STAT 12500 Communicating with Statistics Course Syllabus

Course Title: Communicating with Statistics

Course Number: STAT 12500

Instructor Name:

Instructor Email:

Office Hours: M-F; 7:15 am – 3:15 pm

Office Location:

Course Description:

An introduction to the basic concepts and methods in statistical reasoning that are commonly referenced in the print media. Topics include data collection methods, descriptive statistics, basic techniques of estimation, and theory testing. Students will analyze and interpret statistics relating to contemporary problems in politics, business, science and social issues.

Course Prerequisites:

MA 12400 or placement by departmental exam or permission of the instructor.

Course Access:

Canvas: Access course lessons/notes, reviews, formulas, syllabus through the Canvas page. Other features area available like messaging the instructor and online quizzes (when appropriate).

Course Goals:

Quantitative reasoning is the ability to analyze numerical information and to determine which mathematical concepts, skills, and procedures can be applied to solve real-world problems. The course is designed to assist you in developing skills for collecting, analyzing, and drawing appropriate conclusions from numerical data with the primary objective of improving your quantitative reasoning ability.

Indiana College Core Area 3 Quantitative Reasoning Competencies:

3.1. Interpret information that has been presented in mathematical form (e.g., with functions, equations, graphs, diagrams, tables, words, geometric figures).
3.2. Represent information/data in mathematical form as appropriate (e.g., with functions, equations, graphs, diagrams, tables, words, geometric figures).
3.3. Demonstrate skill in carrying out mathematical (e.g., algebraic, geometric, logical, statistical) procedures flexibly, accurately, and efficiently to solve problems.
3.4. Analyze mathematical arguments, determining whether stated conclusions can be inferred.
3.5. Communicate which assumptions have been made in the solution process.
3.6. Analyze mathematical results in order to determine the reasonableness of the solution.
3.7. Cite the limitations of the process where applicable. Communication
3.8. Clearly explain the representation, solution, and interpretation of the math problem.

Student Learning Objectives:

By the end of the semester, you should be able to:

1. Recognize and describe the basic challenges associated with collecting data and the measures taken to meet these challenges.
2. Compute/construct and interpret basic descriptive statistics and statistical graphs.
3. Apply the basic concepts of probability theory and describe how these concepts relate to a statistical analysis.
4. Construct and interpret confidence intervals for estimating population means and proportions
5. Compute and interpret the results of tests of significance.
6. Communicate the results of a statistical analysis.

Learning Resources & Texts

- **Required Textbook:** Elementary Statistics (Author: Ron Larson; Betsy Farber (Ninth Edition)

Assignments

Students will be assigned homework for each section in the textbook. In addition, there will be chapter quizzes intermixed through the material. At the end of each chapter, there will be a unit test covering that material. There will also be chapter projects after each unit test for most chapters in the course.

Homework = 20% Quizzes = 30% Tests/Projects = 50%

The Indiana law states that work missed during absences, whether excused or unexcused, like homework, quizzes or tests, will be allowed to be made up the number of a days a student was absent, plus one. After that, it is considered late, and subject to a penalty of points, down to no credit after that time is up. As a student, it is your responsibility to hand things in in a timely manner and keep track of when things are due, whether you've been absent or present.

Grading Scale: EACS

98-100%	**A+**	**73-76%**	**C**
93-97%	**A**	**70-72%**	**C-**
90-92%	**A-**	**67-69%**	**D+**
87-89%	**B+**	**63-66%**	**D**
83-86%	**B**	**60-62%**	**D-**
80-82%	**B-**	**0-59%**	**F**
77-79%	**C+**		

Course Evaluation:

At the end of the school year, dual credit students will be offered a chance to evaluate the instructor on several aspects of the course. PFW receives these comments and evaluations, summarizes them anonymously, and submits them to the instructor as a way to gauge the effectiveness and aptitudes of the instructor. This will be provided as a link to students on Canvas when the appropriate time comes.

Academic Misconduct / Plagiarism / AI:

Academic Misconduct, including plagiarism (using other people's ideas/words and not giving them credit thus implying the work is your own original work) or using your own work from a previous course without the express permission of the instructor, is taken very seriously at any learning institution. It is taken very seriously in this class. Please be aware of what behaviors constitute academic misconduct (See Bulletin, Code of Students Rights, Responsibilities and Conduct Part II. A.) If caught cheating or plagiarizing, a student may receive no credit on the assignment and may result in an F for the course. Any instances of academic dishonesty will be reported to the Office of Student Conduct and Care and your Department Chair and may result in expulsion from the University. Additional potential consequences can be found under: potential consequences (See Bulletin, Code of Students Rights, Responsibilities and Conduct, Part III. A.: i.e., failure of the assignment, failure of the course and/or dismissal from the university) of such behavior.

AI usage at Leo High School is permitted with the intention to help students get extra help and understanding of course material. Please use these resources wisely and ask for help when using it, if you need it. There are some amazing AI tools available to help push you to be a great mathematician.

Student Support Services

Purdue University Fort Wayne is committed to your academic and personal success. Visit the Student Support Services page for a list of student support services, including academic services, technology services, health and wellness, and support from administrative offices. For help with technology, including Brightspace, visit the IT Services Student Technology Support page.

If you observe and/or are made aware of student behavior that leaves you feeling concerned, worried, and/or alarmed, trust your instincts and say something. The CARE Team can assist with the student of concern, whether that's you or someone you are referring. Report the concern through the online CARE referral form. Please note that this form is not for emergencies. If you know of a student who is injured, is injuring themselves or others, or is threatening injuries to themselves or others, please call 911 immediately.

Your emotional wellness and mental health are important. If you have a mental health disorder, are struggling with your mental health, your stress overwhelms your ability to cope with it, or you find yourself needing emotional support, please talk to someone. If you or someone you know is in a mental health crisis situation, call 911 or go to the local emergency room. Otherwise, please reach out to our Center for Student Counseling (CSC). All currently enrolled PFW and IUFW students have access to free counseling at the center. To make an appointment to talk with a counselor call 260-481-6200 or email csc@pfw.edu.

Course Schedule

Semester 1:

Chapter 1: Introduction to Statistics
Chapter 2: Descriptive Statistics
Chapter 3: Probability
Chapter 4: Discrete Prob. Distributions
Chapter 5: Normal Prob. Distributions

Semester 2:

Chapter 6: Confidence Intervals

Chapter 7: Hypothesis Testing 1 sample
Chapter 8: Hypothesis Testing 2 samples
Chapter 9: Correlation and Regression
Chapter 10: Chi-Square Tests/ F-Dist.

Final Exams will be at the end of December and May for each semester.

Additional Information:

Students are expected to be self-learners and advocate for themselves when they don't understand material, homework, notes, etc. Students are expected to report to class on time and be prepared daily.

Students are expected to have their own graphing calculator. The TI-84 CTE will be modeled in class when appropriate. Students have until the beginning of September to purchase their own. If you have any questions, please direct them to

When students have questions or are confused or lost, please communicate with as quickly as possible either through Canvas messaging or send him an email at to get the help you need.