

# North Hennepin Community College

## MATH 1210: Applied Statistics

### A. COURSE DESCRIPTION

Credits: 4

Lecture Hours/Week: 4

Lab Hours/Week: \*.\*

OJT Hours/Week: \*.\*

Prerequisites:

This course requires either of these prerequisites

A score of 79 on test Accuplacer College Level Math

MATH 1150 - College Algebra (Minimum grade: 1.67 GPA Equivalent)

Corequisites: None

MnTC Goals: Goal 02 - Critical Thinking, Goal 04 - Mathematical/Logical Reasoning

This course provides students with practical statistical tools for analyzing a variety of data. Students will learn how to choose which statistical test to implement, how to apply computer software to conduct tests, and how to interpret the statistical results. Topics include discussion of frequency distributions, measures of central tendency and variation, exploratory data analysis, probability, hypothesis testing and inferences about proportions and means (one and two populations), analysis of variance, correlation, linear regression, and nonparametric statistics. Prerequisites: College math placement above Math 1150 or successful completion of Math 1150 or higher with grade of "C" or better.

**B. COURSE EFFECTIVE DATES:** 05/06/2016 - Present

### C. OUTLINE OF MAJOR CONTENT AREAS

1. See Course Description and Course Outcomes

## **D. LEARNING OUTCOMES (General)**

1. Use descriptive statistics to describe and compare data (MnTC Goal 4: b; Goal 2: a, b, c) (NHCC ELO 1, 2)
2. Create and interpret visual summaries of data (G4: b; G2: a) (NHCC ELO 1, 2)
3. Find and interpret the mean and the standard deviation of discrete probability distributions with an emphasis on binomial distributions (G4: a, b, d) (NHCC ELO 1, 2)
4. Identify and describe continuous probability distributions with an emphasis on normal distributions (G4: a, b, d) (NHCC ELO 1, 2)
5. Determine probabilities using binomial and normal distributions (G4: a, b, d) (NHCC ELO 1, 2)
6. Describe the Central Limit Theorem and use it to determine probabilities (G4: a, b, d; G2 a) (NHCC ELO 1, 2)
7. Create and interpret confidence intervals of one and two population means, proportions, and variances (G4: a, b, d; G2: a, b, c, d) (NHCC ELO 1, 2, 4)
8. Create, perform, and interpret hypothesis tests of one and two population means, proportions, and variances (G4: a, b, d; G2: a, b, c, d) (NHCC ELO 1, 2, 4)
9. Use linear regression to investigate correlation of paired data (G4: a, b, d; G2: a, b, c, d) (NHCC ELO 1, 2)
10. Perform and interpret tests of independence, homogeneity, and the goodness of fit for a sample chi-square statistic (G4: a, b, d; G2: a, b, c, d) (NHCC ELO 1, 2, 4)
11. Perform and interpret the one-way ANOVA and two-way ANOVA for comparing sample means (G4: a, b, d; G2: a, b, c, d) (NHCC ELO 1, 2, 4) and
12. Perform and interpret the sign test, the rank run sum test, Spearman rank correlation, and run test for randomness of the nonparametric statistics. (G4: a, b, d; G2: a, b, c, d) (NHCC ELO 1, 2, 4)

## **E. Minnesota Transfer Curriculum Goal Area(s) and Competencies**

### Goal 02 - Critical Thinking

1. Gather factual information and apply it to a given problem in a manner that is relevant, clear, comprehensive, and conscious of possible bias in the information selected.
2. Imagine and seek out a variety of possible goals, assumptions, interpretations, or perspectives which can give alternative meanings or solutions to given situations or problems.
3. Analyze the logical connections among the facts, goals, and implicit assumptions relevant to a problem or claim; generate and evaluate implications that follow from them.
4. Recognize and articulate the value assumptions which underlie and affect decisions, interpretations, analyses, and evaluations made by ourselves and others.

### Goal 04 - Mathematical/Logical Reasoning

1. Illustrate historical and contemporary applications of mathematical/logical systems.
2. Clearly express mathematical/logical ideas in writing.
3. Apply higher-order problem-solving and/or modeling strategies.

## **F. LEARNER OUTCOMES ASSESSMENT**

As noted on course syllabus

## **G. SPECIAL INFORMATION**

1. Knowledge of Human Cultures and the Physical and Natural World -Through study in the sciences, mathematics, social sciences, humanities, histories, languages, the arts, technology and professions.
2. Intellectual and Practical Skills - Including: Inquiry and analysis; Critical and creative thinking; Written and oral communication; Quantitative literacy; Information literacy; Teamwork and problem solving.
4. Integrative and Applied Learning - Including: Synthesis and advanced accomplishment across general education, liberal studies, specialized studies and activities in the broader campus community.