Τμήμα Επιστήμης
Τροφίμων & Διατροφής
ΠΑΝΕΠΙΣΤΗΜΙΟ ΘΕΣΣΑΛΙΑΣ

MATHEMATICS
COURSE OUTLINE

GENERAL

SCHOOL	AGRICULTURAL SCIENCES			
DEPARTMENT	FOOD SCIENCE AND NUTRITION			
EDUCATION LEVEL	*Undergraduate*			
LECTURE CODE	ΒΠ112	**SEMESTER**	A´	
LECTURE TITLE	MATHEMATICS TEACHERS: Chr. PAPAIOANNOU			
SELF-ENDED TEACHING ACTIVITIES *in case the credits are awarded in separate parts of the course e.g. Lectures, Laboratory Exercises, etc. If the credits are awarded uniformly for the entire course, enter the weekly teaching hours and total credits*		**WEEKLY TEACHING HOURS**	**CREDIT UNITS (ECTS)**	
	Διαλέξεις	3	5	
	Ασκήσεις Πράξης	1		
COURSE TYPE *Background, General Knowledge, Scientific Area, Development*	GENERAL INFRASTRUCTURE (*Background*)			
PREREQUISITE COURSES:	NO			
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	GREEK			
THE COURSE IS OFFERED TO ERASMUS STUDENTS	NO (Yes as long as there is a request from Erasmus students)			
COURSE WEBSITE (URL)				

LEARNING OUTCOMES

Learning Outcomes

The course is the only one in the curriculum in which students are trained in Higher Mathematics (Differential and Integrative Calculus) and Statistics.

The material of the course aims to present the most basic theoretical results of Differential and Integral Calculus, Linear Algebra, Probability and Statistics- Biostatistics.

It also presents numerical methods that connect the theory and its practical application in quantity calculations, when the data comes from experience.

With the successful completion of the course, students will be able to:

- Understands the basic theoretical results of Differential and Integral Calculus, Linear Algebra, Probability and Statistics.
- It distinguishes, according to the conditions of the problem, which result it will use and which numerical data it may need to collect, from ready-made tables or from sampling.

General Skills

- Adjusting to new situations
- Decision making
- Unguided (Autonomous) work

COURSE CONTENT

1st week
Finding function type from numerical data. Estimate function value, solve equation, find absolute error and relative absolute error from interpolation polynomial. First Knowledge of Biomathematics: Linear Algebra, Natural numbers, Identities, Graphical Representation of Functions.
2nd week
Derivatives: Definition, interpretation, derivatives of elementary functions, rules for finding derivative.
3rd week
The Taylor polynomial as an extension of the Mean Value Theorem and its use in function estimation, limit computation, and equation solving.
4th week
The Newton – Raphson method for solving an equation numerically. Theory of Tables.
5th week
Monotonicity and extremes: Solving max-minimum problems
6th week
Indefinite Integral: Calculation methods. Definite Integral: Interpretation, exact and approximate calculation methods. General on Infinite Calculus: Derivative – Integral – Differential Equations.
7th week
Optional Progress Exam (weight 40%) - Εξέταση προόδου
8th week
Differential equations: solutions of elementary differential equations.
9th week
Elements of set theory and combinatorial elements Basic concepts of probability theory. Probability theory: discrete and continuous distributions
10th week
Descriptive Statistics: Measures of Location and Dispersion, Least Squares Line.
11th week
Estimation: Point estimate, Confidence interval of mean, percentage, variance.

12th week

Random variables – Distributions: Probability distributions, Parameters of distributions, Normal distribution, Student's distribution.

Biostatistics-Biomathematics in Food and Nutrition Science.

13th week

Assumption testing of mean, percentage, variance

Testing mean, percentage, variance assumptions

TEACHING and LEARNING METHODS - EVALUATION

TEACHING METHOD	Face-to-face lectures in a classroom.
USE OF INFORMATION AND COMMUNICATION TECHNOLOGIES	Use of T.P.E. in teaching. Support of the learning process with the e-class electronic platform. Contact by e-mail.
TEACHING ORGANISATION	(see table below)

Activity	*Semester's Workload*
Lectures	39
Practice exercises	13
Bibliograpy stude and analysis	
Writing problem solving assignements	
Unguided study	73
Total (25 workload hours per Credit unit)	**125**

STUDENT EVALUATION	i. Written progress exam (after the 7th lecture): participation of 40% of the final grade.
	ii. Final written exam: participation of 60% of the final grade.
	The written exams include Problem Solving where:
	▪ The correct use of Theory
	▪ The correct use of ready-made data tables
	▪ The ability to perform complex numerical calculations

RECOMMENDED BIBLIOGRAPHY

Suggested Bibliography of the "Eudoxus" System:

1) Papaioannou & Kosmas Ferentinos, Medical Statistics and Biomathematics data, Volume A', Book Code in Eudoxus: 22855

2) Petridis D., Applied Statistics in Food and Nutrition Science, Book Code in Eudoxus: 102075301

3) Vassilis G. Stavrinos, Demosthenes V. Panagiotakos, Biostatistics, Book Code in Eudoxus: 31148

4) Papadopoulos G., An Introduction to Probability and Statistics, Book Code in Eudoxus: 50659284

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