

Syrian Arab Republic	 الجامعة الافتراضية السورية SYRIAN VIRTUAL UNIVERSITY	الجمهورية العربية السورية
Ministry of Higher Education		وزارة التعليم العالي
Syrian Virtual University		الجامعة الافتراضية السورية

Course Description: **Course Name**

1- Basic Information:

Course Name	Probability Theory
Course ID	PRB
Contact Hours (Registered Sessions)	10
Contact Hours (Synchronized Sessions)	18
Mid Term Exam	-
Exam	75 min
Registered Sessions Work Load	10
Synchronized Session Work Load	18
Credit Hours	One session of 1:30 hours per week

2- Pre-Requisites:

Course	ID
None	

3- Course General Objectives:

This course aims to provide the student with basics of Probability Theory. In addition, it will enable the student to build a suitable mathematical model for studying a random phenomena of daily life. The student will learn how to deal with global events by means of partial events and various probability laws. The student studies also random variables for random phenomena processing, since it is simpler to deal with numerical functions than to deal with set functions as it is the case in random events. The course presents also few of the famous probability distributions, with their characteristic moments values. In all, the stress is on linking theoretical concepts with practical life in various fields of knowledge.

4- Intended Learning Outcomes (ILO):

Code	Intended Learning Outcomes
ILO1	Understanding the basic principles in Probability Theory
ILO2	Building a suitable probabilistic model for the phenomenon under study.
ILO3	Understanding the probability distributions, and their applications
ILO4	Understanding the essence of Convergence of probability distributions, and applications.

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5- **Course Syllabus** (18 hours of total synchronized sessions; 10 hours of total Recorded Sessions)

- **RS:** Recorded Sessions; **SS:** Synchronized Sessions;

ILO	Course Syllabus	RS	SS	Type	Additional Notes
ILO1	Random Events and calculation of their probability: Random experiment, Elementary events space, Random events Algebra, Counting methods, Basic definitions, Building a probability model and computation of probability	2	3	<input type="checkbox"/> Exercises <input type="checkbox"/> Assignments <input type="checkbox"/> Seminars <input type="checkbox"/> Projects <input type="checkbox"/> Practices <input type="checkbox"/> Others	+ including revision
ILO2	Conditional probability: Definition of conditional probability, Law of joint probability, Independence of random events, Law of total probability and Bayes theorem,	2	3	<input type="checkbox"/> Exercises <input type="checkbox"/> Assignments <input type="checkbox"/> Seminars <input type="checkbox"/> Projects <input type="checkbox"/> Practices <input type="checkbox"/> Others	+ including revision
ILO3	Random variables: Probability distributions, Discrete random variables and probability function, Continuous variables and density probability, Joint distributions and random functions, Conditional densities, Characteristic moments values of distributions, Ex: Geometric distribution, (expectation value, variance, covariance, correlation coefficient)	2	4	<input type="checkbox"/> Exercises <input type="checkbox"/> Assignments <input type="checkbox"/> Seminars <input type="checkbox"/> Projects <input type="checkbox"/> Practices <input type="checkbox"/> Others	+ including revision
ILO4	Probability discrete distributions: Bernoulli distribution, Binomial	2	4	<input type="checkbox"/> Exercises <input type="checkbox"/> Assignments <input type="checkbox"/> Seminars	+ including revision

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	distribution, Geometric distribution, Poisson distribution and its approximation by a binomial distribution			<input type="checkbox"/> Projects <input type="checkbox"/> Practices <input type="checkbox"/> Others	
ILO5	Probability continuous distributions: Uniform distribution, Exponential distribution, Normal distribution, Chi square distribution, T-Student distribution, Approximating the normal distribution by a binomial distribution	2	4	<input type="checkbox"/> Exercises <input type="checkbox"/> Assignments <input type="checkbox"/> Seminars <input type="checkbox"/> Projects <input type="checkbox"/> Practices <input type="checkbox"/> Others	+ including revision

6- Assessment Criteria (Related to ILOs)

ISC	Interactive Synchronized Collaboration	Ex	Exams	Rpt	Reports
PF2F	Presentations and Face-to-Face Assessments	PW	Practice Work		

ILO Code	ILO	Intended Results	Assessment Type				
			ISC	PW	Ex	PF2F	Rpt
ILO1			X	<input type="checkbox"/>	X		X
ILO2			X	<input type="checkbox"/>	X		X
ILO3			X	<input type="checkbox"/>	X		X
ILO4			X	<input type="checkbox"/>	X		X
ILO5			X	<input type="checkbox"/>	X		

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7-Practice Tools:

Tool Name	Description
Course Name	

8-Main References

- Files in pdf format, including lecture notes covering the five chapters, with solved exercises

9-Additional References

1. مبادئ الاحتمالات والإحصاء د.عزات قاسم ،منشورات جامعة دمشق
2. Applied Statistics and Probability for Engineers ,Douglas C.Montgomery ,George C.Runger ,2007 John Wiley & Sons