POLYTECHNIC OF NAMIBIA

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SCHOOL OF HEALTH AND APPLIED SCIENCES

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MATHEMATICS & STATISTICS DEPT

aroux@polytechnic.edu.na

COURSE OUTLINE

COURSE NAME: Statistics for IT 1A

COURSE CODE: SIT110S

COURSE LECTURER DETAILS

SURNAME & INITIALS	OFFICE	TELEPHONE
Roux, AJ	Room 408 Blue floor Lecturer building	2072166

SHORT COURSE DESCRIPTION:
This course deals with important aspects in the analysis and applications of Statistics in a business and information technology environment. It evaluates the techniques of data collection, classification and presentation, as well as the analysis of some graphical data displays. The computations and evaluations of probability distributions and random variables are undertaken, together with its industrial applications. A study of the applications of statistical sampling techniques and sampling distributions are also covered.

COURSE LEARNING OUTCOMES:
Learning outcomes:

By the end of the course, students should be able to

- Organize and analyze information from complex situations to provide a basis for decision making
- Evaluate suitable statistical techniques for data collection
- Construct statistical tools for presenting and interpreting comparable numerical data
- Apply a basis for drawing valid conclusions and taking reasonable decisions in the face of uncertainty
- Select and apply suitable statistical software for data analysis

ASSESSMENT STRATEGIES:

Assessments will be done in the form of class tests (CT) and specific application oriented assignments (SAOA). Four (4) class tests and two (2) specific application oriented assignments will be conducted during this course. Every class test will count twenty percent (20%), and every specific application oriented assignment will count ten percent (10%) towards the final evaluation. A student will have to obtain a minimum average of 50% to pass a course subject to a sub-minimum of 40% in each of the assessments. Where a student misses an assessment or scores below 40% in any assessment, the following rule will apply:
A student can only supplement and/or resubmit a maximum of two assessments.
All supplementary tests will be written at the end of the semester.

SYLLABUS CONTENT:

1. INTRODUCTION (WEEK 1)
What is Statistics
Applications of Statistics
Statistics in Business and Industry
Statistics in Decision Making
Statistical Problem Solving Methodologies

2. COLLECTION, SUMMARISATION AND PRESENTATION OF DATA (WEEKS 2 & 3)
Introduction
Types of Data
Sources of Data
Errors in Data
Methods of Collecting Data

Sampling
Interviews
Questionnaires
Experimentation and Observation
Presentation of Data
Tabulation
Pictorial Presentation

- Pictograms
- Pie Charts
- Bar Charts
- Histograms
- Frequency Polygons
- Cumulative Frequency Diagrams
- Scatter Diagrams

TEST 1 : Mrt

3. MEASURES OF CENTRAL TENDENCY (WEEKS 4 & 5)
Review of Arithmetic Mean
Review of Median
Review of Mode
Arithmetic Mean of a Frequency Distribution
Median of s Frequency Distribution
Mode of a Frequency Distribution
Geometric Mean
Harmonic Mean
3.9 Weighted mean

4. MEASURES OF SPREAD (WEEKS 6 & 7)
Introduction
The Range
The Inter-quartile Range
The Variance
The Coefficient of Variation
Description of Measures of Skewness

5. ELEMENTS OF PROBABILITY THEORY (WEEKS 8 & 9)

Basic Definitions and Theorems
Sample Space and Events
Probability of an Event
Basic Theorems of the Theory of Probability

Probability Rules and Conditional Probability
Addition and Multiplication Rule
Conditional Probability
The Partition and Baye's Theorem

TEST 2 : Apr

6. RANDOMVARIABLES & PROBABILITY DISTRIBUTIONS (WEEKS (10 & 11)

6.1 Elementary Concepts and Numerical Characteristics of Random Variables

6.2 Probability Distributions

6.2.1 Elementary Discrete Distributions
6.2.2 Bernoulli's Distribution
6.2.3 Binomial Distribution
6.2.4 Poisson Distribution

6.3 Normal Approximations of Discrete Probability Distr.

6.3.1 Binomial Distr.
6.3.2 Poisson Distr.

6.4 Elementary Continuous Probability Distribution

TEST 3: April

7 SAMPLING AND SAMPLING DISTRIBUTIONS (WEEKS 12 & 13)

7.1 Introduction
7.2 Sampling and Sampling Methods
7.3 Sampling Distribution of Single Sample Means and Proportions
7.4 Sampling Distribution for the Difference between Two Sample Means
7.5 Sampling Distribution for the Difference between Two Sample Proportions

8 STATISTICAL ESTIMATION (WEEK 14 & 15)

8.1.1 Statistical Inferences about the unknown population Mean
8.1.2 Estimation of Confidence Intervals for the unknown single population Mean
8.1.3 Estimation of Confidence Intervals for the difference between two unknown population Means
8.1.4 Determining a Suitable Sample Sizes for estimating population means

8.2 Statistical Inferences about unknown population Proportion
- 7.2.1 Estimation of Confidence Intervals for the unknown single population Proportion
- 7.2.2 Estimation of Confidence Intervals for the difference between two unknown population Proportions
- 7.2.3 Determining a Suitable Sample Size for estimating population proportions

8.3 Statistical Inferences about unknown population Variances
- 7.3.1 Estimation of Confidence Intervals for unknown population Variances

TEST 4 : May

Reading List

Prescribed Textbook

Applied Business Statistics; Methods and Applications

Trevor Wenger
Juta & Co., LTD, 1993 (or more recent edition)
ISBN 0-7021-2873-2

Recommended Textbooks

1. Introductory Mathematics and Statistics for Business
   S. Croucher
   McGraw-Hill Australia, 1998 (or more recent edition)
   ISBN 0-702-470454-0

2. Mathematical Statistics with Applications
   Denmi D. Wackerly, W.Mevenhill, & R.L Scheaffer
   Duxbury, Pacific Grove, CA93950 (6^{th} edition)
   ISBN 0-534-37741-6