COURSE OUTLINE

(1) GENERAL

SCHOOL	School of Agricultural Sciences		
ACADEMIC UNIT	Biosystems & Agricultural Engineering		
LEVEL OF STUDIES	UNDERGRADUATE		
COURSE CODE	**BAE_230**	**SEMESTER**	**2nd**
COURSE TITLE	BASIC PRINCIPLES OF INFORMATION TECHNOLOGY AND PROGRAMMING		

INDEPENDENT TEACHING ACTIVITIES *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*	**WEEKLY TEACHING HOURS**	**CREDITS**
Lectures	2	
Tutorials	0	
Laboratory	3	
TOTAL	**5**	**5**
Add rows if necessary. The organisation of teaching and the teaching methods used are described in detail at (d).		

COURSE TYPE *general background, special background, specialised general knowledge, skills development*	Background
PREREQUISITE COURSES:	There are no prerequisite courses. However, students must have a satisfactory knowledge of Mathematics of the General Lyceum and familiarity with the computer environment.
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	Greek / English to the extent required by the nature of the course .-For Erasmus students in English
IS THE COURSE OFFERED TO ERASMUS STUDENTS	Yes. Project work
COURSE WEBSITE (URL)	

(2) LEARNING OUTCOMES

Learning outcomes

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

- *Description of the level of learning outcomes for each qualifications cycle, according to the Qualifications Framework of the European Higher Education Area*
- *Descriptors for Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning and Appendix B*
- *Guidelines for writing Learning Outcomes*

The material of the course BASIC PRINCIPLES OF INFORMATION TECHNOLOGY AND PROGRAMMING is a background object and at the same time a tool for the students of the Department of Biosystems Science and Agricultural Engineering which aims to introduce and familiarize them with the are essential tools in their science This knowledge is necessary because it is used in many subsequent courses which are related to the Intelligent Agriculture of the Future, Precision Agriculture etc.

Upon successful completion of the course the student will be able to:

• distinguish the structural elements of a computer and choose the composition of a computer system that meets the needs of its scientific field

• utilize the capabilities of the operating system (Operating System) of a computer and perform configurations,

• understand the basic principles of programming, algorithmic structures and techniques of designing and developing a program,

• convert algorithms into structures and, using the commands of a programming language, compose a program that solves a specific problem using PC

• be able to install, configure and use software systems for data processing and analysis, evaluation of results and decision making in matters of the scientific field. To acquire the necessary knowledge to search for information

General Competences

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?

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

At the end of the course the student will have acquired the ability to use effectively the PC and basic programming methods as knowledge of infrastructure in the next courses in his studies at EVGM. Additional goal is to be able to:

1. Autonomous Work
2. Teamwork
3. Decision Making
4. Work in an interdisciplinary environment
5. Search, analysis and synthesis of data and information, using the necessary information technologies

(3) SYLLABUS

1. Introduction to computer use. Evolution of computers, processors and architectures
2. Data storage and data handling, information creation
3. Data representation. Representation of numbers
4. Modern computer architecture, structural / functional elements
5. Registrars. Memory items, Memory addresses. Input, Output and storage devices.
6. Relational Database Systems (RDBMS)
7. Computer Software: Operating Systems. Evolution of operating systems.
8. Application Architecture and Software.
9. Computer Networks, Internet
10. Algorithms and Programming Languages. Introduction to structured and object-oriented programming
11. Data types. Variables. Stable. Numerical, relational and logical operators.
12. Input / Output Methods. Commands (simple and complex). Built-in and user-defined functions.
13. Conditions. Decision structures, iteration structures, table handling.
14. Subroutines
15. Debugging

(4) TEACHING and LEARNING METHODS - EVALUATION

DELIVERY *Face-to-face, Distance learning, etc.*	Teaching in the amphitheater and mainly in the Computer Center, Lectures using electronic means which concern the theory, in exercises in the PC for applications in the area of Biosystems and Agricultural Engineering.
USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY *Use of ICT in teaching, laboratory education, communication with students*	• Use of ICT (power point) in Teaching • Use of ICT (power point) in Laboratory Training

<table>
<tr><td></td><td>• Use of ICT in Communication with students (Learning process support through the electronic platform e-class).</td></tr>
<tr><td>TEACHING METHODS
The manner and methods of teaching are described in detail.
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.

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</td><td>
<table>
<tr><th>Activity</th><th>Semester workload</th></tr>
<tr><td>Lectures</td><td>39</td></tr>
<tr><td>Tutorials</td><td>26</td></tr>
<tr><td>Unguided study</td><td>57</td></tr>
<tr><td>Final Exams</td><td>3</td></tr>
<tr><td></td><td></td></tr>
<tr><td>Course total</td><td>125</td></tr>
</table>
</td></tr>
<tr><td>STUDENT PERFORMANCE EVALUATION
Description of the evaluation procedure

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

Specifically-defined evaluation criteria are given, and if and where they are accessible to students.</td><td>Combined Final Exam with the use of PC in the Greek language</td></tr>
</table>

(5) ATTACHED BIBLIOGRAPHY

- KnuthD.E., «Η Τέχνη του Προγραμματισμού», Μετ. Σ. Σουραβλάς, Εκδόσεις Τζιόλα, Θεσσαλονίκη, 2009
- Καρλής Δ. και Ντζούφρας Ι. 2015. Εισαγωγή στον προγραμματισμό και στη στατιστική ανάλυση με R.
- Thomas Rahlf. Data Visualisation with R. Springer International Publishing, New York, 2017. ISBN 978-3-319-49750-1
- Steven Murray. Apprendre R en un Jour. SJ Murray, 2017. Ebook.
- Lawrence Leemis. Learning Base R. Lightning Source, 2016. ISBN 978-0-9829174-8-0
- Vikram Dayal. An Introduction to R for Quantitative Economics: Graphing, Simulating and Computing. Springer, 2015. ISBN 978-81-322-2340-5