Dashboards and Data Visualization

Course Number: CSE-41222

Section ID: 114518

Course Start Date: 04/04/2016

Course End Date: 06/05/2016

Instructor Information

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Communication policy: You may contact me either by phone (408-204-0211) or by via email. I will try to answer your emails within 24 hours of receiving them.

Welcome

Hi and welcome to the *Dashboards and Data Visualization* class. I am your instructor, Arshad Khan. I look forward to introducing you to an area of high interest in the field of business intelligence.

This is an online course and I will be using Blackboard, the website that you are viewing right now, to distribute the electronic versions of the syllabus, class handouts, PowerPoint presentation files, as well as the mid-term and final exam. I will also be distributing my lecture notes, which are contained in a 215 page PDF document.

Course Purpose and Prerequisites

The purpose of this course is to teach you dashboard and data visualization technologies. There are no prerequisites for this course and it does not require knowledge of any specific technical skills. However, a basic understanding of data and reporting will be helpful.

Course Goal and Objectives

The goal of this course is to teach you how to use dashboards and data visualization for presenting and analyzing performance data and, also how to use a data visualization tool for this purpose.

Learning Objectives

By the end of this course, students will be able to:
- Explain dashboard elements, characteristics, and features
- Explain scorecard objectives, characteristics, and balanced scorecard
- Explain common dashboard and scorecard characteristics, differences, benefits and shortcomings
- Explain key performance indicators and how to design them
- Explain the dashboard process, architecture and requirements, as well as design principles
- Explain data visualization and identify common data visualization types
- Design dashboard displays, identify presentation options, and learn how to make dashboards work effectively

- Identify common design mistakes as well as problems with real-time operational dashboards
- Identify the best practices for dashboards and scorecards
- Avoid common problems and mistakes
- Evaluate dashboard tools and vendors

Course Materials/Textbooks

Required textbook:
- Tableau Jumpstart: A Step-by-Step Guide to Better Data Visualization by Arshad Khan; Apress, 978-1484219331

Note: This book may not hit the bookstores by the time this class starts. In that case, the instructor, who is also the author, will provide you with the electronic version of the book on Blackboard.

Recommended textbooks:
- Performance Dashboards: Measuring, Monitoring, and Managing Your Business by Wayne Eckerson; John Wiley & Sons, Nov 2010, 978-0470589830
- Information Dashboard Design: Displaying Data for At-a-Glance Monitoring, Stephen Few, Analytics Press, Aug 2013, 978-1938377006

These books are available from Amazon.com as well as other internet textbook retailers.

NOTE: You will require a computer with Internet access as you will need to access the online Blackboard system. Through the Blackboard system, you will be able to take the mid-term and final exams and, also, access the electronic versions of the syllabus, lecture notes, other handouts, and presentations.

Course Overview

This course is spread over nine sessions (weeks) and the topics covered in the lecture are:
- Week 1: Modules 1-2
  - Dashboards
  - Scorecards
- Week 2: Modules 3-5
  - Dashboards and scorecards: Characteristics and implementation
  - Key performance indicators
  - Designing KPIs
- Week 3: Modules 6-8
  - Process, architecture and requirements
  - Dashboard design principles
  - Data visualization
- Week 4: Module 9
  - Effective visualization
- Week 5: Modules 10-11
  - Dashboard design and visualization tips

- Dashboard design mistakes
- Week 6: Modules 12-13
  - Design problems for real-time operational dashboards
  - Best practices: Dashboards and scorecards
- Week 7: Modules 13-16
  - Common problems and mistakes
  - Software tools and vendors

The students will also learn how to use Tableau software through many hands-on exercises. The instructions for completing the exercises, in a step-by-step manner, will be provided separately through Blackboard's "Resource" link.

Online Course Structure
The course is organized using the course menu (left side of your screen):

Announcements	This is the first page you will see upon entering your course. Your instructor will post weekly announcements and reminders here.
Introduction	Contains an introduction to the course and instructor biography.
Syllabus	Contains the course outline, learning objectives, weekly assignments and course details.
Lessons	If it is a fully online course, this section will have the instructor's weekly audio/image lectures. The lectures are self-paced and can be replayed like a video movie (start, pause, rewind, etc.).
Discussion Board	Questions pertaining to each lesson are posted weekly for you and your classmates to discuss and answer.
Assignments	Assignments, quizzes, course evaluation, and the final exam are available here.
Resources	Additional readings and handouts, web site links, and PowerPoint presentations are here.
Contacts	Instructor, student services and online learning support contact information is listed here.
Tools	Check your grades (My Grades), add a Homepage (Homepage), or access the Blackboard User Manual (User Manual) here.

Course Schedule

Week	Lecture	Exams and Project	Tableau Exercise #	Assignments/ Discussions
1	Modules 1-2	**Tableau Project Distributed**	Install Software	
2	Modules 3-5		Exercises 1-7	Case Study #1: Start discussion on Apr 11
3	Modules 6-8		Exercises 8-14	
4	Module 9		Exercises 15-21	
5	Modules 10-11	**Midterm Exam**	Exercises 22-28	Case Study #1: Complete by May 8
6	Modules 12-13		Exercises 29-35	Case Study #2: Start discussion on May 9
7	Modules 14-16		Exercises 36-42	
8				Case Study #1: Complete by May 29
9		**FINAL Exam Tableau Project Due**		

Requirements

In order to satisfy course requirements, class participants must participate in discussions, complete all course assignments on time.

IMPORTANT! Late assignments will be graded -1 point/day, unless it is due to a medical or family emergency. Late assignments will be accepted at the discretion of the instructor.

In general, an "A" grade is based on the assignment:

- Demonstrating a high level understanding of issues, including complexities
- Being well focused, has a clear sense of purpose, and is easily understandable
- Evaluating the topic beyond what is stated in readings, research, and discussions
- Expressing views clearly; provides specific examples, details, illustrations, and anecdotes to support positions
- Doing more than repeating the text or what was lectured in class; extracts additional important implications
- Showing originality of thought
- Using proper citations for resources
- Using organizers (table of contents, topic headings, etc.)
- Having no punctuation, grammar, or spelling errors

Expect and plan for contingencies and technical problems (they WILL happen!).

Discussion Board Participation/Exams/Project

Discussion Board Participation—20 points

Students will participate in online discussions, on Blackboard, which will be based on two case studies. Substantial contributions are expected, to gain full points, which may include taking a leadership role in weekly online discussions.

Mid-term exam: 20 points

This will be a 20 question multiple choice quiz. Only one attempt is allowed. The exam, which is an open book exam, will need to be completed by **11pm on May 8, 2016 (Sunday).** Attempt it a day or two before the due date to ensure that there are no technical difficulties. The exam will be available a week before the exam completion date.
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Final exam: 30 points

This is a concept testing exam, which will be based on questions that will test your knowledge of the topics covered in this course. Only one attempt is allowed. The exam, which is an open book exam, will need to be completed by **11pm on June 5, 2016 (Sunday).** After taking the exam, feedback will be provided immediately. The exam will be available a week before the exam completion date.

Project: 30 points

Students will complete a hands-on data visualization project using Tableau software. The project will be due by **11pm on June 5, 2016 (Sunday).**

Note: The exams must be completed by the due date, after which they will no longer be available. Plan ahead and give yourself plenty of time to complete them.

Grades

Grading criteria

Grades are based on points and the letter grades will be awarded as follows:

A+   97-100
A   94-96
A-   90-93
B+   87-89
B   84-86
B-   80-83
C+   77-79
C   74-76
C-   70-73
D+   67-69
D   65-66
F   0-64

You can check your grade on Blackboard anytime by navigating as follows:

- Click **Course Tools**
- Click **My Grades** (which will display the points earned to-date in the course)

Weighted grades

Mid-term: 20%
Final: 30%
Project :   30%
Discussion Board participation: 20%
                            Total: 100%

About Discussion Board Participation

You are expected to participate in Blackboard discussions and provide substantial contribution pertaining to assigned case studies, class topics, and topics identified by other participants. Therefore, you should access Blackboard regularly, about 2-3 times a week, and make your contribution to the discussion.

The following are the attributes of effective discussion board participation:
- Start a discussion on Blackboard (add a thread)
- Respond thoughtfully to a topic or another person's post
- Provide links and resources related to the topic
- Pose a thought-provoking question related to the topic
- Provide pros and cons
- Thoughtfully rebut another person's comments
- Make your postings in a timely manner
- Take a leadership role for weekly postings, initiate the discussion, and encourage others

For grading, both the quality and quantity of participation/contribution are considered. Regular contributions that add to the knowledge base of other students, provide links to additional resources, and provoke meaningful discussions enable points to be earned. If you are new to a topic and your knowledge is limited, ask questions, seek clarifications, or request elaboration. Where possible, conduct your own search on the Internet and share your findings.

Note: Discussion Board participation is 20% of your grade. So do not take this component lightly.

Student Resources

On Blackboard, various tabs are located across the top of the displayed window. The Student tab provides information on how to get started as a student, as well as contact information (for obtaining help). It also contains videos and instructions on how to perform common tasks in Blackboard.

On the FAQ (Frequently Asked Questions) tab, click on the Students Category, on the left, to find step-by-step directions for common tasks such as sending an e-mail, uploading assignments, posting a reply on the discussion board, etc.

Code of Conduct

All participants in a course at UC San Diego Extension are bound by the University of California's Code of Conduct, which is located at:

http://www.ucop.edu/ucophome/coordrev/ucpolicies/aos/uc100.html.

Academic Honesty Policy

The University is an institution of learning, research, and scholarship predicated on the existence of an environment of honesty and integrity. As members of the academic community, faculty, students, and administrative officials share responsibility for maintaining this environment. It is essential that all members of the academic community subscribe to the ideal of academic honesty and integrity and accept individual responsibility for their work. Academic dishonesty is unacceptable and will not be tolerated at the University of California. Cheating, forgery, dishonest conduct, plagiarism, and collusion in dishonest activities erode the University's educational, research, and social roles.

Students who knowingly or intentionally help other students perform dishonest conduct, acts of cheating, or plagiarism will be subject to disciplinary action at the discretion of UC San Diego Extension.

Emergency Information

In the event of an emergency, information for UC San Diego Extension will be posted on the website at *extension.ucsd.edu.* Extension students must access the website to find out the status of the emergency situation. Email and or phone lines may not be accessible. Information will be updated online as the situation progresses and an ALL CLEAR will be posted once the situation is resolved.