COURSE OUTLINE

(1) GENERAL

SCHOOL	School of Sciences		
ACADEMIC UNIT	Department of Informatics		
LEVEL OF STUDIES	Undergraduate		
COURSE CODE	206	**SEMESTER**	2
COURSE TITLE	COMPUTER ORGANIZATION		

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
Tutorial Exercises	1	
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*	Background, Skill Development
PREREQUISITE COURSES:	No
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	Greek
IS THE COURSE OFFERED TO ERASMUS STUDENTS	No
COURSE WEBSITE (URL)	Under Construction

(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*

Upon successful completion of the course, students should be able to:

1. To understand the architectural structure of CISC / RISC microprocessors.

2. To understand the concepts and architectures of the following Microcomputer units: 1. control unit, 2. microprocessor, 3. memory, 4. input unit and 5. output unit.

3. To specialize their knowledge in the architectural structure of CISC / RISC processors.

4. To understand the concepts and roles of data, address and control information transfer corridors.

5. Understand the concepts and roles of general data registers, general address registers, program counter, heap and heap pointer, status register, instruction register and instruction decoder.

6. To understand and use the various methods of addressing.

7. To understand and use the way of writing instructions in Assembly language.

8. Know and be able to use the methodology and tools used to program a microprocessor in Assembly language.

9. To know the architecture with which a RAM and ROM memory is structured.

10. Know how memory integrated circuits can be connected to create memory modules of larger capacity or longer memory word length.

11. To know how to design a memory unit of a microcomputer.

12. To know the architectural structure of parallel communication and serial communication units.

13. To know how to design input and output units.

14. To understand the concept of interrupt and the circuits through which interrupts are made.

15. To know the concept of real time applications.

16. Know how the units of a microcomputer are connected (microprocessor, memory, input/output units) in order to create a minimal microcomputer system.

17. To know how to create a minimal operating system.

18. To develop skills in CISC (Motorola 68000) or RISC (Atmel AVR) processor Assembly language.

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…*
	…….

- Search, analysis and synthesis of data and information, using the necessary technologies
- Project planning and management,
- Promotion of free creative and inductive thinking.

(3) SYLLABUS

1. Introduction to CISC / RISC microprocessor-based systems.
2. Architectural structure of the microprocessor.
3. Assembly language.
4. Addressing Methods.
5. Assembly language programming with software.
6. RAM and ROM architecture.
7. Memory system design.
8. System design of input-output units.
9. Stop function.
10. Design (Hardware/Software) of a minimal microcomputer system.

(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

Presentation with the help of slides, Website of the course with supporting and auxiliary material, Application of programming software in Assembly language, Communication by e-mail.

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

Activity	Semester workload
Lectures	39 h
Tutorial Exercises: Selected, representative exercises are solved concerning different modules of the course.	13 h
Written Exams	14 h
Exercises	33 h
Individual Study	26 h
Course total	125 h (5 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

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

Written final exam (75%) including theory questions and problem-solving topics.

Delivery of one (1) Exercises Set (25%) during the semester.

The final examination of students with dyslexia takes place after consultation.

(5) **ATTACHED BIBLIOGRAPHY**

- Suggested bibliography:

1. «Σχεδίαση Συστημάτων Μικροϋπολογιστών, ο MC 68000», Δ. Πογαρίδη, Εκδόσεις ΔΙΣΙΓΜΑ, 2010.
2. «Ενσωματωμένα Συστήματα», Δ. Πογαρίδη, Εκδόσεις ΔΙΣΙΓΜΑ, 2015.
3. «Digital Design and Computer Architecture» by Sarah Harris, David Harris, MK Publications.
4. Computer Architecture: A Quantitative Approach by John L. Hennessy, David A. Patterson, MK Publications.
5. «Microprocessor Systems Design, 68000 Family, Hardware, Software and Interfacing», A. Clements, PWS Publishing Co.
6. «The 68000 Microprocessor, Hardware and Software, Principles and applications», J. L. Antonakos, Prentice Hall, 1999.
7. «The Motorola MC 68000 Microprocessor Family, Assembly Language Interface Design and Systems Design», T.L. Harman και D.T. Hain, Prentice Hall, 1996.
8. «The Essence of Microprocessor Engineering», S. Katzen, Prentice Hall, 1998.