COURSE OUTLINE

1.GENERAL

SCHOOL	Environment and Agricultural Engineering		
ACADEMIC UNIT	Natural Resources Management and Agricultural Engineering		
LEVEL OF STUDIES	Master of Sciences		
COURSE CODE	**630303**	**SEMESTER**	**A**
COURSE TITLE	Field data collection – Precision Agriculture		

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	3	3
Lab exercises and assignments	2	2
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*	General background
PREREQUISITE COURSES:	-
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	Greek
IS THE COURSE OFFERED TO ERASMUS STUDENTS	YES
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*

Specialized knowledge about the development and application of innovative solutions for the application of precision agriculture. The student will be able to understand the spatial and temporal variability of the fields and decide on the best suitable method and technologies for the treatment of variability. The student will be familiar with the selection of the technologies, as well as with measuring the field variability and the application of variable rate doses. (S)he will be trained on the technologies to be used in field, such as IoT, and micro-processors for the collection of field data.

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…*
	…….

Extraction, analysis and presentation and field data with the relevant information with the use of appropriate techniques.
Group exercise.
Decision making.
Promotion of free, creative, and generative thinking.

3.SYLLABUS

Introduction to the principles and methods of precision agriculture
Methods, sensors and applications for mapping of different crops
Deployment of variable rate doses, selective harvesting
Sensors for the development of variable rate systems
Analysis and processing of precision agriculture data
Analysis of big data generated from precision agriculture with artificial intelligence algorithms
Applications of precision agriculture in Greece
IoT systems for precision agriculture
Microprocessors for data collection in the field
Microprocessors for the development of systems for the management of farm machinery
Robotic systems as means for carrying sensors to measure field variability
Assessment of precision agriculture systems - Profitability
Technology assessment – future trends

4.TEACHING and LEARNING METHODS - EVALUATION

DELIVERY *Face-to-face, Distance learning, etc.*	Face to face
USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY *Use of ICT in teaching, laboratory education, communication with students*	Use of Information systems for the teaching and communication with the students
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*	
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.*	I. Group exercise and presentation in the classroom II. Writing assignment in relation to the processing of data generated from the application of precision agriculture

Activity	***Semester workload***
Lectures	75
Exercises	50
Course total	***125***

5.ATTACHED BIBLIOGRAPHY

- Suggested bibliography:

Fountas, S., Gemtos, T., 2016. Precision Agriculture. [e-book]. Athens. ISBN: 978-960-603-135-9.

- Related academic journals:

- Precision agriculture journal (Springer): https://www.springer.com/journal/11119
- Computers and Electronics in Agriculture (Elsevier) https://www.sciencedirect.com/journal/computers-and-electronics-in-agriculture
- Smart Agricultural Technology (Elsevier) https://www.sciencedirect.com/journal/smart-agricultural-technology/vol/5/suppl/C