Course Syllabus

Course Information

BUS640
Business Analytics
Oct 15, 2018-Dec 9, 2018

Instructor Information

Dr. Bari Courts
Doane University

Contact Information

Office: Monday – Friday 10am to 2pm EST
Email Address: bcourts@doane.edu
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Communicating With the Instructor

This course uses a "three before me" policy in regard to student to faculty communications. When questions arise during the course of this class, please remember to check these three sources for an answer before asking me to reply to your individual questions:

1. Course syllabus
2. Announcements in Blackboard
3. The "Question Center" discussion board

This policy will help you in potentially identifying answers before I can get back to you and it also helps your instructor from answering similar questions or concerns multiple times.

If you cannot find an answer to your question, please first post your question to the "Water Cooler" discussion board. Here your question can be answered to the benefit of all students by either your fellow students who know the answer to your question or the instructor. You are encouraged to answer questions from other students in the discussion forum when you know the answer to a question in order to help provide timely assistance.

If you have questions of a personal nature such as relating a personal emergency, questioning a grade on an assignment, or something else that needs to be communicated privately, you are welcome to contact me via email or phone. My preference is that you will try to

email me first. Please allow 24 hours for me to respond to emails Monday-Friday and 48 hours on the weekend.

If you have a question about the technology being used in the course, please contact the Doane University Help Desk for assistance (contact information is listed below).

Course Catalog Description

Analytics and Decision Sciences (3)

A course that introduces fundamental concepts and modeling tools for decision making under uncertainty. The learning approach combines business cases, probability and risk analysis within conceptual frameworks, and spreadsheet modeling of managerial decision problems. The course will also provide training to perform and interpret Monte Carlo simulation and decision tree models. Other concepts discussed will include the value of information, option value, selection bias, herd behavior, and risk aversion, among others The concepts and tools are illustrated using business applications in the areas of economics, finance, operations management, and strategic management.

Course Prerequisites

N/A

Course Textbook and Materials

Required

Business Analytics (2nd Edition) 2nd Edition
by James R. Evans (Author)

Paperback: 656 pages
Publisher: Pearson; 2 edition (January 9, 2015)
ISBN-10: 0321997824
ISBN-13: 978-0321997821

Learning Objectives

Course Objectives

At the completion of this course students will be able to:

1. Define business analytics and models; explain why analytics is important in today's business environment.

2. Analyze numerical measures that provide an effective and efficient way of obtaining meaningful information from data. Understand the different methods of choosing populations and samples.

3. Explain the concept of probability and use probability rules and formulas to perform probability calculations to provide examples of the perspectives of probability in business applications.

4. Understand the elements of a sampling plan, demonstrate a understanding of the statistical relationship with business applications

5. Interpret trendlines and regression models, statistical issues associated with interpreting regression analysis results, and practical issues in using trend lines and regression as tools for making and evaluating decisions.

6. Choose the appropriate forecasting technique to support decision making in business applications.

7. Understand characteristics and patterns among variables in large databases using a variety of statistical and analytical tools in data mining; using such characteristics and patterns to evaluate predictive analytic models and examine concept and importance of analyzing risk in business decisions.

Module Objectives

Unit I: Introduction to Business Analytics

CO1: Define business analytics and models; explain why analytics is important in today's business environment.

A. Define business analytics.
B. Provide examples of how data are used in business
C. Explain the difference between uncertainty and risk
D. Define and list the elements of a decision model.
E. List and explain the steps in the problem-solving process
F. Use predictive models to compute model outputs and use influence diagrams to build simple mathematical models

Unit II: Visualizing and Exploring Statistical Data

CO 1 Convert data into information to understand past and current performance is the core of descriptive analytics and is vital to making good business decisions.

CO 2 Analyze numerical measures that provide an effective and efficient way of obtaining meaningful information from data. Understand the differences between populations and samples.

A. Explain the science of statistics and define the term *statistic*.
B. Determine the appropriate chart to visualize diverse types of data.
C. Apply the Pareto Principle to analyze data
D. Construct a frequency distribution for both discrete and continuous data
E. Construct a relative frequency distribution and histogram, cumulative relative frequencies, percentiles and quartiles for a data set.
F. Explain the difference between a population and a sample

G. Calculate and understand the mean, variance, midrange and standard deviation for grouped data

Unit III: Probability Distributions and Data Modeling

CO 1 Explain the concept of probability and use probability rules and formulas to perform probability calculations to provide examples of the perspectives of probability in business applications.

A. Explain conditional probability and how it can be applied in a business context.
B. Use expected values to support simple business decisions
C. Determine if two events are independent using probability arguments.
D. Give examples of other types of distributions used in business applications

Unit IV: Sampling and Estimation; Statistical Inference

CO 1 Understand the elements of a sampling plan, demonstrate a understanding of the statistical relationship with business applications

A. Interpret the difference between subjective and probabilistic sampling and state two types of subjective sampling.
B. Evaluate systematic, stratified, and cluster sampling, and sampling from a continuous process and the importance of unbiased estimators.
C. Explain how the average, standard deviation, and distribution of means of samples changes as the sample size increases.
D. Explain the practical importance of the central limit theorem.
E. Evaluate the assumptions of ANOVA.
F. Conduct and interpret the results of a chi-square test for independence.

Unit V: Trendlines and Regression Analysis

CO 1 Interpret trendlines and regression models, statistical issues associated with interpreting regression analysis results, and practical issues in using trend lines and regression as tools for making and evaluating decisions.

A. Explain the purpose of regression analysis and provide examples in business.
B. Apply scatter chart to identify the type of relationship between two variables.
C. Interpret confidence intervals for regression coefficients
D. Apply a systematic approach to build good regression models.
E. Evaluate the importance of understanding multicollinearity in regression models.

Unit VI: Forecasting Techniques

CO 1 Demonstrate the ability to choose the appropriate forecasting technique to support decision making in business applications

A. Explain how judgmental approaches are used for forecasting.

B. Apply moving average and exponential smoothing models to stationary time series.
C. Apply double exponential smoothing models to time series with a linear trend.
D. Explain how regression techniques can be used to forecast with explanatory or causal variables

Unit VII: Data Mining; Modeling and Analysis

CO 1 Understand characteristics and patterns among variables in large databases using a variety of statistical and analytical tools in data mining; using such characteristics and patterns to evaluate predictive analytic models and examine concept and importance of analyzing risk in business decisions

A. Define data mining and some common approaches used in data mining.
B. Evaluate how cluster analysis is used to explore and reduce data.
C. Use correlation analysis for cause-and-effect modeling
D. Construct one- and two-way data tables.
E. Evaluate the purpose of classification methods, how to measure classification performance, and the use of training and validation data.

Unit VIII: Risk Analysis

CO 1 Understand characteristics and patterns among variables in large databases using a variety of statistical and analytical tools in data mining; using such characteristics and patterns to
evaluate predictive analytic models and examine concept and importance of analyzing risk in business decisions.

A. Explain the concept and importance of analyzing risk in business decisions.
B. Use data tables to conduct simple Monte Carlo simulations.
C. Compute confidence intervals for the mean value of an output in a simulation model.
D. Construct and interpret sensitivity, overlay, trend, and box-whisker charts for a simulation model.
E. Define and use custom distributions in Monte Carlo simulations.

Course Requirements

Attendance Policy

You should plan to work on this course every day. This means that you absolutely must have a reliable and consistent internet connection throughout the duration of the course. This is a condensed, fast-pace, course and it would be extremely difficult to catch up after a prolonged absence.

Online Course
This is an online course and therefore there will not be any face-to-face class sessions. All assignments and course interactions will utilize internet technologies.

Computer Requirements
Minimum computer requirements for the successful use of Blackboard:
http://www.doane.edu/about-doane/offices/its/help-and-support#min_requirements

Minimum computer requirements for success in this course:

- Reliable computer and internet connection
- A web browser (Chrome or Mozilla Firefox)
- Adobe Acrobat Reader (free)
- Adobe Flash Player (free)
- Word processing software—Microsoft Word or Google Docs
- Webcam and mic

You are responsible for having a reliable computer and internet connection throughout the course.

Email and Internet
You must have an active Doane University e-mail account and access to the Internet. *All instructor correspondence will be sent to your Doane* University *e-mail account.* Please plan on checking your Doane Gmail account regularly for course related messages.

This course uses Blackboard for the facilitation of communications between faculty and students, submission of assignments, and posting of grades. The Blackboard Course Site can be accessed at http://bb2.doane.edu

Campus Network or Blackboard Outage
When access to Blackboard is not available for an extended period of time (greater than one entire evening - 6pm till 11pm) you can reasonably expect that the due date for assignments will be changed to the next day (assignment still due by midnight).

Attendance/Participation
Preparation for class means reading the assigned readings & reviewing all information required for that week. *Attendance* in an online course means logging into the Blackboard and on a regular basis and *participating* in the all of activities that are posted in the course.

Studying and Preparation Time
The course requires you to spend time preparing and completing assignments. A three-credit course requires 144 hours of student work. Therefore, expect to spend approximately 18 hours a week preparing for and actively participating in this 8-week course.

Late or Missed Assignments
ALL assignments must be finished and turned in to complete the course. It is automatically docked 10% each day it is late.

Federal requirements state that students must complete 75% of the course work to be eligible to receive an incomplete for the course. If students fall more than two weeks behind, they cannot meet this requirement.

Submitting Assignments
All assignments, unless otherwise announced by the instructor, MUST be submitted via Blackboard. Each assignment will have a designated place to submit the assignment.

Drop and Add dates
If you feel it is necessary to withdraw from the course, please contact your advisor for full details on the types of withdrawals that are available and their procedures.

Subject to change notice
All material, assignments, and deadlines are subject to change with prior notice. It is your responsibility to stay in touch with your instructor, review the course site regularly, or communicate with other students, to adjust as needed if assignments or due dates change.

Academic Integrity

Doane University expects and requires all its students to act with honesty and integrity, and respect the rights of others in carrying out all academic assignments. Academic dishonesty, the act of knowingly and willingly attempting or assisting others to gain academic success by dishonest means, is defined in four categories:

a. Cheating - "Intentionally using or attempting to use unauthorized information or study aids in an academic exercise."
b. Fabrication - "Intentional and unauthorized falsification of invention or any information or citation in an academic exercise."
c. Facilitating Academic Dishonesty - "Intentionally or knowingly helping or attempting to help another to commit an act of dishonesty," and/or coercing others to do the same.
d. Plagiarism - "Intentionally or knowingly representing the words or ideas of another as one's own in any academic exercise," in both oral and written projects.

Gehring, D., Nuss, E.M., & Pavela, G. (1986). Issues and perspectives on academic integrity. Columbus, OH: National Association of Student Personnel Administrators

For more information on the sanctions for academic dishonesty, please visit the website:
https://catalog.doane.edu/content.php?catoid=16&navoid=1333

Course Grading

Grades, Grading Scale, Feedback
Assignment of letter grades is based on a percentage of points earned. The letter grade will correspond with the following percentages achieved. All course requirements must be completed before a grade is assigned.

	Points	Total
Intro Discussion	10 (1)	10

Weekly Discussions	30 (8)	240
Case Studies	45 (8)	360
Problems and Exercises	30 (8)	240
Group Project	150 (1)	150
Course total		1000

A 100 – 90
B 89 – 80
C 79 – 70
D 69 – 60
E 59 and below

Feedback: Please allow 3-5 days for feedback on assignments. This timeframe is dependent upon the level of detail that I provide and the number of students in the course. I expect you to read my feedback and make changes if needed. If you do not know how to look at feedback using the My Grades tool in Blackboard, please notify me immediately.

Discussion Boards_– Each week you will participate in topic-related conversations with your classmates in discussion forums. These replace the interactive activities that occur during the face-to-face session in the classroom-based version of this course. Your initial post should be done by 11:55 pm EST on the Wednesday of each week and be at least 150 words. Respond to at least two of your classmates' postings by Day 7 (Sunday). Your responses should expand on a point made by your classmate, pose a pertinent question about your classmate's posting, and/or debate an opinion or fact presented by your classmate.

Graded Case Study - A case study is a short description of a real business situation that includes analysis and critical thinking. Analyzing case studies gives you the opportunity to apply concepts to real business problems. Usually, there is not a "right or wrong" answer. Rather, cases provide a vehicle for you to demonstrate your understanding and ability to apply course concepts. Each case study will comprise approximately 4-5 pages in length (not including title and reference pages).

How to Succeed in this Course

- Check your Doane email regularly
- Log in to the course web site daily
- Communicate with your instructor
- Create a study schedule so that you don't fall behind on assignments

Accessibility Statement

In compliance with the Rehabilitation Act of 1973, Section 504, and the Americans with Disabilities Act of 1990, professional disability specialists and support staff at Doane University facilitate a comprehensive range of academic support services and accommodations for qualified students with disabilities. Doane University staff coordinate student transitions from high schools and community colleges, conduct in-service training for faculty and staff, enable the resolution of accessibility issues, conduct community outreach, and facilitate collaboration among Doane University staff on disability policies, procedures, and accommodations.

Accessibility Services

Doane University Access/Services for Students with Disabilities
http://www.doane.edu/disability-services

Contact Person: Chris Brady Phone: 402.467.9031 Email: chris.brady@doane.edu

Self-Identification Form: https://www.doane.edu/student-disability-identification-form

Academic Support

Contact Person: Tere Francis Phone: 402.466.4774 Email: terese.francis@doane.edu

https://www.doane.edu/graduate-and-adult/academic-support

Student Services

http://www.doane.edu/gps/student-services

Student Conduct Statement

Students are required to adhere to the behavior standards listed in **Doane University Policy Manual**

Appropriate classroom behavior is defined by the instructor. This includes the number and length of individual messages online. Course discussion messages should remain focused on the assigned discussion topics. Students must maintain a cordial atmosphere and use tact in expressing differences of opinion. Inappropriate discussion board messages may be deleted if an instructor feels it is necessary. Students will be notified privately that their posting was inappropriate.

Student access to the course Send Email feature may be limited or removed if an instructor feels that students are sending inappropriate electronic messages to other students in the course.

Technical Support Contact Information

For technical assistance 24 hours a day, 7 days a week, please contact the Doane University Technology Office Help Desk:

Phone: 402-826-8411
Email: helpdesk@doane.edu
Web: http://www.doane.edu

Instructional Technology Accessibility and Privacy Policies

http://www.doane.edu/instructional-design-services/policies

Syllabus Disclaimer

The instructor views the course syllabus as an educational contract between the instructor and students. Every effort will be made to avoid changing the course schedule, but the possibility exists that unforeseen events will make syllabus changes necessary. The instructor reserves the right to make changes to the syllabus as deemed necessary. Students will be notified in a timely manner of any syllabus changes face-to-face, via email or in the course site Announcements. Please remember to check your Doane University email and the course site Announcements often.