Syllabus

Course Overview

This course has a specific data-mining project that requires you to demonstrate how data-management processes and workflows impact the work of data analytics. You will be provided with a set of data appropriate for this particular project. You will then apply Excel spreadsheets and other commercially available software and pivot tables in summarizing and presenting knowledge accumulated through resources and practice. These spreadsheet, software, and pivot table skills will allow you to analyze data to complete an accurate and effective data-mining project.

Course Competencies **(Read Only)**

To successfully complete this course, you will be expected to:

1. Evaluate the role of data modeling, data standards, and data management rules in supporting effective data-analytics processes and workflows.
2. Analyze the role data structure plays in determining how to apply data models, standards, and rules.
3. Research the tools and strategies specific to data models that are helpful in supporting effective and efficient data-analytics processes and workflows.
4. Apply data-modeling tools and techniques to solve a particular problem using data analytics.
5. Communicate effectively.

Course Prerequisites

There are no prerequisites for this course.

Syllabus >> Course Materials

Required

The materials listed below are required to complete the learning activities in this course.

Integrated Materials

Many of your required books are available via the VitalSource Bookshelf link in the courseroom, located in your Course Tools. Registered learners in a Resource Kit program can access these materials using the courseroom link on the Friday before the course start date. Some materials are available only in hard-copy format or by using an access code. For these materials, you will receive an email with further instructions for access. Visit the Course Materials page on Campus for more information.

Book

Jelen, B., & Alexander, M. (2016). *Excel 2016: Pivot table data crunching*. Indianapolis, IN: Que Publishing, Pearson. ISBN: 9780789756299.

Software

Capella University requires learners to meet certain minimum computer requirements. As a Capella learner, to purchase some required or recommended software at a substantially reduced price, visit the Capella Software Store. Some software required for a course may exceed these requirements, in which case it will be provided to you via a virtual desktop or as part of your course materials. The following software is required to complete learning activities in this course.

SAS Data Analysis Software.

Library

The following required readings are provided in the Capella University Library or linked directly in this course. To find specific readings by journal or book title, use Journal and Book Locator. Refer to the Journal and Book Locator library guide to learn how to use this tool.

- Alexander, M. (2014). Part II: Chapter 6: The pivotal pivot table. In *Excel dashboards and reports for dummies* (2nd ed.). Somerset, NJ: Wiley.
- Anonymous. (2010). Data, data everywhere. *The Economist, 394* (8671), S3–S5.
- Barton, D., & Court, D. (2012). Making advanced analytics work for you. *Harvard Business Review, 90* (10), 78–83.
- Dagobert, S. (2015). Unleashing the power of data through organization: Structure and connections for meaning, learning and discovery. *Knowledge Organization, 42* (6), 401–427.
- de Ville, B. (1995). Pivot tables qualify Excel as a serious market research tool. *Marketing Research, 7*(1), 50.
- Foster, E.C. & Godbole, S. (2016). *Database systems: A pragmatic approach* (2nd ed.). Retrieved from https://capella.skillport.com/skillportfe/main.action?path=summary/BOOKS/119889
- Khoury, J. (2017). *Qlikview: Data modeling in qlikview* [Video file]. Retrieved from https://capella.skillport.com/skillportfe/main.action?path=summary/VIDEOS/118383

- Lee, D. (2015). Case studies: Business intelligence. *Accounting Today, 29* (9), 36–37.
- Moss, L. T. (2015). Enterprise data modeling: Lost art or essential science? *Business Intelligence Journal, Supplemental 2015 Student Edition, 27*–32.
- Mullins, C. S. (2015). Data modeling still applies. *Database Trends & Applications, 29*(2), 29.
- Nelson, S. L., & Nelson, E. (2014). Part II: Pivot tables and pivot charts. In *Excel data analysis for dummies* (2nd ed.). Somerset, NJ: Wiley.
- Palocsay, S. W., Markham, I. S., & Markham, S. E. (2010). Utilizing and teaching data tools in Excel for exploratory analysis. *Journal of Business Research, 63*(2), 191–206.
- Simsion, G., Milton, S. K., & Shanks, G. (2012). Data modeling: Description or design? *Information & Management, 49*(3), 151–163.
- Tyrrell, S. (2008). Pivot tables in seven minutes. *Mathematics Teaching, 207,* 44–45.
- Yung, C. (2015). Mining massive web log data of an official tourism web site as a step towards big data analysis in tourism. *Paper presented at 2015 ASE BigData and Social Informatics, New York, NY.*

External Resource

Please note that URLs change frequently. While the URLs were current when this course was designed, some may no longer be valid. If you cannot access a specific link, contact your instructor for an alternative URL. Permissions for the following links have been either granted or deemed appropriate for educational use at the time of course publication.

- Ambysoft. (2013). Data modeling 101. *Agile Data.* Retrieved from http://www.agiledata.org/essays/dataModeling101.html
- Encyclopaedia Britannica. (n.d.). Retrieved from http://www.britannica.com/
- Frishberg, M., Cohen, B., & Norris, C. (2012). A comparative review of data modeling web portals. *Edison Group.* Retrieved from http://www.theedison.com/pdf/2012_Samples_CA_ERwin_Web_Portal.pdf
- Infoplease. (n.d.). Retrieved from http://www.infoplease.com/
- Poolet, M. A. (2010, December 17). Comparative review: Sizing up data modeling software. Retrieved from http://sqlmag.com/sql-server/comparative-review-sizing-data-modeling-software
- SAS OnDemand for Academics. null
- SAS. (2020). SAS customer support. Retrieved from https://support.sas.com/en/support-home.html
- ScaleOut Software. (2014). What is operational intelligence? [Video]. Retrieved from https://www.youtube.com/watch?v=H6OFzdIEy-g
- Semantics. (n.d.). Retrieved from https://www.webopedia.com/TERM/S/semantics.html
- WhatIs.com. (n.d.). Retrieved from http://whatis.techtarget.com/
- Webopedia. (n.d.). Retrieved from http://www.webopedia.com/

Suggested

Optional

The following optional materials are offered to provide you with a better understanding of the topics in this course. These materials are not required to complete the course.

Library

The following optional readings may be available in the Capella University Library. To find specific readings by journal or book title, use Journal and Book Locator. Refer to the Journal and Book Locator library guide to learn how to use this tool. If the full text is not available, you may be able to request a copy through the Interlibrary Loan service.

- Hiltz, K. (2014). Combine widespread data into a pivot table and keep its original location intact. *Inside Microsoft Excel, 21*(9), 5–8.
- Hiltz, K. (2014). Manipulate pivot table data with slicers. *Inside Microsoft Excel, 21*(12), 6–8.
- Jelen, B. (2010). Perfect pivot table formatting. *Strategic Finance, 91*(10), 54–55.
- National, R. C. (2003). Review of NOAA's national geophysical data center. Retrieved from https://ebookcentral-proquest-com.library.capella.edu

External Resource

Please note that URLs change frequently. While the URLs were current when this course was designed, some may no longer be valid. If you cannot access a specific link, contact your instructor for an alternative URL. Permissions for the following links have been either granted or deemed appropriate for educational use at the time of course publication.

- ScaleOut Marketing. (2014). *ScaleOut software: What is operational intelligence?* | Transcript Retrieved from https://www.youtube.com/watch?v=H6OFzdIEy-g
- Zero to Pro Training. (2013). *Business intelligence component - ETL.* Retrieved from https://www.youtube.com/watch?v=pXxRtOlDSXw

Unit 1 >> Databases, Database Management Systems, Data Standards, and Data Modeling

Introduction

In this unit, you will be introduced to several basic topics that will help you understand how to conduct data mining.

As you will explore the three levels of data modeling—the conceptual data model, the logical data model, and the physical data model—you will see how complexity increases from conceptual to logical to physical. Additionally, we will introduce an optional software system called SAS.

Learning Activities

u01s1 - Studies

Readings

Your assigned readings from the *Data Modeling: A Beginner's Guide* text will provide an overview of the basics of data modeling and definitions of related concepts that will help you develop the required understanding of various information technology (IT) terms used in data mining and business analytics. The purpose is to support understanding of business intelligence (BI) applications.

A brief article from the *Economist*, "Data, Data, Everywhere," highlights the motivation for all of this—to support evidence-based decision making by taking advantage of the enormous amounts of data available to the modern organization through data mining. This course will provide you with the tools and techniques of data mining for pursuing that goal.

Use your *Data Modeling: A Beginner's Guide*. text to complete the following:

- Read Chapter 1, "Introduction to Data Modeling," pages 3–19.
- Read Chapter 2, "Relational Model Components," pages 23–49.
- Read Chapter 3, "Data and Process Modeling," pages 53–77.
    - These chapters provide an overview of data modeling.

Use the Capella University Library to read the following:

- Anonymous. (2010). Data, data everywhere. *The Economist, 394*(8671), S3–S5.
- Dagobert, S. (2015). Unleashing the power of data through organization: Structure and connections for meaning, learning and discovery. *Knowledge Organization, 42*(6), 401–427.

Use the Internet to read and view the following:

- Ambysoft. (2013). Data modeling 101. *Agile Data.* Retrieved from http://www.agiledata.org/essays/dataModeling101.html
- ScaleOut Software. (2014). What is operational intelligence? [Video] | Transcript. Retrieved from https://www.youtube.com/watch?v=H6OFzdIEy-g

Multimedia

- Complete the **Data Models: Conceptual, Logical, and Physical**.

Optional Resources

Search SAS Customer Support for information on the following topics:

- Getting Started:
    - What Is SAS?
    - Getting Started With SAS Studio.
    - Using SAS.
    - Working in SAS Studio.
    - Getting Started With SAS Enterprise Guide.
    - Getting Started With SAS Windowing Environment.
    - Writing a Basic SAS Program.
- Accessing Data:
    - Accessing Data in SAS Libraries.
    - Creating a SAS Table From a CSV File.
    - Reading and Generating CSV Files Using SAS Studio.
- Managing and Manipulating Data:

- Formatting Values in SAS.
- Filtering a SAS Table in a DATA Step.
- Merging SAS Tables in a DATA Step.
- Data Management Software.

Additionally, you may find the following resources helpful:

- National, R. C. (2003). Review of NOAA's national geophysical data center. Retrieved from https://ebookcentral-proquest-com.library.capella.edu
- Zero to Pro Training. (2013). *Business intelligence component - ETL* | Transcript. Retrieved from https://www.youtube.com/watch?v=pXxRtOlDSXw
- Importing Excel Data Using SAS [PDF].
  - In this document, you will see the steps required when importing Excel data in SAS. Note that the variables titles in your file should always occupy row one.

u01s2 - Optional: SAS Software Download and Installation

SAS software is optional for this course. You may use it for assignments where appropriate, but it is not required.

SAS Enterprise Guide and SAS Enterprise Miner are available for you to use during this course for your statistical calculations; there is no fee for you to use SAS. SAS is one of the most commonly used statistical analysis tools in business and, as a Capella learner, you have access to this valuable resource.

To have free access to this software you must first register with SAS using the following steps:

1. Register with your Capella e-mail address by going to the SAS On Demand for Academics registration page.
2. After registering and receiving your login ID and password, **click the course enrollment link** provided to you by the instructor to access the SAS BUS4230 courseroom.
3. Login using your ID and password. **Click the enroll button** to enter the course for access and use of SAS Enterprise Miner or SAS Enterprise Guide.

Note: You only need to access the SAS Web site to download the SAS software. If you have problems with the download or procedure, first consult with your instructor to determine if your problem is a hardware compatibility problem. If you are having problems navigating the SAS Web site, you can contact SAS Customer Support.

Use the Importing Excel Data Using SAS tutorial to learn the steps required when importing Excel data in SAS. Note that the variables titles in your file should always occupy row one.

u01a1 - Strategy for Conceptual, Logical, and Physical Design

Assignment Instructions

Review the opportunities discussed in each of the unit discussions. Then, for this assignment, develop strategies for the conceptual, logical, and physical design of data structures for a business entity (for example, customer services and sales). Write a 2–4-page analysis of the business entity you have chosen.

Additional Requirements

- **Written communication**: Written communication should be free of errors that detract from the overall message.
- **APA formatting**: Your paper should be formatted according to the current APA style and format.
- **Length**: 2–4 typed, double-spaced pages.
- **Font and font size**: Times New Roman, 12 point.

Course Resources

APA Style and Format

u01d1 - Describing a Database

For this discussion, complete the following:

- Identify a database that you have read about (one managed by a database management system such as DB2, Oracle, MS/SQL, or the like). Some examples:
  - The Library of Congress database.
  - A customer database.
  - A bill of materials database.
  - National Geophysical Data Center, NOAA.
- Explain the database's characteristics and uses in regard to business intelligence.
- Give a brief description of its technical aspects, such as structure and hierarchy. What are the other technical aspects of the database? Examples may include:
  - Ease of integration.
  - Data cleansing.
  - Merging capability.
  - Application in business intelligence.

Response Guidelines

Read the posts of your peers and respond to at least two of them. Compare your post to those of your peers and note any differences. Explain why you agree or disagree with your peers' views and analyses. Your responses are expected to be substantive in nature and should reference the assigned readings or other professional literature, as applicable, to support your views.

Course Resources

Undergraduate Discussion Participation Scoring Guide

u01d1 - Learning Components

- Describe a conceptual data model.
- Explain what a database looks like and its uses.

u01d2 - Describing a Data Model

In the database you identified in this unit's first discussion, identify the potential for an analytics process in gathering business intelligence. Elaborate on the use of the resulting analytics in a business setting. Confirm that the database contains all necessary data needed for a business intelligence project. For example, describe in detail what is needed to analyze the efficiency of advertising channels. Develop a strategy for development of the business intelligence model.

Response Guidelines

Read the posts of your peers and respond to at least two of them. Compare your post to those of your peers and note any differences. Explain why you agree or disagree with your peers' views and analyses. Your responses are expected to be substantive in nature and should reference the assigned readings or other professional literature, as applicable, to support your views.

Course Resources

Undergraduate Discussion Participation Scoring Guide

u01d2 - Learning Components

- Describe a conceptual data model.
- Identify a logical data model.

- Explain what a database looks like and its uses.
- Analyze a physical data model.

Unit 2 >> Detailed Data Modeling

Introduction

In this unit, you will explore data modeling and develop strategies for using it. We use data modeling and techniques to ensure data compliance with the data standards, which implies expected consistency and predictability. The advantage of application of data modeling for any business intelligence projects stems from the fact that we will enjoy the benefits of a uniform approach for data modeling within an organization. Examples of data modeling in a business entity are:

- Assisting stakeholders of a business intelligence project (business analysts, programmers, testers, manual writers, IT package selectors, engineers, managers, related organizations, and clients) to communicate in a commonly understandable language for data modeling, data source, entities of the model, and their corresponding attributes.
- Managing data as a valuable resource for decision-making process.
- Centralizing actionable knowledge from disparate information systems.
- Designing of efficient database and effective data warehouse.

West and Fowler (1999) state that the lack of standards increases the costs of data modeling and its maintenance when "the quality of the data model implemented in systems and interfaces is poor (p.1)." According to West and Fowler, poor data quality is the result of the following:

- Business rules, specific to how things are done in a particular place, are often fixed in the structure of a data model.
- Entity types are often not identified or are identified incorrectly.
- Data models for different systems are arbitrarily different.
- Data cannot be shared electronically with customers and suppliers because the structure and meaning of data has not been standardized. To obtain optimal value from an implemented data model, it is very important to define standards that will ensure that data models will both meet business needs and be consistent. (p. 1)

Reference

West, M., & Fowler, J. (1999). Developing high quality data models. *The European Process Industries STEP Technical Liaison Executive (EPISTLE)*. Retrieved from https://sites.google.com/site/drmatthewwest/publications

Learning Activities

u02s1 - Studies

Readings

Use your *Data Modeling: A Beginner's Guide* text to complete the following:

- Part II: Data Modelling Details:
  - Read Chapter 5, "Conceptual Data Modeling," pages 101–124.
  - Read Chapter 6, "Logical Database Design Using Normalization," pages 127–142.
  - Read Chapter 8, "Physical Database Design," pages 173– 191.

Use the Capella University Library to read the following:

- Moss, L. T. (2015). Enterprise data modeling: Lost art or essential science? *Business Intelligence Journal, Supplemental 2015 Student Edition,* 27–32.
- Mullins, C. S. (2015). Data modeling still applies. *Database Trends & Applications, 29*(2), 29.
- Simsion, G., Milton, S. K., & Shanks, G. (2012). Data modeling: Description or design? *Information & Management, 49*(3), 151–163.
- Foster, E.C. & Godbole, S. (2016). *Database systems: A pragmatic approach* (2nd ed.). Retrieved from https://capella.skillport.com/skillportfe/main.action?path=summary/BOOKS/119889.
  - Chapter 1: Introduction to Database Systems.
  - Chapter 2: The Database System Environment.
- Khoury, J. (2017). *Qlikview: Data modeling in qlikview* [Video file]. Retrieved from https://capella.skillport.com/skillportfe/main.action?path=summary/VIDEOS/118383

The following required readings are available full-text in the Capella University Library. Search for each article by clicking the linked title and following the instructions in the Library Guide.

- Barton, D., & Court, D. (2012). Making advanced analytics work for you. *Harvard Business Review, 90*(10), 78–83.

Use the Internet to research on data modeling by using any of the following resources:

- Encyclopaedia Britannica. (n.d.). Retrieved from http://www.britannica.com/
- Infoplease. (n.d.). Retrieved from http://www.infoplease.com/
- Responsible Conduct in data management (n.d.). Retrieved from https://ori.hhs.gov/education/products/n_illinois_u/datamanagement/datopic.html
- Semantics. (n.d.). Retrieved from https://www.webopedia.com/TERM/S/semantics.html
- WhatIs.com. (n.d.). Retrieved from http://whatis.techtarget.com/

Multimedia

- Complete **Data Modeling: Developing a Strategy** presentation to view the interactive.

u02a1 - Applying Conceptual, Logical, and Physical Design

Assignment Instructions

For this assignment, identify or create a business intelligence case. Discuss your strategy for applying data models for a given data structure, standards, and business rules. Expand on the actual model to be applied and techniques you would use.

Additional Requirements

- **Written communication**: Written communication should be free of errors that detract from the overall message.
- **APA formatting**: Your paper should be formatted according to the current APA style and format.
- **Length**: 2–4 typed, double-spaced pages.
- **Font and font size**: Times New Roman, 12 point.

Course Resources

APA Style and Format

u02d1 - Data-Modeling Methods

For this discussion, explain how you would apply a data model with different methodology and data structure, including entity relationship, generic data modeling, and sematic data modeling.

Response Guidelines

Read the posts of your peers and respond to at least two of them. Compare your post to those of your peers and note any differences. Explain why you agree or disagree with your peers' views and analyses. Your responses are expected to be substantive in nature and should reference the assigned readings or other professional literature, as applicable, to support your views.

Course Resources

Undergraduate Discussion Participation Scoring Guide

u02d1 - Learning Components

- Explain how to apply data-modeling strategy for business intelligence.
- Analyze a strategy for data modeling.

u02d2 - Developing a Data-Modeling Strategy

For this discussion, consider a quality problem with a product that emanates from poor raw material. Describe a strategy to develop a data model and the associated tools to solve this problem in the context of business intelligence.

Response Guidelines

Read the posts of your peers and respond to at least two of them. Compare your post to those of your peers and note any differences. Explain why you agree or disagree with your peers' views and analyses. Your responses are expected to be substantive in nature and should reference the assigned readings or other professional literature, as applicable, to support your views.

Course Resources

Undergraduate Discussion Participation Scoring Guide

u02d2 - Learning Components

- Analyze a case study of data modeling.
- Analyze a strategy for data modeling.

Unit 3 >> Tools and Strategy for Data Modeling

Introduction

In this unit, you will compare the various data-modeling tools that are commercially available. These tools include standalone, conventional data-modeling tools as well as modeling supporting tools. You will also practice your learning in a practical case. Given some specific technical and business requirements, you will rank the candidate data-modeling tools.

Learning Activities

u03s1 - Studies

Readings

Read the document Data-Modeling Tools – Technical Properties and Attributes [PDF].

Use the Internet, the Capella University Library, or other resources to research each of the data-modeling tools listed in the document. One of the suggestions could be the following:

- Poolet, M. A. (2010, December 17). Comparative review: Sizing up data modeling software. Retrieved from http://sqlmag.com/sql-server/comparative-review-sizing-data-modeling-software

Multimedia

- Complete the **Data Modeling: Tool Selection** presentation to view the interactive.

Optional Resources

You may find the following resources helpful:

- Frishberg, M., Cohen, B., & Norris, C. (2012). A comparative review of data modeling web portals. Retrieved from http://www.theedison.com/pdf/2012_Samples_CA_ERwin_Web_Portal.pdf

u03a1 - Data-Modeling Tool Selection

Assignment Instructions

Review the document Data-Modeling Tools – Technical Properties and Attributes from this unit's studies.

For this assignment, you are required to choose a data-modeling tool for a general setting.

- Which tool do you choose? Why?
- What are the specific attributes and functionalities required for your selection?
- Explain how you would execute it.

Additional Requirements

- **Written communication**: Written communication should be free of errors that detract from the overall message.
- **APA formatting**: Your paper should be formatted according to the current APA style and format.
- **Length**: 2–4 typed, double-spaced pages.
- **Font and font size**: Times New Roman, 12 point.

Course Resources

APA Style and Format

Data Modeling Tools - Technical Properties and Attributes [PDF].

u03d1 - Technical Properties and Attributes

For this discussion, review the technical properties, functional capabilities, and attributes of data-modeling tools in the document Data-Modeling Tools – Technical Properties and Attributes from this unit's readings. Discuss their importance in a tool-selection process.

- Is the initial cost as important as maintenance cost? Why?
- Is user-friendliness as important as integration capabilities? Why?
- Is a standalone system better than an integrated one with enterprise resource planning (ERP)? Why?

Response Guidelines

Read the posts of your peers and respond to at least two of them. Compare your post to those of your peers and note any differences. Explain why you agree or disagree with your peers' views and analyses. Your responses are expected to be substantive in nature and should reference the assigned readings or other professional literature, as applicable, to support your views.

Course Resources

Undergraduate Discussion Participation Scoring Guide

Data Modeling Tools - Technical Properties and Attributes [PDF].

u03d1 - Learning Components

- Identify the important attributes of a data-modeling tool.
- Identify data-modeling tools.
- Describe strategies for tool selection for data modeling.

u03d2 - Case Study for Data-Modeling Tool Selection

For this discussion, consider that you were tasked with determining the best data-modeling tool for quality control of raw materials in a pharmaceutical setting. You will be using ERP system as the source of internal data. Your external source of data will have varying data structures and databases. You may make any assumption on data structure, hierarchy, quality, as well as refreshment cycle.

Create a selection criteria matrix and answer the following:

- What are the important functional, operational, and integration requirements for analyzing this data? Why?
- Which data modeling tool meets your requirements?

Response Guidelines

Read the posts of your peers and respond to at least two of them. Compare your post to those of your peers and note any differences. Explain why you agree or disagree with your peers' views and analyses. Your responses are expected to be substantive in nature and should reference the assigned readings or other professional literature, as applicable, to support your views.

Course Resources
Undergraduate Discussion Participation Scoring Guide
Data Modeling Tools - Technical Properties and Attributes [PDF].

u03d2 - Learning Components

- Identify the important attributes of a data-modeling tool.
- Identify data-modeling tools.
- Describe strategies for tool selection for data modeling.

Unit 4 >> Excel Pivot Tables

Introduction

You have been using Excel as a basic and simple repository of data in a tabular form, or as a database for gathering business intelligence. While processing data, an Excel pivot table is a very useful tool that may be used for summarizing data and visualization. The functionality of using pivot tables includes automatic sorting, counting, and statistical analysis. When summarized, the results are depicted in a second table (pivot table). To set up and change the summary structure, simply drag and drop fields. This pivoting, or rotating, of the summary table implies its name. There are other advanced functions in a pivot table that you may use, such as direct query for business intelligence on an online analytical processing (OLAP) server for retrieving data.

Learning Activities

u04s1 - Studies

Readings

Use your *Excel 2016: Pivot Table Data Crunching* text to read the following:

- Chapter 1, "Pivot Table Fundamentals," pages 9–17.
- Chapter 2, "Creating a Basic Pivot Table," pages 19–43.
- Chapter 3, "Customizing a Pivot Table," pages 45–74.
- Chapter 4, "Grouping, Sorting, and Filtering Pivot Data," pages 75–111.
- Chapter 6, "Using Pivot Charts and Other Visualizations," pages 135–156.
- Chapter 7, "Analyzing Disparate Data Sources With Pivot Tables," 157–192.
- Chapter 8, "Sharing Pivot Tables With Others,"193–202.
- Chapter 9, "Working With and Analyzing OLAP Data," pages 203–222.
- Chapter 11, "Dashboarding With Power View and 3D Map," pages 245–274.
- Chapter 12, "Enhancing Your Pivot Table Reports With Macros," pages 275–288.

Use the Capella University Library to read the following:

- de Ville, B. (1995). Pivot tables qualify Excel as a serious market research tool. *Marketing Research, 7*(1), 50.
- Tyrrell, S. (2008). Pivot tables in seven minutes. *Mathematics Teaching, 207,* 44–45.

Multimedia

If you have not already viewed the presentation for this unit, you may view it in this study.

- Complete the **Using Excel Pivot Tables for Data Mining** to view the interactive.

Optional – Readings

You may find the following resources helpful:

- Hiltz, K. (2014). Manipulate pivot table data with slicers. *Inside Microsoft Excel, 21*(12), 6–8.
- Hiltz, K. (2014). Combine widespread data into a pivot table and keep its original location intact. *Inside Microsoft Excel, 21*(9), 5–8.
- Jelen, B. (2010). Perfect pivot table formatting. *Strategic Finance, 91*(10), 54–55.
- Nelson, S. L., & Nelson, E. (2014). Part II: Pivot tables and pivot charts. In *Excel data analysis for dummies* (2nd ed.). Somerset, NJ: Wiley.
- Alexander, M. (2014). Part II: Chapter 6: The pivotal pivot table. In *Excel dashboards and reports for dummies* (2nd ed.). Somerset, NJ: Wiley.

u04s2 - Optional: SAS Software Download and Installation

If you have not already done so, then in this unit's study complete the following steps to download and install the SAS Software.

SAS Enterprise Guide is available for you to use during this unit for your statistical calculations; there is no fee for you to use SAS. SAS is one of the most commonly used statistical analysis tools in business and, as a Capella learner, you have access to this valuable resource.

To have free access to this software you must first register with SAS using the following steps:

1. Register with your Capella e-mail address by going to the SAS On Demand for Academics registration page.
2. After registering and receiving your login ID and password, **click the course enrollment link** provided to you by the instructor to access the SAS BUS4230 courseroom.
3. Login using your ID and password. **Click the enroll button** to enter the course for access and use of SAS Enterprise Miner or SAS Enterprise Guide.

Note: You only need to access the SAS Web site to download the SAS software. If you have problems with the download or procedure, first consult with your instructor to determine if your problem is a hardware compatibility problem. If you are having problems navigating the SAS Web site, you can contact SAS Customer Support.

Use the Importing Excel Data Using SAS tutorial to learn the steps required when importing Excel data in SAS. Note that the variables titles in your file should always occupy row one.

u04a1 - Application of Sales and Marketing Using ERP

Assignment Instructions

Use the Alberstonne Sales Data to create a basic pivot table for generating business intelligence and reporting. Customize the layout, style, and theme to your preference. Be sure to include grouping, sorting, and filtering.

Optional

Conduct the same assignment as above using SAS Pivot Table and SAS Enterprise Guide.

Additional Requirements

- **Written communication**: Written communication should be free of errors that detract from the overall message.
- **APA formatting**: Your paper should be formatted according to the current APA style.
- **Length**: Sufficient to support the presentation of pivot table.
- **Font and font size**: Times New Roman, 12 point.

Course Resources

Alberstonne Sales Data [XLSX].

APA Style and Format

u04d1 - Pivot Tables and Data Crunching 1

For this discussion, review Chapters 1, 2, 3, 4, and 6 from your *Pivot Table Data Crunching* text and respond to the following:

- Describe the limitations of a pivot table.
- Explain how to create a report filter.
- Identify a customization feature.
- Discuss how to use a manual sort sequence.
- Describe how to create a customized conditional formatting.
- Compare and contrast the ease of above operations using an SAS pivot table (optional).

Response Guidelines

Read the posts of your peers and respond to at least two of them. Compare your post to those of your peers and note any differences. Explain why you agree or disagree with your peers' views and analyses. Your responses are expected to be substantive in nature and should reference the assigned readings or other professional literature, as applicable, to support your views.

Course Resources

Undergraduate Discussion Participation Scoring Guide

u04d1 - Learning Components

- Analyze pivot tables in an Excel database.
- Identify pivot table methods for grouping, sorting, and filtering.

u04d2 - Pivot Tables and Data Crunching 2

For this discussion, review Chapters 7, 8, 9, 11, and 12 from your *Pivot Tables and Data Crunching* text and complete the following:

- Explain pivot table properties for creating business intelligence.
- Explain in detail how to create a triple consolidation pivot table.
- Explain how to embed a workbook.
- Discuss how to manage OLAP data in a pivot table.
- Describe how to animate a scatter chart chronologically.
- Present an example for an OLAP case.
- Compare and contrast the ease of above operations using SAS pivot table (optional).

Response Guidelines

Read the posts of your peers and respond to at least two of them. Compare your post to those of your peers and note any differences. Explain why you agree or disagree with your peers' views and analyses. Your responses are expected to be substantive in nature and should reference the assigned readings or other professional literature, as applicable, to support your views.

Course Resources

Undergraduate Discussion Participation Scoring Guide

u04d2 - Learning Components

- Analyze pivot tables in an Excel database.
- Identify pivot table methods for grouping, sorting, and filtering.
- Follow APA style, format, structure, and guidelines in using resources and citation and create a well-written content free of spelling and grammar errors.

Unit 5 >> Data Mining Using Pivot Tables

Introduction

In this unit, you will have the opportunity to discuss various types of statistical analysis such as descriptive statistics, inferential statistics, and regression analysis used for business intelligence.

Also, in the final assignment, you will have the opportunity to act as a business intelligence (BI) consultant. You will conduct an analysis of sales data and create a power-view dashboard to present your results. In the assignment, you will be using the properties of pivot tables to demonstrate, in a graphical form, the summary of the business status. These summaries will point you to the tasks that are more easily accomplished ("low-hanging fruit"), opportunities for improvement, and quantitative assessments for your recommendations.

Learning Activities

u05s1 - Studies

Readings

Use the Capella University Library to complete the following:

- Lee, D. (2015). Case studies: Business intelligence. *Accounting Today, 29*(9), 36–37.
- Yung, C. (2015). Mining massive web log data of an official tourism web site as a step towards big data analysis in tourism. *Paper presented at 2015 ASE BigData and Social Informatics,* New York, NY.
- Palocsay, S. W., Markham, I. S., & Markham, S. E. (2010). Utilizing and teaching data tools in Excel for exploratory analysis. *Journal of Business Research, 63*(2), 191–206.

Use the Internet to research on data mining using any of the following resources:

- Encyclopaedia Britannica. (n.d.). Retrieved from http://www.britannica.com/
- Infoplease. (n.d.). Retrieved from http://www.infoplease.com/
- Webopedia. (n.d.). Retrieved from http://www.webopedia.com/
- WhatIs.com. (n.d.). Retrieved from http://whatis.techtarget.com/

u05s2 - Optional: SAS Software Download and Installation

If you have not already done so, then in this unit's study complete the following steps to download and install the SAS Software.

SAS Enterprise Miner is available for you to use during this unit for your statistical calculations; there is no fee for you to use SAS. SAS is one of the most commonly used statistical analysis tools in business and, as a Capella learner, you have access to this valuable resource.

To have free access to this software you must first register with SAS using the following steps:

1. Register with your Capella e-mail address by going to the SAS On Demand for Academics registration page.
2. After registering and receiving your login ID and password, click on the course enrollment link provided to you by the instructor to access the SAS BUS4230 courseroom.
3. Login using your ID and password. Click on the enroll button to enter the course for access and use of SAS Enterprise Miner or SAS Enterprise Guide.

Note: You only need to access the SAS Web site to download the SAS software. If you have problems with the download or procedure, first consult with your instructor to determine if your problem is a hardware compatibility problem. If you are having problems navigating the SAS Web site, you can contact SAS Customer Support.

Use the Importing Excel Data Using SAS tutorial to learn the steps required when importing Excel data in SAS. Note that the variables titles in your file should always occupy row one.

u05a1 - Business Intelligence Consulting Project

Assignment Instructions

Use the Alberstonne Sales Data to complete this assignment.

Alberstonne is a BI consulting firm. It is facing stiff competition in its top-of-the-line and in-demand services, which are:

- Balance scorecard analysis.
- Business consulting.
- Data visualization training.
- Executive dashboard.
- Key performance indicator (KPI) analysis.
- Strategy map analysis.

Alberstonne has three core business functions to deliver its services:

- Consulting services.
- Licenses.
- Maintenance.

Alberstonne has five groups of customers:

- Large enterprises.
- Government.
- Small and medium businesses.
- Administration.
- Others.

In the Alberstonne Sales Data document, Table 1 presents the transaction data in a chronological order for daily sales and cost by services, business functions, and customer groups.

- Use a pivot table or SAS Enterprise Miner to create graphical presentations of sales per customer group, per service, and per a selected unit of time (weekly, monthly, and yearly).
- Determine the following:
    - The most selling service.
    - The most profitable customer group.
    - Any trend that you may observe.

Note: One of the services in the data has typos on purpose. Please clean the data before performing your analysis.

Present your analysis in a 5–10 page report. Include supporting graphs from Excel.

Additional Requirements

- **Written communication**: Written communication should be free of errors that detract from the overall message.
- **APA formatting**: Your paper should be formatted according to the current APA style.
- **Length**: 5–10 typed, double-spaced pages.
- **Font and font size**: Times New Roman, 12 point.

Course Resources

Alberstonne Sales Data [XLSX].

APA Style and Format

u05d1 - Statistical Descriptive Analysis of Data

Read the article "Utilizing and Teaching Data Tools in Excel for Exploratory Analysis" from this unit's studies before beginning this discussion.

For this discussion:

- Discuss the application of data mining as exploratory tool in business intelligence gathering.
- Review the limitations of data mining as a predictive model in creation of business intelligence.

Response Guidelines

Read the posts of your peers and respond to at least two of them. Compare your post to those of your peers and note any differences. Explain why you agree or disagree with your peers' views and analyses. Your responses are expected to be substantive in nature and should reference the assigned readings or other professional literature, as applicable, to support your views.

Course Resources

Undergraduate Discussion Participation Scoring Guide

Palocsay, S. W., Markham, I. S., & Markham, S. E. (2010). Utilizing and teaching data tools in Excel for exploratory analysis. *Journal of Business Research, 63*(2), 191–206.

u05d1 - Learning Components

- Discuss the data-modeling role and the corresponding standards in support of the data-analytics process.
- Identify application of data modeling to a business case.
- Discuss data-modeling tools and techniques.
- Analyze data-modeling tools and techniques to real-life problems.

u05d2 - Statistical Analysis: Regression and Correlation

Read the paper "Mining Massive Web Log Data of an Official Tourism Web Site as a Step Towards Big Data Analysis in Tourism." from this unit's studies before beginning this discussion.

The focus of this paper is the conceptual and technical solution design to the analysis of massive web log data of an official tourism Web site when integrated with web mining and big data technology. Discuss the difficulties in implementing the proposed architecture as a solution design in tourism? Do you concur with the author's conclusion? Why?

Response Guidelines

Read the posts of your peers and respond to at least two of them. Compare your post to those of your peers and note any differences. Explain why you agree or disagree with your peers' views and analyses. Your responses are expected to be substantive in nature and should reference the assigned readings or other professional literature, as applicable, to support your views.

Course Resources

Undergraduate Discussion Participation Scoring Guide

Mining Massive Web Log Data of an Official Tourism Web Site as a Step Towards Big Data Analysis in Tourism

u05d2 - Learning Components

- Discuss the data-modeling role and the corresponding standards in support of the data-analytics process.
- Identify application of data modeling to a business case.