

## COURSE OUTLINE

**Course Code / Title** : HS3002 Understanding Social Statistics

**Pre-requisites** : HS1001 Person and Society  
HS2001 Classical Social Theory  
HS2002 Doing Social Research

**No. of AUs.** : 3

**Contact Hours** : 39

### Course Aims

This course introduces you to foundational statistical concepts and methods to describe, analyze and interpret data in social research. Specifically, the course will teach you how to summarize sample or population data, how to infer characteristics of a population from sample observations, and how to summarize relationships between variables.

### Intended Learning Outcomes (ILO)

By the end of the course, you should be able to:

1. Describe data at different levels of measurement (nominal, ordinal, and interval-ratio), and summarize and interpret data using common graphical tools including, bar charts, pie charts, boxplots, histograms and scatter plots;
2. Apply and interpret descriptive statistics, and apply measures of association to describe the relationships between two nominal variables, between two ordinal variables, and between two interval-ratio variables;
3. Describe the main features of a normal curve, calculate and interpret Z scores, and apply methods of inferential statistics including estimation and hypothesis testing;
4. Use Excel, Stata, or any other statistical software to summarize data and perform basic statistical analyses learnt in this course.

### Course Content

Week 1 Introduction to the course

Crucial role of statistics in social research; three levels of measurements; graphs and charts

Week 2 Descriptive statistics, central tendency

Two categories of statistics: descriptive statistics and inferential statistics; three measures of central tendency: mode, media, and mean.

### Week 3 Variation and dispersion

Measures of dispersion: range, interquartile range, variance, and standard deviation; skewness of the distribution.

### Week 4 Cross-tabulation, contingency table, and bivariate association

Association between two variables at nominal or ordinal levels; Measures of association including phi, Cramer's V, Lambda, Gama.

### Week 5 Regression: association between two interval-ratio variables

Linear regression line; Correlation coefficient; Pearson's r; Coefficient of determination;

### Week 6 Normal curve and sampling

Normal curve/bell curve and its properties; Z-score and location; probabilities under a normal curve; sampling methods

### Week 7 Sampling distribution and estimation

Three distributions: sample, sampling distribution, and population; Central Limited Theorem; estimation and confidence interval.

### Week 8 One sample hypothesis test

Null hypothesis and sampling distribution; critical regions; five-step hypothesis testing; Type 1 and Type II errors; Z and t tests;

### Week 9 Data analysis using statistical software

Introduction to Stata; command and syntax; interpretation of statistical results.

### Week 10 Two sample hypothesis test

Independent and dependent samples; testing for the mean and proportion; degrees of freedom; small and large samples; statistical significance and importance.

### Week 11 ANOVA

Definition and application of ANOVA; within group variability and between group variability; F distribution; pairwise comparison; one-way and two-way ANOVA.

### Week 12 Chi-Square test and linear regression t test

Hypothesis testing for association; parametric and non-parametric tests; Chi-square distribution; disadvantages of Chi-square test; linear regression t test.

### Week 13 Semester-end review and revision; additional topics

Couse review; reading quantitative research papers; application of statistics.

### **Course Assessment**

CA1	Quiz	: 5%
CA2	Class participation	: 5%
CA3	Tutorial presentation	: 10%
CA4	Homework	: 30%
	Final Examination	: 50%
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<b>Total</b>		<b>100%</b>