

COURSE OUTLINE

MATH 138 **Statistics** 4 Semester Hours

HOWARD COMMUNITY COLLEGE

Description

In this course, students will develop the skills necessary to examine basic statistical terminology; develop pictorial and analytical distributions; and use a calculator to calculate measures of central location and measures of variation. The student will additionally examine the normal distribution, correlation, and regression analysis, sampling, testing hypotheses, the chi square test, and probability related to statistics. Prerequisite: MATH 070 (4 hours weekly)

Statement on General Education and Liberal Learning

A liberal education prepares students to lead ethical, productive, and creative lives and to understand how the pursuit of lifelong learning and critical thinking fosters good citizenship. General education courses form the core of a liberal education within the higher education curriculum and provide a coherent intellectual experience for all students by introducing the fundamental concepts and methods of inquiry in the areas of mathematics, the physical and natural sciences, the social sciences, the arts and the humanities, and composition. This course is part of the general education core experience at Howard Community College.

Overall Course Objectives

Upon completion of this course, the student will be able to:

1. Present data in a readable form.
2. Calculate a correlation and state its meaning.
3. Calculate and use a regression equation.
4. Calculate measures of central locations and measures of variation.
5. Find appropriate samples.
6. Solve probability problems and make decisions based on given probabilities.
7. Present various types of distributions and calculate their mean and standard deviation.
8. Test hypotheses.

Major Topics

Exploring and Understanding Data

- Displaying and describing categorical data
- Displaying and summarizing quantitative data
- Understanding and comparing distributions
- Using the standard deviation as a ruler and understanding the Normal Model

Exploring Relationships Between Variables

- Scatterplots, Association, and Correlation
- Linear Regression

Gathering Data

- Understanding Randomness
- Sample Surveys
- Experiments and observational studies

Randomness and Probability

- From Randomness to Probability
- Probability Rules!
- Random Variables
- Probability Models

From the Data at Hand to the World at Large

- Sampling Distribution Models
- Confidence Intervals for Proportions
- Testing Hypotheses About Proportions
- More about Tests
- Comparing Two Proportions

Learning about the World

- Inferences about Means
- Comparing Means
- Paired Samples and blocks

Inference When Variables Are Related

- Comparing Counts

Course Requirements

Grading procedures will be determined by the individual faculty member but will include the following:
Several unit exams, several projects, and a comprehensive departmental final.

Other Course Information

This course may be used as a Mathematics core course or as a Mathematics elective. Check your transfer institution to guarantee transferability.