Course Outline

Course Name:	Probability & Statistics	
Course Code: Stat -115	**Course Type:** Elective	**Course Credits:** 3
Class Timings: T, TR 8:00-9:15	**Section:** A	**Student Meeting Hours/ Office Hours:** Monday to Friday: 11:00 to 12:00

Instructor Name: Dr. Nadia Mushtaq, Assistant Professor Department of Statistics, FCCU

A Note from the Instructor:
- Lectures will be delivered in class face to face
- Lecture and reading Material will be uploaded on Moodle
- Quizzes will be performed during class time.
- Assignment documents will be uploaded on Moodle and their submissions will be considered as in hard copy during class timings
- For all assessments, dates will be announced in classes.

Instructor Contact Details
Email: nadiamushtaq@fccollege.edu.pk
Office: S-418
Office Hours: 11 to 12 Monday to Friday
Guidelines for contacting instructor: Students can contact me during office hours or make an appointment via email during weekdays and wait until I respond.

Course Description:
Pre-requisites if any: N/A
Mode of Instruction:
- In case of blended mode, students with even and odd roll numbers will rotate weekly as per academic calendar provided by university. There will be on-campus lectures accompanied with video lectures & notes on Moodle/ regular Zoom sessions.
- In case of in-person (on campus) classes, there will be in class lectures.
- •In case of fully online teaching, regular Zoom classes will be conducted along with recorded video lectures and lecture notes uploaded on Moodle.

Technology Requirements:
- Students are required to have a computer/laptop/smartphone and calculator.
- During exams scientific calculator is mandatory and smartphones are not allowed.

Main Mode of Instruction: In-class lectures, reading material, assignment documents will be uploaded on Moodle

Course Objectives:

This course is designed to provide students majoring in Computer Sciences introductory survey of descriptive and inferential statistics. We first review techniques for organizing and presenting the raw data and elementary probability theory and some important discrete or continuous distributions. Next, we discuss few techniques to make inferences with single and multiple regression analysis, model building, and correlation.

Student Learning Outcomes:

At the end of the course the student will:
1) To develop statistical thinking and introduce students to descriptive as well a bit of inferential statistics
2) To enable students to accomplish empirical projects by using appropriate statistical methods
3) To enable students to critically assess statistical studies
4) To serve as a sound foundation for Computer Science courses

Course contents, Learning Material & Activities Schedule

WEEK	Title/ Topic	Instructional Material	Assessment
1	Introduction to basic concepts and terminology. Measurement scales.		
	Data, Types of Data. and its representations.		
2	Frequency distribution		Quiz 1
	Graphs and Charts (Pi-chart, bar-graph, histogram)	PowerPoint Presentations, worksheet, activities and Reading Material	
3	Measures of Central tendency (mean , median, mode, quantiles)		
	Cont.		
4	Measures of dispersion (Range, mean deviation, standard deviation)		Assignment 1

	Cont.		
5	Random Variables and Probability Distributions (Discrete and continuous random variables)		Quiz 2
6	Introduction to Probability: Events, Sample Spaces and Probability; General Probability Rules; Unions and Intersections; Complementary Events;		Assignment 2
7	The Additive Rule and Mutually Exclusive Events; Conditional Probability		
			Quiz 3
8	Multiplicative Rule and Independent Events; practice questions, Bayes' Theroem		
Mid - Term			
9	Discrete Distributions (Binomial distribution and Poisson Distribution)	PowerPoint Presentations, worksheet, activities and Reading Material	
	Cont.		Assignment 3
10	Continuous Distribution (Normal Distribution)		
	Cont.		
11	Simple Linear Regression		
	Probabilistic Models; Fitting the Model Conduct inference for the slope and intercept parameters		Quiz 4
12	Multiple Regression and Model Building (Define the concept of Least Squares Regression in Multiple Regression)		
			Assignment 4

13	Correlation (the coefficients of correlation of Least Squares Regression in multiple Regression)		
	Introduction to Confidence Interval and point estimation		
14	Hypothesis testing		
	Revision		
15	Project		
16	Final Exam		

Textbooks, Materials, Supplies, and Other Resources

1. Lind, D. A., Marchal, W. G., & Wathen, S. A. (2012). Statistical techniques in business & economics. New York, NY: McGraw-Hill/Irwin,
2. Anderson, D. R., Sweeney, D. J., Williams, T. A., Camm, J. D., & Cochran, J. J. (2016). Statistics for business & economics. Nelson Education
3. Prof. Sher Muhammad Ch. And Prof. Dr. Shahid Kamal, Introduction to Statistical Theory Part 1, Ilmi Kitab Khana.
4. Mann, P. S. (2007). Introductory statistics. John Wiley & Sons.
5. R.S.N. Pillai and Bavanthi, Statistics theory and Practice, 8th Edition.

Course Requirements:

Class Participation: Class attendance; participation in-class activities and discussions
Assignment 1: data, frequency distribution, and graphical presentation
Assignment 2: Measures of dispersion and moments
Quiz 1 (marks 10): Data collection and frequency distribution
Quiz 2 (marks 10): Graphical presentation, arithmetic mean, and mode, dispersion
Quiz 3 (marks 10): Probability & Probability distributions
Quiz 4 (marks 10): Regression & Correlation
Assigned Readings
     Practice Worksheets/ questions and reading documents

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

Grades	Quality Points	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
NS	0.00	0.00	Did not show up in class
W	-	-	Officially Withdrawn
AW	-	-	Administrative Withdrawal/Dismissal
AU	-	-	Audit/Listener Status
I	-	-	Incomplete
T	-	-	Transferred credit

The entire course is worth 100%, the breakup is as follows (for example):

Class Participation	5%
Assignments:	10%
Quizzes:	10%
Midterm exam:	25%
Final term exam:	40%
Final Project	10%
TOTAL	**100%**

Missed Assignments/Make-Ups/Extra Credit
- *NO delayed assignments. There will be 50% deduction of marks for late submission after due date.*
- *NO Make-up mid/final exam*
- *NO retake mid/final 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 the classroom for class activities and may ask questions related to the lesson taught. Class participation is also included in your grade

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

- Students can contact the [Campus Counseling Center](#) at 0331-444-1518 or [ccc@fccollege.edu.pk](#).
- [Writing Center](#)
- [Mercy Health Center](#)

Other Useful Links:

-[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