Math 1150
Introduction to Statistics
Course Syllabus

Instructor Information:

Office: Room 215

Phone: 419-433-1234 ext. 1215

Email: nnemire@huron-city.k12.oh.us

Office Hours: Monday-Friday, 2:30-2:50

Required Test: Essential Statistics by Robert Gould and Colleen Ryan with access to MyLabsPlus.

Calculator: TI-83 Plus or TI-84 Plus is highly recommended but any calculator with statistics capabilities will work.

Prerequisites: Two years of high school algebra, one year of geometry and a satisfactory placement exam score

General Description: The main objective of MATH 1150 is to give the non-mathematical student an elementary introduction to the practice of statistics. This course will give insight into how a statistician gathers, summaries, and draws conclusions from data. We are surrounded everyday by numerical information and graphical material. At the end of the course, the student should be a critical consumer of this information.

Course Learning Outcomes:
1. Select and produce appropriate graphical, tabular, and numerical summaries of the distributions of variables in a data set. Summarize such information into verbal descriptions.
2. Summarize relationships in bivariate data using graphical, tabular, and numerical methods including scatter plots, two-way tables, correlation coefficients, and least squares regression lines. Investigate and describe the relationships or associations between two variables using caution in interpreting correlation and association.
3. Use the normal distribution to interpret z-scores and compute probabilities.
4. Understand the principles of observational and experimental studies including sampling methods, randomization, replication and control. Understand how the type of data collection can affect the types of conclusions that can be drawn.

5. Construct a model for a random phenomenon using outcomes, events, and the assignment of probabilities. Use the addition rule for disjoint events and the multiplication rule for independent events. Compute conditional probabilities in the context of two-way tables.
6. Introduce the concept of a s sampling distribution. Discuss the distribution of the sample mean and sample proportion under repeated sampling (Central Limit Theorem). Students should be expected to simulate or generate sampling distribution to observe, empirically, the Central Limit Theorem.
7. Estimate a population mean or proportion using a point estimate and confidence intervals, and interpret the confidence level and margin of error. Understand the dependence of margin of error on sample size and confidence level.
8. Given a research question involving a single population, formulate null and alternative hypotheses. Describe the logic and framework of the inference of hypothesis testing. Make a decision using a p-value and draw an appropriate conclusion. Interpret statistical significance.
9. Carry out a hypothesis test for a mean or proportion. Interpret statistical and practical significance in this setting.

BGP Learning Outcomes:
1. Interpret mathematical and statistical models such as formulas, graphs, tables, and schematics, and draw inferences from them
2. Represent mathematical and statistical information symbolically, visually, numerically, and verbally
3. Use arithmetical, algebraic, geometric, and statistical methods to solving problems
4. Estimate and check answers to mathematical problems in order to determine reasonableness, identify alternatives, and select optimal results
5. Recognize that mathematical and statistical methods are based on assumptions and have limits

BGP Learning outcomes will be measured by a twenty-item multiple-choice exam completed on Canvas during Final Exam Week.

-Chapter 1-Introduction to Data
 What are Data?
 Classifying and Storing Data
 Organizing Categorical Data
 Collecting Data to Understand Causality
Chapter 2-Picturing Variation with Graphs
 Visualizing Variation in numerical Data
 Summarizing Important Features of a Numerical Distribution
 Visualizing Variation in Categorical Variables
 Summarizing Categorical Distributions

Interpreting Graphs
Chapter 3-Numerical Summaries of Center and Variation
Summaries for Symmetric Distributions
What's Unusual? The Empirical Rule and z-Scores
Summaries for Skewed Distributions
Comparing Measures of Center
Chapter 4- Regressions analysis: Exploring Associations between Variables
Visualizing Variability with a Scatterplot
Measuring Strength of Association with Correlations
Modeling Linear Trends
Chapter 5- Modeling Variation with Probability
What is Randomness?
The Law of Large Numbers
Chapter 6-The Law of Large Numbers
Probability Distributions are Models of random Experiments
The Normal Model
Chapter 7-Survey Sampling and Inference
Learning about the world through Surveys
Measuring the Quality of a Survey
The Central Limit Theorem for Sample Proportions
Estimating the Population Proportion with Confidence Intervals
Chapter 8-Hypothesis Testing for Population Proportions
The Main Ingredients of Hypothesis Testing
Characterizing P-values
Hypothesis Testing in Four Steps

Grading Scale
A: 90-100
B: 80-89.9
C: 70-79.9
D:60-69.9
F:0-59.9

Quizzes: There will be quizzes throughout the semester. Any material from class, the text, and/or homework is 'fair game' for quizzes.

Projects: Projects may be assigned throughout the semester. Details will be given in class.

Cell Phones: Cell phones need to be silenced during class time. Ringing, vibrating, blinking, dancing, singing etc. is distracting to both the instructor and the other students.

Late Assignments: Late assignments will not be accepted.

Course Attendance and Participation: The Department of Mathematics and Statistics has found that class attendance and participation are important elements of student success. While a few students might find it possible to succeed without regular attendance, most students will find that regular attendance is necessary for success in this course. This does not mean that attendance by itself will generate success in this course- you must also learn the content of the course. All students should make regular course attendance a priority, devote significant time to studying for this course, and complete all course assignments on time. You are expected to attend class regularly and actively participate in this course.

Codes of Conduct and Academic Honesty Policy: The instructor and students in this course will adhere to the University's general Codes of Conduct defined in the BGSU Student Handbook. The Code of Academic Conduct (Academic Honesty Policy) requires that students do not engage in academic dishonesty. For details refer to the Student Handbook.

Department Mediator: Dr. Arjun Gupta, 419 MSC, (419)-372-2820

Disability Policy: In accordance with the University policy, if the student has a documented disability and requires accommodations to obtain equal access in this course, she or she should contact the instructor at the beginning of the semester and make this need known. Students with disabilities must verify their eligibility through the Office of Disability Services for Students, 38 College Park Building, 419-372-8495.