

COURSE LAYOUT

1. GENERAL

SCHOOL	School of Food and Nutritional Sciences		
DEPARTMENT	Department of Food Science and Human Nutrition,		
STUDY LEVEL	Undergraduate		
COURSE CODE	555	SEMESTER	1 st
COURSE TITLE	Mathematics A (OBLIGATORY)		
INDEPENDENT TEACHING ACTIVITIES		WEEKLY TEACHING HOURS	ECTS
Lectures		4	4
COURSE TYPE	Infrastructure/ development	General	knowledge/ Skills
PREREQUISITES	No		
LANGUAGE	Greek		
IS THE COURSE OFFERED for ERASMUS STUDENTS?	No		
COURSE WEB PAGE			

2. LEARNING OUTCOMES

Learning Outcomes	
After this course, the student is expected to be able to: • use and apply definitions and notions of Infinitesimal Calculus in a pure and applied sense. • Use and apply mathematical methods in basic problems of Agricultural Economy and Rural Environment • develop critical thinking through result verification	
	General Competences
1) Adapt to new situations. 2) Make decisions. 3) Work autonomously. 4) Create new research ideas. 5) Advance free, creative and inductive thinking.	

3. COURSE CONTENT

1) Vectors in n-dimensional Euclidean space. Linear independence. 2) Matrices: addition, multiplication, square matrices, determinants (for 2×2 and 3×3). Invertible matrices, rank, reduced echelon form. 3) Solving systems of linear equations. 4) Inner product, cross product in 3-dimensional Euclidean space, geometric meaning. Lines and planes in 3-dimensional Euclidean space. 5) Real valued functions of one variable, exponential, trigonometric functions, logarithm. 6) Differentiable functions, monotonicity, local maxima-minima. 7) Integration: definite and indefinite integral, calculations, area. 8) Functions of several variables (2 and 3), partial derivatives, chain rule. Critical points, Hessian determinant, local maxima-minima.
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9) First order Differential equations: solving separable and linear. Applications.

ο. TEACHING and LEARNING METHODS - Evaluation

TEACHING METHOD	Live, face to face teaching in the classroom	
USE OF INFORMATICS and COMMUNICATION TECHNOLOGIES	Educational material, updates and announcements available via Open e-class platform.	
TEACHING ORGANISATION		
	<i>Activity</i>	<i>Workload (hours)</i>
	Lectures	52 hours
	Individual study	48 hours
	Course Total (25 hours student workload per ECTS)	100 hours (4 ECTS)
STUDENT EVALUATION	Written examination of gradual difficulty, based on the lectures offered, containing: ➤ Problems and/or exercises. ➤ Comprehension questions.	

BIBLIOGRAPHY

- 1) J. Hass, C. Heil, D. Weir, Thomas. *Calculus*. Pearson; 14th edition (2017)
- 2) Φιλιππάκης Μιχαήλ, *Εφαρμοσμένη Ανάλυση και στοιχεία Γραμμικής Άλγεβρας*, Εκδόσεις Τσότρας Αθανάσιος, 2017.
- 3) Ν. Μυλωνάς, Χ. Σχοινάς, Γ. Παπασχοινόπουλος, *Λογισμός Συναρτήσεων Πολλών Μεταβλητών*, Εκδόσεις ΤΖΙΟΛΑ, 2016.
- 4) Α. Θεοδώρου, *Εφαρμοσμένα Μαθηματικά Θεμέλια Θετικών και Περιβαλλοντικών Επιστημών*, UNIBOOKS, 2019.
- 5) Σακκαλής, Π. *Απειροστικός Λογισμός και Πραγματική Άλγεβρα*. Εκδόσεις Τυπωθήτω, Γ έκδοση, Σεπτέμβριος 2008.