Probability and Statistics Course Specifications

Faculty: Computer and Informatics

Department: Scientific Computing

Program(s) on which the course is given: Bachelor in Computer and Information Sciences

Major or Minor element of programs **:** all majors

Department offering the program **:** Scientific Computing

Department offering the course **:** Basic Sciences

Academic year / Level **:** 2nd Year / B.Sc.

Date of specification approval **:** 11/10/2009

A. Basic Information

Title: Probability and Statistics **Code:** BSC 223

Lecture: 2 hrs/week **Tutorial:** 2 hrs/week **Practical:** ---

Credit Hours: --- **Total:** 4 hrs/week

B. Professional Information

1. Overall Aims of Course:

The aims of this module are to introduce students to the basic concepts of probability and statistics and illustrate the relevance of these concepts to practical problem solving. Graduates will be able to use concepts of probabilities and statistics and apply them on real work.

2. Intended Learning Outcomes of Course (ILOs):

a. Knowledge and Understanding:

a1- Understand and explain the basic concepts of probability and statistics

a2- Illustrate the impact of variation/uncertainty on predictions and

a3- Understand the benefits, in terms of economy and quality of information, of using statistically designed experiments.

b. **Intellectual Skills:**

b1- Formulate simple probability and statistical methods in modeling and prediction and stating them.

c. Professional and Practical Skills:

c1- Use statistical and probability methods in solving practical problems and concluding them.

c2- Use statistical software as a tool in applying and presenting statistical methods

d. **General and Transferable Skills:**

d1- Think logically, manage time effectively and work independently.

e. Attitude

a1- A knowledge and respect of ethics and ethical standards in relation to a major area of study

3. Contents:

Topic	No. of hours	Lecture	Tutorial/ Practical
Sample space, probability axioms(Part I)	4	2	2
Sample space, probability axioms(Part II)	4	2	2
Sample space, probability axioms(Part III)	4	2	2
Conditional probability, independence and Bayes theorem.(Part I)	4	2	2
Conditional probability, independence and Bayes theorem.(Part II)	4	2	2
Random variables; distribution functions, moments and generating function. Some probability distributions(Part I)	4	2	2
Random variables; distribution functions, moments and generating function. Some probability distributions(Part II)	4	2	2
Random variables; distribution functions, moments and generating function. Some probability distributions(Part III)	4	2	2
Random variables; distribution functions, moments and generating function. Some probability distributions(Part V)	4	2	2
Joint distribution, the Chebychev inequality and the law of large numbers.(Part I)	4	2	2
Joint distribution, the Chebychev inequality and the law of large numbers.(Part II)	4	2	2
The central limit theorem and sampling distributions.(Part I)	4	2	2
The central limit theorem and sampling distributions.(Part II)	4	2	2
The central limit theorem and sampling distributions.(Part III)	4	2	2