BUMA 003: BUSINESS STATISTICS

New Course Proposal

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Originator

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Justification / Rationale

AB 705 provides optional pathways for students to complete college level mathematics. This course, Business Statistics, is intended to meet that requirement by providing a college level statistics course that is contextually relevant to the field of Business.

Effective Term

Fall 2020

Credit Status

Credit - Degree Applicable

Subject

BUMA - Business/Management

Course Number

003

Full Course Title

Business Statistics

Short Title

BUSINESS STATISTICS

Discipline

Disciplines List
Business

Modality

Face-to-Face
100% Online
Hybrid

Catalog Description

This course is intended for business administration majors or anyone who wishes to gain an understanding of elementary data analysis, probability, and statistics. It introduces students to the use of probability techniques, hypothesis testing, and predictive techniques to facilitate decision-making. Topics include descriptive statistics; probability and sampling distributions; statistical inference; correlation and linear regression; analysis of variance; chi-square and t-tests, central tendency and dispersion measures; index numbers (CPI, deflators); time series analysis (trends, seasonal variations); probability theory; probability and sampling distributions (normal, exponential, binomial, Poisson); central limit theorem; and application of technology for statistical analysis, including the interpretation of the relevance of the statistical findings.

Schedule Description

This course is intended for business administration majors or anyone who wishes to gain an understanding of elementary data analysis, probability, and statistics. It introduces students to the use of probability techniques, hypothesis testing, and predictive techniques to facilitate decision-making. Prerequisite: MATH 040 or MATH 045 or MATH 049

Lecture Units

3

Lecture Semester Hours

54

In-class Hours

54

Out-of-class Hours
108

Total Course Units
3

Total Semester Hours
162

Prerequisite Course(s)
MATH 040 or MATH 045 or MATH 049

Required Text and Other Instructional Materials

Resource Type
Book

Author
Anderson, Sweeney, Williams, James and Cochran

Title
Statistics for Business and Economics

Edition
13th

Publisher
Cengage

Year
2018

College Level
Yes

ISBN #
978-1337901062

Resource Type
Web/Other

Description
Students are required to have access to a computer and SPSS either through the flash drive that comes with the textbook or by downloading a six month version of SPSS.

Resource Type
Web/Other

Description
Students are required to have access to a computer and SPSS either through the flash drive that comes with the textbook or by downloading a six month version of SPSS.

Class Size Maximum
35

Entrance Skills
Comprehend the key characteristic of a linear model in its constant rate of change

Requisite Course Objectives

MATH 040-Comprehend that the key characteristic of a linear model is its constant rate of change.
MATH 045-Comprehend that the key characteristic of a linear model is its constant rate of change and interpret slope as a rate of change and relate slope to topics from social sciences.
MATH 049-Comprehend that the key characteristic of a linear model is its constant rate of change. Recognize when a table, graph or equation is linear.

Entrance Skills

Interpret slope as a rate of change

Requisite Course Objectives

MATH 040-Interpret slope as a rate of change.
MATH 045-Comprehend that the key characteristic of a linear model is its constant rate of change and interpret slope as a rate of change and relate slope to topics from social sciences.
MATH 049-Interpret slope as a rate of change, in preparation for generalizing the rate of change to the derivative in the Calculus course.

Entrance Skills

Recognize when a table, graph or equation is linear or quadratic

Requisite Course Objectives

MATH 040-Recognize when a table, graph, or equation is linear.
MATH 045-Recognize when a table, graph, or equation is linear and recognize when a scatterplot appears to show linear correlation and be able to describe this relationship and discuss how it does not necessarily reflect causation in written form.
MATH 049-Recognize when a table, graph, or equation is quadratic.

Entrance Skills

Create a linear model in the form of a table, graph or equation.

Requisite Course Objectives

MATH 040-Create a linear model in the form of a table, graph, or equation.
MATH 045-Create a linear model in the form of a table, graph, or equation, including a line of best fit for a set of given points.
MATH 049-Create and comprehend a linear model in the form of a table, graph, or equation from a verbal description, using the rule of 4.

Entrance Skills

Find the equation of a line and apply it to solve problems with a constant of change

Requisite Course Objectives

MATH 040-Find the equation of a line and apply it to solve problems with a constant of change.
MATH 045-Find the equation of a line and apply it to solve financial and social sciences problems involving constant rates of change.
MATH 049-Find the equation of a line and apply it to solve problems with a constant rate of change.

Entrance Skills

Solve 2x2 and 3x3 systems of linear equations

Requisite Course Objectives

MATH 040-Solve 2x2 and 3x3 systems of linear equations.
MATH 045-Solve 2x2 and 3x3 systems of linear equations and solve application problems from social sciences.
MATH 049-Solve 2x2 and 3x3 systems of linear equations apply this to model circles, parabolas lines from given data, as a lead into generalizing to least squares methods in the Calculus sequence.

Entrance Skills

Graph systems of linear inequalities in two dimensions

Requisite Course Objectives

MATH 040-Graph systems of linear inequalities in two dimensions.

MATH 045-Graph systems of linear inequalities in two dimensions and find the coordinates of points of intersection, including application problems similar to examples from linear programming.
MATH 049-Graph systems of linear inequalities in two dimensions. Introduction to non-linear inequalities.

Entrance Skills

Comprehend and manipulate rational exponents and Nth roots

Requisite Course Objectives

MATH 040-Comprehend and manipulate rational exponents and Nth roots.
MATH 045-Comprehend and manipulate rational exponents and Nth roots, including those used in financial mathematical formulas such as compound interest.
MATH 049-Comprehend and manipulate rational exponents and Nth roots, and solve radical equations.

Entrance Skills

Apply the definition of a function including function notation and terminology (domain and range).

Requisite Course Objectives

MATH 040-Apply the definition of a function including function notation and terminology (domain and range).
MATH 045-Apply functions to topics from social sciences and consumer mathematics, including ceiling and floor functions.
MATH 049-Apply the definition of a function including function notation and terminology (domain and range), especially as function notation relates to a graph. Develop the ability to read a graph and precisely describe how the output variable changes wrt (with respect to) the output variable, using function notation and inequality notation.

Entrance Skills

Comprehend that the key characteristic of an exponential function is its constant growth (decay) factor

Requisite Course Objectives

MATH 040-Comprehend that the key characteristic of a linear model is its constant rate of change.
MATH 040-Comprehend that the key characteristic of an exponential function is its constant growth (decay) factor.
MATH 045-Comprehend that the key characteristic of an exponential function is its constant growth (or decay) factor and relate this to the differences between linear and exponential change with applications involving simple and compound interest.
MATH 049-Comprehend that the key characteristic of an exponential function is its constant growth (decay) factor. Recognize when a table, graph or function is exponential.

Entrance Skills

Recognize when a table, graph, or equation is exponential and when a word problem can be modeled with an exponential function.

Requisite Course Objectives

MATH 040-Recognize when a table, graph, or equation is exponential and when a word problem can be modeled with an exponential function.
MATH 045-Recognize when a table, graph, or equation is exponential and when a word problem can be modeled with an exponential function, including equations and graphs of functions similar to continuous probability distributions.
MATH 049-Recognize when a table, graph, or equation is exponential and when a word problem can be modeled with an exponential function. Develop the language associated with an exponential function such as: growth or decay factor; percent increase or decrease.

Course Content

1. Summarize data graphically and numerically
2. Descriptive Statistics: measures of central tendency, variation, relative position, and levels/scales of measurement.
3. Sample spaces and probability.
4. Random variables and expected value.
5. Sampling and sampling distributions.
6. Discrete distributions - Binomial.
7. Continuous distributions - Normal.
8. Central Limit Theory.

9. Estimation and confidence intervals.
10. Hypotheses testing and inference, including t-tests for one and two populations, and Ch-square test.
11. Correlation and linear regression and analysis of variance. (ANOVA)
12. Application using data from disciplines including business, social science, psychology, life science., health science and education..
13. Statistical analysis using technology such as SPSS, EXCEL, minitab, StaCrunch or graphic calculators.
14. The mathematics of finance:
- Simple interet caluclations of present and future value
- Compound interest calculations of present and future value
- Discounting
- Present and future value calculations for annuities
- Amortization schedules
- Net present value

Course Objectives

	Objectives
Objective 1	Apply concepts of sample space and probability.
Objective 2	Interpret data displayed in tables and graphically.
Objective 3	Describe and compute the principal measures of central tendency (mean, median and mode) and explain when it is appropriate to use each.
Objective 4	Identify and define the basic concepts of probability theory and exhibt computational skill in applying the related mathematical principles to hypothesis testing, including skill in the use of the binomial and normal probability distributions.
Objective 5	Identify the standard methods of obtaining data and identifying advantages and disadvantages of each.
Objective 6	Calculate the mean and variance of a discrete distribution.
Objective 7	Calculate the probabilities using normal and t-distributions.
Objective 8	Distinguish the difference between sample and population distributions and analyze the role played by the Central Limit Theorem.
Objective 9	Construct and interpret confidence intervals.
Objective 10	Determine and interpret levels of statistical significance including p-values.
Objective 11	Interpret the output of a technology-based statistical analysis.
Objective 12	Identify the basic concept of hypothesis testing including Type I and Type II errors.
Objective 13	Formulate hypotheses tests involving samples from one and two populations.
Objective 14	Select the appropriate technique for testing a hypothesis and interpret the result.
Objective 15	use linear regression and ANOVA analysis for estimation and interference, and interpret the associated statistics.
Objective 16	Use appropriate statistical techniques to analyze and interpret applications based on data from disciplines including business, social science, psychology, life science and education.

Student Learning Outcomes

	Upon satisfactory completion of this course, students will be able to:
Outcome 1	Use the appropriate statistical techniques including hypothesis testing for samples from one and two populations.
Outcome 2	Describe the breadth of statistical applications in real-world Business applications.
Outcome 3	Use statistical models to describe random data and draw inferences from them.
Outcome 4	Demonstrate computing, including the use of statistical software, excel and networking capabilities, in particular World Wide Web and use this information to calculate descriptive and inferential commonly used in Business Statistics.

Methods of Instruction

Method	Please provide a description or examples of how each instructional method will be used in this course.
Demonstration, Repetition/Practice	Computer Demonstrations
Collaborative/Team	Collective and individual solving of statistical problems
Technology-based instruction	Computer assisted learning software

Methods of Evaluation

Method	Please provide a description or examples of how each evaluation method will be used in this course.	Type of Assignment
Written homework	The computation of statistical measures is required on all examinations and most homework	In and Out of Class
Mid-term and final evaluations	Students must learn how to state clearly in plain language both the hypotheses to be tested and the results of the statistical tests on such hypotheses.	In and Out of Class
Tests/Quizzes/Examinations	Students must learn how to decide which of the many statistical measures or techniques are appropriate to specific problems enountered. Students must learn which sampling techniques are most likely to result in representative samples in particular situations.	In and Out of Class
Group activity participation/observation	Extensive computation is required of students in completing the class research project. Students are tested on their mathematical skills as they relate to the computation of descriptive measures, probability values, estimates and test statistics.	In Class Only
Computational/problem-solving evaluations	Students are also required to state in writing the appropriate interpretation of statistical measures, tests and estimates as appropriate in both their homework and examinations.	In and Out of Class
Term or research papers	Students are required to write brief critiquest of published reports and arguments which employ statistical reasoning and data in support of their conclusion.	Out of Class Only

Assignments

Other In-class Assignments

1. Attending classroom lectures and applying the technique of good listening by asking questions, summarizing, drawing inferences, making relevant observations, effective note-taking, etc.
2. Participate in classroom discussions to review, analyze, diagnose and evaluate various methods of solution used on their homework.
3. Complete business-related projects and reports that require statistical analysis and communication of results.
4. Participate in a class research project requiring the collection, compilation and interpretation of data, including the composition of a written report thereon.
5. Complete examinations using problems that apply to studied principles to new situations and which require both computation and the interpretation of the results.

Other Out-of-class Assignments

1. Read and solve problems and business-related case studies from the course text.
2. Read current publications that include articles related to modern business practices and the use of statistics to address business challenges.
3. Write solutions to assignments that include the use of Excel to analyze and interpret, where applicable, data.
4. Write responses to prompts posed in business-related case studies.
5. Complete assigned homework including problem solving exercises to improve skills and mathematical understanding.

Grade Methods

Letter Grade Only

Distance Education Checklist

Include the percentage of online and on-campus instruction you anticipate.

Online %
100
On-campus %
0

Instructional Materials and Resources

Effective Student/Faculty Contact

Which of the following methods of regular, timely, and effective student/faculty contact will be used in this course?

Within Course Management System:
Timely feedback and return of student work as specified in the syllabus
Discussion forums with substantive instructor participation
Regular virtual office hours
Private messages
Online quizzes and examinations
Weekly announcements

External to Course Management System:
Direct e-mail
Posted audio/video (including YouTube, 3cmediasolutions, etc.)

For hybrid courses:
Scheduled Face-to-Face group or individual meetings

Briefly discuss how the selected strategies above will be used to maintain Regular Effective Contact in the course.
Weekly discussions regarding topics related to the course with appropriate instructor participation.
Students will create logs describing the process to diagnose and solve a problem. These logs are uploaded to the LMS and receive appropriate instructor feedback.

If interacting with students outside the LMS, explain how additional interactions with students outside the LMS will enhance student learning.
None

Other Information

COD GE
C4.B - Language and Rationality - Communication and Analytical Thinking

MIS Course Data

CIP Code
52.0201 - Business Administration and Management, General.

TOP Code
050600 - Business Management

SAM Code
D - Possibly Occupational

Basic Skills Status
Not Basic Skills

Prior College Level
Not applicable

Cooperative Work Experience
Not a Coop Course

Course Classification Status
Credit Course

Approved Special Class
Not special class

Noncredit Category
Not Applicable, Credit Course

Funding Agency Category
Not Applicable

Program Status
Program Applicable

Transfer Status
Transferable to both UC and CSU

General Education Status
Not applicable

Support Course Status
Course is not a support course

Allow Audit
No

Repeatability
No

Materials Fee
No

Additional Fees?
No

Files Uploaded

Attach relevant documents (example: Advisory Committee or Department Minutes)
BUMA 003 COR - GE Worksheet.pdf

Approvals

Curriculum Committee Approval Date
10/01/2019

Academic Senate Approval Date
10/10/2019

Board of Trustees Approval Date
11/13/2019

Chancellor's Office Approval Date
11/18/2019

Course Control Number
CCC000609215

Programs referencing this course
Geographic Information Systems Certificate of Achievement (http://catalog.collegeofthedesert.eduundefined/?key=315)