

1314-ST113 Introduction to Statistics

II Semester 2013-14

Lecture times and locations

Monday 14:00-14:50 AC202; Wednesday 15:00-15:50 AC202

Course lecturer

Dr. Milovan Krnjajić, [milovan.krnjajic \[at\] nuigalway.ie](mailto:milovan.krnjajic@nuigalway.ie)

office: 1005 Aras de Brun, School of Mathematics

office hours: Thu 16:00-17:00 or by appointment (also, open door policy)

Course web page

All information will be communicated through the Blackboard or during the lectures.

Course description

This is an introductory course to statistics for the first year students of Mathematics. A prerequisite is a course in elementary probability theory (such as ST112) and knowledge of basic calculus. The course starts with a review of basic probability concepts such as probability spaces and events; probability axioms; conditional probability, independence of events; sampling (ordered, unordered, with/without replacement); discrete and continuous random variables (r.v.) and their probability mass/density functions (PMF/PDF), cumulative distribution functions (CDF); expectation and variance of r.v.; basic properties of Bernoulli, Binomial, Poisson, Exponential and Normal distributions; Central Limit Theorem. Statistics deals with collection, presentation and analysis of data using methods based on probability theory. We'll first look at ways of graphing data such as histograms, scatterplots, boxplots, stem-and-leaf plots. We shall learn about simple random sampling and properties of the samples such as numerical measures of location and spread. for both ungrouped and grouped data; We shall discuss statistical inference, point and interval estimates, and steps in hypothesis testing. In particular, we'll look at inference for a single population mean, a single population proportion, difference between two population means, and if time permits we shall also learn about estimation of a single population variance and the ratio of two population variances, and the basic assumptions and results of linear regression.

Course work and examination

Final mark based on the exam (about 75%) and continuous assessment (about 25%) including class participation, homework assignments and in-class quizzes.

Reference books and material

Michael Lavine, *Introduction to Statistical Thought* (available online)

www.math.umass.edu/~lavine/Book/book.html

L. Gonick, W. Smith, *The Cartoon Guide to Statistics*, HarperPerennial (1993)

C. Grinstead, L. Snell, *Introduction to Probability*, American Maths Soc.

www.dartmouth.edu/~chance/teaching_aids/books_articles/probability_book/book.html

Various handouts/material to be posted on the Blackboard