

Probability and Statistics (ELM2081) Group-2

Monday 13:00-15:50 C018

Associate Prof. Dr. Atif Evren

Topics

- 1) Populations, samples, and processes. Pictorial and tabular methods in descriptive statistics
- 2) Measures of location. Measure of variability.
- 3) Sample spaces. Events. Counting techniques.
- 4) Probability. Properties of probability. Conditional probability and independence.
- 5) Random variables. Probability distributions for discrete random variables. Cumulative distribution functions. Expected values. Joint probability distributions for discrete random variables.
- 6) Binomial distribution. Multinomial distribution.
- 7) Geometric distribution. Negative binomial distribution. Hypergeometric distribution. The Poisson distribution.
- 8) Continuous random variables. Probability density functions. Cumulative distribution functions and expected values. Joint probability distributions.
- 9) Normal distribution. Gamma distribution. Exponential distribution. Chi-squared distribution.
- 10) Sampling distributions. Sampling distribution of mean and the central limit theorem. Sampling distribution of the sample variance. t-distribution, F-distribution.
- 11) One and Two sample estimation problems. Interval estimation. Estimating the mean. Two samples: Estimating the difference between two means. Independent samples, paired samples. Estimating the variance. Two sample: Estimating the ratio of two variances. Confidence interval for the ratio of variances.

References

- 1) Lecture notes
- 2) Walpole, Myers, Myers, Ye, Probability & Statistics for Engineers & Scientists.

Evaluation

Two midterms (30% each), final (40%)