Course Syllabus

Course Information

Course Title: Statistical Methods

Subject and Number: STA 2023

Course Description: In this course, students will utilize descriptive and inferential statistical methods in contextual situations, using technology as appropriate. The course is designed to increase problem-solving abilities and data interpretation through practical applications of statistical concepts. This course is appropriate for students in a wide range of disciplines and programs. Student learning outcomes: students will visualize and summarize data using descriptive statistics; students will apply basic probability concepts to draw reasonable conclusions; students will employ concepts of random variables, sampling distributions, and central limit theorem to analyze and interpret representations of data; students will choose an appropriate method of inferential statistics, including confidence intervals and hypothesis testing, to make broader decisions based on sample data; and students will model linear relationships between quantitative variables using correlation and linear regression. Prerequisites: MAT 1033 or MGF 1131 with a grade of "C" or higher. Special Fee. Fulfills Gordon Rule Computational Requirement.

Class Number: LOREM IPSUM

Term and Year: LOREM IPSUM

Course Modality: MDC Modalities

Instructor Information

Name: LOREM IPSUM

Department and Campus: LOREM IPSUM

Office location: LOREM IPSUM

Office hours: *(communicate course office hours with students)*

Phone number: 123-456-7890

Email: LOREM IPSUM

Communication Policy: *(Faculty will establish protocols for communication with students)*

Required Textbook, Course Materials, and Technology

Required course materials: *(Textbook(s), library reserves, shark pack, and/or other required readings. Include ISBN Number and author(s))*

List optional/supplemental materials/OER: LOREM IPSUM

Technology & Technical Skill Requirements: *(Technology tools or equipment students need to complete this course are included)*

Grading Policy & Assessment Methods

List all activities, papers, quizzes, tests, etc. including grading scale used for final grade calculation. Relationships between the final grade and the learner's accumulated points or percentages/weights breakdown for each assessment or component of the course grade.

Include policy on late submissions.

For MDC Live and MDC Online courses, include policy regarding exams (e.g., ProctorU, Respondus Lockdown and Monitor, etc.)

If applicable, include guidelines for extra credit.

Incomplete Grades: View the college's procedures for Incomplete Grades

Miami Dade College Policies

Attendance Policy: *(Faculty include precise statements about illnesses/emergencies/ tardiness, missed assignments/make-up.)*

Students Rights and Responsibilities: *Policies addressing academic integrity and plagiarism, code of conduct, grade appeals, religious observations, services for students with special needs, student complaints, and other.*

For more information, visit the Student's Rights and Responsibilities page

Available Support Services & Resources

- Tutoring Labs and Technology – Learning Resources
- Virtual Tutoring through Learning Resources or Smarthinking Online Tutoring
- ACCESS: A Comprehensive Center for Exceptional Student Services
- Advisement
- Password and Login Technical Support
- Technical Support for MDC Live and MDC Online Courses
- SMART Plan

(Faculty select from the above if applicable and include additional course/campus specific resources)

Available Support Services & Resources

- Public Safety - Services
- Hurricane and Other Natural Disasters: In the event of a hurricane or other disaster, the class follows the schedule established by the College for campus-based courses. Please visit the MDC website or call the MDC Hotline (305-237-7500) for situation updates.

Course Description

STA2023 | Statistical Methods | 3 credits

In this course, students will utilize descriptive and inferential statistical methods in contextual situations, using technology as appropriate. The course is designed to increase problem-solving abilities and data interpretation through practical applications of statistical concepts. This course is appropriate for students in a wide range of disciplines and programs. Student learning outcomes: students will visualize and summarize data using descriptive statistics; students will apply basic probability concepts to draw reasonable conclusions; students will employ concepts of random variables, sampling distributions, and central limit theorem to analyze and interpret representations of data; students will choose an appropriate method of inferential statistics, including confidence intervals and hypothesis testing, to make broader decisions based on sample data; and students will model linear relationships between quantitative variables using correlation and linear regression. Prerequisites: MAT 1033 or MGF 1131 with a grade of "C" or higher. Special Fee. Fulfills Gordon Rule Computational Requirement.

Course Competencies

Competency 1:

The student will demonstrate knowledge of terminology by:

- Defining statistical terms.

Learning Outcomes

- Communication

Competency 2:

The student will be able to describe, explore, and compare data by:

- Constructing and interpreting frequency tables and graphs such as bar graphs, pie charts, and stem and leaf plots.
- Computing and interpreting the measures of centrality: the mean, median, mode, and midrange.
- Computing and interpreting the measures of dispersion: The range, variance, and standard deviation.

Learning Outcomes

- Communication
- Critical thinking
- Information Literacy
- Numbers / Data
- Social Responsibility

Competency 3:

The student will be able to apply the measures of positions by:

- Computing z-scores.
- Applying the Empirical Rule to the Normal Distribution.
- Applying the Chebyshev's Rule to the Non-Normal (or unknown) Distributions.

Learning Outcomes

- Communication
- Critical thinking
- Information Literacy
- Numbers / Data
- Social Responsibility

Competency 4:

The student will be able to apply the counting principles by:

- Defining the Fundamental Counting Principle.
- Computing the possible outcomes of compound events.
- Computing Combinations and Permutations.

Learning Outcomes

- Communication
- Critical thinking
- Information Literacy
- Numbers / Data
- Social Responsibility

Competency 5:

The student will demonstrate knowledge of probability by:

- Describing a sample space and an event.
- Calculating probabilities of simple, compound, and conditional events.

Learning Outcomes

- Communication
- Critical thinking
- Information Literacy
- Numbers / Data
- Social Responsibility

Competency 6:

The student will demonstrate knowledge of random variables by:

- Distinguishing between discrete and continuous random variables.
- Constructing a probability distribution for a discrete random variable and be able to compute its mean and standard deviation.
- Computing probabilities for random variables having a binomial distribution.
- Computing probabilities for random variables having a normal distribution.
- Applying the Central Limit Theorem.
- Approximating the Binomial Probability using the Normal Distribution.

Learning Outcomes

- Communication
- Critical thinking
- Information Literacy
- Numbers / Data
- Social Responsibility

Competency 7:

The student will demonstrate knowledge of confidence intervals by:

- Constructing confidence intervals for the mean using the Z and t tables.
- Constructing confidence intervals for a proportion.
- Constructing confidence intervals for the difference of two means.

Learning Outcomes

- Communication
- Critical thinking
- Information Literacy
- Numbers / Data
- Social Responsibility

Competency 8:

The student will demonstrate knowledge of hypotheses testing by:

- Identifying Type I and Type II errors.
- Identifying and interpreting p-values.
- Testing a single mean for large and small samples.
- Testing the difference between two means.
- Testing a single proportion.

Learning Outcomes

- Communication
- Critical thinking
- Information Literacy
- Numbers / Data
- Social Responsibility

Competency 9:

The student will demonstrate knowledge of bivariate data by:

- Constructing and interpreting a scatter-plot.
- Computing and interpreting the linear correlation coefficient.

Learning Outcomes

- Communication
- Critical thinking
- Information Literacy
- Numbers / Data
- Social Responsibility