

DEPARTMENT OF STATISTICS
FORMAN CHRISTIAN COLLEGE, LAHORE
(A Chartered University)
Fall 2021

Course Name: Probability & Probability Distributions		
Course Code: STAT 102/ MATH 105	Course Type: Major	Course Credits: 3
Class Timings: 11:00 – 11:50 a.m. MWF	Section: A	Online Office Hours (Zoom): MWF: 12:00-01:00pm.
Instructor Name: Dr Shakila Bashir Associate Professor Department of Statistics FCCU		
A Note from the Instructor: <ul style="list-style-type: none">• <i>Lectures will be delivered in class face to face for in-person students and at the same time online via zoom for students at home.</i>• <i>Recorded Lecture and reading Material will be uploaded on Moodle.</i>• <i>Quizzes will be accomplished through Moodle during Class time. Dates will be announced in-class as well as on Moodle.</i>• <i>Assignments will be posted on Moodle and submissions are also executed through Moodle.</i>• <i>Feedbacks will be uploaded on Moodle.</i>• <i>Late submission of assignments will result as 50% deduction of marks for each day.</i>• <i>There will be no retake/alternative/bonus etc. for mid and final exams.</i>		
Instructor Contact Details Email: shakilabashir@fccollege.edu.pk Office Hours (online): TR 12:00-01:00 pm. Meeting ID: 960 2968 1672 Passcode: 0000 Guidelines for contacting instructor: <ul style="list-style-type: none">• Meet online.• If in-person make an appointment via email		

Course Description:

Pre-requisites if any: NA

Mode of Instruction: Asynchronous/ Synchronous

Mode of peer-to-peer Contact Among Students: online discussion forums

Main Mode of Instruction: *Moodle, Zoom*

Technology Requirements:

- Students need to have a computer/ laptop/ smartphone/ calculator.

Technology Etiquettes

- Students are recommended to log in at least 10 minutes before the start of the session to do the necessary checks, specifically for students
- Be sure to name yourself for your slot on the screen. It will make it easy to get a report of the students' attendance. If your slot carries a different name, to rename click 3 dots near your video window OR in the participants' list, hover over your name, and click "rename" to make the change
- Please stay muted when not speaking.
- Please turn off your video during class.
- Be respectful of others' opinion
- If the session is recorded do not post isolated comments that may be taken out of context.

Considerations for Students with Limited Internet/Technology Access:

- Student with limited internet connections may send an email to instructor with their concern.

Course Objectives:

This course is designed to give students, a conceptual knowledge of probability and its many applications. Most of the contents included in the course are fundamental to probability theory in the disciplines, such as business and management, the life sciences, the computer sciences, pure sciences, and the social sciences etc. It is expected that after successful completion of course students would be able to concentrate on the many applications of probability theory in their respective disciplines.

Student Learning Outcomes:

At the end of the course the student would be able to:

- 1) understand the basic concepts and application of counting rules and probability.
- 2) Understand the concept and applications if random variables.
- 3) understand the well-known discrete probability distributions and can find out probability with the help of these distributions.
- 4) find probabilities using normal distribution.
- 5) use probability concepts and laws in decision analysis.

Course Content, Learning Material & Activities Schedule

W k	Topic/ Title	<u>Teaching-Learning Activities</u>		<u>Assessment & Rubrics</u>
		Synchronous (Simultaneously conducted) <i>Presentation / Lecture Live Video-Audio Small Group Discussion/ Breakout Rooms In-class quiz Q&A/ Live Chat</i>	Asynchronous (postal/ Moodle/ email) <i>Discussion blogs WhatsApp Readings Moodle Quizzes Assignment Submission Online Content/ Recordings Lecture notes/ Annotated PPT Experiential learning</i>	
		In-Person & Online	Off-campus and offline	
1	Concepts of set theory,	In-class & Zoom lectures	Moodle Quizzes, Readings, PowerPoint Presentations	
		In-class & Zoom lectures	Moodle Quizzes, Readings, PowerPoint Presentation	
2	rules of counting	In-class & Zoom lectures	Moodle Quizzes, Readings, PowerPoint Presentation	
	Cont.	In-class & Zoom lectures	Moodle Quizzes, Readings, PowerPoint Presentation	
3	Different approaches of	In-class & Zoom lectures	Moodle Quizzes, Readings,	Quiz 1

	probability and their applications.		PowerPoint Presentation	
	Cont.	In-class & Zoom lectures	Moodle Quizzes, Readings, PowerPoint Presentation	
4	Laws of probability and their uses.	In-class & Zoom lectures	Moodle Quizzes, Readings, PowerPoint Presentations	Assignment 1
	Cont.	In-class & Zoom lectures	Moodle Quizzes, Readings, PowerPoint Presentation	
5	Conditional Probability	In-class & Zoom lectures	Moodle Quizzes, Readings, PowerPoint Presentation	
	Cont.	In-class & Zoom lectures	Moodle Quizzes, Readings, PowerPoint Presentation	
6	Multiplicative rule and independence	In-class & Zoom lectures	Moodle Quizzes, Readings, PowerPoint Presentation	Quiz 2
	Cont.	In-class & Zoom lectures	Moodle Quizzes, Readings, PowerPoint Presentation	
7	Bayes' Rule	In-class & Zoom lectures	Moodle Quizzes, Readings, PowerPoint Presentation	
	Cont.	In-class & Zoom lectures	Moodle Quizzes, Readings, PowerPoint Presentation	Assignment 2

8	Concept of Random variable. Probability distributions of discrete r.v with properties	In-class & Zoom lectures	Moodle Quizzes, Readings, PowerPoint Presentation	
	Cont.	In-class & Zoom lectures	Moodle Quizzes, Readings, PowerPoint Presentation	
mid-exam				
9	Probability distributions of continuous r.v with properties	In-class & Zoom lectures	Moodle Quizzes, Readings, PowerPoint Presentation	
	Cont.	In-class & Zoom lectures	Moodle Quizzes, Readings, PowerPoint Presentation	
10	Discrete joint probability distributions.	In-class & Zoom lectures	Moodle Quizzes, Readings, PowerPoint Presentation	Quiz 3
	Continuous joint probability distributions.	In-class & Zoom lectures	Moodle Quizzes, Readings, PowerPoint Presentation	
11	applications of Binomial; Hypergeometric distributions in daily life.	In-class & Zoom lectures	Moodle Quizzes, Readings, PowerPoint Presentation	
	Cont.	In-class & Zoom lectures	Moodle Quizzes, Readings, PowerPoint Presentation	Assignment 3

12	Applications of Poisson distribution in daily life	In-class & Zoom lectures	Moodle Quizzes, Readings, PowerPoint Presentation	
	Cont.	In-class & Zoom lectures	Moodle Quizzes, Readings, PowerPoint Presentation	
13	Applications of Geometric and negative Binomial Distributions in daily life	In-class & Zoom lectures	Moodle Quizzes, Readings, PowerPoint Presentation	Quiz 4
	Cont.	In-class & Zoom lectures	Moodle Quizzes, Readings, PowerPoint Presentation	
14	Normal Distribution with applications	In-class & Zoom lectures	Moodle Quizzes, Readings, PowerPoint Presentation	Assignment 4
	Cont.	In-class & Zoom lectures		
15	CULMINATING PROJECT			
16	FINAL EXAM			

‘Out-of-class’ Study Required (across all 3 categories of students -- those attending in-person, online, or asynchronously)

1. Quizzes will be online at the time of class
2. Students are expected to study 3 hours a week
3. If you have any questions, please join online office hours
4. Assignment submissions will be on Moodle

Textbooks, Materials, Supplies and other Resources

1. Walpole, R. E., Mayer, R. H., Mayer, S. L. and Ye K. E. (2018) "Probability and Statistics for Engineer and Scientists" Prentice Hall, New York. **9th Edition.**
2. Hogg, R.M. and Craig, A.T. "Introduction to Mathematical Statistics" Prentice Hall, Engle Wood Cliffs, New Jersey.
3. Mood, A. M, Graybill, F. A. and Boss, D. C. "*Introduction to the theory of statistics*" Mc Graw Hill, New York
4. Stirzaker, D. "*Probability and Random Variables*". Cambridge University Press, Cambridge.
- 4 PETALE, M. D. (2019). Probability and Probability Distribution: Engineering and Mathematics. Copyright © Petale, M. D.
- 5 Thomopoulos N. T. (2018). Probability Distributions. Springer International Publishing AG, part of Springer Nature

Course Requirements:

Class Participation

Class Participation

- Attendance and participation in discussions
- At least 3 quizzes will be taken and best two will be considered for grading.
- At least 3 assignments will be taken, and all three assignments will be considered for grading.

Note: The topics and numbers of (Assignments and quiz) are tentatively suggested above it may vary according to situation.

Assigned Readings

Practice worksheets/ Questions

The breakup is as follows:

Class Participation	5%
Assignments:	20%
Quizzes:	10%
Midterm exam:	25%
Final term exam:	30%
Project	10%
TOTAL	100%

[OPTIONAL] Missed Assignments/ Make-Ups/ Extra Credit

- *No delayed assignments.*

-*No Make-up class and exam*

-*No retake exam*

Attendance Policy:

If a student does not attend a minimum of 70% of total classes, he/she will not be permitted to take the final examination in the course.

Classroom Participation:

Students must participate in classroom for class activities and may ask questions related to lesson taught.

Grading Legend

Below is the grading legend of FCCU (published in all catalogues and available on the FCCU website) as approved by the Academic Council and applies for Fall as well

Grade	Point Value	Numerical Value	Meaning
A	4.00	93-100	Superior
A-	3.70	90-92	
B+	3.30	87-89	Good
B	3.00	83-86	
B-	2.70	80-82	
C+	2.30	77-79	Satisfactory
C	2.00	73-76	
C-	1.70	70-72	
D+	1.30	67-69	Passing
D	1.00	60-66	
F	0.00	59 or below	Failing

Student Conduct & Other Issues:

- *Consider including ground rules for appropriate classroom interactions, as well as a clear statement of expectations that classroom interactions will remain civil, respectful, and supportive.*

- If any student faces any issues or has any concerns regarding the classroom climate and interactions, please feel free to contact VR office glorialib@fccollege.edu.pk

Changes to the Syllabus:

This syllabus was designed to convey course information and requirements as accurately as possible. It is important to note however that it **may** be subject to change during the course depending on the needs of the class and other situational factors. Such changes would be for your benefit and you will be notified of them as soon as possible.

Student Support Services

[Student Counseling Services](#)

[Writing Center](#)

[Mercy Health Center](#)

Other Useful Policy Documents:

[Sexual Harassment Policy](#)

[Anti-Corruption Policy](#)

[Academic integrity](#)

[Plagiarism Policy](#)

[Academic Calendar](#)

I expect that you will strictly follow the core values of FCCU and put your entire efforts to learn as per the course requirements, attend classes, read the textbook(s)/other assigned reading material, and do the assignments in the stipulated time period

Developed by CLT (2020) from:

[FCC Policy for Fall Semester 2020](#)

<https://www.aascu.org/>

<https://blended.online.ucf.edu/>

Note:

PI see <https://unitguides.mq.edu.au/> for additional options. Macquarie University has their syllabus online (called Unit Guides and are publicly viewable)

See additional information for [Syllabus Checklist](#) and for [How to Create a Syllabus](#)

Please also consider [High Impact Practices](#) for your classes