

Course specification
(2203 Probability and Statistics)

Faculty: HICIT

Programme(s) on which the course is given: Under graduate program in Computer Science

Major or minor element of programme: Core

Department offering the programme: Department of Computer Science

Department offering the course: Department of Computer Science

Year / Class: 2nd Year – 2nd Semester

Date of specification approval: 22/2/2016

A- Basic Information

Title: Probability and Statistics **Code:** 2203

Weekly Hours: **Lecture:** 3 **Exercise:** 3 **Practical:-** **Total:** 6

B- Professional Information

1- Course Objectives:

- Understand the principles and probability theories and basic of statistics.
- Understand methods of processing statistical data.
- Understand and application of statistical data.

2- Program ILOs Covered by Course

Program Intended Learning Outcomes			
Knowledge and understanding	Intellectual Skills	Professional and practical skills	General and Transferable skills
a1, a4	b1, b5, b7, b8	c16	d11

3- Intended learning outcomes of course (ILOs)

After completing this course, the student should be able to:

a- Knowledge and Understanding

- a1. Know and understand the fundamental probability and statistics concepts, principles and theories necessary for computer science such as artificial intelligence, expert systems, vision, neural networks, ...etc.

b- Intellectual skills

- b1. Solve a wide range of problems related to different courses.

c- Professional and practical skills

- c1. use statistical techniques to solve big problems dedicated for computer science.

d- General and transferable skills

- d1. Communicate effectively by oral, written and visual means.
d2. Work effectively as an individual and as a member of a team.
d3. Develop Creativity and imagination skills, Self-assessment ability and Critical thinking and analytic ability.

4- Contents

Topic	Hours	Lec.	Exc/Lab
An introduction to Descriptive Statistics.	6	3	3
Mean, Median, and Variance in row data and grouped data.	12	6	6
Probability, Sampling, Sample space, Permutation and combinations.	12	6	6
Discrete and continuous probability functions.	12	6	6
Conditional Probabilities, Bayes theorem, Expectations.	12	6	6
Random variables, the probability density functions.	12	6	6
Special distributions such as Normal, uniform, Binomial, ... distributions.	12	6	6
Correlation – Regression.	6	3	3
Hypothesis Testing, Analysis of Variance.	12	6	6

5- Teaching and learning methods

- 5.1 Lectures
- 5.2 Tutorial Exercises
- 5.3 Discussions.

6-Student assessment methods

- 6.1 Midterm Exam: To assess the knowledge and understanding achieved by the student during the previous weeks.
- 6.2 Final Exam: To evaluate what the student gain at the end of the course, and to assess: the knowledge and understanding, general skills, and intellectual skills.
- 6.3 Course Work & Quizzes: To keep the student always in the course, and to evaluate knowledge, understanding, intellectual, and transferable skills.

Assessment Schedule

Assessment	Week #
Mid Term Exam	8
Final Exam	16
Course Work & Quizzes	2-14

Assessment Weight

Assessment	Weight %
Mid Term Exam	10%
Final Exam	80%
Course Work & Quizzes	10%
Total	100

Course Work & Quizzes: (Short Exams, Assignments, Researches, Reports, Presentations, Class/Project discussion)

7 -List of references

7.1 Text Books

- Probability and statistics for engineers & scientists, Walpole & Myers, 2001.

Probability & Statistics for Engineers & Scientists, 8/E, Ronald E. Walpole Raymond H. Myers, Sharon L. Myers Keying Ye. ISBN-10: 0131877119 • ISBN-13: 9780131877115 ©2007, Pearson.

8- Required Facilities

None

9-Course Matrices

9.1-Course Content/ILO Matrix

Course Contents	a1	b1	c1	d1	d2	d3
An introduction to Descriptive Statistics.	√	√	√			
Mean, Median, and Variance in row data and grouped data.	√	√	√			
Probability, Sampling, Sample space, Permutation and combinations.	√	√	√			
Discrete and continuous probability functions.	√	√	√			
Conditional Probabilities, Bayes theorem, Expectations.	√	√	√			
Random variables, the probability density functions.	√	√	√			
Special distributions such as Normal, uniform, Binomial, ... distributions.	√	√	√			
Correlation – Regression.	√	√	√			
Hypothesis Testing, Analysis of Variance.	√	√	√			

9.2-Learning Method /ILO Matrix

Learning Methods	a1	b1	c1	d1	d2	d3
Lectures	√	√	√			
Tutorial Exercises		√	√			
Discussions.		√	√	√	√	√

9.3-Assessment Methods /ILO Matrix

Assessment Methods	a1	b1	c1	d1		
Mid Term Exam	√	√	√			
Final Exam	√	√	√			
Course Work & Quizzes	√	√	√	√	√	√

Course Coordinator: Dr. Nesreen Abdel-Hamed()

Head of Department: Dr. Farouk Shabaan ()

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