Course Specifications

Course Title:	**Theory of Probability**
Course Code:	**30113302-3**
Program:	**BSc. Mathematics 301100**
Department:	**Mathematics**
College:	**Al- Leith University College**
Institution:	**Umm Al-Qura, University**

Table of Contents

A. Course Identification

1. Credit hours: 3 hours
2. Course type   **a.** University ☐ College ☐ Department ☑ Others ☐   **b.** Required ☑ Elective ☐
3. Level/year at which this course is offered: Fifth Level / Third Year
4. Pre-requisites for this course (if any)**:**   Introduction to Statistics and Probability (30112301-3)
5. Co-requisites for this course (if any)**:**   None.

6. Mode of Instruction (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	**Traditional classroom**	3 hours/ week	100%
2	**Blended**	0	0%
3	**E-learning**	0	0%
4	**Correspondence**	0	0%
5	**Other**	0	0%

7. Actual Learning Hours (based on academic semester)

No	Activity	Learning Hours
Contact Hours		
1	**Lecture**	(3 hours)x(15 weeks)
2	**Laboratory/Studio**	
3	**Tutorial**	
4	**Others** (specify) Final exam, midterm exam, 4 quizzes	8 hours
	Total	53 hours
Other Learning Hours*		
1	**Study**	(2 hour) x (15 weeks)
2	**Assignments**	(2 hour) x (15 weeks)
3	**Library**	(2 hour) x (15 weeks)
4	**Projects/Research Essays/Theses**	15 hours
5	**Others**(specify)	
	Total	105 hours

*The length of time that a learner takes to complete learning activities that lead to achievement of course learning outcomes, such as study time, homework assignments, projects, preparing presentations, library times

B. Course Objectives and Learning Outcomes

1. Course Description   Theory of probability is the study of random variables, their probability distributions and some popular probability distributions. Key topics of the course include Random Variable, Cumulative distribution function and probability distribution.

2. Course Main Objective
The primary objective of the course is to provide the students by the basic knowledge and concepts of theory of probability concerning random variables, their characteristics and different types of their probability distributions.

3. Course Learning Outcomes

	CLOs	**Aligned PLOs**
1	**Knowledge:**	
1.1	State the importance of random variable characteristics and distributions	K1
1.2	Describe the assumptions for each of the discrete and continuous probability distributions.	K3
1.3	Outline the properties of random variables.	K5
2	**Skills:**	
2.1	Establish the different characteristics of random variables from basic definition.	S4
2.2	Diagram some of the popular probability distribution functions.	S1
2.3	Apply scientific models and tools effectively.	S5
3	**Competence:**	
3.1	Use variety of resources to write reports about basic statistical principles.	C2
3.2	Utilize computer packages to apply statistical knowledge which gained during the course	C4
3.3	Develop problems solutions using a range of formats and approaches.	C5

C. Course Content

No	List of Topics	Contact Hours
1	The Random Variable Probability distribution of random variable	6
2	Cumulative distribution function	6
3	Mathematical expectation	6
4	Moments and Moments generating	6
5	Feature of probability distribution	6
6	Some popular probability distribution	6
7	Popular continuous probability distribution	9
	Total	**45**

D. Teaching and Assessment

1. Alignment of Course Learning Outcomes with Teaching Strategies and Assessment Methods

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
1.0	**Knowledge**		
1.1	State the importance of random variable characteristics and distributions	Lecture Tutorials	Exams (Quizzes, Midterm and Final).
1.2	Describe the assumptions for each of the discrete and continuous probability distributions.	Lecture Tutorials	

1.3	Outline the properties of random variables.	Lecture Tutorials		
2.0	**Skills**			
2.1	Establish the different characteristics of random variables from basic definition.	Lecture Individual or group work	Exams (Quizzes, Midterm and Final). Homework	
2.2	Diagram some of the popular probability distribution functions.	Lecture Individual or group work		
2.3	Apply scientific models and tools effectively.	Lecture Individual or group work		
3.0	**Competence**			
3.1	Use variety of resources to write reports about basic statistical principles.	Lecture Individual or group work	Exams (Quizzes, Midterm and Final). Research Essays	
3.2	Use computer packages to apply statistical knowledge which gained during the course	Lecture Individual or group work		
3.3	Solve problems using a range of formats and approaches.	Lecture Individual or group work		

2. Assessment Tasks for Students

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	Midterm 1	6th week	20 %
2	Midterm 2	12th week	20%
3	Homework + reports + Quizzes	During the semester	10%
4	Final exam	End of semester	50 %

*Assessment task (i.e., written test, oral test, oral presentation, group project, essay, etc.)

E. Student Academic Counseling and Support

Arrangements for availability of faculty and teaching staff for individual student consultations and academic advice:

Each group of students is assigned to a faculty member where he or she will provide academic advising. All faculty members are required to be in their offices outside teaching hours. Each faculty member allocates at least 4 hours per week to give academic advice and to answer to the questions of students about concepts studied during the lectures.

F. Learning Resources and Facilities

1.Learning Resources

Required Textbooks	Introduction to mathematical statistics (fifth edition), Prentice Hall (1995).
Essential References Materials	Probability and statistics for engineers and scientists. Ronald E. Walpole, Prentice Hall (2012).
Electronic Materials	None.
Other Learning Materials	None.

2. Facilities Required

Item	Resources
Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.)	Large classrooms that can accommodate more than 50 students.
Technology Resources (AV, data show, Smart Board, software, etc.)	Data show
Other Resources (Specify, e.g. if specific laboratory equipment is required, list requirements or attach a list)	None

G. Course Quality Evaluation

Evaluation Areas/Issues	Evaluators	Evaluation Methods
Effectiveness of teaching and assessment.	Students	Direct
Quality of learning resources.	Students	Direct
Extent of achievement of course learning outcomes.	Faculty member	Direct

Evaluation areas (e.g., Effectiveness of teaching and assessment, Extent of achievement of course learning outcomes,Quality oflearning resources, etc.)
Evaluators (Students,Faculty, Program Leaders,Peer Reviewer, Others (specify)
Assessment Methods (Direct, Indirect)

H. Specification Approval Data

Council / Committee	Council of the Mathematics Department
Reference No.	
Date	

Council / Committee	Council of the Mathematics Department	The mathematical sciences (college of applied sciences) and the mathematics (Al Leith university college) department's first meeting of the coordinative committee
Reference No.	4101050782	First meeting
Date	Sunday, 17 November 2019	Thursday, 17 October 2019

Department Head

Dr. Ali Hassani