STATISTICS

COURSE OUTLINE

1. GENERAL

SCHOOL	SCHOOL OF PLANT SCIENCE		
ACADEMIC UNIT	DEPARTMENT OF CROP SCIENCE		
LEVEL OF STUDIES	Undergraduate		
COURSE CODE	105	**SEMESTER**	3rd
COURSE TITLE	STATISTICS		
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		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 knowledge Skills development		
PREREQUISITE COURSES:			
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	GREEEK		
IS THE COURSE OFFERED TO ERASMUS STUDENTS	No		
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*

- Upon completion of this course, the student is expected to be able to:
- distinguish stochastic and deterministic phenomena and experiments
- using enumeration methods and basic probability tools
- apply simple probability calculus

- recognize the practical value and importance of probabilities in the understanding of stochastic phenomena and experiments
- describe and summarize data
- translate a research question into a statistical hypothesis when given a data group and the type of experimental design or sampling procedure
- apply estimation and testing methods to make data-based decisions
- identify the selected method's assumptions and keep in mind that it is required to apply checks for them
- comprehend and interpret correctly the statistical significance
- interpret results correctly, effectively, and in context without relying on statistical jargon
- comprehend the notion of uncertainty which is always contained in statistical inference
- critique data-based claims and evaluate data-based decisions
- complete a research project that employs simple statistical inference
- comply to ethical issues.

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*
Teamwork	*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…*
	……

1) Retrieve, analyse and synthesize data and information, with the use of necessary technologies.
2) Adapt to new situations.
3) Make decisions.
4) Work autonomously.
5) Create new research ideas.
6) Advance free, creative and inductive thinking.

3. SYLLABUS

1) Descriptive statistics (frequency table; numerical descriptive measures; bar chart; pie chart; box plot; histograms).
2) Statistical approach: a brief overview.
3) Useful counting rules (multiplication principle, permutations, k-permutations, combinations).
4) Practical notion of probability; basic probability tools.
5) Conditional probability (multiplication rule; law of the total probability; Bayes theorem); Independence.
6) Random variables (cumulative distribution function; discrete and continuous random variables; probability function; probability density function; mean and variance).
7) Useful discrete distributions (Bernoulli; Binomial; Poisson).
8) Useful continuous distributions (Normal; X 2; t and F).

9) Central limit theorem.
10) Sampling distributions.
11) Estimation; point estimation (properties of an estimator); interval estimation (confidence intervals for a (difference of) population mean (s) or proportion (s));
12) Testing hypotheses for a (difference of) population mean (s) or proportion (s));
13) Analysis of Variance (single-factor ANOVA; two-factor ANOVA).
14) Goodness-of-fit test; Chi-Square test of independence.

4. TEACHING and LEARNING METHODS - EVALUATION

<table>
<tr><td>DELIVERY
Face-to-face, Distance learning, etc.</td><td>In-class lecturing</td></tr>
<tr><td>USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY
Use of ICT in teaching, laboratory education, communication with students</td><td>Educational material, updates and announcements available on the web</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>52</td></tr>
<tr><td>Autonomous study</td><td>48</td></tr>
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<tr><td></td><td></td></tr>
<tr><td>Course total</td><td>100</td></tr>
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<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>Written examination of different difficulty, based on the lectures offered, containing:
- Problems and/or exercises.
- Comprehension questions.</td></tr>
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5. ATTACHED BIBLIOGRAPHY

- Suggested bibliography:
- Related academic journals: