

CIS 570 – Business Intelligence

**Department of Computer Information Systems
College of Business
Colorado State University**

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* Please use Canvas' Messaging system for all course related communication.

Course Description:

Organizations are awash with data that they collect and store as part of their routine operations. Business intelligence refers to the harnessing of these vast data stores to understand and solve problems, enhance decision-making and discover new opportunities. This course will focus on the concepts, processes, techniques and technologies that managers can use to store, access, transform, analyze, mine, and perceive/visualize data for the purpose of deriving business value from it.

Course Objectives

Upon successful completion of the course, you should have a) a sound knowledge of the field of business intelligence (BI) including its impacts, capabilities, and role in decision making, b) learnt about BI technologies and their vendors, and c) gained hands-on experience with some popular BI tools.

Textbooks

- Business Intelligence: A Managerial Perspective on Analytics by Ramesh Sharda, Dursun Delen and Efraim Turban, Pearson, Fourth Edition, 2017.
- Delivering Business Intelligence with Microsoft SQL Server 2016 by Brian Larson, McGraw-Hill, Fourth Edition, 2017.

Course Materials

Most course-related materials will be available through Canvas. In addition, Teradata University Network (<http://www.teradatauniversitynetwork.com>) is a free learning resource for BI and other related topics. This site has a number of articles and software resources that you will be encouraged (and sometimes, expected) to read and use. You have to register as a student - the access password is, Analytics.

Course Requirements for Grades

Requirements	Points
Research Presentation - BI in Practice OR BI Vendor	40
BI Projects (multi-part)	120
Hands-On Exercises	160
Discussion of Assigned Readings	60
Midterm and Final Exams	120
Total Points	500

The final course grade will be assigned based on the following scale:

Total Points	Letter Grade
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467 and above	A
450 - 466	A-
433 - 449	B+
417 - 432	B
400 - 416	B-
383 - 399	C+
350 - 382	C
300 - 349	D
Below 300	F

Research Presentation

For this assignment, you will research and prepare a presentation on either A) an organization's use of BI or B) a BI vendor.

Option A – BI in Practice

The presentation (15 to 20 minutes) should include the following:

- Brief overview of the organization
- Examples of how BI is currently used and/or planned to be used at the organization
- BI tools/technologies/vendors used by the organization
- Benefits of BI to the organization
- Challenges (if any) faced by the organization in implementing and using BI
- Two discussion questions related to BI use at the organization
- Research sources (i.e., references)

Your presentation will be graded on content (90%) and presentation format and style - organization, clarity, and poise (10%).

A written research report is not required. Just submit the slides used in your presentation.

You can pick an organization from the sample list below or choose any other organization (including your own) that you know is either using or planning to use BI.

- Air Canada
- Allstate
- Amazon
- American Express
- Anheuser Busch (InBev)
- Associated Grocers, Inc.
- Bahamas' Ministry of Tourism
- Brinker International, Inc.
- Cablecom
- Capital One
- Disney
- Dunkin' Donuts
- eBay
- eCourier
- FDA and the Pharmaceutical Industry
- Hagen, Inc.
- Harrah's Entertainment
- Kroger
- Marriott International
- Oil and Gas Companies (example, Chevron, Exxon, Petrobras, Hess, Valero)
- PhoneWorks
- Proctor & Gamble
- Progressive Insurance
- Richmond (VA) Police Department
- Rubio's Fresh Mexican Grill
- St. Joseph Medical Center
- Target
- Travelocity.com
- UPS
- Walmart

When researching online, use your chosen organization's name in combination with the following terms: Business Intelligence, data mining, analytics, big data, visualization, and data warehousing.

Option B - BI Vendor

The presentation (15 and 20 minutes) should include the following:

- a) Brief overview of the vendor
- b) BI products and services offered by the vendor
- c) Brief demo(s) of one or more of the vendor's products/services
- d) Examples of how the vendor's products/services are being used by its customer(s).
- e) Independent evaluations/rankings (if any) or your own assessment of the strengths and limitations of the vendor's BI offerings
- f) Research sources (i.e., references)

Your presentation will be graded on content (80%), presentation format and style - organization, clarity, poise (10%), and use of appropriate examples/demos (10%).

A written research report is not required. Just submit the slides used in your presentation.

You can pick a vendor from the sample list below or choose some other company that offers BI products and services.

- Actuate/BIRT
- Alteryx
- Attensity
- Birst
- Bitam
- Board International
- Cazena
- Domo
- Dundas
- Envision Analytics
- ESRI
- Exago
- Exsys
- GoodData
- Greenplum
- Grow
- Halo
- IBM/Cognos
- InetSoft
- Information Builders
- Jaspersoft
- Kognitio
- LogiAnalytics
- Longview/ArcPlan
- Looker
- Magnitude Software
- Microsoft
- MicroStrategy
- Netbase
- MITS
- Oracle/Hyperion
- Panorama Software
- Pentaho
- Prognosz
- Qlik
- Salient Management Company
- SAP/Business Objects/Sybase
- SAS
- Silvion
- Sisense
- Tableau Software
- Targit
- Teradata
- TIBCO/Spotfire

Additional Notes for the Presentation:

1. In addition to secondary sources, if possible, you should also consider gathering information directly from the company or vendor.
2. Discussion forums have been created for you to indicate your choice of company/organization or vendor for the presentation. Avoid picking a company or vendor that has already been chosen.
3. You have to record your presentations and post them on YouTube. Instructions for recording and posting videos are posted within Modules → Course Information on Canvas. We will make the presentation links and slides available to all students.
4. You can choose to do the presentation individually or as a two-person team. Please indicate your team membership in the discussion forum. By default, both team members will receive the same grade. Managing conflicts and ensuring that each team member makes his/her expected contribution is part of the learning process. Please inform us when your team is unable to resolve a work allocation dispute.
5. Although the research presentation will not be due until week 6 (**Sunday, June 24**), it can be submitted earlier. This will help spread out the presentation postings and increase the likelihood of you watching at least a few (if not, all) of your classmates' presentations.
6. You have to form a team (optional) and indicate the organization or BI vendor you have chosen for the research presentation by **Sunday, May 27**.
7. You cannot form or join a new team after **Sunday, May 27**. However, you have the option of disbanding a team and completing the research presentation individually.

BI Project

For this assignment, you will be asked to analyze and mine datasets and report your findings by answering specific questions. The project will have multiple parts, and detailed instructions for each will be provided at later dates.

Hands-On Exercises

You will be required to complete a number of exercises using Microsoft SQL Server, Visual Studio and Power BI. These exercises will cover data marts, data integration, OLAP cubes, data mining and reporting. I will discuss these exercises in class and get you started. You will finish the rest at your own pace as homework.

Discussion of Assigned Readings

You are encouraged to read and synthesize the assigned materials. Based on the readings for a given session, I will provide questions to guide the discussion. Your postings to the discussion threads created for each session can be a) responses to the guiding questions, b) observations and comments related to the readings/topic, and/or c) responses/questions/follow-ups to other postings. To receive discussion points (**four** points per session), you will have to answer at least **two** of the questions assigned for each session. While it is not necessary to answer every question, I encourage you to read all the assigned materials.

Exams

Both exams will be cumulative. Questions for the exams will be based on lectures, slides, readings, handouts, exercises, projects, discussions and presentations. The exams can include multiple-choice, short-answer, essay answer and analytical questions, and hands-on exercises.

Academic Honesty

All work in this course must be completed in a professional manner and should be consistent with CSU's Policy on Academic Integrity - <https://tilt.colostate.edu/integrity/knowTheCode/>. With the exception of the research presentation (which can be completed as a team), all other course requirements have to be completed individually.

Plagiarism or copying someone else's work and submitting it as your own is a serious violation of University Policy. The penalty for academic misconduct on a course-related work/activity is zero credit for that assignment. In addition, at my discretion, you could receive letter grade deductions or an F grade for the course (refer to CIS Department - Academic Integrity Policy on Canvas). **Note:** The above penalty applies to all students involved in a misconduct incident (i.e., those who copied and those who allowed their work to be copied).

Administrative

Course requirements have to be submitted by the due date and time. If you have a critical family and/or medical emergency, your IC or I will consider granting an extension provided you contact us before the deadline.

Check the University Calendar for drop and withdrawal dates.

Any student with disabilities or other special needs, who requires special accommodation in this course, is invited to share these concerns or requests with the instructor as soon as possible.

Tentative Schedule

Week	Topic	Readings & Assignment Due Dates
1 (05/14) Session 1	Introduction to the course and BI	Syllabus Articles: 1) Business analytics insight: Hype or here to stay, 2) Envisioning the power of analytics Larson: Chapters 1, 2 Sharda: 1.1 - 1.5
Session 2		Articles: 1) The analytics portal at Mozilla, 2) Mercedes revs big data for grand prix season, 3) Cognitive analytics Larson: Chapter 5 Sharda: 1.6 - 1.10
2 (05/21) Session 1	Data Warehousing	Articles: 1) Adapting design thinking to agile/scrum DW/BI development, 2) Choosing a database architecture: an essential guide for DW professionals, 3) Building the single customer view in a data warehouse Larson: Chapters 3, 6 Sharda: 3.1 - 3.4
Session 2		Articles: 1) Evolving DW and BI architectures: The big data challenge, 2) Enabling self-service BI with a logical data warehouse, 3) From layers to pillars – a logical architecture for BI and beyond, 4) DW-on demand: The DW redefined in the cloud Sharda: 3.5 – 3.8
3 (05/28) Session 1	Big Data and Analytics	Articles: 1) Big data: concepts, technologies and applications, 2) When it's time to Hadoop, 2) Big data applications in clinical medicine Larson: Chapter 8 Sharda: 7.1 – 7.4 Data Mart Exercise - Parts 1 and 2
Session 2		Articles: 1) Data modeling in the age of big data, 2) Dipping a toe into data lakes, 3) How analytics is transforming agriculture, 4) Big data and the creative destruction of today's business models Sharda: 7.5 – 7.8
4 (06/04) Session 1	Descriptive Analytics	Article: Aggregate deceptions: finding suitable aggregation strategies and appropriate functions Sharda: 2.1 – 2.6 Integration Exercise – Parts 1 and 2
Session 2	Predictive Analytics	Articles: 1) Predictive Analytics, 2) Mining for data could help companies mine for gold Larson: Chapter 11 Sharda: 4.1 – 4.2, 4.3 - 4.4 Midterm Exam
5 (06/11) Session 1		Articles: 1) How companies learn your secrets, 2) Fighting fraud with advanced analytics, 3) Am I ready for advanced analytics, 4) Recruiting analytics talent Larson: Chapter 12 Sharda: 4.5 – 4.7 Cubing Exercise – Parts 1 and 2
Session 2	Text, Web, Social Media Analytics	Articles: 1) Maximizing insight from unstructured data, 2) Start from the question - A guide to unstructured text analysis, 3) Fire up your social media strategy with big data analytics, 4) Getting to know your digital-age customers: an airline industry case study Sharda: 5.1 - 5.5, 5.6 - 5.10

Week	Topic	Readings & Assignment Due Dates
6 (06/18) Session 1	Prescriptive Analytics	Articles: 1) Ads that don't overstep, 2) Fundamental mind shifts for the future of data analytics, 3) Creating a fact-based decision-making culture, 4) Projecting ROI for analytics Sharda 6.1 – 6.5, 6.6 – 6.10 BI Project – Part 1
Session 2	Business Reporting, Visualization, and Performance Management	Articles: 1) Mobile BI, 2) Best practices for powerful dashboards, 3) Persuading with data, 4) Which chart or graph is right for you Larson: Chapter 15 Sharda: 2.7 – 2.11 Research Presentation
7 (06/25) Session 1		Articles: 1) What gets watched gets done: How metrics can motivate, 2) BI at Guthy-Renker, 3) A practitioner's guide to best practices in data visualization, 4) Saving time and money – Why open-source BI makes sense Sharda: 3.9 – 3.12 Mining Exercise – Parts 1 and 2
Session 2	BI Trends and Impacts	Articles: 1) The cure for ailing self-service BI, 2) Democratic analytics, 3) The shift to on-demand BI, 4) Data governance gamification, 5) Beyond the numbers: Building qualitative intelligence Larson: Chapter 16 Sharda: 8.1 – 8.4 BI Project – Part 2
8 (07/02)		Articles: 1) BI director, 2) BI consulting firms, 3) Analytics at Amazon speed: the new normal, 4) Partnering for data monetization success, 5) Are you ready for what's coming in analytics Sharda: 8.5 – 8.7 Visualization & Reporting Exercise – Part 1 and Part 2 BI Project – Part 3 Final Exam