COURSE OUTLINE

(1) GENERAL

SCHOOL	Engineering		
DEPARTMENT	Electrical and Computer Engineering		
LEVEL OF STUDIES	Undergraduate		
COURSE UNIT CODE	3.003	**SEMESTER**	3 ^{o}
TITLE COURSE	Theory Probabilities and Statistics		

COURSEWORK BREAKDOWN	**TEACHING WEEKLY HOURS**	**ECTS Credits**
Theory	4	5
TOTAL	**4**	**5**

COURSE UNIT TYPE	General background
PREREQUISITES	
LANGUAGE OF INSTRUCTION/EXAMS	Greek
COURSE DELIVERED TO ERASMUS STUDENTS	
WEB PAGE (URL)	

(2) LEARNING OUTCOMES

Learning Outcomes

Upon successful completion of the course, the student is expected:

1.To know the basics laws governing stochastic phenomena, to solve combinatorial analysis problems, understand the concepts of one-dimensional or two-dimensional random variables and the distribution of their values as well as be able to calculate probabilities concerning events or behaviours of a random variable,

2. To model stochastic phenomena with the help of known distributions and be able to describe their behaviour with the help of their parameters.

3. In terms of Statistics, he/she should be able to apply techniques analysis data for the description of a set of observations as well as apply statistics inference techniques and simple regression in appropriate selected samples for the induction of statistically sound conclusions with respect to the populations from where the samples are sampled.

General Skills

The lesson is intended in acquisition skills where concern in autonomous mainly but possibly and in team/collaborative work, at making decisions, as and in promotion of free, creative and inductive thinking for the production of new research ideas.

(3) SYLLABUS

Sample space, events, probability measures.

Conditional Probability.

Law of total probability, Bayes Theorem, event/probability independence.

Combinatorial Analysis.

Random variables and their distribution.

Special Distributions. Expected value, Variance.

Inequalities Markov and Chebyshev, Jensen.

Multivariate distributions, joint distribution, marginal distributions, conditional distributions, conditional expected value. Independence and correlation of random variables., coefficient correlation.

Chernoff dams. Multivariate normal distribution. Transformations of random variables and random vectors, distribution of sum and max/min of independent random variables. Law of big numbers and central limit theorem.

Procedures Poisson. Descriptive Statistics. Pointer estimative, impartiality, consistency, means square error, method of torques, maximum likelihood estimation.

Intervals trust.

Parameter estimation. Confidence intervals and hypothesis tests for the mean value and variance of a population. Conclusion for two populations. Intervals trustand rate controls. x^2 test.

Adjust allocation. Relevance matrix analysis. Simple linear regression. Multiple linear regression. Analysis of variance in selection model.

(4) TEACHING METHODS - ASSESSMENT

MODE OF DELIVERY	Face with face in the class
USE OF INFORMATION AND COMMUNICATION TECHNOLOGY	At choose theory and tutoring schools exercises are displayed slides and at the same time it is done use table for better consolidation of analytical techniques required in theory or exercises. In addition, for the learning support of the students but also for Contact together their is used the electronics platform eclass where has the EL.ME.PA, where are posted the notes from them choose, the exercises to practice and relevant announcements.
TEACHING ORGANIZATION	

Method description/Activity	**Semester Workload**
Choose	65
Exercises	30
Non guided study	55
Total Contact Hours	**150**

ASSESSMENT METHODS	1. Progress (40%) 2. Final examination (60%)

(5) RECOMMENDED BIBLIOGRAPHY

- *Von Mises, Richard. Mathematical theory of probability and statistics. Academic press, 2014.*
- *Tucker, H. G. (2014). An introduction to probability and mathematical statistics. Academic Press.*
- *Pugachev, V. S. (2014). Probability theory and mathematical statistics for engineers. Elsevier.*
- *Holický, M. (2013). Introduction to probability and statistics for engineers. Springer Science & Business Media.*