COURSE OUTLINE

(1) GENERAL

SCHOOL	School of Business		
ACADEMIC UNIT	Department of Financial and Management Engineering		
LEVEL OF STUDIES	Undergraduate		
COURSE CODE	**ΔΕ0114**	SEMESTER	9th
COURSE TITLE	Manufacturing Processes		

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).		

COURSE TYPE *general background, special background, specialised general knowledge, skills development*	Engineering background with techno-economic specialised knowledge, skills development
PREREQUISITE COURSES:	-
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	Greek
IS THE COURSE OFFERED TO ERASMUS STUDENTS	NO
COURSE WEBSITE (URL)	http://www.fme.aegean.gr/en/c/production-processes

(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*

The course is addressed to undergraduate students and aims to allow students to:

- **Describe the relationship of product design, product function, materials used, and manufacturing processes used.**
- **Compare basic physical, mechanical, manufacturing properties, and testing methods of common engineering materials.**
- **Compare relative advantages/disadvantages of common engineering materials.**
- **Understand the relative advantages/disadvantages of common forming and shaping manufacturing processes.**
- **Understand the relative advantages/disadvantages of common machining manufacturing processes.**
- **Demonstrate the ability to calculate machining speeds and feeds for specific applications.**

- **Demonstrate the ability to define and document a manufacturing process.**

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 for, analysis and synthesis of data and information, with the use of the necessary technology
- Respect for the natural environment
- Adapting to new situations
- Decision-making
- Working independently
- Team work
- Production of free, creative and inductive thinking
- Criticism and self-criticism

(3) SYLLABUS

Class 1: Introduction to manufacturing processes
Class 2: Casting
- Sand casting
- Croning sand casting
- Lost wax casting
- Metallic mould
- Continuous casting

Class 3: Manufacturing with material removal: cutting tools
- Types of cutting tools
- Materials of cutting tools
- Wear mechanisms of cutting tools
- Parameters that influence wear

Class 4: Machining processes and machine tools: Turning
Class 5: Machining processes and machine tools: Turning and Milling
Class 6: Machining processes and machine tools: Milling
Class 7: Machining processes and machine tools: Drilling and Sawing
Class 8: Machining processes and machine tools: Grinding
Class 9: Forming and shaping processes
- Rolling
- Forging
- Extrusion
- Sheet metal forming

Class 10: Assembly processes

- Welding
- Brazing and soldering
- Adhesive bonding
- Riveting

Class 11: Non-metal fabrication processes: injection moulding

Class 12: Surface techniques

Class 13: Manufacturing in a competitive environment

- Cost / volume / profit analysis
- Speed to market

(4) TEACHING and LEARNING METHODS - EVALUATION

DELIVERY *Face-to-face, Distance learning, etc.*	Face to face teaching and lab
USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY *Use of ICT in teaching, laboratory education, communication with students*	**Use of eClass in delivering notes and presentations**
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
Bibliography study	86
Technical demonstration	5
Essay writing	45
Tests/presentations	30
Course total	***205***

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.*	Grading will be determined on the basis of Laboratory projects and a comprehensive final exam (alternatively a semester project). Two laboratory projects will be entered that students will be graded for each scheduled lab for participation and progress toward course objective. The course grade will be calculated as follows: Laboratory project: turning 20 % Laboratory project: milling 20 % Final exam or a semester project 60 % Exam in September covers the whole topic of the course 100 %

(5) ATTACHED BIBLIOGRAPHY

- Suggested bibliography: Manufacturing, Engineering and Technology Sl, Serope Kalpakjian, Stephen R. Schmid, 6th edition, Prentice Hall, 2009, ISBN 9810681445.

- Related literature:

- *Introduction to manufacturing processes, John A. Schey, 2nd edition, McGraw-Hill, 1987, ISBN 0070552797.*
- *Product Design for Manufacture and Assembly, G. Boothroyd, P. Dewhurst and W. Knight, Marcel Dekker, 1994.*
- *Manufacturing Processes For Engineering Materials, Serope Kalpakjian, 4th edition, Pearson Education, 2009, ISBN 8131702456.*
- *Fundamental Principles of Manufacturing Process, by Robert H. Todd, Dell K. Allen, Leo Alting, Industrial Press Inc., 1994, ISBN 0831130504.*
- *Introduction to Manufacturing Processes and Materials, Robert Creese, Taylor & Francis, 1999, ISBN 0824799143.*