

The Department of Mathematics

2018–19–A term

Course Name Mathematical Statistics 1

Course Number 201.1.8011

Course web page

<https://www.math.bgu.ac.il/en/teaching/fall2019/courses/mathematical-statistics>

Lecturer Emeritus Prof Daniel Berend, <berend@bgu.ac.il>, Office 37/213

Office Hours <https://www.math.bgu.ac.il/en/teaching/hours>

Abstract

Requirements and grading¹

Course topics

(1) Parametric point estimation: sampling, statistics, estimators, sample mean, sample variance, method of moments, maximum likelihood. (2) Properties of point estimators: mean square error, loss and risk functions, unbiased estimators, lower bound for variance (Rao-Cramer inequality), efficient estimators. (3) Sufficient statistics: factorization criterion, sufficiency and completeness, exponential families of distributions, finding of minimal variance unbiased estimators. (4) Parametric interval estimation: confidence interval, sampling from normal distribution, confidence intervals for mean and variance, large sample confidence interval. (5) Test of hypotheses: simple hypothesis versus simple alternative, most powerful test, composite hypotheses, uniformly most powerful test, sampling from normal distribution, tests for mean and variance. (6) Comparison of two populations: confidence interval for differences of two means, test on two means, tests concerning variances, goodness of fit tests, tests on independence.

¹Information may change during the first two weeks of the term. Please consult the webpage for updates