COURSE OUTLINE

(1) GENERAL INFORMATION

SCHOOL	POLYTECHNIC SCHOOL		
DEPARTMENT	ELECTRICAL AND COMPUTER ENGINEERING		
LEVEL OF STUDIES	*POSTGRADUATE*		
COURSE CODE	**B3**	**SEMESTER**	**2o**
COURSE TITLE	INDUSTRIAL ROBOTS		

COURSEWORK BREAKDOWN	**TEACHING WEEKLY HOURS**	**ECTS CREDITS**
Lectures and tutorials	3	5
Add extra space if necessary		

COURSE TYPE Scientific field *special knowledge* Development of special skills	Compulsory/Elective
PREREQUISITES:	
LANGUAGE OF INSTRUCTION and EXAMS:	Greek
COURSE AVAILABLE TO ERASMUS STUDENTS:	yes
COURSE WEB PAGE (URL)	https://eclass.uowm.gr/courses/ECE384/

(2) LEARNING OUTCOMES

Learning Outcomes
To familiarise the student with the basic concepts of robotics with particular emphasis on solving the basic kinematic problems (position and velocity) of robotic arms. Upon completion of the course, the student will be able to understand basic robotics concepts, perform kinematic analysis of position, velocity and acceleration of robotic arms, design controllers in the form of introductory robotic arm control techniques, and design robotic arm trajectories.
General Skills
Retrieve, analyse and synthesise data and information using the necessary Adapt to new situations Making decisions Working autonomously Working in teams Working in an international context Respect the natural environment Be critical and self-critical Foster free, creative and causal thinking

(3) COURSE CONTENT

Definition of robotics. Structural characteristics of robots, geometric characteristics. Forward kinematics problem. Denavit-Hartenberg method. Tool orientation. Inverse kinematics problem. Calculation of the Jacobian matrix. Forward and inverse kinematic problem of velocity-acceleration. Robot position and velocity control, PID controllers and automatic robot control. Position control, trajectory design.

(4) TEACHING and LEARNING METHODS - ASSESSMENT

COURSE DELIVERY MODE *lectures, face-to-face, distance learning etc.*	Lectures and tutorials
USE OF INFORMATION AND COMMUNICATION TECHNOLOGY *e.g. use of audiovisual media and computers etc.*	• Support of learning process through e-class platform. • Specialized simulation software of Robotics
TEACHING METHODS *Derailed description of the teaching methods used:* *Lectures, Seminars, Laboratory exercises, Study & bibliography analysis, Tutoring, Internship/Practicum, Art Workshop, Interactive Teaching, Projects, Written Assignments, Artistic creation etc.* *Study hours for each learning activity are included along with the non-guided study hours according to the ECTS principles*	

Method Description	***Semester workload***
Lectures and tutorials	39
Individual project	70
Individual Study	41
Total	***150***

ASSESSMENT METHODS AND CRITERIA *Description of the assessment methods and criteria:* *Language of Assessment, Assessment Methods, Formative or Concluding Assessment, Multiple Choice Test, Short Answer Questions, Essay Development Questions, Problem Solving, Written Assignment, Reports, Oral Exam, Essay, Oral Presentation, Clinical Examination of patient, Artistic Performance, Others* *Assessment criteria are explicitly defined and stated.*	I. Written final examination (80%) including - Multiple choice questions - Multiple Choice Questions - Multi-choice essay questions Short answer questions - Comparative assessment of theoretical elements - Laboratory work II. Presentation of individual/group work (20%)

(5) RECOMMENDED BIBLIOGRAPHY

- Recommended Bibliography:

Εισαγωγή στη Ρομποτική, 4η Έκδοση, Craig John
Ρομποτική, 4η Έκδοση, Εμίρης Δημήτριος, Κουλουριώτης Δημήτριος
Ρομποτική, Ιωάννης Μπούταλης
ΡΟΜΠΟΤΙΚΗ, SICILIANO,SCIAVICCO,VILLANI,ORIOLO