HIGHLAND COMMUNITY COLLEGE

Syllabus

MAT203 Basic Statistics
3 Credit Hours (Lecture)
Prerequisites: Assessment
C&I Revision Date: 00/00/0000

Department:

Mathematics

Course Description:

This course is an introductory study of the fundamentals of modern statistics and probability. The course will cover descriptive methods, inductive statistics, probability, estimation, tests of hypotheses, correlation, regression, and Chi-square, along with other topics as time allows.

Course Competencies:

The learning outcomes and competencies detailed in this syllabus meet or exceed the learning outcomes and competencies specified by the Kansas Core Outcomes Groups for this course as approved by the Kansas Board of Regents. (Kansas Regents Shared Number Course and Title: KRSN Course MAT 1020 Elementary Statistics.)

KCOG Core Outcomes:

1. Create graphical and numerical descriptions of quantitative and qualitative data.
2. Calculate probabilities and percentiles related to a general normal distribution.
3. Distinguish differences in data analysis and interpretation between observational data and data from designed experiments.
4. Calculate and interpret a confidence interval for a single parameter, using both large and small samples.
5. Perform and interpret a test of hypotheses for a single parameter, using both large and small samples.
6. Perform and interpret statistical inference on the difference of the two parameters.
7. Fit and interpret a simple linear regression model, including correlation and scatterplots.

Additional HCC Competencies:

8. Define random variables. Calculate the mean and standard deviation of discrete random variables.
9. Calculate probabilities for a binomial experiment using binomial distribution.
10. Analyze the Central Limit Theorem. Calculate probability by applying the central limit theorem.
11. Utilize the Chi-squared test to perform tests for goodness-of-fit, homogeneity, and independence in contingency tables.

Course Content:

A. Introduction to Data
B. Summarizing Data
C. Averages and Variation
D. Elementary Probability Theory
E. Introduction to Probability Distributions &The Binomial Distribution
F. Normal & Sampling Distributions

G. Estimation with Confidence Intervals
H. Hypothesis Testing
I. Correlation and Regression
J. Chi-Square Distribution

Learning Assessments:

Competencies may be evaluated by multiple measures, including written examinations covering all course material, regular hour-long exams, and a required comprehensive final exam. Additionally, assessment may also occur through any of the following at the discretion of the instructor: regular collection of homework, in-class work, quizzes, and various projects.

Instructional Materials:

Textbook: Diez, D., Rundel, M. C., & Barr, C.D. (2019 and updated 2022). OpenIntro Statistics (4th ed.). OpenIntro. https://www.openintro.org/book/os/

A graphing calculator (required)

Guidelines for Requesting Accommodations Based on Documented Disability or Medical Condition

It is the intention of Highland Community College to work toward full compliance with the Americans with Disabilities Act, to make instructional programs accessible to all people, and to provide reasonable accommodations according to the law.

Students should understand that it is their responsibility to self-identify their need(s) for accommodation and that they must provide current, comprehensive diagnosis of a specific disability or medical condition from a qualified professional in order to receive services. Documentation must include specific recommendations for accommodation(s). Documentation should be provided in a timely manner prior to or early in the semester so that the requested accommodation can be considered and, if warranted, arranged.

In order to begin the process all students **must** complete the "Disabilities Self-Identification Form" on our Disability Services website.

This form can also be accessed at the Highland Community College homepage under Students Services/Student Resources/Disability Service or by contacting the Disabilities Coordinator.

A Note on Harassment, Discrimination and Sexual Misconduct

Highland Community College seeks to assure all community members learn and work in a welcoming and inclusive environment. Title VII, Title IX, and College policy prohibit harassment, discrimination and sexual misconduct. Highland Community College encourages anyone experiencing harassment, discrimination or sexual misconduct to talk to report to the Vice President for Student Services, the Human Resources Director or complete an online report about what happened so that they can get the support they need and Highland Community College can respond appropriately.

There are both confidential and non-confidential resources and reporting options available to you. Highland Community College is legally obligated to respond to reports of sexual misconduct, and therefore we cannot guarantee the confidentiality of a report, unless made to a confidential resource. Responses may vary from support services to formal investigations. As a faculty member, I am required to report incidents of sexual misconduct and thus cannot guarantee confidentiality. I must provide our Title IX coordinator with relevant details such as the names of those involved in the incident. For more information about policies and resources or reporting options, please review our Equity Grievance Policy.