

DEPARTMENT: PURE AND APPLIED SCIENCES

PROGRAMME: BACHELOR OF SCIENCE IN FINANCIAL ENGINEERING

YEAR: 2

SEMESTER: II

UNIT CODE: SPS 2249 **UNIT TITLE:** Statistical Computing I

LECTURE HOURS: 45 Hrs.

CREDIT HOURS: 45Hrs

Pre-requisites: PROBABILITY AND STATISTICS I

LECTURER: KAROMO J.N

LECTURER CONTACTS: EMAIL jkaromo@kyu.ac.ke **Mobile phone:** 0750 903 935

Purpose

To equip students with the skills to enable them to perform basic statistical analysis using standard statistical software and interpret the results

Objectives

By the end of this course the student should be able to;

1. Analyse Statistics using R programming Language
2. Recognize accuracy or misleading quantitative information
3. Interpret the results from the data analyzed
4. Use a computer programme in estimation of the measures of central tendency and dispersion.
5. Use a computer to estimate simple linear regression models
6. Apply statistical computer packages for handling statistical techniques such as graphics, sampling variability. Computation of density, distribution and quartile functions for probability distribution.

Course work plan

Week	Topic	Sub- Topic	Remark
1	Introduction to R programming	Definition and Features of R	
2	R-Data types	Vectors, Lists, Matrices, Arrays, Factors and Data Frames and their operations	
3	Measures of Central tendency	Arithmetic mean, Harmonic Mean, Geometric Mean, Mode, Median and Quartiles	
4	Measures of Dispersion	Range, Variance, Kurtosis and Skewness	
5	CAT I		
6	Regression	Simple Linear Regression and	

	Analysis	Correlation coefficient	
7	Regression	Pearson correlation and spearman Rank correlations	
8	Exploratory Data analysis	Data analysis	
9	Computation of Density,	Binomial, Poisson, Normal	
10	CAT II		
11	Computation of distributions	Gamma, Beta, and Chi-square	
12	Computation of Quintiles	Hyper-geometric distributions and exponential	
13/14	Computation of Density,	Uniform and Weibull distributions	
15/16	EXAMINATION		

Teaching Methods

1. Lecture: oral presentation generally incorporating additional activities, e.g. writing on a chalk-board, exercises, class questions and discussions, or student presentations.
2. Practical: a laboratory experiment/session as a means of further actively involving students.
3. Tutorial: to give the students more attention.

Instructional Material/Equipment

Include course notes, black-and white-board, chalk, white-board marker, duster, computer and projector.

Assessment

- 1) Written end of semester Examination comprising 70% of the total marks
- 2) Continuous Assessment Tests within the semester comprising 30% of the total marks (Tests 15%, Practical 10%, Assignment 5%)

Course Text Books

1. Crawley. *Statistics: An Introduction Using R* John Wiley & Sons, 2005 ISBN 0470-02297-3
2. RV Hogg, JW McKean & AT Craig *Introduction to Mathematical Statistics*, 6thed. Prentice Hall, 2003 ISBN 0-13-177698-3