**BARTON COMMUNITY COLLEGE**

**COURSE SYLLABUS**

1. **GENERAL COURSE INFORMATION**

Course Number: STAT 1840

Course Title: Business and Economics Statistics I

Credit Hours: 3

Prerequisite: MATH 1828 College Algebra with a grade of C or better OR MATH 1826

College Algebra with Review with a grade of C or better OR appropriate

placement score

Division/Discipline: Academics Division//Mathematics

Course Description: An introduction to the basic concepts of statistics related to business and economics; including descriptive statistics, probability, discrete and continuous distributions, confidence intervals, sampling methods, hypothesis testing, and correlation and regression.

1. **INSTRUCTOR INFORMATION**
2. **COLLEGE POLICIES**

Students and faculty of Barton Community College constitute a special community engaged in the process of education. The College assumes that its students and faculty will demonstrate a code of personal honor that is based upon courtesy, integrity, common sense, and respect for others both within and outside the classroom.

Plagiarism on any academic endeavors at Barton Community College will not be tolerated. The student is responsible for learning the rules of, and avoiding instances of, intentional or unintentional plagiarism. Information about academic integrity is located in the Student Handbook.

The College reserves the right to suspend a student for conduct that is determined to be detrimental to the College educational endeavors as outlined in the College Catalog, Student Handbook, and College Policy & Procedure Manual. (Most up-to-date documents are available on the College webpage.)

Any student seeking an accommodation under the provisions of the Americans with Disability Act (ADA) is to notify Student Support Services via email at [disabilityservices@bartonccc.edu](mailto:disabilityservices@bartonccc.edu).

1. **COURSE AS VIEWED IN THE TOTAL CURRICULUM**

Business & Economics Statistics I fulfills the college-level math requirement for all associate degrees offered at Barton Community College. The purpose of the course is to introduce the fundamental concepts of probability and statistics in a setting of applications related to the fields of business and economics. This course will provide a base from which students can proceed to more advanced work, including specialized applications. Business & Economics Statistics I is an approved fundamental general education course at Barton Community College that can be used to fulfill degree requirements.

The transferability of all college courses will vary among institutions, and perhaps even among departments, colleges, or programs within an institution. Institutional requirements may also change without prior notification. It is the student's responsibility to obtain relevant information from intended transfer institutions to ensure that the courses the student enrolls in are the most appropriate set of courses for the transfer program.

1. **ASSESSMENT OF STUDENT LEARNING**

Barton Community College is committed to the assessment of student learning and to quality education. Assessment activities provide a means to develop an understanding of how students learn, what they know, and what they can do with their knowledge. Results from these various activities guide Barton, as a learning college, in finding ways to improve student learning.

Course Outcomes, Competencies, and Supplemental Competencies:

A student will be able to use appropriate technology as one tool to:

1. Organize and describe data
2. Define and distinguish between categorical (qualitative) and numerical (quantitative) data.
3. Distinguish between data from an observational study and data from a designed experiment.
4. Distinguish differences in data analysis and interpretation between observational data and data from designed experiments.
5. Organize data in frequency tables and contingency tables.
6. Construct appropriate graphical displays of qualitative and quantitative data for a given set of data.
7. Describe the general shape of data, skewed left, skewed right, normal or symmetric.
8. Calculate the measures of central tendency including mean, median, and mode.
9. Calculate the measures of dispersion including range, standard deviation, variance, and interquartile range; explain the meaning of dispersion as it relates to a problem.
10. Use a statistical package on a graphics calculator or a computer to enter data and analyze results.
11. Measure the position of a data point by computing a percentile
12. Find the theoretical probability of an event
13. Use probability notation including the “or” condition and the “and” condition.
14. Determine whether or not two events are mutually exclusive.
15. Determine whether or not two events are independent.
16. Calculate the probability of compound events.
17. Calculate conditional probabilities; explain the meaning of conditional probabilities.
18. Calculate combinations and permutations of ordered events.
19. Determine the probabilities of a random variable
20. Distinguish between discrete and continuous random variables.
21. Find and interpret the mean and the standard deviation of a probability distribution.
22. Recognize Bernoulli populations.
23. Use the Binomial formula to solve probability problems with two outcomes and independent events.
24. Calculate cumulative probabilities for the negative binomial & geometric distributions.
25. Calculate mean and standard deviation for negative binomial & geometric distributions.
26. Calculate cumulative probabilities for the hypergeometric distribution.
27. Calculate mean and standard deviation for hypergeometric distribution.
28. Calculate cumulative probabilities for the Poisson distribution.
29. Calculate mean and standard deviation for Poisson distribution.
30. Use the normal distribution to solve percent problems for normally distributed populations.
31. Use the normal distribution to solve probability problems for normally distributed random variables.
32. Generate distributions for sample means
33. Calculate the mean for a distribution of sample means.
34. Calculate the standard deviation for a distribution of sample means.
35. Create a normal probability plot and assess normality of a set of data.
36. Demonstrate the use of the Central Limit Theorem and explain its importance.
37. Estimate the Mean and Proportion with both large and small samples
38. Construct confidence intervals for a population mean and interpret them in context.
39. Construct confidence intervals for a population proportion and interpret them in context.
40. Use Hypothesis Tests with both large and small samples
41. Perform hypothesis tests for a population mean and interpret results.
42. Perform a hypothesis test for a population proportion and interpret results.
43. Explain Type I error, Type II error, p-value, significance level and power of test in context.
44. Perform a hypothesis test with more than two categories for procedures using the Chi-square distribution
45. Make predictions with linear data
46. Calculate a linear regression equation; explain the meaning in terms of the problem.
47. Use a linear regression equation to make predictions about data.
48. Calculate the coefficient of determination for a linear regression equation; use the coefficient of determination to explain the strength of the regression equation.
49. **INSTRUCTOR'S EXPECTATIONS OF STUDENTS IN CLASS**

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1. **TEXTBOOKS AND OTHER REQUIRED MATERIALS**
2. **REFERENCES**
3. **METHODS OF INSTRUCTION AND EVALUATION**

## **ATTENDANCE REQUIREMENTS**

###### COURSE OUTLINE