

## 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 910	<b>SEMESTER</b>	9 <sup>th</sup>
<b>COURSE TITLE</b>	INFORMATION TECHNOLOGIES IN AGRICULTURE		
<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. However, students must have basic knowledge of General and Inorganic Chemistry, Organic Chemistry, Agricultural Physical Chemistry, Agricultural Hydraulics and Irrigation		
<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 purpose of the course is the understanding and practical application of the basic concepts, methods and tools of informatics in agriculture. Upon successful completion of the course, students will be able to follow the continuous developments of this interdisciplinary field and use IT tools</p> <ul style="list-style-type: none"> <li>• Computer systems,</li> <li>• Programming in agricultural applications</li> <li>• Basic network building blocks,</li> <li>• Advanced computer applications for agriculture,</li> <li>• Sensor applications,</li> </ul>
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- Automation technologies,
  - Applications of robotics in crops,
  - Applications of electronic agricultural machinery in crops.
- Geographic Information Systems (GIS)

<b>General Competences</b>	
<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>	
<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>.....</i>
<i>Production of new research ideas</i>	<i>Others...</i>
	<i>.....</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. Theory
1. Use of information technology in agriculture.
  2. History of computer technology and review of agricultural technology.
  3. Importance of computer technology in agricultural practice.
  4. Information and informational data.
  5. Numerical systems.
  6. Structure, hierarchical organization and categories of computer systems.
  7. Basic network building blocks.
  8. Advanced computer applications for agriculture and programming.
  9. Application of sensors to crops.
  10. Automation technologies in agriculture.
  11. Application of robotics in crops.
  12. Application of electronic agricultural machinery in crops.
  13. Geoinformatics and remote sensing (geographical information system (GIS) global navigation satellite system (GNSS)).

### 6. TEACHING and LEARNING METHODS - EVALUATION

<b>DELIVERY</b> <i>Face-to-face, Distance learning, etc.</i>	Face to face deliveries.
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<p><b>USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY</b></p> <p><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></p> <p><i>The manner and methods of teaching are described in detail.</i></p> <p><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></p> <p><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>	<table border="1"> <thead> <tr> <th><i>Activity</i></th> <th><i>Semester workload</i></th> </tr> </thead> <tbody> <tr> <td>Lectures</td> <td>39</td> </tr> <tr> <td>Tutorials</td> <td>26</td> </tr> <tr> <td>Study and literature survey</td> <td>20</td> </tr> <tr> <td>Exams</td> <td>10</td> </tr> <tr> <td>Unguided study</td> <td>30</td> </tr> <tr> <td><b>Course total</b></td> <td><b>125</b></td> </tr> </tbody> </table>	<i>Activity</i>	<i>Semester workload</i>	Lectures	39	Tutorials	26	Study and literature survey	20	Exams	10	Unguided study	30	<b>Course total</b>	<b>125</b>
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<p><b>STUDENT PERFORMANCE EVALUATION</b></p> <p><i>Description of the evaluation procedure</i></p> <p><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></p> <p><i>Specifically-defined evaluation criteria are given, and if and where they are accessible to students.</i></p> <p>1</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.</p> <p>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>														

**4. RECOMMENDED LITERATURE in Greek**

<ul style="list-style-type: none"> <li>• Laudon, KC and Traver, CG, (2013). E-commerce. 9th Eds Pearson Prentice Hall. 34 Gelb E, and Offer A, (2005). ICT in agriculture: perspectives of technological innovation. Ebook</li> </ul>
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- Sonka ST, Bauer ME, Cherry ET, Colburn JW, Heimlich RE, Joseph DA, Leboeuf JB, Lichtenberg E, Mortensen DA, Searcy SW, Ustin SL and SJ Ventura. (1997) Precision Agriculture in the 21st Century: Geospatial and information technologies in crop management. National Academy Press Washington.
- Μάνος Β, Μπουρνάρης Θ (2010). Εφαρμογές και νέες τεχνολογίες πληροφορικής Αθήνα Εκδόσεις Ζήτη σελ.224 .
- Τσακνάκης Ι και Φλώρος Α, (2007). Εισαγωγή στις Τεχνολογίες της Πληροφορικής και των Επικοινωνιών. Αθήνα: Εκδόσεις Κλειδάριθμος, σελ.229 .