms. • to identify types of errors in a problem • to choose the appropriate numerical method for solving a nonlinear equation. • to calculate interpolation values into data with the appropriate interpolation. • to predict values using appriximations • to calculate numerical integral (areas) with numerical integration. • to use MATLAB in scientific programming problems. • to select the appropriate method in each problem faced.	YES	Greek	Required	4	5
ΠΛΠ03073	7	Διοίκηση Επιχειρήσεων (προαιρετικό)	Business Administra-tion (facultative)		NO		Facultative	2	3

Course Number	A/A	Course Title (in Greek)	Course Title (in English)	Course Description	Erasmus		Method	Characterization	Hours per week	ECTS
		Semester 4								
ΠΛΥ04011	1	Τεχνολογίες Διαδικτύου	Internet Technologies	Internet Technologies presents the student with an introduction to the Internet and its services, applications, major protocols and tools. IP protocol. IP addressing, subnetting and supernetting. UDP. TCP. Flow control. Congestion Avoidance. Basic internet control functions, ICMP. IPv6. Fundamental interent applications, the Web, email, ftp. Domain Name System – DNS. Multicasting. Graph theory, spanning trees, path discovery. Bridges and Routers. RIP. OSPF. BGP. Case studies. VoIP, SIP.	YES	Greek		Required	4	5
ΠΛΥ04021	2	Τηλεπικοινωνιακά Συστήματα I	Communication Systems I	Students will study the basic principles of Telecommunication Theory. The basic analogue modulation schemes (AM amplitude modulation, FM frequency modulation). Emphasis is placed on the modulation and demodulation techniques used in the transmitters and receivers of telecommunication systems respectively. • Fundamentals of a communication system • Signal bandwidth • Normalized power and spectral power density • Auto-correlation of periodic and non-periodic waveform • Probability density function and cumulative distribution function • Noise and noise effects on telecommunication signals • AM amplitude modulation (transmitter and receiver) • FM frequency modulation (transmitter and receiver) • Sampling and quantization, Nyquist's theorem. • Pulse coding modulation (PCM)	YES	Greek		Required	4	5

				• Telecommunication transceivers • PCM signal multiplexing						
ΠΛΥ04033	3	Αρχιτεκτονική Υπολογιστών	Computer Architecture	The course aims at introducing students to the concepts of internal structure, architecture, organization, and implementation of modern computers and modern microprocessors. It emphasizes on the design and operation principles of computer systems and their subsystems, on the communication principles between subsystems and peripheral devices, on the computer subsystems' implementation technologies and the microprocessor programming in the assembly language level and also machine code level. The course analyzes topics such as basic and combinatorial digital circuits, structure and architecture of microprocessors, microprocessors' control units, internal structure and execution phases of machine code instructions, memory access methods, CISC/RISC architectures, control and interrupt signals, CPU-memory communication and addressing, CPU-peripheral I/O communication methods, memory organization and architecture, ROM and RAM memories and technologies, hardware error identification and correction codes, cache memory and basic computer and peripheral interconnection buses and technologies. Moreover, the course focuses on the internal structure and operation of the Intel 8088 microprocessor, its instruction set and its programming in assembly language and machine code. The course features a laboratory part where students systematically learn the Intel 8088's assembly language and programming environment, and develop programs of scaling	YES	Greek	(projects)	Required	4	5

				complexity.						
ΠΛΥ04042	4	Αντικειμενοστ ραφής Προγραμματι σμός	Object-oriented Programming	This course provides students with a comprehensive study of the object-oriented programming characteristics. The course emphasizes on the object paradigm including classes, inheritance, polymorphism, virtual functions, friend functions and templates. Students will also be given the opportunity to design and implement a complete object oriented application using the C++ programming language.	Yes	Greek		Required	4	5
ΠΛΥ04052	5	Ψηφιακή Επεξεργασία Σημάτων	Digital Signal Processing	Digital signal processing is a field of science and engineering that has grown rapidly over the past 30 years. This rapid development is a result of the significant advantages of digital computing technology and the integrated circuit industry. The learning objectives are an understanding of the basic principles of the area such as related mathematical tools, Linear Time Invariant Systems, their transformations and the design of simple digital filters. Finally, reference to the basic digital processing circuits that allow software integration that can more easily modify signal processing functions.	YES	Greek		Required	3	5
ΠΛΥ04063	6	Αναλογικά Ηλεκτρονικά	Analog Electronics	Introduction to the principles of basic semiconductor devices and their applications. Diodes, polarization circuits, Special purpose diodes, rectification, bridge rectifier, voltage regulation. Bipolar Junction transistor, biasing circuits, biasing with voltage divider, load lines, voltage amplifiers and voltage gain, feedback. Differential amplifiers, Operational amplifiers, the inverting amplifier, noninverting amplifier, adder and subtractor. The comparator.	YES	Greek		Required	5	5

Course Number	A/A	Course Title (in Greek)	Course Title (in English)	Course Description	Erasmus		Method	Characteri zation	Hours per week	ECTS
		Semester 5								
ΠΛΥ05012	1	Βάσεις Δεδομένων	Database Systems	General Description: This course includes introduction to the concepts, architecture and basic principles of organization and management of Databases Systems, design models, theoretical background, Database implementation methodology and Structured Query Language. Contents • Introduction to Databases (Introduction, the purpose of DB systems, History and Evolution DB). • Database Management Systems (DBMS, Data and users Advantages and Disadvantages, relational and non-relational systems, Hierarchical, Network) • Architecture of database systems (external level, conceptual level, data independence) • Modeling - The Entity-Relationship model (Notations, attributes, structural constraints, week entity types, Generalization) • The Relational Model - Transformation Scheme, Relational (Formalism, domains, relations, properties and relationships, structural constraints, Variations) • Logical Design and Normalization (Keys and Functional dependencies, first, second and third normal form). • Relational Algebra (View, Select, Cartesian product, renaming, Union, Intert, Difference, Additional Operators) • The SQL language (Data definition language commands, Create, Alter, Drop) • Modifying Data with SQL, (Insert, Delete, Update, Select) • SQL (Select-from-where, arithmetic expressions, Operations	YES	Greek	(projects)	Required	4	5

				with Strings,) • SQL (Rename, alias, Null Values) • SQL (Aggregate Functions, Grouping, having, subqueries, operators: some, all, exists) • SQL (Types domain, schema definition, Limitations) • Relational Database (Query by Example -QBE)						
ΠΛΥ05021	2	Θεωρία της Πληροφορίας	Information Theory	The course is an introduction to the Information Theory and Coding concepts. This knowledge is essential for the study and analysis of telecommunication systems, as well as the understanding of the data encoding techniques that lead to the compression of data. The following concepts are introduced during the course: Measure of Information Entropy. Mutual entropy, conditional entropy Transinformation Channel matrix, channel diagram Channel Capacity Basic channel types (ideal channel, binary summetric channel, erasure channel etc) Coding (Huffman, Arithmetic etc.)	yeS	Greek		Required	3	5
ΠΛΥ05031	3	Οπτικές Επικοινωνίες	Optical Communications*	1) Introduction and overview of Optical Fiber Systems 2) Optical fiber as a medium (General properties of optical wave, reflection and refraction, propagation modes in optical fibers, optical fiber attenuation, group velocity and dispersion, nonlinear effects in optical fibers, types and technologies of optical fibers). 3) Light sources in optical communications (light-emitting diodes, laser diodes, single frequency semiconductor lasers) 4) Photodetectors (PN and PIN photodiodes, avalanche photodiodes) 5) Optical amplifiers	YES	Greek		Required	4	5

				6) Passive optical components 7) Optical transmission system design 8) Coherent optical communication systems 9) Modulation for optical communications 10) Optical fiber networks (layers of communication networks, optical network architectures, passive optic networks, datacentre optical networks)						
ΠΛΥ05042	4	Περιβάλλοντα Ανάπτυξης Λογισμικού	Software Development Environments*	The course aims to introduce students to the application programming interfaces (API) and application development using different APIs. The students learn application development using objects from programming libraries, event-driven programming where the flow of program execution is determined by events and introduction to the Model-View-Controller model. MVC is an architectural pattern that separates an application into three main logical components: the model, the view, and the controller. Each of these components are built to handle specific development aspects of an application. MVC is one of the most frequently used industry-standard web development framework to create scalable and extensible projects. **Contents:** Introduction to modern programming environments, Visual C#, JavaScript, AJAX, MVC, Laravel framework	YES	Greek	(projects)	Required	4	5
ΠΛΥ05052	5	Μηχανική Μάθηση	Machine Learning*	Introduction and Basic Concepts. Supervised Learning Setup. Linear Regression. Weighted Least Squares. Logistic Regression. Netwon's Method Perceptron. Exponential Family. Generalized Linear Models. Gaussian Discriminant Analysis. Naive Bayes. Laplace Smoothing. Laplace Smoothing. Support Vector Machines.				Required	4	5

				Neural Networks - 1 Evaluation Metrics Bias - Variance. Regularization. Feature / Model selection. Deep Learning K-Means. GMM (non EM). Expectation Maximization. Factor Analysis. Principal and Independent Component Analysis.					
ΠΛΥ05063	6	Ευφυή Συστήματα Ηλεκτρικής Ενέργειας	Intelligent Electric Energy Systems*	The course aims at introducing students to the design and operation principles of Electric Energy Systems, from the stage of power production to the stage of the final power consumption. The course studies the principles and problems of electric power production, power transmission and distribution down to power consumption by single consumers, so as to give the student the necessary knowledge about all these phases in terms from a technical, financial but also social perspective. It focuses on modelling and analysis of electric energy systems: single-phase and three-phase circuits, real and reactive power, per-unit systems, electromechanical energy conversion, construction, modelling and characteristics of transformers, DC, induction and synchronous machines, electric energy transmission and distribution, modelling of transmission lines, system analysis, control of voltage, power and frequency. The course also aims at introducing students to the potentials of Computational Intelligence techniques in optimally solving problems derived from all stages of power production, distribution and consumption, for the optimal overall system performance.	YES	Greek	Required	3	5
ΠΛΠ05071	7	Στοιχεία Δικαίου και Κυβερνοηθική (Προαιρετικό)	Legislation and Cyber-ethics (facultative)		NO		Facultative	2	3

Course Number	A/A	Course Title (in Greek)	Course Title (in English)	Course Description	Erasmus		Method	Characterization	Εργαστήρια Hours per week	ECTS
		Semester 6								
ΠΛΥ06011	1	Τηλεπικοινωνιακά Συστήματα II	Telecommunication Systems II	Information bandwidth, Fourier series and Fourier transform Source coding, sampling and digitization of analogue waveforms. analogue to digital Converters (ADC), pulse code modulation (PCM), pulse amplitude modulation (PAM). Data compression and expansion according to ì-law and A-law. Communications networks and signalling protocols Äßêôõá åðéêïéíùíéþí (ITU standardized digital hierarchy, ISDN, RS232, ATM, in-brief) Communications link and sources of degradation Data transmission fundamentals, communications methods, binary and multi-level signalling, multi-level symbol operation Information transfer rate and symbol rate, channel capacity, Shannon-Hartley's theorem. Baseband data transmission. Intersymbol interference (ISI), pulse shaping for zero ISI, achieving a Nyquist channel response, Eye diagrams, raised cosine filtering Matched filtering. Bit error performance (BER) for baseband data systems. BER performance for matched filter detection. BER performance for unipolar and bipolar symbols. BER performance for multilevel signalling. Data coding (Gray, Manchester) Partial response signalling Bandpass digital modulation Binary amplitude shift keying (ASK), frequency shift keying (FSK), phase shift keying (PSK) Multi-level digital modulation, M-ary ASK, M-ary FSK and M-	YES	Greek		Required	4	5

				ary PSK Combined amplitude and phase modulation (QAM) Orthogonal frequency division multiplexing (OFDM) Multi-user digital modulation techniques (FDMA, TDMA, CDMA). Combined multiple access systems Modulation techniques for Optical Communications Systems (in-brief)					
ΠΛΥ06023	2	Προηγμένα Ψηφιακά Συστήματα	Advanced Digital Systems	Architecture of Field Programmable Gate Arrays (FPGAs). Hardware Description Languages with emphasis to VHDL. Design of digital filters, controllers and simple processors. Laboratory exercises with EDA tools. Design of combinatorial and sequential circuits. Design of Finite State Machines in VHDL. Circuit simulation using ModelSim. Implementation of VHDL testbenches. Design of systems on chip. System prototyping using low-cost FPGA devices.	YES	English	projects	Required	4	5
ΠΛΥ06032	3	Μεθοδολογία Προγραμματι σμού	Programming Methodology	The "Programming Methodology" module focuses on presenting solid programming principles and object oriented design techniques. A major part of the module is the discussion of good and bad object oriented designs and notions such as coupling and cohesion. Object oriented design patterns are also presented in this setting. The module makes a quick introduction to the Java language as well as UML, and uses them in order to present the examples discussed; the emphasis, however, is on design techniques and not programming language details. A major part of the module is the associated term project which is developed by teams of 3 or 4 people. Students will be requested to deliver a substantial piece of software that will showcase the design principles discussed. Optional assignments are also given that students can take in order to	YES	Greek		Required	4	5

				improve their final grades.						
ΠΛΥ06043	4	Αυτόματος & Ευφυής Έλεγχος Συστημάτων	Automatic and Intelligent Control Systems	The main goal of this lesson is to introduce the fundamental concepts of control systems to students. Students learn the basic notions of classical linear control systems, including concepts such as system description via differential equations, transfer functions, block diagrams and state space equations. Additionally, analysis and design concepts are presented such as poles and zeros, system stability and characteristics, Bode, Nichols and Nyquist diagrams, root locus etc. Also, the students get acquainted with the notions of neural and fuzzy control. Finally, in the laboratory, the students work with MATLAB's control systems package and Simulink.	YES	English	projects	Required	4	5
ΠΛΥ06052	5	Ειδικά Θέματα Βάσεων Δεδομένων	Special Topics in Databases	General Description: The aim of this course is to offer the appropriate knowledge for databases systems, special issues on Data Base Systems and new techniques. The students will be able to create and design applications with databases, manage, protect and transfer the data of databases. Contents Conceptual Models and Logic Models Implementation Normalization and Normal Forms, 1NF, 2NF, 3NF, NF-BC, 4NF, 5NF, Key NF Nested queries, integrity constraints and views in SQL. SQL Extensions (procedures, functions, triggers) DB systems recovery and transactions Concurrency Security Cryptography Methodology correlation and linking databases with visual programming applications. Object-oriented and Object-Relational Database	YES	Greek	(projects)	Required	4	5

				Indexes Modern Issues on Database Systems XML and ISON Introduction Introduction to Data Mining on Big Data						
ΠΛΕ06061	6	Μικροκυματι κές Επικοινωνίες	Microwave Communicati ons Engineering*	Basic concepts in Electromagnetics, Transmission Lines, Impedance Matching, Passive and Active Microwave Components. Electromagnetics review Transmission lines Microwave Network Analysis Basic microwave components Impedance matching and tuning Microwave filters Noise in microwave components Microwave amplifiers Microwave oscillators	YES	Greek		Elective	4	5
ΠΛΕ06073	7	Βιομηχανική Πληροφορική	Industrial Informatics	The main goal of this lesson is to introduce the main principles on design and development of industrial information systems. Students learn the applications of computer science in the industry, including sensors, industrial control systems, programmable logic controllers, supervisory control and data acquisition systems, simulation environments, industrial network systems, fault detection and analysis systems and robotics. In the laboratory, students get acquainted with SCADA and industrial simulation systems.	yeS	English	projects	Elective	4	5
ΠΛΕ06082	8	Γραμμικός Προγραμματι σμός & Βελτιστοποίη ση	Linear Programming and Optimisation	The course aims to give students the tools they need to solve optimization problems with the help of Linear Programming. The use of the LPSolve software makes it possible to implement and study the methods which presented in the theory. After attending the course, the student will be able : • to model an optimization problem as Linear Programming	YES	Greek		Elective	4	5

				Problem. • to design the possible area and identify the optimal solution. • to apply the Simplex method • to model and solve problems of integer and binary programming. • to recognize and solve transportation problems and their specific cases • to using LPSolve software in linear programming problems.						
ΠΛΠ06092	9	Διδακτική και Τεχνικές Παρουσίασης (προαιρετικό)	Teaching and Presentation Techniques (facultative)	1. **Pedagogical and psychological problems in teaching** The concept of teaching Epistemology of knowledge, genesis of knowledge, consolidation of knowledge and interdisciplinary and interdisciplinary approach to knowledge Teaching relationship: knowledge - student – teacher Psychological and epistemological dimension of teaching General and specific purposes of teaching Teaching metaphor of scientific concepts The essence of the structure of the content of teaching Causes and purposes, activity and effect, tracking students' knowledge and working with help 2. **Teaching educational technology** Basic principles of scientific thinking (consciousness, activity, representation, accessibility, systematization and succession, personal tactics and differentiation, duration of knowledge and teaching aids) Qualifications of scientific thought (flexible, standardized, depth, expediency, reasonableness, breadth, critical thinking) Methods of scientific knowledge (observation and experiment, analysis, isolation and synthesis, comparison, generalization, concretization and specialization, modeling).	NO			Facultative	2	

				Teaching technology (oral speech, listening, written speech, reading, support material, teaching contract, extracurricular assistance, e-book, dynamic presentations, online competition, use of educational software, educational social networks, lesson file).						

3. **Defining educational relationships**

Teaching methods and techniques
Teaching processing of the educational content of the courses
Course cycle
Student, teacher and system evaluation
Scale of graded performance evaluation criteria
Competition preparation – Rating
The process of communication
Logical and creative thinking for the teacher
Teacher-knowledge-student relationship
Educational curricula

4. **Presentation techniques**

Construction of research work
Teaching presentation structure
Writing a bibliography

Semester 7

Course Number	A/A	Course Title (in Greek)	Course Title (in English)	Course Description	Erasmus		Method	Characterization	Hours per week	ECTS
ΠΛΥ07011	1	Δίκτυα Κινητών Επικοινωνιών	Mobile Communication Networks	Wireless communications systems. The evolution of mobile communications. Mobile communication systems. Overview of cellular 2G, 3G (UMTS, CDMA2000 1xRTT, TD-SCDMA), 4G network system architecture, 5G network and future evolution	YES	Greek		Required	4	5

| | | | | Spectrum requirements for the development of mobile communication systems.
2G network: The principle and application of the frequency re-use concept, frequency planning and spectrum requirements for network development, handover, roaming, techniques for increasing system capacity, trunking theory, sizing cells for given capacity and availability, GSM technical specification, network architecture and operation.
UMTS network: Application of CDMA in the UTRAN, Rake Receiver, Error Probability, Power Control, Multiple access, Handovers, Coding and Modulation in Up-link and Down-link, Cell link-budget, UMTS technical specification, network architecture and operation
LTE network (general description): MIMO system, TDD & FDD, Frame & subframe, Physical & Transport channels, Bands and Spectrum, UE categories, SAE Architecture, LTE SON, VoLTE, SRVCC, LTE-M, LTE-U / LAA, Security
Antennas and propagation for mobile communications (MIMO Multiple Input Multiple Output and AAS, Adaptive Antenna Systems)
Large scale propagation loss
Fading in wireless channels (large scale fading, small scale fading, fast and slow fading, frequency selective fading and flat fading, Rayleigh and Rician fading) and methods of reducing fading. | | | | | | |
| ΠΛΥ07023 | 2 | Προγραμματι σμός Μικροελεγκτ ών | Microcontroll er Programming * | Introduction to embedded systems, introduction to microcontrollers and digital signal processors (DSP), microcontroller applications.
Elements of microcontroller architecture, data bus, address bus, clock frequency, instruction types, Arithmetic Logic Unit (ALU), internal registers, interrupts, memory management, | YES | English | projects | Required | 4 | 5 |

				addressing modes. Case study on 8-bit PIC microcontrollers. Memory map, Special Function Registers (SFRs), General Purpose Registers (GPRs), assembly instruction set, physical programming and configuration bits, C compilers. I/O management, interrupt vector, EEPROM, ADC. PIC microcontroller peripherals. Case study on 8-bit AVR microcontrollers, application examples. Case study on Arduino (based on AVR 8-bit). Introduction to Arduino platform, Arduino hardware versions, programming environment. Applications with Arduino.					
ΠΛΥ07032	3	Τεχνολογία Λογισμικού	Software Engineering	The "Software engineering" module focuses on presenting the software development activities that are often overlooked in other programming modules. Whereas other modules such as "Programming Methodology" focuses on design issues, and modules such as "Introduction to programming" focuses on implementation issues, this module takes a step back and looks into activities such as "testing", "requirements gathering" and "software development methodologies". Its main task is to show students how to organise their work and deliver a quality product at the end. To this end students are introduced to agile methodologies such as Scrum and learn how to follow them applying time-boxing, writing tests and implementing a continuous delivery workflow. A major part of the module is the associated term project which is developed by teams of 7 or 8 people. Students will be requested to deliver a substantial piece of software following a workflow that resembles as much as possible that of a professional setting. They are expected to use any tools for this (version control, build systems etc) in order to deliver, on time, a working product that has been tested thoroughly.	YES	Greek		Required	4	5

ΠΛΥ07041	4	Ασφάλεια & Διαχείριση Δικτύων	Network Security and Management	This is a two part course focusing on one hand on data and networking security issues and on the other hand acting as an introduction in network management. Part 1. • Computer Security Concepts. Malware types. Access Control models. Cryptographic algorithms and tools. Authentication methods. PKI. Internet Security. Kerberos, PGP, IPsec, Web Security (TLS/SSL). Perimeter defense. Firewalls, secure SNP. Intrusion Detection. Forensics. Part II • Network Management, protocols, tools, platforms. Alarms – troubles – warnings, performance – traffic – ticketing, distributed management. OSI management (X.7xx), TMN Framework, Internet management (SNMP, RMON, …), Inernetworking (MIB's), Applications (Corba, OMG), TINA, Web Based Management.	YES	English	projects	Required	4	5
ΠΛΥ07052	5	Προγραμματιστικές Εφαρμογές Στο Διαδίκτυο	Internet Programming Applications	The main goal of this lesson is to introduce the main principles of web programming to students. During the lesson, (Hypertext Markup Language) and CSS (Cascade Style Sheet) are being introduced, as well as the programming language PHP and the main concepts of database design. Also, JavaScript is being introduced. Finally, content management systems such as WordPress and Drupal are taught. In the laboratory, students work with WAMP (Windows, Apache, MYSQL, PHP) platforms, and develop a full web-based application as a project.	YES	Greek		Required	4	5
ΠΛΕ07062	6	Προσομοίωση και Αναγνώριση Συστημάτων	System Simulation and Recognition	Fundamental concepts of mathematical modeling for physical phenomena. Introductory concepts Analytic (Mathematical) models. Analytic solution of elementary differential equations Cobweb models	YES	English	projects	Elective	4	5

				Car suspension model, RLC circuit model Petri nets Random number generators Randomness tests Random samples Monte Carlo simulation Numerical solution of differential equations: Euler, Runge-Kutta methods Phase space, trajectories, solution behavior Volterra, epidemic and pendulum models Laboratory: applications of Matlab/Simulink software					
ΠΛΕ07073	7	Συστήματα Πολυμέσων	Multimedia Systems	The course deals with the basic concepts and modern techniques of the multimedia technology field that is evolving at a dizzying pace. Multimedia systems are composed of heterogeneous disciplines of informatics, telecommunications and physics. Upon successful completion of the course the student will be able to: Report elements on digital representation of multimedia information. Explain and apply techniques for multimedia information compression, storage and retrieval. Report information on multimedia devices, main international standards, and basic multimedia development applications.	YES	Greek	Elective	4	5
ΠΛΕ07081	8	Ασύρματες Επικοινωνίες	Wireless Communications	Basic concepts in Wireless Communications and their applications. Applications and requirements of wireless communications services Technical challenges in wireless communications Noise and interference Link budget The wireless channel	YES	Greek	Elective	4	5

Course Number	A/A	Course Title (in Greek)	Course Title (in English)	Course Description	Erasmus		Method	Characterization	Hours per week	ECTS
				Propagation mechanisms Wide-band and directional wireless channel characterization Wireless channel models Antennas Differential reception and transmission Multiple antenna systems Standardised wireless systems						
ΠΛΠ07091	9	Παιδαγωγικά (Προαιρετικό)	Pedagogy (facultative)		NO			Facultative	2	0
		Semester 8							Εργασ τήρια	
Course Number	A/A	**Course Title (in Greek)**	**Course Title (in English)**	**Course Description**	**Erasmus**		**Method**	**Characterization**	**Hours per week**	**ECTS**
ΠΛΕ08012	1	Μεταγλωττισ τές	Compilers	This course introduces a number of important concepts concerning the design and implementation of programming language compilers. Concepts that are discussed are compiler's structure, lexical analysis, parsing, syntax-directed translation, abstract syntax trees, semantic analysis, types and type checking, intermediate languages, program analysis, program optimization, symbol table, code generation and runtime systems. On successful completion of this course, students will be able to deeply understand how a program written in a high-level language is systematically translated into a program written in low-level assembly language more suited to machines. In addition, students will be able to construct small scale compilers by using a set of free tools.	NO			Elective	4	4

| ΠΛΕ08022 | 2 | Εξόρυξη Γνώσης | Data Mining | Data mining is usually associated with the analysis of the large data sets present in the fields of big data, machine learning and artificial intelligence. The process looks for patterns, anomalies and associations in the data with the goal of extracting value. Here is the list of important areas where data mining is widely used: Healthcare, Market Basket Analysis, Manufacturing Engineering, CRM, Fraud Detection, Intrusion Detection, Customer Segmentation, Financial Banking.
Contents
Introduction to data mining techniques. a) data types b) problems, c) applications, d) general data analysis and processing techniques.
Data pre-processing: a) data cleaning, b) data transformation, Clustering: a) introduction to clustering methods, b) distance measures, c) k-means, d) hierarchical clustering.
Data classification: (a) introduction to classification methods, (b) decision trees, (c) statistical techniques, (d) overfitting, (c) missing values, (d) model evaluation indexes, (e) classifiers Bayes classifiers, k-nearest neighbors f) classification in multidimensional time series data
Association rules: a) item sets b) support b) confidence c) a-priori algorithm
Dimensionality reduction techniques: Feature selection algorithms a) wrappers, b) filters, c) embedded.
Knowledge discovery with Data Warehouses
Applications: Data mining techniques on biomedical data, business data, images data, text data and the Internet data.
Google Analytics, Bussiness Analytics | YES | Greek | (projects) | Elective | 4 | 5 |
| ΠΛΕ08033 | 3 | Εισαγωγή στη Ρομποτική | Introduction to Robotics | The main goal of this lesson is to introduce the fundamental concepts of robotics to students. Students learn the basic | NO | | | Elective | 4 | 5 |

				notions of robotics, including concepts such as kinematics and inverse kinematics, robotic control systems, and robot dynamics. Also, the students get acquainted in the laboratory with different robots and robotic design/programming software.						
ΠΛΕ08041	4	Ειδικά Θέματα Δικτύων Η/Υ	Selected Topics in Computer Networking	The course aims at developing the skills to design, configure, manage and troubleshoot modern computer networks. The course provides students with hands on experience through the use of computer network simulators (CISCO packet tracer and GNS3) and real equipment (Switches and Routers). Students will be introduced on how to configure services: IPv4 addressing IPv6 addressing Network Address Translation (NAT) RIPv1 and 2 OSPF EIGRP SNMPv2, SNMPv3 Access Control Lists (ACLs) Switch Security Virtual LANs (VLANs) VTP, Router on a stick VPNs, PPP etc	YES	English	projects	Elective	4	5
ΠΛΕ08052	5	Ψηφιακή Επεξεργασία Εικόνας	Digital Image Processing	Introduction and organization, physics of vision, resolution, impulse response. Viewing digital images, bits and bytes, raster scan format, quantization. Linear systems, matrix transformations, scaling, translation and rotations. Scaling, translation and rotation, sums and differences. Contrast and grey levels, histograms, Gaussian and other non-linear stretches. Convolution, simple filters, edge detection. The frequency domain, power spectral density, the FFT. Digital				Elective	4	5

				filtering, image enhancement, noise. Fourier transforms and the frequency domain, filters. Color representation, RGB, HSI, 24 bit and 8 bit color tables. 3D information, perspective plots. Image morphing. Interpolation. Fitting smooth functions to sparse data, least-squares. False color images, principle components analysis						
ΠΛΕ08061	6	Τηλεπικοινων ιακή Πολιτική & Ρυθμιστικό Περιβάλλον	Telecommuni cations Policy and Regulatory Environment *	Aim: This course addresses the development of the communications industry within the technical, legal and economic framework imposed both by states and international bodies. Special emphasis is given into the technical issues relating to policy making and regulation of radio communication applications. Course description: The International Telecommunication Union Historical development Purpose and function Structure (Sectors: ITU-T, ITU-R, ITU-D, Administrative structure, Study Groups) The International Table of Frequency Allocations Services and interpretation of the Table The Greek Table of Frequency Allocations Need for Standards and Regulation of Radio Communications The European Telecommunications Standards Institute (ETSI) Radio Regulations Interaction and interference between radio applications Basic bandwidth definitions Basic electric field definitions Radio noise Radio Spectrum Management International Issues - Coordination of services National Issues	YeS	English	projects	Elective	3	5

				Radio Spectrum Management Policy Modes of Radiowave Propagation and prediction methods Groundwave Skywave Spacewave Licensing of Telecommunication Services General and Special Licenses The unbundling of the Local Loop The Economics of Spectrum License Fees Licensing mechanisms for rights of access to spectrum Comparative Bidding Lottery Auctions and variants The Radio and Telecommunications Terminal Equipment (R&TTE) Directive (1999/5/EC) Key ICT market and regulatory trends Fourth-generation regulation: A new model of regulation for the digital ecosystem Managing white spaces (managing digital dividends) Interconnection Charging models in a national broadband network environment Digital broadcasting and online delivery Digital transactions in today's smart society The need for more IP addresses						
ΠΛΕ08073	7	Γραφικά Υπολογιστών	Computer Graphics*	The course deals with the basic concepts and modern techniques of the computer technology field which is evolving at a dizzying pace. Computer graphics are applied in many different areas of science and technology. Upon successful completion of the course the student will be able to: Report on the history and development of computer graphics.	YES	Greek		Elective	4	5

				Explain line, circle and polygon drawing algorithms, clipping and transformations. Apply these algorithms and evaluate them. Explain the concepts and techniques used in 3D computer graphics, including transformations, hierarchical modeling, color, lighting, and texture mapping. Apply algorithms and techniques to 3D graphics and explain the relationship between 2D and 3D versions of such algorithms. Use the OpenGL graphics API and related tools and evaluate and develop programs based on OpenGL and related application development tools.					
ΠΛΕ08081	8	Δορυφορικές Επικοινωνίες	Satellite Communications	Basic concepts in Satellite Systems, Satellite Links, Satellite Networks. Basic components of a satellite communications system Satellite orbits Radio spectrum regulations Satellite services Satellite trends Base-band signals and quality of service Up-link, down-link and total performance Inter-satellite links Satellite networks and protocols	YES	Greek		Elective	4	5
ΠΛΕ08093	9	Συστήματα Μετρήσεων	Measurement Systems*	Digital measurement systems. Characteristics of sensors. Signal conditioning and signal converters (Analog to Digital and Digital to analog). Sensor calibration. Temperature pressure, force, speed and acceleration sensors. Systems for signal acquisition. Specifications of computer hardware for measurement and instrumentation. Sensor interfaces and data transfer. Supervisory control and data acquisition. Measurement software. Laboratory exercises with	YES	English	projects	Elective	4	5

Course Number	A/A	Course Title (in Greek)	Course Title (in English)	Course Description	Erasmus		Method	Characterization	Hours per week	ECTS
				LabVIEW software and NI instrumentation hardware.						
ΠΛΕ08103	10	Ηλεκτρικές Μηχανές και Ηλεκτρονικά Ισχύος	Electrical Machines and Power Eletronics*	The course combines the traditional fields of electrical machines with the modern technologies in the field of control with power electronics techniques. Topics that covered are: DC machines and transformers, AC machines and rotating magnetic fields, synchronous machines, induction machines, variable frequency control of AC motors, power electronics technology, devices and applications, DC choppers and switched-mode regulators, AC controllers and cyclo-converters, DC link DC-AC inverters, quasi-square wave and PWM operation, electronic drive circuits.	YES	Greek		Elective	4	5
ΠΛΠ0811Κ	11	Πρακτική Άσκηση (Προαιρετική)	Internship (facultative)		NO			Facultative		10
		Semester 9								
Course Number	A/A	**Course Title (in Greek)**	**Course Title (in English)**	**Course Description**	**Erasmus**		**Method**	**Characterization**	**Hours per week**	**ECTS**
ΠΛΕ09013	1	Μικροηλεκτρονική και Σχεδίαση VLSI	Microelectronics and VLSI Design*	In this course, fundamental concepts of Microelectronics and VLSI design are provided. Semiconductor theory and CMOS technology is introduced to the student. A brief description of each section is provided below.	NO			Elective	4	5

				Semiconductors theory, free electrons, holes, semiconductor devices, p-n junction, BJTs, MOSFETs. Introduction to CMOS technology, MOS transistor, CMOS logic, logic circuit design, Logic Gates design, sequential circuits, physical design, layout. Passive and active elements, static power, dynamic power, low power architectures. Combinational circuit design, sequential circuit design, pipelining, datapath subsystems, addition/subtraction, multiplication, logic operations. Memories, Static RAM, Dynamic RAM, Serial Access Memories (shift registers, LIFO/FIFO queues), Programmable Logic Arrays (PLAs), clocks, Phase Locked Loops (PLLs). Design and simulation software tools.						
ΠΛΕ09023	2	Τεχνολογίες Πράσινης Ενέργειας	Green Energy Technologies *	The course includes the main technologies for the exploitation of green energy sources, using the fundamental scientific principles. Topics that covered are: fundamental principles of heat transmission, fluid mechanics and solid-state physics applying to green energy technologies, nature and measure of solar radiation, technologies for the utilization of solar radiation in various thermal applications, technologies of photovoltaic cells and design photovoltaic systems, nature and measure of wind energy, technologies of wind turbines and design wind systems, hydraulic energy, technology of hydro turbines, design hydroelectric systems, connect green energy technologies to the electricity grid, various energy storage techniques.	YES	Greek		Elective	4	5

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ΠΛΕ09033 3		Εξελικτική Υπολογιστική	Evolutionary Computation	The course aims at introducing the student to the theory and practice of Evolutionary Computation that comprises a new but developing sector of Computational Intelligence that endorses a large set of powerful tools for search and optimization in difficult real-world problems, where analytical or other deterministic methods do not exist. The course analyzes the operating principles of evolutionary algorithms, their history, and their different types and versions. The course describes the theory and operating principles of Genetic Algorithms, their building blocks, and their implementation techniques for real-world problems that can be of various forms (continuous variable, combinatorial, multi objective and constrained ones). The course analyzes special E.A. implementations such as Learning Classifier Systems and Parallel Genetic Algorithms. Other Evolutionary techniques are also discussed, such as the Evolution Strategies, Evolutionary Programming, Genetic Programming, Evolvable Hardware, Ant Colony Optimization, Artificial Immune Systems, Memetic Algorithms, Cultural Algorithms and Artificial Life algorithms. The course features a Laboratory part, where students systematically build versions of a Genetic Algorithm of increasing completeness, in the ANSI C language, and apply them to benchmark and real world problems.	YES	Greek	(projects)	Elective	4	5
ΠΛΕ09041 4		Προηγμένες Δικτυακές Τεχνολογίες	Advanced Data Networking Technologies *	The course aims at introducing students to the modern technologies and protocols used in modern networks such as: Quality of Service, Software Defined Networks, MPLS, Metro Ethernet etc. More specifically, students will be introduced to: QoS, IntServ, DiffServ QoS in Wireless LANs	NO			Elective	4	5

ΠΛΕ09051		Υπολογιστικός Ηλεκτρομαγνητισμός	Computational Electromagnetics*	MPLS Metro Ethernet Scheduling (FIFO, PQ, WFQ, CBQ) SDNs, Openflow, OpenFlow Controllers and Tools, Cisco APIC-EM, Network Function Virtualization (NFV). Data Center Technologies, Data Center Ethernet, Multi-Tenant Isolation and Network Virtualization in Cloud Data Centers. Server Virtualization, Storage Virtualization, Carrier Ethernet, Metro Ethernet. Application Delivery Networking, Virtual Bridging, Big Data, Networking Issues for Big Data, LAN Extension and Virtualization using Layer 3 Protocols, Internet of Things (IoT), Networking Protocols for IoT. Ad Hoc Routing						
ΠΛΕ09051	5	Υπολογιστικός Ηλεκτρομαγνητισμός	Computational Electromagnetics*	Mathematical methods for computations in electromagnetic problems. Finite Differences in Frequency Domain (FDFD) Finite Difference Equations Computational errors Solutions of Helmholtz, diffusion, Poisson and Laplace equations Finite Differences in Time Domain (FDTD) Solution of diffusion and wave equations Implicit and explicit algorithms Numerical stability and error propagation Solution of Maxwell's equations in 1, 2 and 3 dimensional spaces Method of Auxiliary Sources (MAS) Green's functions in 2 and 3 dimensions Elementary currents and auxiliary sources Boundary conditions and linear systems	YES	English	projects	Elective	3	5

				Solution of linear systems and computational accuracy/condition number Method of Moments (MoM) Linear spaces and operators Basis and weighting functions Method of weighted residuals Galerkin, point matching and least squares methods Finite Element Method (FEM) Discretization of solution space Structured and unstructured meshes Interpolation functions Equation construction via calculus of variations and weighted residuals						
ΠΛΕ09061	6	Τηλεπικοινων ιακές Διατάξεις	Telecommuni cation Devices*	The students will study the electronic devices and the sub-systems that are used to design telecommunication transmitters and receivers. • Telecommunication transmitter and receiver subsystems (RF radio frequency subsystem , IF intermediate frequency subsystem, Baseband subsystem) • Receiver architectures: heterodyne, homodyne, sub-sampling receivers • Telecommunication receiver performance parameters: noise figure, compression point (IP2), inter-modulation and third-order intercept point (IP3), spurious receiver response. • Telecommunication transmitter performance parameters: frequency stability and spurious signals, output power efficiency, inter-modulation. • Low noise amplifiers (RF and IF Receiver) • Power Amplifiers (Transmitter) • Phase Locked Loops (PLL) • Direct Digital Synthesizer (DDS) • Modulators for transmitters and receivers	YES	Greek		Elective	4	5

				• Analogue to digital signal converters and digital to analogue signal converters (ADC, DAC) • Digital telecommunications signal processors (ASIC, ASSP, FPGA) • Software Defined Radio (SDR)							
ΠΛΕ09071	7	Ευρυζωνικά Δίκτυα	Broadband Networks	The students will study in depth modern broadband network technologies. After completing the course, the students will be able to design the physical layer (PHY) and the media access control layer (MAC) of broadband networks. • Basic principles of Orthogonal Frequency Division Multiplexing (OFDM) • Orthogonal multiple access technique (OFDMA) • Digital Subscriber Line (x-DSL) • Distributed-Queue Dual-Bus Network (DQDB) • WLAN IEEE 802.11x Physical Layer • WiMAX IEEE 802.16x Physical Layer • WiMAX MAC Layer • Key features of LTE and LTE-Advanced Technology • Key features of 5G Broadband Networks	YES	English	projects	Elective	4	5
ΠΛΕ09082	8	Αλγόριθμοι και Πολυπλοκότη τα	Algorithms and Complexity*	Introduction of formal techniques to support design and analysis of algorithms. Emphasizing on both the underlying mathematical theory and practical considerations of efficiency. Asymptotic analysis of time complexity. Algorithms and advanced data structures for searching and sorting lists, Graph algorithms, Complexity of algebraic operations, Automata and string algorithms, Introduction to complexity theory, Parallel and distributed algorithms.	NO			Elective	3	5
ΠΛΕ09092	9	Επαυξημένη Πραγματικότ ητα	Augmented Reality*	The objective of this course is to teach all important technologies that are used in state-of-the-art AR, Skype, and YouTube video and multimedia products and services. This includes the advanced video and real-time multimedia	NO			Elective	3	5

Course Number	A/A	Course Title (in Greek)	Course Title (in English)	Course Description	Erasmus		Method	Characterization	Hours per week	ECTS
				delivery mechanisms based on H.264/MPEG-4 AVC, MPEG-DASH, CDN, and mobile CDN. World of business and products are driven to be more and more video and multimedia oriented. Having knowledge of these core technologies will enable you to design video multimedia technology products, services, and business.						
ΠΛΕ09102	10	Σχεδιασμός και Ανάπτυξη Πληροφοριακ ών Συστημάτων	Design and Development of Information Systems*	Information systems design and development revolves around accomplishing a project. A project is a temporary endeavour that provides a solution or fulfils a need in a company. Information systems design and development provides the necessary framework to do just that.	NO			Elective	4	5
ΠΛΕ09112	11	Διεπαφές Ανθρώπου - Μηχανής	Human-Machine Interfaces*	For product solutions (commercial, industrial, medical etc) to work effectively, the industrial designer needs to design for the ergonomics relating to the human machine interface and the psychology that drives the emotional and action responses of the user to the product. In this course students study and evaluate current human machine interfaces, redesign and test examples of current products and, through project based learning, design for innovative interface interaction. The project outcomes are achieved through the application of research, design thinking, electronics and programming.	NO			Elective	3	5
		Semester 10								
Course Number	A/A	Course Title (in Greek)	Course Title (in English)	Course Description	Erasmus		Method	Characterization	Hours per week	ECTS
ΠΛΥ1001Κ	1	Διπλωματική Εργασία	Diploma Thesis		YES	English		Required		30