COURSE OUTLINE

1. GENERAL

SCHOOL	BUSINESS ADMINISTRATION		
ACADEMIC UNIT	DEPARTMENT OF CULTURAL HERITAGE MANAGEMENT AND NEW TECHNOLOGIES		
LEVEL OF STUDIES	UNDERGRADUATE		
COURSE CODE	**T808**	**SEMESTER**	**8th**
COURSE TITLE	COMPUTATION AND CULTURE		

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 (theoretical part)	3	5
Lectures (laboratory part)	2	
Add rows if necessary. The organisation of teaching and the teaching methods used are described in detail at (d).		

COURSE TYPE *general background, special background, specialised general knowledge, skills development*	Advanced elective (Direction of Cultural Informatics (CI))
PREREQUISITE COURSES:	DISCRETE MATHEMATICS (1st SEMESTER) INTRODUCTION TO ALGORITHMS (2nd SEMESTER)
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	Greek
IS THE COURSE OFFERED TO ERASMUS STUDENTS	No
COURSE WEBSITE (URL)	goo.gl/tgWba6

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*

This course aims at (a) studying the evolution of our current information age and how technology and information have influenced the very nature of human consciousness and (b) using approaches based on methods and tools from computer science (like automata theory and theory of computation, game theory, learning algorithms) for the study and analysis of social and cultural phenomena.

When studying problems in various fields, data is not always "tangible", so "modelling" and "analysis" - i.e., computation – is required. In other words, it is usually necessary to study abstract entities corresponding to real equivalents and then use techniques and methods from Computer Science for working with abstract entities in order to reach conclusions which also directly apply to real-world situations, suggesting solutions to the corresponding problems.

Computational models from computer science can be used to study a wide range of cultural issues. For instance: (a) finite automata and context-free grammars can be used to identify the author of a text, (b) cellular automata can be used to determine the origin of a text or linguistic influences it features, (c) ideas and techniques from game theory can be applied to study problems such as understanding different cultures to facilitate international cooperation, improving the quality of life in groups with ethnic diversity, decision making in contexts with culturally heterogeneous characteristics.

Students who regularly participate in course activities and successfully complete the course:

- have knowledge and understanding for modelling and analysis or real-world problems using graph theory and computational models and approaches from Theoretical Computer Science
- are able to use knowledge and understanding they have acquired in a way that shows a professional approach to their work or profession, and appropriately skilled to use computational models such as graphs, automata, grammars, games, as well as matching and fair division approaches for the study and analysis of social and cultural phenomena
- have the ability to collect and interpret relevant data (typically within their field) to form judgments that include reflection on relevant social, scientific or ethical issues
- are able to communicate information, ideas, problems and solutions to specialized and non-specialized audience
- have developed knowledge acquisition skills necessary to further continue their studies with a high degree of autonomy
- have become familiar with computational thinking and are able to exploit its advantages in scientific, professional and practical issues

In particular, students who regularly participate in course activities and successfully complete the course:

1. have knowledge of modelling and analysis or real-world problems using graph theory and computational models and approaches from Theoretical Computer Science
2. understand issues for modelling and analysis of real-world problems
3. are able to use computational models such as graphs, automata, grammars, games and to apply particular algorithmic approaches (e.g., for matching, fair division, etc) in order to suggest solutions in the context of real-world problems
4. analyze problems / questions in order to gain understanding of their structure and components
5. suggest solutions to these problems by modelling and analysis
6. evaluate findings (solutions or hardness results)
7. are familiar with computational thinking

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	*Project planning and management*
Adapting to new situations	*Respect for difference and multiculturalism*
Decision-making	*Respect for the natural environment*
Working independently	*Showing social, professional and ethical responsibility and sensitivity to gender issues*
Team work	*Criticism and self-criticism*
Working in an international environment	*Production of free, creative and inductive thinking*
Working in an interdisciplinary environment	*……*
Production of new research ideas	*Others…*
	…….

Familiarity with computational thinking
Search for, analysis and synthesis of data and information, with the use of the necessary technology
Adapting to new situations
Decision-making
Working independently
Team work
Working in an international environment
Working in an interdisciplinary environment
Production of new research ideas
Project planning and management
Respect for difference and multiculturalism
Showing social, professional and ethical responsibility and sensitivity to gender issues
Criticism and self-criticism
Production of free, creative and inductive thinking

3. SYLLABUS

This course aims at (a) studying the evolution of our current information age and how technology and information have influenced the very nature of human consciousness and (b) using approaches based on methods and tools from computer science (like automata theory and theory of computation, game theory, learning algorithms) for the study and analysis of social and cultural phenomena.

When studying problems in various fields, data is not always "tangible", so "modelling" and "analysis" - i.e., computation – is required. In other words, it is usually necessary to study abstract entities corresponding to real equivalents and then use techniques and methods from Computer Science for working with abstract entities in order to reach conclusions which also directly apply to real-world situations, suggesting solutions to the corresponding problems.

Computational models from computer science can be used to study a wide range of cultural issues. For instance: (a) finite automata and context-free grammars can be used to identify the author of a text, (b) cellular automata can be used to determine the origin of a text or linguistic influences it features, (c) ideas and techniques from game theory can be applied to study problems such as understanding different cultures to facilitate international cooperation, improving the quality of life in groups with ethnic diversity, decision making in contexts with culturally heterogeneous characteristics.

Lectures (each including a theoretical and a laboratory part) are scheduled as follows:

- Introduction: Course outline, objectives and role in the curriculum
- Data representation: Graphs
- Data representation: Trees
- Computational models: Grammars
- Computational models: Finite automata
- Computational models: Regular expressions
- Fair Division
- The Stable Marriage Problem

4. TEACHING and LEARNING METHODS - EVALUATION

DELIVERY *Face-to-face, Distance learning, etc.*	Face to face, Distance learning
USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY *Use of ICT in teaching, laboratory education, communication with students*	Use of ICT in teaching (online lectures, course website, extensive use of Web resources), in communication/collaboration with students (mailing lists, social networks (Feacebook), course website, Doodles) and in the process of progress monitoring and evaluation (use of specialized software for the monitoring and evaluation of student progress)

TEACHING METHODS	*Activity*	*Semester Workload*
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*	Lectures (theoretical part)	39
	Lectures (laboratory part)	26
	Intense cooperation among professor and students also using ICT	8
	Independent study	60
	Study and analysis of bibliography	17
	Course total (25 hours per credit)	**150**

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* *Specifically-defined evaluation criteria are given, and if and where they are accessible to students.*	Assessment - Grading Process (it is announced on the course website before the beginning of the semester and remains available throughout the semester) The final score is obtained as a function of: (A) 2 intermediate computer-based multiple choice examinations. They contribute by 40% to the final score. - All students attending the course can participate in the intermediate examinations. - Scores are valid only for the current academic year. - Participation in the intermediate exams is not mandatory: students who decide not to participate in intermediate examinations are not excluded from the final examination in February. However, the 2 intermediate examinations contribute to the final score (by 40%). (B) a final, computer-based, multiple choice examination. It contributes by 60% to the final score.

5. ATTACHED BIBLIOGRAPHY

- Suggested bibliography:

THE INFORMATION: a history, a theory, a flood, J. Gleick

DISCRETE MATHEMATICS AND ITS APPLICATIONS, K. Rosen

- Related academic journals:

Journal of Graph Theory and Applications

International Journal of Advances in Computer Science & Its Applications

International Journal of Computer Systems

International Journal of Advances in Education

International Journal of Advances in Social Sciences