

QF01/0408-4.0E	Course Plan for Bachelor program - Study Plan Development and Updating Procedures/ Mathematics Department
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Study plan No.	2021/2022		University Specialization		Master of Math.	
Course No.	0101752		Course name		Probability Theory	
Credit Hours	3		Prerequisite/ Co-requisite			
Course type	<input type="checkbox"/> MANDATORY UNIVERSITY REQUIREMENT	<input type="checkbox"/> UNIVERSITY ELECTIVE REQUIREMENTS	<input type="checkbox"/> FACULTY MANDATORY REQUIREMENT	<input type="checkbox"/> Support course family requirements	<input checked="" type="checkbox"/> Mandatory requirements	<input type="checkbox"/> Elective requirements
Teaching style	<input type="checkbox"/> Full online learning		<input type="checkbox"/> Blended learning		<input checked="" type="checkbox"/> Traditional learning	
Teaching model	<input type="checkbox"/> 1 Synchronous: 1 asynchronous		<input type="checkbox"/> 1 face to face : 1 asynchronous		<input checked="" type="checkbox"/> 2 Traditional	

Faculty member and study divisions' information (to be filled in each semester by the subject instructor)

Name	Academic rank	Office No.	Phone No.	E-mail	
Dr. Ma'mon AbuHammad	Assistant Professor	127	380	m.abuhammad@zuj.edu.jo	
Division number	Time	Place	Number of students	Teaching style	Approved model

Brief description

This course aims to discuss the fundamentals of probability theory including Kolmogorov's axioms, Sigma & Borel fields, Random variables, Distributions and distribution functions, Expected values, Chebyshev's inequality, Independence, Borel-Cantelli Lemma, Convergence concepts, Characteristic functions, Central limit theorem, Strong and weak laws of large numbers.
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Learning resources

Course book information (Title, author, date of issue, publisher ... etc)	<ol style="list-style-type: none"> 1) Introduction to Probability and Mathematical Statistics, 2nd edition. By Bain, Lee, J. and Engelhardt, Max. Publisher Duxbury Press 1987. 2) Modern Prob. Theory. By B. Ramdas Bhat. New Age Int. Limited Publisher, 3rd edition 2003
Supportive learning resources (Books, databases, periodicals, software, applications, others)	<ol style="list-style-type: none"> 1) Modern Mathematical Statistics with Applications. By Devore, Jay, L. and Berk, Kenneth, N. Publisher Thomson Brooks/Cole 2007. 2) Mathematical Statistics with applications, seventh edition, by Miller & Miller. Pearson Prentice Hall (2004).
Supporting websites	https://web.njit.edu/~dhar/math333/math333.html https://math.tntech.edu/e-stat/4470/index.html

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The physical environment for teaching	<input checked="" type="checkbox"/> Class room	<input type="checkbox"/> labs	<input type="checkbox"/> Virtual educational platform	<input type="checkbox"/> Others
Necessary equipment and software				
Supporting people with special needs				
For technical support				

Course learning outcomes (S= Skills, C= Competences K= Knowledge,)

No.	Course learning outcomes	The associated program learning output code
Knowledge		
K1	Identify the events, fields, sigma-fields.	MK1
K2	Understand the expectation function and properties.	MK2
K3	Combine between different distributions.	MK3
K4	Find the distribution of functions.	MK4
Skills		
S1	Analyze the probability properties.	MS1
S2	understand the meaning of the random variable and distinguish discrete and continuous R.V.	MS2
S3	Apply theorems to solve problems.	MS3
Competences		
C1	Obtain the probability distribution of a function of random variables.	MC1
C2	Develop the individual's ability to communicate and interact with other mathematical courses.	MC2

Mechanisms for direct evaluation of learning outcomes

Type of assessment / learning style	Fully electronic learning	Blended learning	Traditional Learning (Theory Learning)	Traditional Learning (Practical Learning)
First/Second exam	30%	30%	40%	30%
Participation / practical applications	0	0	10%	30%
Asynchronous interactive activities	30%	30%	0	0
Final exam	40%	40%	50%	40%

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Schedule of simultaneous / face-to-face encounters and their topics

Week	Subject	learning style*	Reference **
1	Introduction	Lecture	Text 2
2	Sets and class of events: events, fields, sigma-fields	Lecture	Text 2
3	Sets and class of events: events, fields, sigma-fields	Lecture	Text 2
4	Random Variables	Lecture	Text 2
5	Random Variables, Probability Space	Lecture	Text 2
6	Probability Space	Lecture	Text 2
7	Probability Space.	Lecture	Text 2
8	.	Midterm	
9	Distribution Functions	Lecture	Text 2
10	Expectations and Moments	Lecture	Text 2
11	Expectations and Moments	Lecture	Text 2
12	Independence	Lecture	Text 2
13	Independence, Laws of Large Numbers	Lecture	Text 2
14	Laws of Large Numbers, Central Limit Theorem	Lecture	Text 2
15	Central Limit Theorem	Lecture	Text 2
16		Final Exam	

Theoretical course evaluation methods and weight	Participation 20% (Home works, Projects) Midterm Exam 30% Final exam 50%	Practical (clinical) course evaluation methods	Semester students' work = 50% (Reports, research, quizzes, etc.) Final exam = 50%
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Approved by head of department		Date of approval	22/1/2021
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Extra information (to be updated every semester by corresponding faculty member)

Name of teacher	Dr. Ma'mon Abu Hammad	Office Number	9127
Phone number (extension)	338	Email	m.abuhammad@zuj.edu.jo
Office hours	Sun., Tue., Thu. : 19- 20		Mon., Wed. : 19-20