

STAT 3800/8805:

Applied Engineering Probability & Statistics

001 | MW 1:00 PM – 2:15 PM | Dr. Dora Velcsov

002 | MW 5:30 – 6:45 PM | Dr. Vyacheslav Rykov

Description: The goal is to help you answer questions about validity of engineering claims and decisions. Here is an example:

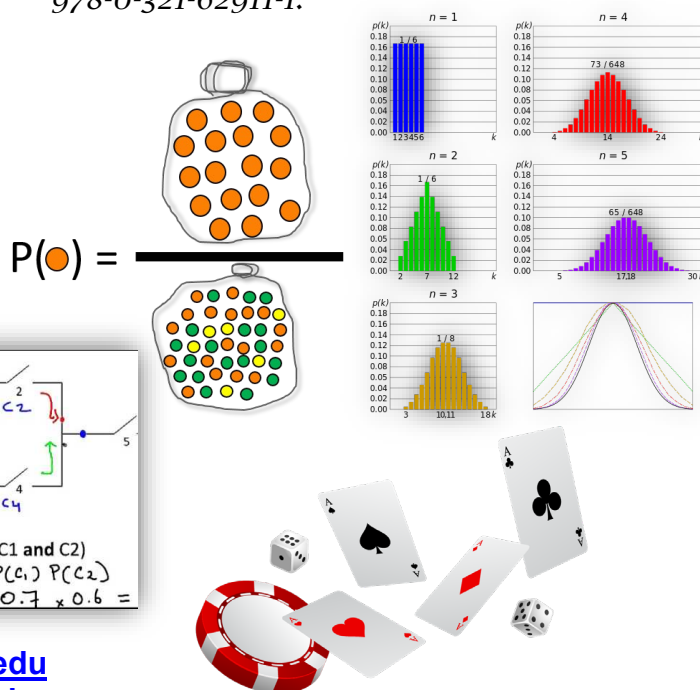
An important manufacturing process produces cylindrical component parts for the automotive industry. It is important that the process produces parts having a mean of 5.0 mm. The engineer involved conjectures that the population mean is 5.0 mm. An experiment is conducted in which 100 parts produced by the process are selected randomly and the diameter measured on each. It is known that the population standard deviation is 0.1. The experiment indicates a sample average diameter of 5.027 mm. Does this sample information appear to support or refute the engineer's conjecture?

In other words, if YOU are the engineer, will you get fired or not?

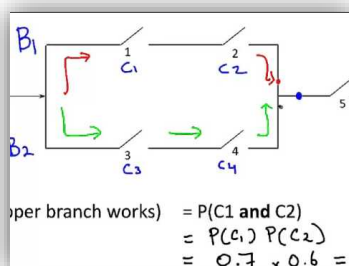
Pre-requisites: MATH 1970 (Calculus III).

What you need to learn: probability and probability distributions, mathematical expectation, distribution of random variables, binomial, Poisson, hypergeometric, gamma, normal, and t-distributions, Central Limit Theorem, confidence intervals, hypothesis testing, linear regression, contingency tables.

Text: R.E. Walpole, R.H. Myers, S.L. Myers, K. Ye, Probability and Statistics for Engineers and Scientists, Pearson / Prentice Hall, New Jersey, 2012, 9-th edition, ISBN 10: 0-321-62911-6, ISBN 13: 978-0-321-62911-1.



$$P(\bullet) = \frac{\text{Number of favorable outcomes}}{\text{Total number of outcomes}}$$



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