COURSE OUTLINE

(1) GENERAL

SCHOOL	ENGINEERING		
ACADEMIC UNIT	ELECTRICAL AND COMPUTER ENGINEERING		
LEVEL OF STUDIES	UNDERGRADUATE		
COURSE CODE	**CEID_NΣM02**	**SEMESTER**	**9**
COURSE TITLE	COMPUTER AND NETWORK SECURITY		

INDEPENDENT TEACHING ACTIVITIES *if credits are awarded for separate components of the course, e.g. lectures, laboratory exercises, etc. If the credits are awarded for the whole of the course, give the weekly teaching hours and the total credits*	**WEEKLY TEACHING HOURS**	**CREDITS**
Lectures	3	5
Add rows if necessary. The organisation of teaching and the teaching methods used are described in detail at (d).	TOTAL	5

COURSE TYPE *general background, special background, specialised general knowledge, skills development*	*skills development*
PREREQUISITE COURSES:	Computer organization (ECE_Y409), algorithms and data structures (ECE_Y608), computer communication networks (ECE_Y410)
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	Greek
IS THE COURSE OFFERED TO ERASMUS STUDENTS	Yes
COURSE WEBSITE (URL)	https://eclass.upatras.gr/courses/EE678/

(2) LEARNING OUTCOMES

Learning outcomes

The course learning outcomes, specific knowledge, skills and competences of an appropriate level, which the students will acquire with the successful completion of the course are described.

Consult Appendix A

- *Description of the level of learning outcomes for each qualifications cycle, according to the Qualifications Framework of the European Higher Education Area*
- *Descriptors for Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning and Appendix B*
- *Guidelines for writing Learning Outcomes*

At the end of the course, the student is able to:

1. **Explain the role and importance of computer and network security**
2. **Understand the fundamentals of cryptographic algorithms**
3. **Understand and use symmetric and public key cryptographic algorithms**
4. **Analyze and evaluate computer security systems**
5. **Analyze and evaluate network security protocols**
6. **Design and implement secure systems and applications**
7. **Judge pros and cons of alternative security architectures**

General Competences

Taking into consideration the general competences that the degree-holder must acquire (as these appear in the Diploma Supplement and appear below), at which of the following does the course aim?

Search for, analysis and synthesis of data and information, with the use of the necessary technology
Adapting to new situations
Decision-making
Project planning and management
Respect for difference and multiculturalism
Respect for the natural environment
Showing social, professional and ethical responsibility and sensitivity to gender issues

Working independently	*Criticism and self-criticism*
Team work	*Production of free, creative and inductive thinking*
Working in an international environment	*……*
Working in an interdisciplinary environment	*Others…*
Production of new research ideas	*…….*
Adapting to new situations *Decision-making* *Working independently* *Team work* *Working in an interdisciplinary environment* *Production of new research ideas* *Project planning and management*	

(3) SYLLABUS

Principles of analysis, design and implementation of secure computer and network systems.
Architecture of military and commercial secure systems.
Pseudorandom number generation.
Symmetric cryptography.
Public key cryptography.
Digital signatures and certificates.
Cryptographic protocols.
Computer security.
Network security.
Application security.
Architecture of cryptosystems and security systems for computers and networks.
Implementation issues for secure systems.

(4) TEACHING and LEARNING METHODS - EVALUATION

DELIVERY *Face-to-face, Distance learning, etc.*	Face to face
USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY *Use of ICT in teaching, laboratory education, communication with students*	**Eclass system. Powerpoint slides.**
TEACHING METHODS *The manner and methods of teaching are described in detail.* *Lectures, seminars, laboratory practice, fieldwork, study and analysis of bibliography, tutorials, placements, clinical practice, art workshop, interactive teaching, educational visits, project, essay writing, artistic creativity, etc.* *The student's study hours for each learning activity are given as well as the hours of non-directed study according to the principles of the ECTS*	
STUDENT PERFORMANCE EVALUATION *Description of the evaluation procedure* *Language of evaluation, methods of evaluation, summative or conclusive, multiple choice questionnaires, short-answer questions, open-ended questions, problem solving, written work, essay/report, oral examination, public presentation, laboratory work, clinical examination of patient, art interpretation, other*	Written exam. There is possibility for voluntary project; in that case, the grade is calculated as 35% of the project plus 65% of the written exam.

Activity	***Semester workload***
Lectures	3*13=39
Home study	3*13=39
Voluntary project	30
Written exam	3
Course total	***111 (hours)***

Specifically-defined evaluation criteria are given, and if and where they are accessible to students.	

(5) ATTACHED BIBLIOGRAPHY

- Suggested bibliography:

W. Stallings and L. Brown, "Computer security: Principles and practice." Pearson, 2014.
Α. Πομπόρτσης & Γ. Παπαδημητρίου, "Ασφάλεια Δικτύων Υπολογιστών." Τζιόλας, 2002.