INFORMATION SYSTEMS SECURITY

1.GENERAL

SCHOOL	ENGINEERING		
DEPARTMENT	DEPARTMENT OF INFORMATICS AND COMPUTER ENGINEERING		
LEVEL OF EDUCATION	GRADUATE		
COURSE CODE	CSCYB-101	**SEMESTER OF STUDIES**	**A'**
COURSE TITLE	**INFORMATION SYSTEMS SECURITY**		
INDEPENDENT TEACHING ACTIVITIES *in case the credits are awarded in separate parts of the course e.g. Lectures, Laboratory Exercises, etc. If the credits are awarded uniformly for the whole course, indicate the weekly teaching hours and the total number of credits.*		**WEEKLY HOURS OF TEACHING**	**ECTS CREDITS**
Lectures		3	
Practice -Exercises		2	
Add rows if needed. The teaching organization and teaching methods used are described in detail in 4.		**5**	**8**
COURSE TYPE *Background, General Knowledge, Scientific Area, Skills Development*	*Skills Development*		
PREREQUISITE COURSES:	-NONE		
LANGUAGE OF TEACHING AND EXAMS :	ENGLISH		
ERASMUS STUDENTS	Yes (English)		
ONLINE COURSE (URL)	Cscyb.uniwa.gr and eclass https://eclass.uniwa.gr/main/login_form.php?next=%2Fmodules%2Fauth%2Fcourses.php%3Ffc%3D247		

1. LEARNING OUTCOMES

Learning outcomes

The learning outcomes of the course are described, the specific knowledge, skills and abilities of an appropriate level that students will acquire after the successful completion of the course.

Refer to Appendix A.

- *Description of the Level of Learning Outcomes for each course according to the Qualifications Framework of the European Higher Education Area*
- *Descriptive Indicators Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning and Annex B*
- *Summary Guide for writing Learning Outcomes*

Knowledge

The MSc students can:

- Understand modern information systems security issues and their challenges
- Desing the framework for the development of information security management system
- Demonstrate critical understanding of the design, application, and performance evaluation of the appropriate controls/safeguards/countemeasures: organizational, technological, physical, people
- Have specific knowledge for the special characteristics of the cloud controls
- Understand the information security risk management methodology
- Know the problems that generated when personal data have been processed and know personal data protection by design methodologies
- Have critical perception of the evolutionary dynamics of the area of cybersecurity and personal data protection.

During the lecturers, modern international standards are described for the selection of the suitable controls: detection, prevention, correction.

Skills

This course is structured in a way that lectures and practical exercises give students the necessary skills for the job market, in order to improve their possibility of professional rehabilitation

After their studies MSc students can:

- Apply theories and methodologies from the area of information systems security, with emphasis on information security risk management
- Evaluate methods and tools thar are used to implement information systems security
- Develop solutions, with scientific documented way, for the complex security and privacy problems

Competences

The MSc students will be able to:

- Develop autonomously their knowledge and capabilities
- Solve problems and kame strategic decisions with inductive thinking
- Contribute to develop knowledge and practices and have operational capabilities in crisis management

General Abilities

Taking into account the general skills that the graduate must have acquired (as they are listed in the Diploma Supplement and are listed below), which of them is intended for the course ?.

Search, analysis and synthesis of data and information, using the necessary technologies	*Project design and management*
Adaptation to new situations	*Respect for diversity and multiculturalism*
Decision making	*Respect for the natural environment*
Autonomous work	*Demonstration of social, professional and moral responsibility and sensitivity in gender issues*
Teamwork	*Exercise criticism and self-criticism*
Working in an international environment	*Promoting free, creative and inductive thinking*
Work in an interdisciplinary environment	
Production of new research ideas	

The general competences that the MSc students must acquire are:

- Search, analysis, synthesis of data and information, with the use of the appropriate technologies
- Decision making
- Working independently
- Effective team work
- Adapting to new situations
- Project planning and management guaranteeing quality (iron triangle: time, cost, scope)
- Activation in multidisciplinary environment
- Production of new research ideas

3.COURSE CONTENT

Theory:

1. Introduction to information and communication systems security. Terminology and ISO 27000:2018.
2. Authorization and Access Control: Mandatory Access Control, Discretionary Access Control (Access Control Matrix, Access Control List, Capabilities List), Role-based Access Control (Core, Hierarchical, Constrained).
3. Information Security Management System ISMS and ISO 27001:2022,
4. controls and ISO 27002:2022,
5. guidance on implementing ISMS and ISO 27003:2017,
6. best practices for Cloud environment and ISO 27017: 2015.
7. Guidance for Information Security Risk Management and ISO 27005:2022.
8. Information Security Management Guidelines for Cyber insurance and ISO 27102:2019.
9. Legal and regulatory framework for personal data protection and electronic communication security:
10. General Data Protection Regulation and ISO 29100:2017,
11. EU Directive e-Privacy 2002/58, EU Directive for data retention 2006/24.
12. The Constitution of Greece, article 19 for communication security and related national laws: law 5002/2022, law 3115/2003. Spyware and risk treatment.

Laboratory:

Case studies: Enterprise Risk Management, Personal Data Protection, Electronic Communication Security

4.TEACHING AND LEARNING METHODS - EVALUATION

METHOD OF DELIVERY *Face to face, Distance education etc.*	In class face to face
USE OF INFORMATION AND COMMUNICATION TECHNOLOGIES *Use of ICT in Teaching, in Laboratory Education, in Communication with students*	Use of ICT in Teaching, Laboratory Education and Communication with Students
TEACHING ORGANIZATION *The way and methods of teaching are described in detail. Lectures, Seminars, Laboratory Exercise, Field Exercise, Bibliography study & analysis, Tutoring, Internship (Placement), Clinical Exercise, Art Workshop, Interactive teaching , Study visits, Study work, artwork, creation. λπ. The student study hours for each learning activity are indicated as well as the non-guided study hours so that the total workload at the semester level corresponds to the ECTS standards .*	Projection system and presentation capability with the application of the Power Point program, - Internet connection, - Use of bibliography search engines HEAL-LINK, PUBMED, SCOPUS, GOOGLE SCHOLAR - Use of e-mail and the Department's website to communicate with students and keep them informed - Use of the course eclass
STUDENT EVALUATION *Description of the evaluation process* *Assessment Language, Assessment Methods, Formative or Concluding, Multiple Choice Test, Short Answer Questions, Essay Development Questions, Problem Solving, Written Assignment, Report / Report, Oral Examination, Public Presentation, Public Presentation, Others* *Explicitly defined assessment criteria are stated and if and where they are accessible to students.*	Written final exam and Assignments (Individual and Group). The performance in the exams is calculated as follows: 50% of the final grade for the written exams, 50% for the Assignment

5.RECOMMENDED-BIBLIOGRAPHY

- Suggested Bibliography:
Books
Security Engineering A Guide to Building Dependable Distributed Systems, R. Anderson, J. Wiley & Sons, 3rd edition, 2020
The Cyber Security Handbook, A. Calder, ITGP, 2020
Cybersecurity, E. Lewis, 2020
The Age of Surveillance Capitalism, S. Zuboff, Profile Books, 2019
Computer Security, D. Gollmann, J. Wiley & Sons, 3rd edition, 2018

Journals
IEEE Communications Surveys and Tutorials
International Journal of Information Security, Springer
Computers and Security, Elsevier
Information and Computer Security, Emerald