COURSE OUTLINE

(1) GENERAL

SCHOOL	School of Engineering		
ACADEMIC UNIT	Department of Mechanical Engineering		
LEVEL OF STUDIES	Undergraduate		
COURSE CODE	MY0200	**SEMESTER**	1st
COURSE TITLE	Introduction to 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 and laboratory exercises	5	6
Add rows if necessary. The organization of teaching and the teaching methods used are described in detail at (d).		

COURSE TYPE *general background, special background, specialized general knowledge, skills development*	General background
PREREQUISITE COURSES:	No
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	Greek
IS THE COURSE OFFERED TO ERASMUS STUDENTS	No
COURSE WEBSITE (URL)	https://mie.uth.gr/?page_id=17691&lang=en

(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 aim of the course is to understand the introductory and basic principles of Machining theory and technology and their application in solving problems in corresponding research processes and in industrial production. Demonstrations and exercises give the students a general overview of the realization of production through machining engineering. Upon successful completion of the course students will be able to:

- Define and describe scientifically and technologically the procedures for the execution of the machining processes
- Design and specify the parameters of the machining processes at the production process level
- Resolve Problems Related to the Machine Tool Related Machines.

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…
…….

- Search, analyze and synthesize data and information using the necessary technologies
- Independent Work
- Decision making
- Project planning and management
- Exercising criticism and self-criticism
- Promote free, creative and inductive thinking

(3) SYLLABUS

Basic concepts (production, machining, technical materials). Metroethnic: Tolerances on dimensions, shape and position, joints. Surface quality measurement. Two Dimensional Cutting (Rectangular Cutting): Cutting geometry, scratch, kinematics, cutting forces, special cutting resistance, cooling - lubrication. Tool wear. Track format. Conventional cutting operations. Cutting with pre-defined geometric edge. Unconventional cutting operations. Initial formatting operations. Castings processes. Forming and Shaping Processes. Distortion modulation operations. Metal plate configurations. Welding and Welding processes. Surface Technology. Advanced editing. Rapid prototyping. Powder Metal Processes and Equipment. Unconventional processes. Product Design and Manufacturing in a Competitive Environment.

(4) TEACHING and LEARNING METHODS - EVALUATION

DELIVERY ***Face-to-face, Distance learning, etc.***	Face-to-face (In the class)
USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY *Use of ICT in teaching, laboratory education, communication with students*	• Search for manufacturing methods on the web • Spreadsheet calculations
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: 56 Laboratory: 6 Independent Study: 88 *Course Total (25 hours of work per credit unit)*: **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.*	I. Final written examination (70%): II. Laboratory Exercises (30%)

(5) **ATTACHED BIBLIOGRAPHY**

Suggested bibliography:

I. In GREEK

- Antoniadis A., Machining Technology, Tziolas Editions, 2016.
- Petropoulos P., Machining Technology, Ziti Editions, 1998.
- Bouzakis K.-D, Machining by removing material Ziti Editions, 2015.
- Haidemenopoulos G. Introduction to Welding, Tziolas Editions, 2010.
- Pantelis D.I., Papazoglou B.I., Haidemenopoulos G.N. Welding science and technology. 2017.
- Dillinger Josef, Metal Working, M. Parikou Edition, 2010.

II. In English

- Kalpakjian S., Schmid S.R., Manufacturing Engineering and Technology, Pearson 2023.
- Astakhov V.P., Mascining in Mechanical Eng A Practical Guide, Woodhead Publishing 2011.
- Grzesik W., Advanced machining processes of metallic material-theory, modelling and applications, Elsevier 2016.
- El Hofy., H. A., Fundamentals of Machining Processes-Conventional and Nonconventional Processes. Taylor & Francis Group 2014.
- Modern Manufacturing Engineering, Series editor, J. Paulo Davim, Aveiro, Portugal, Springer 2015.

Related academic journals:

- Machining Science and Technology
- CIRP Journal of Manufacturing Science and Technology
- CIRP Annals - Manufacturing Technology
- Science and Technology of Welding and Joining
- Materials Science and Engineering: A