Course outline`

Course Title: Statistics for management or introduction to statistics Basic Statistics

Course Description:

The course is designed to equip students with basic methods of statistical data collection, summarization, presentation analysis, and interpretation. It involves detail methods of describing data by means of tables, graphs and diagrams as well as summary measure like averages, measures of variation and skew-ness. In addition students are introduced to concepts of probability, distribution and correlation.

TOPICS:

CHAPTER 1: Introduction

- 1.1 Definition of statistics
- 1.2 Importance & Limitation
- 1.3 Types of Statistics
  - 1.3.1 Descriptive statistics
  - 1.3.2 Inferential statistics
- 1.4 Steps of statistical investigation

CHAPTER 2: Collection of data

- 2.1. Scales of measurements
  - Nominal scale
  - ordinal scale
  - Interval scale
  - Ratio scale
- 2.2 Scope
  - Census
  - Sample
- 2.3.Sampling Techniques
  - 2.3.1 Random sampling
    - 2.3.1.1 Simple random sampling
    - 2.3.1.2 Cluster random sampling
    - 2.3.1.3 Stratified random sampling
    - 2.3.1.4 Systematic random sampling
  - 2.3.2 None random sampling
- 2.4 Methods and means of collection of data
  - 2.4.1 Primary data
  - 2.4.2 Secondary data

CHAPTER 3: Classification and presentation of Data

- 3.1 Definition of classification
- 3.2 Types of classification
- 3.3 Presentation of data
  - 3.3.1 Table- components, example
    - Frequency distribution
  - 3.3.2. Graphs
    - 3.3.2.1. Vertical line graph
    - 3.3.2.2. Histogram

3.3.2.3. Frequency polygon and curve
3.3.2.4. Ogive
3.3.2.5. Line graph

3.3.3. Charts and diagrams
3.3.3.1. Bar chart
- ❖ Simple
- ❖ Multiple
- ❖ Component
- ❖ Percentage

3.3.3.2. Pie chart
3.3.3.3. Pictogram

Chapter 4: Measure of Central Tendency (Average)
4.1. Definition and Purpose
4.2. Summation Notation
4.3. Mathematical Measures
4.3.1. Arithmetic Mean
4.3.2. Geometric Mean
4.3.3. Harmonic Mean
4.3.4. Relationship between Arithmetic mean, Geometric Mean and Harmonic Mean
4.4. Positional Measure
4.4.1. Mode
4.4.2. Median
4.4.3. Other positional Measures
4.5. Properties of the Averages
- ❑ Relation between Mean, Mode and Median (For symmetric and skewed distribution.)

Chapter 5: Measures of Variation
5.1. Definition and Purpose
5.2. Positional Measures – range, inter quartile range and quartile deviation
5.3. Mathematical Measure
5.3.1. Average Deviation from Mean , Mode and Median
5.3.2. Standard Deviation and Variance
5.4. Relative Measures of variation

Chapter 6: Linear Correlation and Linear Regression
6.1. Linear Correlation
6.1.1. Definition and types
6.1.2. Scatter Diagram
6.1.3. Measuring Simple Linear Correlation
6.2. Linear Regression
6.2.1. Definition of Simple Linear Correlation
6.2.2. Least Squares Method
6.2.3. Regression Equation of Y on X and X on Y
6.2.4. Prediction
6.3. Relationship between Correlation and Regression

Chapter 7: Introduction to Elementary Probability

- 7.1. Counting Methods
- 7.2. Definition of Probability
  - 7.2.1 Classical Approach
    - 7.2.1.1. Important terms (sample space, event etc)
    - 7.2.1.2. Definition of probability of an event
  - 7.2..2. Relative Frequency Approach
- 7.3. Properties
- 7.4. Conditional Probability
- 7.5. Multiplication Rule
- 7.6. Addition Rule

Chapter 8: Probability Distribution

- 8.1 Random Variable
- 8.2 Expected Value
- 8.3 Binomial Probability Distribution
- 8.4 Poison Probability Distribution
- 8.5 Normal Probability Distribution

Course Assessments

Type of Evaluation	Due Date
Mid semester exam	35%
Assignment	15%
Final exam	50%

Text: Basic statistics supported learning material, 2009, AAU College of commerce.

Reading Materials

1. Spiegel, M.R., Probability and statistics, Schaums Out line McGraw-Hill,
2. Frank H, Dietrich II James T. McClave, Statistics
3. W.M. Harper, Statistics, 6th ed, 1991
4. Leonard J. Tashman and Kathleen R. Lamburn The ways and means of statistics, Harcourt Brace Jovanovich Inc. 1979
5. Vicki F, Sharp, Statistics for Social Science, Little, Brown and Company, Sonston Toronto, 1979
6. John R. Stockton and Charles T. Clark, Introduction to Business and Economic Statistics, South-Western Publishing Co., 1974
7. Richard P. Runyon, Business Statistics, Richard D, IRWIN, Inc, 1982
8. Warren Chase and Fred Bown, General Statistics, John Whirly and Sons, 1986
9. Moris Hamburg, Basic Statistics, Harcourt Brace Jovanovich, INC., 1979
10. Lawrence L. Lapin, Statistics for Modern Business Decision, Harcourt Brace Jovanovich, INC., 198