

COURSE OUTLINE

1. GENERAL

SCHOOL	ENGINEERING		
DEPARTMENT	PRODUCT AND SYSTEMS DESIGN ENGINEERING		
LEVEL OF STUDIES	Undergraduate		
COURSE CODE	3204	SEMESTER	6
COURSE TITLE	Computer Aided Analysis and Manufacturing (CAE/CAM)		
INDEPENDENT TEACHING ACTIVITIES <i>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</i>		WEEKLY TEACHING HOURS	CREDITS
Lectures		3	6
<i>Add rows if necessary. The organisation of teaching and the teaching methods used are described in detail at (d).</i>			
COURSE TYPE <i>general background, special background, specialised general knowledge, skills development</i>	Special background, skills development		
PREREQUISITE COURSES:	NONE		
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	GREEK/ENGLISH		
COURSE DELIVERED TO ERASMUS STUDENTS	YES		
MODULE WEB PAGE (URL)	https://eclass.uowm.gr/		

2. LEARNING OUTCOMES

Learning outcomes
<p>On successful completion of this module the learner will be able to:</p> <p>The students are able to:</p> <ul style="list-style-type: none"> • perform structural analyses. • evaluate the optimum dimensions of structures. • satisfy strength and safety requirements. • design the production process (selection of tools and conditions). • generate the NC program of a part. • use CAE/CAM software.
General Skills
<p>Upon successful completion of the program students will:</p> <ul style="list-style-type: none"> • have the theoretical and practical background on the field of product and systems design engineering and the corresponding profession. • utilize scientific knowledge to understand, analyze and solve problems. • apply a wide range of scientific and technical knowledge concerning the design and development of products and systems.

3. COURSE CONTENTS

Introduction to CAE and computational mechanics methods, theoretical basis of the finite element method, theory of elasticity, failure theories and design methodologies, simplifications in FEM, element types and discretization, material properties, loads and boundary conditions, post-processing, structural optimization.

Process study and schedule (procedure, computer aided design). CNC program generation - CAM (methodology, definition of workpiece, machine selection, tools and conditions selection, CNC machining centers, NC sequences). Machine structure. Process control. Post processors.

4. TEACHING METHODS - ASSESSMENT

MODE OF DELIVERY	In class, face to face	
USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY	<ul style="list-style-type: none"> • Video and slide presentations via projector • Support of teaching process via the electronic platform e-class • Communication with students. 	
TEACHING METHODS	Activity	Semester workload
	Lectures	90
	Non-directed study	60
	Course total	150
ASSESSMENT METHODS	<p>Final written exam which includes:</p> <ul style="list-style-type: none"> i. Short-answer questions ii. Multiple choice questions iii. Problem solving <p>Assignment</p>	

5. ATTACHED

- Suggested bibliography:

1. Βιβλίο [102072433]: Κατασκευαστική και Ανάλυση Προϊόντων με τη Βοήθεια Η/Υ, Ευκολίδης Νικόλαος, Τζώτζης Αναστάσιος, Κυράτσης Παναγιώτης [Λεπτομέρειες](#)
2. Βιβλίο [18548727]: Ανάλυση Πεπερασμένων Στοιχείων, Buchanan George R. [Λεπτομέρειες](#)
3. Class notes