MATH 2040

Division: Natural Science and Mathematics
Department: Mathematics
Course: MATH 2040
Title: Applied Statistics
Catalog Description:

Applied Statistics is the study of the nature of statistical reasoning and includes topics such as descriptive statistics, sampling and data collection, probability, hypothesis testing including Chi Square and Analysis of Variance, correlation and regression. This course is primarily for business and mathematics/statistics majors. Graphing calculator required (TI-83/84 preferred).

General Education Requirements: N/A
Semesters Offered: Fall, Spring
Credit/Time Requirement: Credit: 4; Lecture: 4; Lab: 0
Clock/Hour Requirements: 0
Offered for Non-Credit: No
Prerequisites: MATH 1050 or MATH 1080

Justification:

This course is part of the Prebusiness Core at all institutions in the state. It is a required course for all accounting and business administration majors. It also fills the statistics requirement for most mathematics majors. This course is equivalent to statistics courses at all state institutions although they have different course numbers and are offered by various departments.

Student Learning Outcomes:

Upon successful completion of this course, students will:

- understand the appropriate and inappropriate methods of collecting data for statistical purposes
- know how to represent data in a number of different graphical and numerical forms
- understand the relationship between probability and statistics
- be able to perform inference tests on statistical data and explain the conclusions
- recognize that statistical methods have limits and are often abused.

Content:

This course will include:

- descriptive statistics
    - graphical methods
    - numerical methods
- probability and probability distribution
    - general rules
    - discrete probability distributions

        - binomial and poisson
    - continuous probability distributions
        - uniform and normal
    - inferential statistics
        - estimating with confidence
        - hypothesis testing
            - inference for large and small samples and proportions
    - additional inference topics
        - regression analysis
        - ANOVA
        - Chi-Square and contingency tables
        - non parametric tests.

- Students will complete both individual and group assignments, participate in group problem solving activities and take regular examinations. The course also includes a major group project which involves collecting, describing, and analyzing data. The use of graphing calculators and/or computer software is strongly emphasized.

General Education Outcomes:

6) Apply computational skills to a variety of contexts.

Algebra skills are a prerequisite to the course. The understanding and ability to correctly use many formulas is a major component of the course. Most important is the ability to interpret data after having applied the statistical procedures that are computationally intensive. Students will be evaluated through, and receive feedback on, daily assignments and periodic examinations. Students will also be evaluated and receive feedback during in-class discussions, as they do board work, and as they participate in group activities and projects.

Key Performance Indicators:

- Student learning will be evaluated through use of daily assignments and periodic examinations. Understanding will also be evaluated by observation of students during discussions, as they do board work, and as they participate in group activities and projects.
- The effectiveness of the course will also be demonstrated by the ability of students to successfully complete assignments in subsequent major courses using statistics. Immediate feedback can be obtained from subsequent courses that are taught at Snow College and, where possible, from upper division courses taken later.
- Assessment will be based on homework (10-25%), exams (50-70%), group work (5-15%), and a final project (5-15%). Percentages are approximate.

Representative Text and/or Supplies:

- Bowerman, OConnell, and Hand, *Business Statistics in Practice,* current edition, McGraw-Hill/Irwin, New York

- Graphing calculator required (TI-83/84 preferred).

Optimum Class Size: 25
Maximum Class Size: 36

Signatures:

I hereby submit this course syllabus:

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Jonathan Bodrero, M.S., Assistant Professor

I hereby find this course consistent with the goals and resources of the Mathematics Department:

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Kari Arnoldsen, PhD, Professor, Chair

I hereby find this course consistent with the goals and resources of the Natural Science and Mathematics Division:

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Dan Black, EdD, Associate Professor, Dean

I have discussed the need for library resources related to this class with the person submitting the syllabus:

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Lynn Anderson, MLIS, Technical Services Librarian (Main Campus)

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Michelle Olsen, MLS, Campus Librarian (Richfield Campus)