COURSE OUTLINE

(1) OVERVIEW

SCHOOL	MARITIME & INDUSTRY		
DEPARTMENT	INDUSTRIAL MANAGEMENT & TECHNOLOGY		
LEVEL OF STUDIES	UNDERGRADUATE		
COURSE CODE	ΤΕΠΛΗ68-1	SEMESTER	8
COURSE TITLE	PRODUCTION TECHNOLOGIES - ROBOTICS		

DISCRETE TEACHING ACTIVITIES *In cases where ECTS credits are awarded to distinct components of the course (e.g., Lectures, Laboratory Exercises, etc.), please indicate them separately. If the credits are awarded as a whole for the entire course, please state the weekly teaching hours and the total number of credits*	WEEKLY TEACHING HOURS	ECTS
Lectures	4	5.5
Please add additional rows if needed. A detailed description of the teaching organization and instructional methods is provided in Section (4).		

COURSE TYPE *core (C), core elective (CE), elective (E) - background, specialization, skill development*	C - Specialization
PREREQUISITE COURSES:	None.
LANGUAGE OF TEACHING AND EXAMINATIONS:	Greek (English for ERASMUS students)
THIS COURSE IS AVAILABLE TO ERASMUS STUDENTS	Yes
COURSE WEBPAGE (URL)	

(2) LEARNING OUTCOMES

Learning Outcomes

The learning outcomes of the course are described, specifying the particular knowledge, skills, and competencies at the appropriate level that students will acquire upon successful completion of the course.

Please refer to Appendix A

- *Description of the Level of Learning Outcomes for each study cycle according to the Qualifications Framework of the European Higher Education Area.*
- *Descriptive Indicators of Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning and Appendix B.*
- *Concise Guide for Writing Learning Outcomes*

In the context of the present course, the student is introduced to the Computer-Aided Manufacturing (CAM) tools and techniques for the discrete manufacturing sector. The first section of the course is dedicated to the presentation of basic manufacturing processes, emphasizing the family of cutting processes and machining. The introductory section is followed by a presentation of the Computer Numerical Control (CNC) technology and of the APT programming language. From an organizational point of view, the basic characteristics of Group Technology and Flexible Manufacturing Systems are discussed. The final section of the course examines the field of Additive Manufacturing/3D Printing which is the most recent development in the field of Computer-Aided Manufacturing.

Upon successful completion of the course, students:

- Will have been trained on basic machining.
- Will be familiar with the technologies used to assist production using PC and CAM systems.
- Will be more aware of the basic manufacturing technologies.
- Will be familiar with modern prosthetic and 3D printing technologies as well as the capabilities they offer.

General Competences

Taking into account the general competences that a graduate should have acquired (as listed in the Diploma Supplement and outlined below), which of these competences does the course aim to develop?

Searching, analyzing, and synthesizing data and information, using the necessary technologies
Adaptation to new situations
Decision making
Autonomous work
Teamwork
Project design and management
Respect for diversity and multiculturalism
Respect for the natural environment
Demonstration of social, professional, and ethical responsibility and sensitivity to gender issues
Exercising critical and self-critical thinking

Working in an international environment *Working in an interdisciplinary environment* *Generation of new research ideas*	*Promotion of free, creative, and inductive thinking* *…* *Other competences: …*

- Searching, analyzing, and synthesizing data and information, using the necessary technologies
- Adaptation to new situations
- Decision making
- Autonomous work
- Demonstration of social, professional, and ethical responsibility and sensitivity to gender issues
- Exercising critical and self-critical thinking
- Promotion of free, creative, and inductive thinking

(3) COURSE CONTENT

The course covers the following topics:

Week	Topic
1	Introduction
2-3	Basic manufacturing processes
4-6	Cutting processes and machining
7-9	Computer numerical control basics
10-12	Additive manufacturing / 3D printing
13	Group technology and flexible manufacturing systems

In addition, selected case studies from bibliography are presented. Furthermore, articles, audiovisual lecture material, web links to useful resources, exercises, and software are uploaded in electronic format on the eClass platform.

(4) TEACHING and LEARNING METHODS - ASSESSMENT

TEACHING MODE *Face-to-face, in-class lecturing, distance teaching and distance learning etc.*	• Face-to-face in a classroom • Distance teaching & learning (if required)
USE OF INFORMATION AND COMMUNICATION TECHNOLOGY *Use of ICT in Teaching, Laboratory Education, Communication with students*	**Teaching**: Lectures using modern audiovisual equipment, learning support through the eClass electronic platform, synchronous distance teaching via MS Teams. **Communication with students**: face-to-face during office hours, email, eClass platform, MS Teams tools
Organization of Teaching *A detailed description of the teaching methods and approach is provided.* *Lectures, seminars, laboratory exercises, fieldwork, study and analysis of literature, tutorials, internships (placements), clinical practice, artistic workshops, interactive teaching, educational visits, project work, writing assignments, artistic creation, etc.* *The student's study hours for each learning activity, as well as the hours of independent study, are specified in accordance with the principles of ECTS*	
STUDENT ASSESSMENT *Description of the assessment process* *Language of assessment, assessment methods, formative or summative evaluation, multiple-choice tests, short-answer questions, essay questions, problem-solving, written assignments, reports, oral examinations, public presentations, laboratory work, clinical patient examination, artistic interpretation, other(s)*	**Language of Assessment**: Greek (English for ERASMUS students) **Assessment Mode**: Face-to-face and/or distance learning (if required) **Assessment Methods**: The final course grade is formed 100% by written exams in the examination period of the spring semester and, in case of failure, in the September resits. The written examination includes problem solving / exercises, short-answer and essay questions. It is conducted with closed books.

Activity	Semester Workload
Lectures	52
Case studies / exercises	26
Self-study of lecture material and case studies	57
Consultation Support	0.5
Exams (written)	2
Course Total	**137.5**

Explicitly state assessment criteria and information on whether and where these criteria are accessible to students are included.	**Students with Learning Difficulties**: Students with certified learning difficulties in reading and writing (as recognized by the competent authority) are assessed according to the procedures established by the Department. **Disclosure of Assessment Criteria**: The assessment criteria are communicated during the first class and are clearly stated on the course website and the eClass platform. The exam syllabus is announced on eClass following the final lecture of the semester. The exam answers are posted on eClass after the examinations take place. Students have the right to review their graded exams and receive explanations regarding their grades. In cases of further requests, the procedures outlined in the current Study Regulations apply.

(5) SUGGESTED BIBLIOGRAPHY

- Books:

- Emiris, D., Koulouriotis, D. (2024). Robotics, tziolas Publications, ISBN: 9786182210802 [133025578] – in Greek

- Journals:

- Computer-Aided Design
- International Journal of Advanced Manufacturing Technology
- Rapid Prototyping Journal

- Other educational material:

- Lecture Notes and Supporting Material provided by the Instructor