

ALLAMA IQBAL OPEN UNIVERSITY, ISLAMABAD
(Department of Home & Health Sciences)

Course: Biostatistics (1788)
Level: MS Community Health & Nutrition
Credit: 3(2 + 1) **Semester: Autumn, 2013**

CONTENT LIST

1. Course Book (Unit 1-9)
2. Theory Assignment One
3. Practical Assignment One
4. Assignments Forms Eight
5. Schedule for submitting the assignments and tutorial meetings.

Note: If any one item of the above-mentioned content list is missing from your study pack, kindly contact:

The Mailing Officer
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WARNING

1. **PLAGIARISM OR HIRING OF GHOST WRITER(S) FOR SOLVING THE ASSIGNMENT(S) WILL DEBAR THE STUDENT FROM AWARD OF DEGREE/CERTIFICATE, IF FOUND AT ANY STAGE.**
2. **SUBMITTING ASSIGNMENTS BORROWED OR STOLEN FROM OTHER(S) AS ONE'S OWN WILL BE PENALIZED AS DEFINED IN "AIOU PLAGIARISM POLICY".**

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Total Marks: 100

Pass Marks: 50

ASSIGNMENT No. 1

Units (1-9)

Note: All questions are compulsory. Distribution of marks is given against each.

- Q.1 a) What is the difference between descriptive and inferential statistics? (16)
b) What is the use of statistics in research?
- Q.2 What are the four levels of measurements in measuring variables? What do you know about coding and editing of data? (16)
- Q.3 a) What do you know about standard normal distribution and list the eight characteristics of the distribution. (16)
b) Explain the following terms: Null hypothesis, Alternate Hypothesis, type 1 and type 2 error, standard error and critical region.
- Q.4 a) Enlist various sampling techniques, what are the advantages of probability sampling over non-probability sampling? (16)
b) Discuss the difference between stratified sampling and cluster sampling?
- Q.5 What is standard normal distribution, what are the basic characteristics of normal distribution and application of the normal curve in the evaluation of distribution of data? Also explain the Z-score distribution, probability curve and their two unique properties. (16)
- Q.6 Explain briefly the following terms: (20)
1. Hypothesis testing & confidence interval (95% C.I of estimate)
 2. Null and alternate hypothesis
 3. Two tailed versus one tailed test
 4. Alpha (type 1 error) versus beta (type 2 error)
 5. Frequency distribution

ASSIGNMENT No. 2

Total Marks: 100

Pass Marks: 50

Note: This assignment will be completed during the workshop under the close supervision of your tutor.

1. Develop a data sheet on SPSS (Statistical Package for Social Sciences). You can enter data related to Nutritional indicators of the countries. (25)

Source: World population data sheet by population reference bureau available on net. Website: www.prb.org OR as advised by the tutor in the workshop.

2. Analyse the data related to health and nutrition, making frequency distribution, measure of central tendency, measure of dispersion, cross tabulation, chi square test (non parametric, parametric test) and regression analysis. (25)
3. Write a report on your findings. (50)

Course Outlines: BIostatistics (1788)

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Unit 1: Statistical Concepts-I

Introduction, Application of Statistics in Research, Levels of measurements, Descriptive and Inferential Statistics, Sample selection, Central Tendency, Two Categories of Statistical Tests (Parametric & Non Parametric)

Unit 2: Statistical concepts-II

Introduction, Normal Distribution, Application of Normal Curve, Normal distribution as Probability Curve, hypothesis Testing, Null & Alternative hypothesis, Two Tailed Verses One Tailed Hypothesis Tests, Type I & Type II Error, Meaningfulness (Effect Size) Determining required Sample Size.

Unit 3: Relationship among Variables-I

Introduction, Type of Relationship between two variables, Application of correlation & Regression in Research, How Correlation Research Investigates correlation Co-efficient.

Unit 4: Relationship among Variables-II

What the Co-efficient of Correlation Means, Using Correlation of Prediction (Regression), Interpreting Meaningfulness of r, Standard Error of Estimate, Partial correlation, Multiple Regression, Prediction Equation.

Unit 5: Difference among Groups

Statistics Test Difference, Three Types of Students Test, Estimation Meaningfulness of Treatments, tests & Power in Research, Analysis of Variances, Characteristics of the F Distribution, Follow Up Testing, Factorial Analysis (Two Way of ANOVA), Analysis of Co-Variances Limitation of ANOVA.

Unit 6: Non Parametric Statistics

Chi-Square Test, Spearman Correlation co-efficient, Mann-Whitney-Wilcoxon Test, Wilcoxon Matched Paired signed Ranks Test, Kruskal-Wallis ANOVA.

Unit 7: Measuring Research Variables

Comparison of Scales, Precision & Accuracy, Validity, Measurements Errors of Dietary Assessment, Assessment & Control of Measurement Errors, Precision in Dietary Assessment, Validity in dietary Assessment methods, use of Bio-Chemical markers to Validate Dietary Data, Anthropometric Assessment, Clinical Assessment, Various Type of Research.

Unit 8: Experimental & Quasi Experimental Research

Internal & External Validity, controlling Threats to External & Internal Validity, Pre-Experimental Designs, True Experimental Designs, Randomized-Group Designs, pre & Post Randomized, Groups Designs, Factorial Designs, Solomon Four Group Design, Quasi-Experimental Designs.

Unit 9: Using Computers in Research

Hardware, Software, Data Entry Software, Graphical Software, Statistical software, Data Analysis Examples, Important Websites.

Recommended Books:

*Introduction to Nutrition and health Research [Eunsook T. Koh, Willis L. Owen] (2001)
Springer Publishers*