

MODULE OUTLINE

1. GENERAL INFORMATION

SCHOOL	SCHOOL OF SCIENCE AND TECHNOLOGY		
PROGRAM COURSE	INFORMATICS		
LEVEL OF STUDY	UNDERGRADUATE		
MODULE CODE	PLI-37	YEAR OF STUDY	4 th
MODULE TITLE	Informatics and Education		
INDEPENDENT TEACHING ACTIVITIES <i>in case credits are awarded for separate components/parts of the course, e.g. in lectures, laboratory exercises, etc. If credits are awarded for the entire course, give the weekly teaching hours and the total credits</i>		HOURS	CREDIS
Weekly teaching hours * 32 weeks		16-18	20 ECTS
COURSE TYPE <i>Background knowledge, Scientific expertise, General Knowledge, Skills Development</i>	Scientific expertise Optional		
PREREQUISITE MODULES:	No		
LANGUAGE OF INSTRUCTION AND EXAMS	GREEK		
THE MODULE IS OFFERED TO ERASMUS STUDENTS	No (due to annual duration of the module)		
MODULE WEBSITE (URL)	https://www.eap.gr/education/undergraduate/computer-science/topics/#plirof_ekpaideusi Each module has its own space in the Learning Management System of EAP (http://study.eap.gr), with controlled access (use of code) for students and teaching staff.		

2. LEARNING OUTCOMES

<p>Learning Outcomes</p> <ul style="list-style-type: none"> The course learning outcomes, specific knowledge, skills and competences of an appropriate (certain) level, which students will acquire upon successful completion of the course, are described in detail. It is necessary to consult:
<p><i>PLI-37–I Didactics of Informatics</i></p> <p>a) On successful completion of the study of the first volume students will know:</p> <ul style="list-style-type: none"> the role of Informatics in Education the role of Informatics in Greek Education advanced concepts of Didactics of Informatics (learning structural and object oriented programming, psychology of programming)

- the role informatics as a subject matter in education
- specific issues relative to the Didactics of Information focused on structural and object oriented programming

b) On successful completion of the study of the first volume students will know:

- the role of Informatics as a cognitive discipline in alignment with the principles of pedagogy
- the pedagogical and didactical approaches and principles of Informatics and ICT at all levels of an education system

c) On successful completion of the study of the first volume students will know:

- design learning activities and educational scenarios in order to teach informatics as a subject matter
- use appropriate educational software in the teaching of informatics
- apply and evaluate learning activities and educational scenarios into teach informatics as a subject matter

PLI-37–II Informatics in Education

a) On successful completion of the study of the second volume students will know:

- the pedagogical models and approaches concerning the introduction of Information and Communication Technologies in Education
- the evolution of Informatics in Education as different phases
- the Learning Theories (behaviorism, constructivism, socio-cultural theories activity theory) and Information and Communication Technologies (ICT)
- the role of Information and Communication Technologies in teaching and learning (teaching machines, computer assisted learning, microworlds, multimedia and hypermedia learning, virtual reality, e-learning, simulations, modelling, Logo, educational robotics, edutainment).
- the learning theories and instructional strategies integrated with Information and Communication Technologies (ICT)
- the basic principles of communication and interaction between the humans and the computer
- the basic principles of design and evaluation of the education software

b) On successful completion of the study of the second volume students will know:

- the concept of educational software and its usefulness in the educational process
- the concept of open-ended computing environment and its usefulness in the teaching and learning process
- theoretical issues and principles of educational software: principles of instructional design and evaluation of educational software

c) On successful completion of the study of the second volume students will know:

- use appropriate educational software in teaching subjects in various learning areas in primary and secondary education
- use e-learning and distance learning environments in teaching and learning
- consider on the educational applications of the Information and Communications Technologies (ICT)
- design learning activities and educational scenarios for teaching and learning in the curricula of primary and secondary education
- design learning activities with e-learning environments

PLI-37–III Design of Educational Software

a) On successful completion of the study of the third volume students will know:

- the principles of design educational software
- the principles of design interfaces and navigation, content and interaction
- the models for the development of education software
- the tools for the development of education software
- issues related to digitalization of sound, image and video
- issue related to documentation of software
- the principles applied for the evaluation of software
- the principles applied for the pedagogical use of the software
- the issue related to the technological evaluation of the software
- the basic principles related to the qualitative assurance of the educational software

b) On successful completion of the study of the third volume students will know:

- the purpose of designing educational software
- the purpose of evaluating educational software
- the purpose of quality control and assurance of educational software

c) On successful completion of the study of the third volume students will know:

- design multimedia materials for educational use
- design simple educational applications e-learning
- use e-learning tools to design distance learning applications
- develop distance and e-learning applications to teach informatics
- evaluate educational software
- evaluate e-learning environments
- evaluate distance learning applications
- apply quantitative and qualitative methods, techniques and tools for the evaluation of educational software

General Competences

Taking into consideration the general competences that students/graduates must acquire (as those are described in the Diploma Supplement and are mentioned below), at which of the following does the course attendance aim?

<i>Search for, analysis and synthesis of data and information by the use of appropriate technologies,</i>	<i>Project planning and management</i>
<i>Adapting to new situations</i>	<i>Respect for diversity and multiculturalism</i>
<i>Decision-making</i>	<i>Environmental awareness</i>
<i>Individual/Independent work</i>	<i>Social, professional and ethical responsibility and sensitivity to gender issues</i>
<i>Group/Team work</i>	<i>Critical thinking</i>
<i>Working in an international environment</i>	<i>Development of free, creative and inductive thinking</i>
<i>Working in an interdisciplinary environment (Other.....citizenship, spiritual freedom, social</i>	<i>.....</i>
<i>Introduction of innovative research</i>	<i>awareness, altruism etc.)</i>

Search for, analysis and synthesis of data and information by the use of appropriate technologies
 Adapting to new situations
 Decision-making
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 Social, professional and ethical responsibility and sensitivity to gender issues
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 Respect for diversity and multiculturalism

3. MODULE CONTENT

The purpose of this thematic area is to explore the issue of the integration of Information Communication Technologies in education. The main topics which analyze and discuss this thematic area consist of: computer-assisted learning, learning theories, educational software, open learning environments, computer science in education, teaching computer science, programming as a learning tool in education, educational software, tools for developing educational models, evaluation of educational software, prototyping, and quality control.

Cognitive subjects of module:

1. Didactics of ICT
2. ICT and Education
3. Design of Educational Software

4. TEACHING METHODS--ASSESSMENT

MODES OF DELIVERY <i>Face-to-face, in-class lecturing, distance teaching and distance learning etc.</i>	Distance education with five Group Counseling Meetings (OSS) during the academic year on weekends.
USE OF INFORMATION AND COMMUNICATION	We use : Remote meetings tools (skype for business), Presentation software (e.g. power point),

<p>TECHNOLOGY <i>Use of ICT in teaching, Laboratory Education, Communication with students</i></p>	<p>Specialized software in the subjects under study (Arduino platform, Scratch, etc).</p> <p>Additionally, the students use office automation tools, web browsers and e-reader for digital books.</p>												
<p>MODULE DESIGN <i>Description of teaching techniques, practices and methods: Lectures, seminars, laboratory practice, fieldwork, study and analysis of bibliography, tutorials, Internship, Art Workshop, Interactive teaching, Educational visits, projects, Essay writing, Artistic creativity, etc</i></p> <p><i>The study hours for each learning activity as well as the hours of selfdirected study are given following the principles of the ECTS.</i></p>	<table border="1" data-bbox="695 457 1352 783"> <thead> <tr> <th>Activity</th> <th>Annual Workload</th> </tr> </thead> <tbody> <tr> <td>5 OSS (* 4 hours)</td> <td>20</td> </tr> <tr> <td>Preparation of Assignments (4 assignments * 10 hours)</td> <td>40</td> </tr> <tr> <td>Examination</td> <td>3</td> </tr> <tr> <td>Individual study</td> <td>449-513</td> </tr> <tr> <td>Total module workload (hours)</td> <td>512-576</td> </tr> </tbody> </table>	Activity	Annual Workload	5 OSS (* 4 hours)	20	Preparation of Assignments (4 assignments * 10 hours)	40	Examination	3	Individual study	449-513	Total module workload (hours)	512-576
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<p>STUDENT PERFORMANCE EVALUATION/ASSESSMENT METHODS <i>Detailed description of the evaluation procedures.</i></p> <p><i>Language of evaluation, assessment methods, formative or summative (conclusive), multiple choice tests, short- answer questions, open-ended questions, problem solving, written work, essay/report, oral exam, presentation, laboratory work, other.....etc.</i></p> <p><i>Specifically defined evaluation criteria are stated, as well as if and where they are accessible by the students</i></p>	<p>Elaboration of written assignments during the academic year, the average of the grades of which participates in the formation of the final grade of module by 30%, if there is a passable in the final or repetitive examinations. In the final written exams the grade of the written assignments participates in the formation of the final grade of module by 70%.</p> <p>All the criteria are posted, both in each written assignment (in the LMS study.eap.gr), as well as in the general regulation of HOU at: https://www.eap.gr/education/study-regulations/</p>												

(6) SUGGESTED BIBLIOGRAPHY

- Suggested bibliography:

HOU Publications:

Volume A: Didactic of Informatics, EAP, Patra 2001, PLI-37/1

Volume B: Informatics in Education, EAP, Patras 2001, [I-37/2

Volume C: Design of Educational Software, EAP, Patra 2001, PLI-37/3

Accompanied Doc:(88 pages) for the Thematic Init PLI-37: Κόμης Β., Κορδάκη Μ., Νταραντούμης Θ., Παπανικολάου Κ., Μπράττισης Θ. Informatics in Education: design educational scenario, methods for collaborative learning, design and evaluation of learning digital environments

Additional digital material (and multimedia) is available through study platform.

-Related scientific Journals:

- 1) Computers and Education (<https://www.journals.elsevier.com/computers-and-education>)
- 2) EURASIA Journal of Mathematics, Science and Technology Education(<http://www.ejmste.com/>)
- 3) The Journal of Educational Computing Research(<https://journals.sagepub.com/home/jec>)
- 4) Journal of Science Education and Technology(<https://link.springer.com/journal/10956>)
- 5) Hellenic Journal of STEM Education(<http://www.hellenicstem.com/index.php/journal>)