UNIVERSITY of NICOSIA

Course Syllabus

Course Code	Course Title	ECTS Credits
MATH-225	Probability and Statistics I	6
Prerequisites	**Department**	**Semester**
MATH-101 or MATH-185, MATH-195	Computer Science	Fall, Spring
Type of Course	**Field**	**Language of Instruction**
Required	Mathematics	English
Level of Course	**Lecturer(s)**	**Year of Study**
1st Cycle	George Portides	2nd
Mode of Delivery	**Work Placement**	**Corequisites**
Face to face	n/a	none

Course Objectives:

The main objectives of the course are to:

- Demonstrate axioms, basic laws and theorems of probability.
- Define discrete and continuous random variables, their probability distributions, together with the expectation and variance for functions of random variables.
- Cover the characteristics of the most common probability distributions.
- Employ the most common statistics used to summarize data, demonstrate advantages and disadvantages, use visual techniques for presenting data.

Learning Outcomes:

After completion of the course students are expected to be able to:

- Interpret probabilities and use the laws and basic theorems of probability to calculate probabilities.
- Define discrete and continuous random variables and how their probabilities are computed.
- Compute probabilities under common discrete and continuous probability distributions.
- Find expected values of random variables and their functions.
- Produce summary statistics and present data.

Course Content:

- Introduction to Probability, interpretations, Axioms and Laws of Probability, Conditional Probability, Bayes Theorem, Independence.
- Discrete Random Variables and Probability Distributions: Geometric, Binomial, Poisson random variables and some applications.
- Continuous Random Variables and Probability Distributions: Uniform, Exponential and Normal random variables and some applications.
- Expectation and Variance for discrete and continuous random variables.
- Data presentation and Descriptive Statistics: Relative and Cumulative Frequency distributions, Histograms and Bar Charts, Measures of Location and Dispersion.

Learning Activities and Teaching Methods:

Lectures, Exercises and Tests

Assessment Methods:

One test and one Final Exam

Required Textbooks / Readings:

Title	Author(s)	Publisher	Year	ISBN
Introduction to Probability	Grinstead C. and Snell L.	AMS	2012	978-0821894149
Introduction to Probability and its Applications, 3rd edition	Scheaffer R. and Young .L.	Duxbury Press	2009	978-0534386719

Recommended Textbooks / Readings:

Title	Author(s)	Publisher	Year	ISBN
Probability & Statistics for	Walpole R.E. and Myers R.H.	Pearson	2013	978-9332519084

Engineers & Scientists, 9th edition				