

Module Name	Statistical Methods
Module Code	SocM2101
Course Name	Statistics for Sociologists
Course code	SOCI2101
Module ECTS	7 ECTS
Total Module Study Hour	189 hours

Background information

Module coordinator/s name _____

Instructor's name _____

Phone no.: Mobile _____ Office _____

Email _____

Office number _____

Contact hour _____

I. Module Guidebook/ Description

This module starts with introducing basic concepts, applications, uses and limitations of Statistics. It also introduces methods of data collection and presentation; measures of central tendency, measures of variation (dispersion); elementary probability; probability distributions; sampling and sampling distribution of the sample mean and proportion; one and two sample inferences; Analysis of Variance (ANOVA); and simple linear regression and correlation.

II. Module/Course Objectives

The main objective of this module is to introduce students to the basics of statistics and its use in sociological research. It aims at imparting to students the application of statistical techniques and the interpretation of statistical results.

III. Mode of Delivery and Study Hour

The mode of delivery for this course is interactive teaching and learning, independent learning and collaborative learning. The total study hours allocated for this course is 189 hours. Of this time, 42 hours is allocated for lectures, 42 hours for assignments, 30 hours for tutorials and problem solving sessions, 20 hours for assessment and 55 hours for independent study.

IV. Competency/ Learning Outcomes

At the end of the course students are expected to:

- Have a broad knowledge of the basic understanding of statistical techniques demonstrated through principles of data collection, descriptive statistics, probability, probability and sampling distributions, statistical inference and linear regression.
- Understand the methods of data collection, organization, presentation, analysis and interpretation;
- Know what is meant by sample space, event, relative frequency, probability, conditional probability, independence, random variable, probability distribution, probability density function, expected value and variance;
- Be familiar with some standard discrete and continuous probability distributions;
- Be able to use standard statistical tables for the Normal t and chi-square distributions;
- Be able to differentiate between common types of data, and display them appropriately;
- Learn some desirable properties of point estimators;
- Recognize the additional benefits of calculating interval estimates for unknown parameters;
- Understand the framework of hypothesis testing for carrying out statistical inference;
- Be able to produce and interpret interval estimates and tests of hypotheses correctly in some simple cases;
- Have basic skills in exploratory data analysis.

V. Course Contents

- **Section one: Introducing statistics:** *Definition and classification of statistics; stages in statistical investigation; applications, uses and limitations of statistics; and scales of measurement.*
- **Section two: Methods of data collection and presentation:** *Introduction methods of data collection focusing on sources and types of data, frequency distributions and diagrammatic and/or Graphical presentation of data.*
- **Section three: Measures of Central Tendency:** *Objectives of measuring central tendency, the summation notation, properties of measures of central tendency, types of measures of central tendency and quantiles.*
- **Section four: Measures of variation (Dispersion):** *Objectives of measuring variation; absolute and relative measures; types of measures of variation; and the standard scores, moments, skewness and kurtosis.*
- **Section five: Elementary probability:** *Definition of some probability terms, counting rules, probability of an event, probability rules, and conditional probability and independence.*
- **Section six: Probability distributions:** *Definition of random variables and probability distributions, introducing expectation, common discrete probability distributions and common continuous probability distributions.*
- **Section seven: sampling and sampling distribution of the sample mean and proportion:** *Discussing inter alia basic concepts, reasons for sampling, types of*

sampling techniques, basic concepts and definitions of probability and non-probability sampling, sampling distribution of the sample mean and proportion and central limit theorem.

- **Section eight: One sample inference:** *Point and interval estimation of the mean and proportion, hypothesis testing about the mean and proportion, sample size determination and Chi-Square test of association.*
- **Section nine: Two sample inference:** *Inferences about differences between two means, inferences about differences between two proportions, tests of hypotheses on the ratio of the variances of two normally distributed populations, and sample size in comparative studies.*
- **Section ten: Analysis of Variance (ANOVA):** *One-way ANOVA and multiple comparisons (Fisher's Least Significant Difference and Scheffe's Method)*
- **Section eleven: Simple Linear Regression and Correlation:** *Covariance and correlation coefficient, rank correlation coefficient, simple linear regression, and multiple linear regression analysis*