

**ERP 6220 Data Modeling & Visualization Prototyping for Enterprise Decision Dashboards
Course Syllabus – Fall 2017**

Department of Business & Information Technology Mission

“Capitalizing on the strong technological emphasis of Missouri S&T, the Department of Business and Information Technology educates individuals for careers in modern business organizations. The Department emphasizes management through technology with particular focus on information systems and their application in a fast-changing, global, and competitive environment. Through innovative instruction and research, the Department serves the economic interests of industry and the evolving needs of society.”

INSTRUCTOR AND COURSE INFORMATION

Instructor: Bih-Ru Lea, Ph.D.	Class Hours: M W F 9 am – 9:50 am
Office: Fulton 102A	Class room: Fulton 107A
Phone: 573-341-6436	Office Hours: M W 11 am – 12 noon
E-Mail: leabi@mst.edu	T 12 pm – 1 pm
Course Credit: 3 semester hours of credit	And by appointment (suggest a time via email)
Prerequisite: ERP 5110 and one of (ERP/IST 6444 or ERP5410)	Class Web: http://canvas.mst.edu

COURSE CATALOG DESCRIPTION:

Study how to integrate data modeling and visualization prototyping in design and implementation of enterprise decision dashboards for descriptive, predictive, and prescriptive analytics. Assignments and project implementations use SAP HANA Studio, Fiori, Predictive Analytics/Lumira, Design Studio, IBM Watson, and SAS Visual Analytics.

COURSE OBJECTIVES

Strategic Enterprise Management involves analyzing how effectively a company is attaining its strategic objectives as well as developing an effective performance management and reporting system. The main objectives of this course are to stimulate the student’s problem-solving abilities and critical thinking skills and to improve student’s communication skills. As a result of taking this course, students are expected to be able to demonstrate:

Course Objectives	Program Learning Objectives					
	Communication Skills	Critical Thinking	Information Technology	Teamwork & Leadership	Global & Multicultural Issues	Integrate Business Areas
• an understanding of competitive strategies from leveraging the information technology			X		X	
• an understanding of roles, applications, and impact of decision dashboards on enterprise mobile strategies and Big Data Analytics	X	X	X			
• an understanding of principles of Visual Design and Design Thinking in dashboard design and implementation	X	X	X			
• an understanding and be able to communicate fundamental concepts of business analytics, data visualization, decision dashboards, and data warehouse	X	X	X			
• abilities to design and implement an effective analytical dashboard to support decision making in both on-premises and enterprise cloud environments		X	X	X		
• abilities to design and implement an effective data warehouse to support business analytics, visualization, and performance management	X	X	X	X		X

TEXTBOOK(S) AND MATERIALS FOR COURSE

- Information Dashboard Design: Displaying Data for At-A-Glance Monitoring (ISBN-10: 1938377001, ISBN-13: 978-1938377006), 2nd ed., by Stephen Few, Analytics Press; 2013
- ERP6220 Course Packs 1 & 2 ((ISBN: 281000017560B & 281000021339B)), Missouri S&T Bookstore (<https://www.thesandtstore.com/>)

GRADING POLICIES AND PROCEDURES:

Test 1	100 pts	Class Project	120 pts
Test 2	100 pts	• Presentation & Prototype demo (60 pts)	
Assignments (labs, case presentation, class discussions, quiz, etc.)	680 pts	• Final Report & Prototype (60 pts)	

Grading Scale:

A: \geq 895 pts B: 795 – 894 pts C: 695 – 794 pts D: 595 – 694 pts F: < 594 pts

General Grading Policies:

1. **ALL ASSIGNMENTS AND TESTS ARE INDIVIDUAL WORKS UNLESS OTHERWISE SPECIFIED.**
2. All assignments should be handed in at the beginning of class on the date announced. **NO LATE ASSIGNMENTS WILL BE ACCEPTED.**
3. Please make every effort to make it to class on time. It is disruptive to the class to have members arriving late.
4. Attendance is encouraged. If you are unable to attend a class, you need to **turn in assignments in advance** (ask a friend to turn it in for you, use digital drop box provided by blackboard, etc.). You are also responsible for finding out what was covered in class and what announcements were made as well as obtaining handouts.
5. The instructor will assign NO incompletes in lieu of a regular grade.

Exams, Tests, and Quizzes

1. There will be two tests. **All exam materials may become property of the instructor after completion.**
2. It is possible to have announced and pop quizzes throughout the semester. Student will be given the date of announced quizzes one week in advance.
3. Exam dates and quizzes are a part of the class schedule. Failure to appear for an exam/quiz will result in the assignment of a zero for that exam/quiz. If you are going to miss an exam with a legitimate reason (e.g., scheduled surgery, official University business, etc.), contact the instructor **PRIOR** to the administration of that exam/quiz. A make-up quiz/test may be allowed **during the final exam period** only if convincing reasons and proper documentations (such as a doctor's note in case of a surgery/illness) are given for the absence. The make-up exam will be a comprehensive exam covering the material from throughout the course.
4. All in-class quizzes and tests are closed books and closed notes unless otherwise specified.

Lab Assignments

Lab Assignments will mostly involve completion of hands-on exercises and, unless otherwise informed, are due on the following class period in which it was assigned.

Class Project:

Each student will complete a class project that involves design and implementation of a strategic management system for an organization. Students may **NOT** receive these papers back, so if students want a copy, s/he better keeps one for him/herself. However, students may come review my comments on the report after they are graded.

Class Participation:

- Overall, student participation and discussion is essential to ensure that the course topics are understood and are made relevant to actual business situations encountered in the workplace. As such, attendance and participation are an essential factor in the learning process and a tool for assessing student learning. Therefore, you are encouraged and expected to attend all classes.
- Each 10% **unexcused absences will result in loss of a letter grade**. For example, if your grade is a B and you have missed 10% of classes without legitimate excuses, you will end up with a C.
- The instructor reserves the right to drop a student if a student has missed more than 20% of class time.

GENERAL COURSE POLICIES:

US Federal Law Title IX

Missouri University of Science and Technology is committed to the safety and well-being of all members of its community. US Federal Law Title IX states that no member of the university community shall, on the basis of sex, be excluded from participation in, or be denied benefits of, or be subjected to discrimination under any education program or activity. Furthermore, in accordance with Title IX guidelines from the US Office of Civil Rights, Missouri S&T requires that all faculty and staff members report, to the Missouri S&T Title IX Coordinator, any notice of sexual harassment, abuse, and/or violence (including personal relational abuse, relational/domestic violence, and stalking) disclosed through communication including but not limited to direct conversation, email, social media, classroom papers and homework exercises.

Missouri S&T's Title IX Coordinator is Vice Chancellor Shenethia Manuel. Contact her directly (manuel@mst.edu; (573) 341-4920; 113 Centennial Hall) to report Title IX violations. To learn more about Title IX resources and reporting options (confidential and non-confidential) available to Missouri S&T students, staff, and faculty, please visit <http://titleix.mst.edu>.

Accessibility and Accommodations: <http://dss.mst.edu>

It is the university's goal that learning experiences be as accessible as possible. If you anticipate or experience physical or academic barriers based on disability, please contact Disability Support Services at (573) 341-6655, dss@mst.edu, or visit <http://dss.mst.edu/> for information, or go to mineraccess.mst.edu to initiate the accommodation process.

Student Honor Code and Academic Integrity: <http://registrar.mst.edu/academicregs/index.html>

Violations of the University's academic code include, but are not limited to, possession of or use of unauthorized materials during quizzes or tests; providing unauthorized information to another student; or copying the work of another person. Violations may result in academic penalties in addition to receiving an "F" on the assignment in question.

Page 30 of the Student Academic Regulations handbook describes the student standard of conduct relative to the University of Missouri System's Collected Rules and Regulations section 200.010, and offers descriptions of academic dishonesty including cheating, plagiarism or sabotage. Additional guidance for faculty, including the University's Academic Dishonesty Procedures, is available on-line at <http://ugs.mst.edu>. Other informational resources for students regarding ethics, integrity and the student honor code can be found online at

- <http://ugs.mst.edu/academicintegrity/studentresources-ai/>
- http://grad.mst.edu/media/administrative/grad/documents/AcademicMisconductProcessOutline_Graduate.pdf
- <http://stuco.mst.edu/about/honor.shtml>.

Lateness

Normally, the instructor will be in class on time. However, if the instructor is late by more than fifteen minutes, students should check with the Department of Business Administration located in Fulton 101 whether the class will be canceled. Students are expected to be in class on time.

Classroom Egress Maps: <http://registrar.mst.edu/links/egress.html>

Please familiarize yourself with the classroom egress maps posted on line so you will know where emergency exits are located.

KEY DATES:

- The last day to add this course is Friday, September 1, 2017.
- The last day to withdraw from this course without a "WD" showing on transcript is Monday, October 2, 2017
- The last day for dropping this course is Friday, November 10, 2017.

ERP6220 Fall 2017 Course Schedule

Week of	Topic	Readings
1 8/21, 8/23, 8/25	Course Overview The Art and Influence of Data Visualization Introduction to Performance Dashboards Preparation: Account Setup, Dashboard Examples	Notes, Ch. 1 R1
2 8/28, 8/30, 9/1	Types of Dashboard Lab 1: Visualization using SAP Predictive Analytics/Lumira & SAS Visual Statistics	R2 Ch. 3, Ch. 4
3 9/4, 9/6, 9/8	Monday, September 4: Labor Day Holiday (NO CLASS) Common Dashboard Design Mistakes Lab 2: SAP Fiori App: Sales App design using SAP Splash Build	Ch. 2 Notes
4 9/11, 9/13, 9/15	Principles of Visual Design and Design Thinking Lab 3: SAP Fiori App: Sales Order with Details using Smart Template	Notes
5 9/18, 9/20, 9/22	Graphs and Display Media Lab 4: SAP Fiori App: Master-Details Sales App using SAP Netweaver Gateway & Google Map	Ch. 8–Ch. 12 Notes
6 9/25, 9/27, 9/29	Tapping into the Power of Visual Perception Data Warehousing	Ch. 5 R3
7 10/2, 10/4, 10/6	Case Presentation 1: Data Warehouse Design Examples (10/4) Test 1: Concept test (10/6), Take Home Computer Operation (due 10/13)	R6, R7
8 10/9, 10/11, 10/13	Data Warehouse: Dimensional Modeling Process and Tasks In-memory Computing: SAP HANA Data Modeling Lab 5-1: SAP HANA Data Modeling	R4 Notes
9 10/16, 10/18, 10/20	Data Warehouse and Business Intelligence Life Cycle Lab 5-2: SAP HANA Data Provisioning (ETL Process) and Views	R5
10 10/23, 10/25, 10/27	Big Data and Business Analytics Lab 6: Design Studio: Dashboard Design: Integrating SAP BW BEx Query, HANA Analytical View, and SAP Predictive Analytics	Notes
11 10/30, 11/1, 11/3	Data Mining & Visualization for Descriptive, Predictive, Prescriptive Analytics Lab 7: Dashboard Design using SAS Visual Analytics Report 1	R8
12 11/6, 11/8, 11/10	Data Mining & Visualization in Dashboard Development Lab 8: Dashboard Design using SAS Visual Analytics Report 2	R8
13 11/13, 11/15, 11/17	Case Presentation 2: Anonymization, De-Identification, and Data Quality Lab 9: Data Mining using SAS Visual Statistics & SAP Predictive Analytics Test 2 Take home exam provided on 11/13 and due 11/27	R9, R10
14 11/20, 11/22, 1/24	Thanksgiving Break (NO CLASS)	
15 11/27, 11/29, 12/1	Putting it all together in Software Development Lab 10: IBM Watson Analytics: Visualization, Modeling, and Beyond Test 2 Concept Test (12/1)	Ch. 6, Ch. 13, Ch. 14
16 12/4, 12/6, 12/8	Course Review Project Presentation and Prototype Demo	
17 12/11 – 12/15	Final Exam Week (No in class final exam) • Project Prototype & Report due at noon on Friday, December 14	

Note: * it is possible, due to extenuating circumstances that exact coverage and sequencing of course content, grading criteria and weights may change. Students will be notified as far in advance of such changes.

ERP 6220 Required Reading List

- Reading 1 (**R1**): Ch. 1 What Are Performance Dashboards? in *Performance Dashboards: Measuring, Monitoring, and Managing Your Business* by Wayne W. Eckerson (ISBN:978-0-470-58983-0), 2nd ed., , 2011, Wiley Publishing.
- Reading 2 (**R2**): Ch. 6 Types of Performance Dashboards, in *Performance Dashboards: Measuring, Monitoring, and Managing Your Business* by Wayne W. Eckerson (ISBN:978-0-470-58983-0), 2nd ed., , 2011, Wiley Publishing.
- Reading 3 (**R3**): Ch. 2 Data Warehousing, in *Business Intelligence: A Managerial Perspective on Analytics*, 3/E, by Ramesh Sharda, Dursun Delen, Efraim Turban (ISBN-10: 0133051056, ISBN-13: 9780133051056), 2014
- Reading 4 (**R4**): Dimensional Modeling Process and Tasks, in *The Data Warehouse Toolkit: The Definitive Guide to Dimensional Modeling*, 3rd Edition, by Ralph Kimball; Margy Ross; ISBN-10 1-118-53080-2, ISBN-13 9781118530801, John Wiley & Sons.
- Reading 5 (**R5**): Ch. 17 Kimball DW/BI Lifecycle Overview , in *The Data Warehouse Toolkit: The Definitive Guide to Dimensional Modeling*, 3rd Edition, by Ralph Kimball; Margy Ross; ISBN-10 1-118-53080-2, ISBN-13 9781118530801, John Wiley & Sons.
- Reading 6 (**R6**): Data Warehouse Design Example 1: Ch. 4 Inventory, in *The Data Warehouse Toolkit: The Definitive Guide to Dimensional Modeling*, 3rd Edition, by Ralph Kimball; Margy Ross; ISBN-10 1-118-53080-2, ISBN-13 9781118530801, John Wiley & Sons
- Reading 7 (**R7**) Data Warehouse Design Example 2: Ch. 5 Procurement, in *The Data Warehouse Toolkit: The Definitive Guide to Dimensional Modeling*, 3rd Edition, by Ralph Kimball; Margy Ross; ISBN-10 1-118-53080-2, ISBN-13 9781118530801, John Wiley & Sons
- Reading 8 (**R8**): Ch. 5 Data Mining, in *Business Intelligence and Analytics: Systems for Decision Support*, 10th Ed., by Ramesh Sharda, Dursun Delen, Efraim Turban, ISBN-13: 978-0133050905 ISBN-10: 0133050904 , 2014 , Pearson Publishing.
- Reading 9 (**R9**): Ch. 1 Introduction to Anonymizing Health Data, in *Anonymizing Health Data*, 1st Edition, ISBN-13: 9781449363079, by Khaled El Emam; Luk Arbuckle, O'Reilly Media
- Reading 10 (**R10**): Ch. 13 De-Identification and Data Quality: A Clinical Data Warehouse, in *Anonymizing Health Data*, 1st Edition