

Course Title	: Statistics in Modern Society
Course Code	: CLD9003/GED111/CDS111
No. of Credits/Semester	: 3
Mode of Tuition	: Sectional Approach
Class Contact Hours	: 3 hours per week
Category in Major Prog.	: Science, Technology and Society Cluster Course/General Education Category D/Free Elective

Brief Course Description

Wells, H.G., the celebrated English author and historian, noted more than 100 years ago that “statistical thinking will one day be as necessary for efficient citizenship as the ability to read.” Modern society is becoming so complex that there is an ever increasing need for citizens to possess an array of analytical skills. This course will help students develop skills in statistical thinking and reasoning through the use of real world examples from the fields of economics, business, psychology, sociology, and political science. For example, does daycare breed bullies? Is your lifestyle healthy? Who benefits from a tax cut? Are the rich getting richer? Are we smarter than our parents? This course will address such issues as these in order to illustrate ‘user friendly’ approaches to statistical studies. The course is specifically designed for non-statistical majors.

Aims

The aim is to bring the students into attention of the application of statistical information/analysis in our daily life. In modern world, we see and hear all kinds of report with statistical information being supportive, meaningful, irrelevant, misleading, etc. This general education course will raise all sorts of argument in some controversial situations and students will need to evaluate options critically.

Learning Outcomes

On completion of this course, students will be able to:

1. demonstrate the ability to mount an argument using statistical information.
2. critically evaluate various statistical studies presented in daily life and form opinions about their conclusions.
3. use statistical reasoning in the analysis of real world issues.

Measurement of Learning Outcomes

1. Class discussion will focus on a number of controversial issues that purport to be objectively based on the grounds of statistical support. Students will be required to critically assess the statistical methods employed to analyse these issues.
2. Take home exercises require students not only to solve problems but also to demonstrate an understanding of statistical concepts and reasoning that can be used in support of their problem solving.
3. The project and final examination will assess students’ ability to apply statistical reasoning to real world problems.

Indicative Content

- Eight guidelines for critically evaluating a statistical study.
- Cases: Does daycare breed bullies? Is your lifestyle healthy?
- Measurement in Statistics
- Case: Who benefits from a tax cut?
- Visual displays of data
- Case: How much carbon dioxide is in the atmosphere?
- Describing data
- Case: Are the rich getting richer?
- Probability in Statistics
- Case: Are lotteries fair? Is DNA finger-printing reliable?
- Normal distribution
- Case: Are we smarter than our parents?
- Correlation and causality
- Case: What helps children read?
- From samples to populations
- Case: How many words did Shakespeare know?
- Hypothesis testing
- Case: Are genetically modified foods safe?
- Applications of statistics and statistical paradoxes
- Can you tell a fraud when you see one?

Teaching Method

Basic concepts and applications are discussed during lectures, theories are explained in terms of practical real-life examples. This course will require discussion and analysis of questions such as: “The television show *Nightline* conducted a poll in which viewers were asked whether the United Nations headquarters should be kept in the United States. Viewers could respond to the poll by paying 50 cents to call a “900” phone number with their opinions. The poll drew 186,000 response, of which 67% favored moving the United Nations out of the United States. Around the same time, a poll using simple random sampling of 500 people found that 72% wanted the United Nations to *stay* in the United States. Which poll is more likely to be representative of the general opinions of Americans?”

Laboratory sessions will introduce software such as Excel as an aid to analyzing various statistical problems.

Assessment

Examination	60%
Continuous Assessment	40%

Required/Essential Readings

Bennett, J. O., Briggs, W. L. and Triola, Mario F., *Statistical Reasoning for Everyday Life*, 4/E, Addison-Wesley, 2014.

Recommended/Supplementary Readings

Donald, L.H. and Horrell, J.F., *Data, Statistics, and Decision Models with Excel*, John Wiley & Sons, Inc. 1998.

Huff, D., *How to Lie with Statistics*, Harmondsworth, Penguin, 1973.