The University of Jordan

Accreditation & Quality Assurance Center

Course Syllabus

Course Name: Probability Theory

1	Course title	Probability Theory
2	Course number	0301732
3	Credit hours (theory, practical)	3
	Contact hours (theory, practical)	3
4	Prerequisites/corequisites	None
5	Program title	M.Sc. Mathematics
6	Program code	
7	Awarding institution	University of Jordan
8	Faculty	Science
9	Department	Mathematics
10	Level of course	Master Level
11	Year of study and semester (s)	First or second semester
12	Final Qualification	
13	Other department (s) involved in teaching the course	None
14	Language of Instruction	English
15	Date of production/revision	29/03/2017

16. Course Coordinator:

Office number, Office hours, phone numbers, and email addresses should be listed
 Adnan Awad: awada@ju.edu.jo, office 306
 Mufid Azzam: Azzamm@ju.edu.jo, office 304

17. Other instructors:

18. Course Description:

Kolmogorrov's axioms, random variables, distributions, expected values, conditional probability, independence, Borel-Cantelli lemma, characteristic functions and inversion formula, convergence concepts, laws of large numbers, central limit theorems.

19. Course aims and outcomes:

A- Aims:

Understand basic concepts of estimation and testing statistical hypotheses. Derivation of basic theorems and properties. Carry out independent reading and suggest some research problems.

B- Intended Learning Outcomes (ILOs): Upon successful completion of this course students will be able to …

(1) Define the basic concepts in probability.

(2) Prove main probability theorems.

(3) Know the different types of convergence of random variables and the relationships between them.

(4) Give counter examples satisfying some conditions, like the relationships between convergence types.

(5) Computation of the characteristic functions of random variables with some specified distributions.

(6) Know the different types of central limit theorems and the conditions needed in each one. Prove the central limit theorems.

(7) Know and prove some inequalities about moments and probabilities.

20. Topic Outline and Schedule:

Topic	Week	Instructor	Achieved ILOs	Evaluation Methods	Reference
Prob. Spaces	2		1, 2	Exams and ,	(A) 1, 2
Random variables	2		1, 2	Home-works	(A) 1, 2
Expectation	2		1, 2		(A) 1, 2
Charct. f'n	2		2, 5, 7		(A) 1, 2
Convergence	2		2, 3, 4		(A) 1, 2
Laws of large numbers	2		2, 6		(A) 1, 2 B (2)
Central limit theorems	2		2, 6		(A) 1, 2 B (1)

21. Teaching Methods and Assignments:

Development of ILOs is promoted through the following <u>teaching and learning methods</u>:

(1) Lectures

(2) Discussions

(3) Homeworks and student representations of the assignments and projects.

22. Evaluation Methods and Course Requirements:

Opportunities to demonstrate achievement of the ILOs are provided through the following <u>assessment methods and requirements</u>:

ILO/s	Learning Methods	Evaluation Methods	Related ILO/s to the program
	Lectures	Examinations	
		Homeworks	
		Projects	

23. Course Policies:

1. Attendance is absolutely essential to succeed in this course. You are expected to attend every class; please notify your instructor if you know you are going to be absent. All exams must be taken at the scheduled time. Exceptions will be made only in extreme circumstances, by prior arrangement with the instructor.
3. If a student is absent for more than 10% of lectures without an excuse of sickness or due to other insurmountable difficulty, then he/she shall be barred from the final examination also he/she will get a failing grade in this course.
4. Medical certificates shall be given to the University Physician to be authorized by him. They should be presented to the Dean of the Faculty within two weeks of the student's ceasing to attend classes.
5. Test papers shall be returned to students after correction. His/her mark is considered final after a lapse of one week following their return.
6. Solutions for the exams questions and marks will be announced at the webpage of the instructor:
7. Cheating is prohibited. The University of Jordan regulations on cheating will be applied to any student who cheats in exams or on homeworks.

24. Required equipment:

25. References:

A- Required book (s), assigned reading and audio-visual:

1. Bhat, B.R., Modern Prob. Theory, 1981, Wiley.
2. Chung, B.L., A course in Prob. Theory, 1968, Harcourt.

B- Recommended books, materials, and media:

1. Ash, R.B., Real analysis and Prob., 1972, Academic press.

2. Breiman, L., Probability, 1968, Addison Wesley.

26. Additional information:

Name of Course Coordinator: Dr. Adnan Awad Signature: ------------------------ Date: 29/03/2017

Head of curriculum committee/Department: ------------------------ Signature: ------------------------

Head of Department: ------------------------ Signature: --------------------------------

Head of curriculum committee/Faculty: ------------------------ Signature: --------------------------------

Dean: -- -Signature: --------------------------------

Copy to:
Head of Department
Assistant Dean for Quality Assurance
Course File