

Math 244: Introduction to Probability and Statistics 2

Course Description: Introduces methods of inferential statistical analysis. Includes sampling techniques, confidence intervals, hypothesis testing, tests of association, linear regression, and categorical analysis. Basic computer skills (especially spreadsheet knowledge) are desirable. A graphing calculator is required. TI -83 or TI -84 recommended. Prerequisites: "C" or better in MTH 243 or MTH 243 equivalency met or instructor approval.

Specifically, students who successfully complete MTH 244 (Introduction to Probability and Statistics 2) will be able to achieve the following outcomes:

- understand and apply basic sampling techniques for statistical research and how the misapplication of such techniques easily leads to biased and possibly meaningless results.
- recognize data that are normally distributed and be able to calculate probabilities using statistical tables and a graphing calculator.
- perform and interpret hypothesis tests on claims about means and proportions for one and two-sample data both manually and using appropriate technology. Also, students should be able to determine the proper statistic to use under various circumstances and how probabilities of Type I and Type II errors affect hypothesis testing.
- compute and interpret confidence intervals and understand their relationship to hypothesis testing.
- perform a simple regression on two-sample data, understand the uses and limitations of a regression analysis, and perform a test of significance on the correlation coefficient.
- perform Chi-square tests of independence and Goodness-of-fit, as well as ANOVA tests.
- become familiar with the graphing calculator and industry standard statistical software packages to obtain graphical representations of data and perform statistical computations and hypothesis tests.

Performance Based Outcomes in Mathematics

Students who successfully complete any mathematics course at Central Oregon Community College will be able to:

1. *Work independently to explore mathematical applications and models, and to develop algebraic/symbolic, graphical, numerical, and narrative skills in solving mathematics problems.*
2. *Work as a member of a group/team on projects or activities that are designed to explore mathematical applications and models.*
3. *Use both written and oral skills to communicate about mathematical concepts, processes, complete mathematical solutions and their implications.*
4. *Use a variety of problem solving tools including symbolic/algebraic notation, graphs, tables, and narratives to identify, analyze, and solve mathematical problems.*
5. *Develop mathematical conjectures and use examples and counterexamples to examine the validity and reasonableness of those conjectures.*
6. *Create and analyze mathematical models of real world and theoretical situations, including the implications and limitations of those models.*
7. *Use appropriate technologies to analyze and solve mathematics problems, and verify the appropriateness and reasonableness of the solution(s).*

