

## COURSE OUTLINE

### 1. GENERAL

<b>SCHOOL</b>	Agricultural Sciences		
<b>ACADEMIC UNIT</b>	BIOSYSTEMS& AGRICULTURAL ENGINEERING		
<b>LEVEL OF STUDIES</b>	Undergraduate		
<b>COURSE CODE</b>	BAE 902	<b>SEMESTER</b>	9 <sup>th</sup>
<b>COURSE TITLE</b>	DESIGN OF AGRICULTURAL MACHINERY		
<b>INDEPENDENT TEACHING ACTIVITIES</b> <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>	<b>WEEKLY TEACHING HOURS</b>	<b>CREDITS</b>	
<b>Lectures</b>	3		
<b>Tutorials</b>	2		
Laboratory	0		
<b>TOTAL</b>	<b>5</b>	<b>5</b>	
<i>Add rows if necessary. The organisation of teaching and the teaching methods used are described in detail at (d).</i>			
<b>COURSE TYPE</b> <i>general background, special background, specialised general knowledge, skills development</i>	Specialised general knowledge, Skills Development		
<b>PREREQUISITE COURSES:</b>	There are no prerequisite courses.		
<b>LANGUAGE OF INSTRUCTION and EXAMINATIONS:</b>	Greek .-For Erasmus students in English		
<b>IS THE COURSE OFFERED TO ERASMUS STUDENTS</b>	Yes		
<b>COURSE WEBSITE (URL)</b>	<a href="https://eclass.upatras.gr/courses/">https://eclass.upatras.gr/courses/</a>		

### 2. LEARNING OUTCOMES

<p><b>Learning outcomes</b></p> <p><i>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</i></p> <ul style="list-style-type: none"> <li>• <i>Description of the level of learning outcomes for each qualifications cycle, according to the Qualifications Framework of the European Higher Education Area</i></li> <li>• <i>Descriptors for Levels 6, 7 &amp; 8 of the European Qualifications Framework for Lifelong Learning and Appendix B</i></li> <li>• <i>Guidelines for writing Learning Outcomes</i></li> </ul>
<p>The course seeks to give the students of the Department of Agriculture specialized knowledge in the field of agricultural mechanization and agricultural machinery.</p> <p>At the end of the course, the student will have acquired the following skills and abilities:</p> <ol style="list-style-type: none"> <li>1. To recognize agricultural machines, their parts and their operation.</li> <li>2. Will be able to adjust and utilize agricultural machinery to meet specific crop needs.</li> <li>3. He will be able to calculate the cost of using agricultural machinery, calculating fixed and variable costs, as well as calculate the power to purchase new agricultural tractors.</li> </ol>
<p><b>General Competences</b></p> <p><i>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?</i></p>

<i>Search for, analysis and synthesis of data and information, with the use of the necessary technology</i>	<i>Project planning and management</i>
<i>Adapting to new situations</i>	<i>Respect for difference and multiculturalism</i>
<i>Decision-making</i>	<i>Respect for the natural environment</i>
<i>Working independently</i>	<i>Showing social, professional and ethical responsibility and sensitivity to gender issues</i>
<i>Team work</i>	<i>Criticism and self-criticism</i>
<i>Working in an international environment</i>	<i>Production of free, creative and inductive thinking</i>
<i>Working in an interdisciplinary environment</i>	.....
<i>Production of new research ideas</i>	<i>Others...</i>
	.....

At the end of this course the student will have further developed the following general skills:  
*Search, analysis and synthesis of data and information, also using the necessary technologies*  
*Adaptation to new situations*  
*Decision making*  
*Autonomous work*  
*Teamwork*  
*Generating new research ideas*  
*Respect for the natural environment*  
*Exercise criticism and self-criticism*  
*Promotion of free, creative and inductive thinking*

**3. SYLLABUS**

1. • Mechanization of Agriculture  
 Advantages, disadvantages, problems, stages of agricultural mechanization, standardization and importance of

- The agricultural tractor and its use

Types, features, comparison

- The internal combustion engine (Part I)

Operating principle and features

- The Internal Combustion Engine (Part II)

Systems: cooling, lubrication, fuel transfer, electrical

- Agricultural tractor systems

Mechanical transmission, hydraulic system, power take-off, steering system, braking system

- Soil cultivation machinery

Importance of tillage, effect on physical and other soil properties, tillage systems. Primary and secondary processing machinery. Exercises.

- Machines for preparing the spiroclin

Installation of plantations. Methods and their use, sowing, sowing of grains and small seeds. Seedlings of carving crops, planting and transplanting. Exercises

- Cultivation machinery

Fertilizer spreaders, carving plants. Exercises

- Plant protection machinery

High pressure spraying machines, mist sprayers, sprayers. Exercises

- Harvesting machines

Combine harvesters, cotton pickers, beet harvesters, potato harvesters, fruit pickers

- Machinery for forage plants

Grass cutters, grass handlers, grass tyers, stem compactors, silage cutting machines

- Cost of using and replacing agricultural machinery

Calculation of fixed and variable costs, Accumulated cost, Method of partial calculation. Exercises

- Power of agricultural tractors and selection of attachments

Calculation of the required power and the size of the attached machinery. Exercises

The laboratory exercises aim to deepen and familiarize the students with the concepts and methodologies analyzed in the theoretical part.

#### 4. TEACHING and LEARNING METHODS - EVALUATION

<p><b>DELIVERY</b> <i>Face-to-face, Distance learning, etc.</i></p>	Face to face deliveries.	
<p><b>USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY</b> <i>Use of ICT in teaching, laboratory education, communication with students</i></p>	<ul style="list-style-type: none"> <li>• Use of ICT (power point) in Teaching</li> <li>• Use of ICT (power point) in Laboratory Training</li> <li>• Video presentation</li> <li>• Use of ICT in Communication with students (Learning process support through the electronic platform e-class).</li> </ul>	
<p><b>TEACHING METHODS</b> <i>The manner and methods of teaching are described in detail.</i> <i>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.</i> <i>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</i></p>	<b>Activity</b>	<b>Semester workload</b>
	Lectures	39
	Tutorials	26
	Study and literature survey	20
	Exams	10
	Unguided study	30
	Course total	<b>125</b>
<p><b>STUDENT PERFORMANCE EVALUATION</b> <i>Description of the evaluation procedure</i> <i>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</i> <i>Specifically-defined evaluation criteria are</i></p>	<p>1. The main assessment criteria focus on understanding and correlating the knowledge that students gain from the course with knowledge from other courses. The evaluation is continuous and dynamic. It mainly includes short project work, solving problems or answering open questions. Exams are conducted orally or in writing or a combination of the two, with or without pre-examination of the key topics of the course, with or without progressions and by other inventive methods, depending on the dynamics and the needs of the audience</p>	

*given, and if and where they are accessible to students.*

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##### **5. RECOMMENDED LITERATURE in Greek**

1. Τσατσαρέλης, Κ., “Γεωργικοί Ελκυστήρες”, 2η έκδοση, Εκδόσεις Γιαχούδη, Θεσσαλονίκη, 2011

Κωδικός Βιβλίου στον Εύδοξο: 12833463

2. Τσατσαρέλης, Κ., “Αρχές Μηχανικής Κατεργασίας του Εδάφους και Σπορά”, Εκδόσεις Γιαχούδη, Θεσσαλονίκη, 2000

Κωδικός Βιβλίου στον Εύδοξο: 7972