



The Islamia University Bahawalpur

Rahim Yar Khan Campus

Department: Statistics

Class: M.Sc: Statistics

Semester: 4th

Session:2018 -2020

Instructor	Zartashia Zia	E-Mail: zartashia_zia@yahoo.com	
Course Title	Bio Statistics	Program	M.Sc
Course Number	STAT-21411	Credit Hours	3
Lecture Timings	Monday: 10:00 – 11:30 Wednesday : 11:30 – 1:00		
Course Objectives: The Course will cover basic concepts of biostatistics and its application in medical science.			

Course Outline

Week	Topics
1,2	Definition of Biostatistics, Application of Biostatistics, What is Biostatistics? Variables and its Types, Discrete, Continuous variable, Independent, Dependent variable. What is statistics? Population, types of population, parameter, statistic, branches of statistics, Uses of statistics, Limitations of statistics, function of statistics, Rate, Ratios, Proportion. Accuracy and Significance of Digits.
3,4	Measurement scale, Nominal scale, Ordinal scale, Ratio Scale, Interval Scale, Data, Bivariate data, Multivariate data, Geographical data, and Chronological data. Variable, scale, data, Quality of medical data. Sources of Data, Experiments, Surveys, Records, Clinical practices, External sources.
5,6	Frequency distribution, Discrete and Continuous frequency distribution, Measures of central tendency, mean. Median, mode, harmonic mean, geometric mean, Quintiles, Suitable criteria of these averages, Dispersion, Absolute and relative measure of dispersion, Range, Quartile deviation, Mean deviation, Variance, Standard deviation and its coefficients, Moments, Skewness, kurtosis
7,8	Probability and Its basic concepts, Sample space, Sample points, Simple event, Compound event, Equally likely and not equally likely events, Mutually exclusive events, not mutually exclusive events, Independent and Dependent events, conditional probability, Distributional behavior of biological variables, Binomial distribution, Poisson distribution, Normal distribution.
Mid Term Exam	
9,10	Sampling techniques, Population, Sample, Types of Population, Function of Sample, Census and Sample Survey, Sampling and Purpose of sampling, Rational sampling, Limitations of sampling, Sample Characteristics, Sampling error, Non sampling error, Sampling frame, Sampling design, Standard error, uses of standard error, Methods of sampling, Random sampling, probability sampling, Simple random sampling, Systematic sampling, Stratified sampling, Cluster sampling, Multiphase and Multistage sampling, Sequential Sampling, Double Sampling, Consecutive sampling
11,12	Non probability sampling, Purposive sampling, Quota sampling, Convenience sampling, Snowball sampling, Sample quality, “P” value, its importance and role, Confidence interval for mean, two means, proportion, two proportions,
13,14	Estimation, Point estimate, Interval estimate , Confidence interval confidence Limits, Unbaisdness, Testing in Simple and Composite hypothesis, Mean, two means, proportion two proportions, variance , two variance,
15,16	t-distribution, Chi-square distribution, F-distribution, Regression & Correlation.
Final Term Exams	

Students Responsibilities:

- Students must attend class. At least 80% attendance is mandatory. Students are also responsible for doing all assigned work on time.
- Students must also arrive at time and remain in class for the entire period.

- iii) Cellular Phones and Beeper must be turned off.
- iv) Test Question may be taken from textbook reading, additional material discussed in the class and / or other assigned reading

Students Evaluation Criteria:

Attendance	5%
Workshop/Assignments/Case study	5%
Surprise Test/Sudden Test, Quizzes	5%
Class Participation	5%
Mid Term Paper	30%
Final Term Paper	50%
Total	100%

Recommended Books:

1. Zar, J.(2000).”Biostatistical Analysis”, 5th Edition, John Wiley and Sons.
2. Shoukri, M. M. & Pause,C.A. (1998).“Statistical Methods for Health Sciences”. 2nd Edition, CRC press, Florida.
3. Daniel, W.W. (1996).”Biostatistics: A Foundation for the Health Sciences”, 6th Edition, John Willey New York.
4. Diggle, J.P.,Liang, Kung-Yee and Zeger,S.L. (1996).”Analysis of Longitudinal data”,Clarendon Press, Oxford.
5. Dunn,G. and Everit, B. (1995). “Clinical Biostatistics”, Edward Arnold, London.
6. Rosner, B. (1994). “Fundamentals of Biostatistics”, 4th Edition, Duxbury Press.
7. Zolman, J.F. (1993). “Biostatistics: Experimental Design and Statistical Inference”, Oxford Univeristy Press, New York.
8. Lee, E.T. (1992). “Statistical Methods for Survival Data Analysis”, 2nd Edition. John Wiley, New York.
9. Harris,E.K. and Albert, A. (1991). “Survivorship Analysis for Clinical”
10. “Studies”. Marcel Decker, New York.
11. Altman,G. (1991). “Practical Statistics for Medical Research”. Chapman & Hall, London.
12. Lawless, J.F. (1982). Statistical Models and Methods for Life Time Data. John Wiley, New York.
13. “Introduction To Biostatistics & Research Methods For Medical Students, Clinical Researchers, Physiotherapists & Nurses” By Muhammad Ibrahim” Al-Hassan Publications Urdu Bazar Lahore.