

Math 1342 Statistics Course Document

Credit Hours

Three semester hours

Transferability

This course should transfer to all four year colleges and degree programs. If you are concerned about the transferability of this course you should contact the counseling center or the college / university to which you will transfer.

Prerequisites

Math 1314 College Algebra or Instructor / Departmental Approval

Course Description

An introduction to the concepts and methods of statistics. Topics include probability, random variables, binomial and normal distributions, random sampling, statistical inference, estimation, testing hypotheses, linear regressions and correlation, chi square test and analysis of variance.

Materials

Required Textbook and Basic Calculator

Learning Outcomes

- Recognize and apply statistical terminology.
- Interpret ideas of population versus sample, random variables and techniques of descriptive statistics including frequency distributions, stem and leaf plots, boxplots and scatterplots.
- Calculate and interpret measures of central tendency, including mean, median and mode and measures of dispersion to apply the 68-95-99.7 rule, calculator/statistical computer packages.
- Apply basic ideas of probability and its applications to statistics.
- Define discrete and continuous random variables and theoretical probability distributions with emphasis on the binomial and normal distributions.
- Apply the Central Limit Theorem to the sampling process.
- Estimate the means, proportion and variance using point estimation confidence intervals.
- Demonstrate skills in hypothesis testing.
- Use linear regression to find the "line of best fit" for two variables and calculate and interpret correlation coefficients.
- Apply the Chi Square procedure.
- Recognize and appreciate valid statistical techniques versus statistical methods that are misapplied, inaccurately presented or misleading.

Textbook and Sections

Elementary Statistics: A Brief Version w/Data Disk
Allan G. Bluman, 4th Edition, McGraw Hill
ISBN 139780073347141

- 1.1 Introduction
- 1.2 Descriptive and Inferential Statistics
- 1.3 Variables and Types of Data
- 1.4 Data Collection and Sampling Techniques
- 1.5 Observational and Experimental Studies
- 1.6 Uses and Misuses of Statistics
- 1.7 Computers and Calculators

- 2.1 Introduction
- 2.2 Organizing Data
- 2.3 Histogram, Frequency Polygons, and Ogives
- 2.4 Other Types of Graphs
- 2.5 Paired Data and Scatter Plots

- 3.1 Introduction
- 3.2 Measures of Central Tendency
- 3.3 Measures of Variation
- 3.4 Measure of Position
- 3.5 Exploratory Data Analysis

- 4.1 Introduction
- 4.2 Sample Spaces and Probability
- 4.3 The Addition Rules for Probability
- 4.4 The Multiplication Rules / Conditional Probability
- 4.5 Counting rules
- 4.6 Probability and Counting Rules

- 5.1 Introduction
- 5.2 Probability Distributions
- 5.3 Mean, Variance, Deviation and Expectation
- 5.4 The Binomial Distribution

- 6.1 Introduction
- 6.2 Properties of the Normal Distribution
- 6.3 The Standard Normal Distribution
- 6.4 Applications of the Normal Distribution
- 6.5 The Central Limit Theorem
- 6.6 The Normal Approximation to Binomial Distribution

- 7.1 Introduction
- 7.2 Confidence Intervals for the Mean, $n \geq 30$
- 7.3 Confidence Intervals for the Mean, $n < 30$
- 7.4 Sample Size for Proportions
- 7.5 Confidence Intervals for Variances

- 8.1 Introduction
- 8.2 Steps in Hypothesis Testing Traditional Method
- 8.3 z Test for a Mean
- 8.4 t Test for a Mean
- 8.5 z Test for a Proportion
- 8.6 Chi Squared Test for a Variance

- 10.1 Introduction
- 10.2 Correlation
- 10.3 Regression

- 9.1 Introduction
- 9.2 Testing the Difference between Two Means
- 9.4 Testing the Difference between Two Means