COURSE OUTLINE

(1) GENERAL

SCHOOL	SCHOOL OF BUSINESS		
ACADEMIC UNIT	DEPARTMENT OF FINANCIAL & MANAGEMENT ENGINEERING		
LEVEL OF STUDIES	UNDERGRADUATE		
COURSE CODE	MH0103	SEMESTER	1st
COURSE TITLE	INTRODUCTION TO SYSTEMS DESIGN		

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
LECTURE	3	3
LABORATORY	3	3
Add rows if necessary. The organisation of teaching and the teaching methods used are described in detail at (d).	6	6

COURSE TYPE *general background, special background, specialised general knowledge, skills development*	General background (Core course)
PREREQUISITE COURSES:	-
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	Greek
IS THE COURSE OFFERED TO ERASMUS STUDENTS	-
COURSE WEBSITE (URL)	http://www.fme.aegean.gr/en/c/introduction-systems-design

(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*

- Technical knowledge in
  - Understanding the basic design concepts, including the development of technical specifications, axiomatic approach to design, the relationship between the form and function of the product with the product's materials and manufacturing processes
  - Selection of materials and manufacturing processes
  - Production cost estimation based on the bill of materials and the routing
  - Applying these principles in developing drawings for various complex parts.
  - Understanding what is required in order to design products and processes.
  - Understanding the principles of mechanical engineering drawing.
  - Applying the above principles and the rules of mechanical engineering drawing in developing part drawings
- Students obtain proven knowledge and understanding of basic areas of engineering system design, which is based on their secondary education background
- They are in a position to use the knowledge and understanding they obtained from the course in a manner that indicates a professional approach in their work or profession; they

obtained abilities that are evident from the synthesis and support of positions and from problem solving in their knowledge area
- They have the ability to collect and interpret relevant information (within their knowledge area), and to develop views that show critical thinking in relevant scientific topics
- They have developed those abilities of acquiring knowledge that are necessary to continue their study under a certain degree of independence.
- They are in a position to present information, concepts, problems and solutions in a specialized as well as a general audience

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
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
Respect for the natural environment
Showing social, professional and ethical responsibility and sensitivity to gender issues
Criticism and self-criticism
Production of free, creative and inductive thinking
……
Others…
…….

- Innovative thinking
- Decision-making
- Working independently
- Team work
- Working in an interdisciplinary environment
- Production of free, creative and inductive thinking

(3) SYLLABUS

Description

This is an introductory course into product design. The course presents basic design concepts, including the development of technical specifications, the axiomatic approach to design, and the relationship between the form and function of the product with its materials and manufacturing processes. The course also presents the principles of mechanical drawing through a series of drawing exercises, in which the students sketch complex parts and develop related CAD drawings. Finally, each student participates in a group project, in which a commercial product is analyzed and discussed in a term paper.

Week	Topics – Theory Lectures	Topics - Laboratory
1	• Design and Production in 21^{o} century.	• Introduction to Engineering Drawing
2	• Translation of customer requirements into product specifications	• Drawing views, layout views • Homework 1
3	• Translation of customer requirements into product specifications	• Drawing views, layout views • Homework 2
4	• Functional product specifications, design parameters, and decomposition • Midterm exam 1 (Theory – Laboratory)	• Drawing views and sections • Homework 3

5	• Functional product specifications, design parameters, and decomposition	• Drawing sections, dimensions • Homework 4
6	• Design and production processes	• Drawing threads • Homework 5
7	• Design and production processes	• Introduction to design with AutoCAD 2011 • Homework 6
8	• Introduction to the design project	• Design with AutoCAD 2011 • Homework 7
9	• Product costing	• Design with AutoCAD 2011 • Homework 8
10	• Midterm exam (Theory – Laboratory) • Design project discussion and support	• Design with AutoCAD 2011 • Homework 9
11	• Product costing	• Design with AutoCAD 2011 • Homework 10
12	• Computer Aid Product Design - Theory • Design project discussion and support	• Design with AutoCAD 2011 - (3D design) • Homework 11
13	• Design project presentations	• Design with AutoCAD 2011 - (3D design) • Homework 12

(4) TEACHING and LEARNING METHODS - EVALUATION

DELIVERY *Face-to-face, Distance learning, etc.*	Face-to-face Lectures
USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY *Use of ICT in teaching, laboratory education, communication with students*	Use of ICT in teaching, laboratory education, communication with students
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
Laboratory	39
Weekly homework(design theory and drawing)	50 (25 Theory & 25 Laboratory)
Study	33 (Theory & Laboratory)
Semester Project	10
Two midterm exams	6
Final Exam	3
Course total	180

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*	**Assessment Methods:** - Homework 25% - Project 15%

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.*	- Two midterm exams 30% (15% each) - Final exam 30%

(5) ATTACHED BIBLIOGRAPHY

- Suggested bibliography:

Notes are provided:

Minis, I., Integrated Product and Production Processes Development, Department of Financial and Management Engineering, University of Aegean, 2001

Additional Biography

1. *Papadaniil, E., D., and Sfantzikopoulos, M., M., Mechanical Design, Department of Mechanical Engineering, National Technical University, 1999*
2. *Antoniadis, A. Th., Mechanical Design,* Publisher *TZIOLA, 2^{NT} Publication, 2014*
3. *Notes from Work with the AutoCad 2011', I Kappos, 2010, Publications Kleidarithmos*