COURSE OUTLINE

(1) GENERAL

SCHOOL	AGRICULTURAL ENGINEERING AND ENVIRONMENTAL SCIENCES		
ACADEMIC UNIT	**Natural Resources Management & Agricultural Engineering**		
LEVEL OF STUDIES	BACHELOR OF SCIENCE		
COURSE CODE	3650	SEMESTER	1
COURSE TITLE	INTRODUCTION TO CALCULUS AND LINEAR ALGEBRA		

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
	4	4
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 and Skills development
PREREQUISITE COURSES:	
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	Greek
IS THE COURSE OFFERED TO ERASMUS STUDENTS	Non
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*

After successful completion of this course, students are expected to be able to:

- Use and apply definitions and concepts from calculus and linear algebra in a purely mathematical and/or in an applied context.
- Use and apply mathematical knowledge and methodology to solve basic mathematical problems in the life, biological and technological sciences using a systematic approach.
- Enhance their ability of critical thinking through the verification of the results.

Correctly interpret the results in terms of the problem that was modeled mathematically

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

1) Adapt to new situations.
2) Make decisions.
3) Work independently.
4) Create new research ideas.
5) Advance free, creative and inductive thinking.

(3) SYLLABUS

1) FUNCTIONS OF A SINGLE VARIABLE:
Cartesian coordinates and lines, functions of a single variable; limits and continuity;
derivatives; maxima and minima; first and second derivative tests.

2) ELEMENTS OF LINEAR ALGEBRA:
Euclidean spaces; matrices; rank of a linear map/matrix; systems of linear equations.

3) SEQUENCES - INTEGRALS:
Sequences. Area-definite integral; the fundamental theorem of calculus;
the substitution rule; techniques and applications of integration.

4) DIFFERENTIAL EQUATIONS:
Ordinary differential equations; linear equations of first order; separable equations;
applications of first order equations.

(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*	Educational material, updates and announcements available on the web.
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*	

Activity	*Semester workload*
Lectures	52
Homework	13
Independent study	35

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*		
	Course total	*100*
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.*	Written examination with open, short answer and/or multiple choice questions, based on the lectures offered, containing: - Problems and/or exercises. - Comprehension questions.	

(5) ATTACHED BIBLIOGRAPHY

1. Ν. Μυλωνάς, Χ. Σχοινάς, Γ. Παπασχοινόπουλος, Λογισμός Συναρτήσεων μιας Μεταβλητής και Γραμμική Αλγεβρα, Εκδοσεις ΤΖΙΟΛΑ, 2016.
2. Σακκαλής, Π. Απειροστικός Λογισμός και Πραγματική Άλγεβρα. Εκδόσεις Τυπωθήτω, Γ έκδοση, Σεπτέμβριος 2008.
3. Finney R. L., Weir W. D. A., Giordano F. R. Απειροστικός Λογισμός. Πανεπιστημιακές εκδόσεις Κρήτης, 1Η/2012.