ERP 6220 Data Modeling & Visualization Prototyping for Enterprise Decision Dashboards  
Course Syllabus – Fall 2020

**Department of Business & Information Technology Mission**

“To serve the economic interests of industry and the evolving needs of society in a challenging, rapidly-changing, global environment, the Department of Business & Information Technology capitalizes on the strong technological emphasis of Missouri S & T to enable individuals to excel in a technology-centric business world. Recognizing this rapid evolution of the marketplace, we create and disseminate knowledge impacting the theory and practice of business.”

**INSTRUCTOR AND COURSE INFORMATION**

| Instructor: Bih-Ru Lea, Ph.D. | Class Hours: 4 – 6:30 pm Wednesday |
| Office: Fulton 102A | Classroom: Fulton 107A |
| Phone: 573-341-6436 | Office Hours: M W 10 am – 11 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 the 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, and SAS Viya.

**COURSE OBJECTIVES**

Strategic Enterprise Management involves analyzing how effectively a company is attaining its strategic objectives as well as developing effective decision support 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:

<table>
<thead>
<tr>
<th>Course Objectives</th>
<th>Program Learning Objectives</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Communication Skills</td>
</tr>
<tr>
<td>an understanding of competitive strategies from leveraging the information technology</td>
<td>X</td>
</tr>
<tr>
<td>an understanding of roles, applications, and impact of decision dashboards on enterprise mobile strategies and Big Data Analytics</td>
<td>X</td>
</tr>
<tr>
<td>an understanding of principles of Visual Design and Design Thinking in decision dashboard design and implementation</td>
<td>X</td>
</tr>
<tr>
<td>an understanding and be able to communicate fundamental concepts of business analytics, data visualization, decision dashboards, and data warehouse</td>
<td>X</td>
</tr>
<tr>
<td>abilities to design and implement an effective analytical dashboard to support decision making in both on-premises and enterprise cloud environments</td>
<td>X</td>
</tr>
<tr>
<td>abilities to design and implement an effective data warehouse to support business analytics, visualization, and performance management</td>
<td>X</td>
</tr>
</tbody>
</table>
TEXTBOOK(S) AND MATERIALS FOR COURSE

GRADING POLICIES AND PROCEDURES:

<table>
<thead>
<tr>
<th>Grading Policies</th>
<th>Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>Test 1 (concept &amp; Computer Operations)</td>
<td>140 pts</td>
</tr>
<tr>
<td>Test 2 (concept &amp; Computer Operations)</td>
<td>140 pts</td>
</tr>
<tr>
<td>Assignments (labs, exercises, &amp; quizzes)</td>
<td>540 pts</td>
</tr>
<tr>
<td>Team Chapter Presentation</td>
<td>60 pts</td>
</tr>
<tr>
<td>Team Semester Project</td>
<td>120 pts</td>
</tr>
</tbody>
</table>

- Milstone 1 (20 points)
- Milestone 2 (20 points)
- Presentation & Prototype demo (80 pts)

Grading Scale:
- A: ≥ 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. Please make every effort to make it to class on time. It is disruptive to the class to have members arriving late.
3. The instructor will assign NO incompletes in lieu of a regular grade.

Assignments:
1. The assignment must be submitted at the beginning of the class period on the assigned date due. All homework assignments are due at the beginning of the class on its due date. The grade will be reduced by 15% if the assignment is turned in within 24 hours later than its due time/date. The late penalty is incremented by 15% for every 24 hours late. No work will be accepted if submitted four days after the due date, including weekends. The exception will only be given to a student with a legitimate reason and he/she notifies the instructor five days before the due date.
2. If you are unable to attend a class, you need to (1) submit your assignment file(s) via the Canvas submission link by the due date and (2) ask a friend to submit a hard copy on your behalf at the beginning of the class on the due date.

Exams and Quizzes:
1. The course has two exams: a midterm exam and a final exam. All exam materials may become the property of the instructor after completion.
2. It is possible to have announced and pop quizzes throughout the semester. The 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 documentation (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.

Class Project:
A team project that involves the design and implementation of a decision dashboard system is required. The project description, requirements, and grading forms are provided in the course pack. 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 to review my comments on the report after they are graded.
**Class Attendance and Participation:**

1. Attendance is required. You are also responsible for finding out what was covered in class and what announcements were made as well as obtaining handouts.
2. Overall, student participation and discussion are 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 essential factors in the learning process and a tool for assessing student learning. Therefore, you are required and expected to attend all classes.
3. Each 10% of unexcused absences will result in the 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.
4. The instructor reserves the right to drop a student if a student has missed more than 20% of class time.

**Discussion Board Participation**

To help students to better understand course materials, to develop debugging skills, and to learn from each other, the instructor has enabled a discussion board in the Canvas Learning Management System. **All technical support for assignments, exams, and projects are provided through the Discussion Board** and will NOT be answered through e-mail by the instructor.

a. If you do not understand a concept or encounter a problem/error that you do not know how to resolve yourself, you will need to post your questions on the discussion board. You are also expected to answer questions asked by your peers. Occasionally, the instructor will also post questions and answers.

b. Before post a question on the Discussion Board, it is the student’s responsibility to check and ensure no same question has been posted previously.

c. Discussion board participation may earn you extra credit points toward your course grade. Straight forward questions (for example – how do I get to this transaction, where can I find this button, etc) will not count. Do not post questions just for the case of posting.

**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, based on sex, be excluded from participation in, or be denied benefits of, or be subjected to discrimination under any education program or activity. Furthermore, per 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 Mr. Neil Outar. Contact him directly (equity@mst.edu; (573) 341-7734; 203 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://equity.mst.edu](http://equity.mst.edu).

**Disability Support Services:** [http://dss.mst.edu](http://dss.mst.edu)

If you have a documented disability and anticipate needing accommodations in this course, you are strongly encouraged to meet with me early in the semester. You will need to request that the Disability Services staff send a letter to the instructor ([leabi@mst.edu](mailto:leabi@mst.edu)) verifying your disability and specifying the accommodation you will need before meeting the instructor. If you have a disability that might require academic accommodations, please visit Disability Support Services in 204 Norwood Hall (341-4211; [dss@mst.edu](mailto:dss@mst.edu)) very early in the semester.

**Student Honor Code and Academic Integrity:** [http://registrar.mst.edu/academicregs](http://registrar.mst.edu/academicregs)

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 students, including the University’s Academic Dishonesty Procedures, is available on-line at https://registrar.mst.edu/academicreg.

**Family Educational Rights and Privacy Act (FERPA) https://registrar.mst.edu/ferpa**

FERPA is the Family Educational Rights and Privacy Act of 1974, also known as the Buckley Amendment. Statute: 20 U.S.C. 1232g; Regulations: 34CFR Part 99. The FERPA intends to protect the rights of students and to ensure the privacy and accuracy of education records. The Act applies to all institutions that are recipients of federal aid administered by the Secretary of Education.

**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: https://designconstruction.mst.edu/floorplan**

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

**KEY DATES:**

- The last day to add this course is Friday, September 4, 2020.
- The last day to withdraw from this course without a “WD” showing on the transcript is Monday, October 5, 2020.
- The last day for dropping this course is Friday, November 13, 2020.
ERP 6220 Required Reading List


<table>
<thead>
<tr>
<th>Week of</th>
<th>Topic</th>
</tr>
</thead>
</table>
| 1 8/26  | Course Overview  
The Art and Influence of Data Visualization  
Ch. 1. Clarifying the Vision  
Ch. 2 Common Dashboard Design Mistakes  
**Preparation:** Account Setup, Dashboard Examples |
| 2 9/2   | Ch. 3 Assessing what’s needed  
Ch. 4. Fundamental Considerations  
**Lab 1:** Visualization using SAP Predictive Analytics/Lumira |
| 3 9/9   | Ch. 5 Tapping into the Power of Visual Perception  
**Lab 2:** Visualization using SAS Viya: Visual Analytics |
| 4 9/16  | Notes: Visualization and Design Thinking  
Ch. 6 Achieving Elegance through Simplicity  
**Lab 3:** SAP Fiori App Prototyping: Sales App design using SAP Build |
| 5 9/23  | Reading 1: Ch. 3 Descriptive Analytics II: Business Intelligence and Data Warehousing  
Notes: In-memory Computing: SAP HANA Data Modeling |
| 6 9/30  | **Team Chapter Presentation:** Ch. 7 – Ch.9: Graphs and Display Media  
**Team project Milestone 1**  
Reading 1: Ch. 3 Descriptive Analytics II: Business Intelligence and Data Warehousing  
**Lab 4:** SAP HANA Data Modeling: Tables |
| 7 10/7  | Reading 2: Ch. 18 Data Warehouse: Dimensional Modeling Process and Tasks  
**Lab 5:** SAP HANA Data Modeling: Attribute Views and Analytical Views |
| 8 10/14 | Reading 2: Ch. 18 Data Warehouse: Dimensional Modeling Process and Tasks  
**Midterm Exam:** Concept test: due at 11:59 pm on 10/14  
Take home computer operations: due at 4 pm on 10/21 |
| 9 10/21 | Reading #3: Ch. 17 Data Warehouse and Business Intelligence Life Cycle  
**Lab 6:** Decision Dashboard App Development: Design Studio (Eclipse IDE) and SAP BW data source |
| 10 10/28| **Team Chapter Presentation:** Readings #4 & #5: Data Warehouse Design Examples  
**Lab 7:** Decision Dashboard App Development: Design Studio (Eclipse IDE) and SAP HANA data source |
| 11 11/4 | Notes: Big Data and Business Analytics  
Reading #6: Ch 5: Data Mining & Visualization for Descriptive, Predictive, Prescriptive Analytics  
**Lab 8:** Data Mining using SAP Predictive Analytics |
| 12 11/1 | **Team project Milestone 2**  
Reading #6: Ch. 5 Data Mining & Visualization for Descriptive, Predictive, Prescriptive Analytics  
**Lab 9:** Dashboard Design using SAS Viya (Visual Analytics Report) |
| 13 11/18| Notes: Data Mining & Visualization in Dashboard Development  
**Final Exam:** Take home computer operation exam is due at 4 pm on 12/2 |
| 14 11/25| Thanksgiving Break (NO CLASS) |
| 15 12/2 | Readings #7 & #8: Anonymization, De-Identification, and Data Quality  
Ch. 13 Putting it all together in Software Development  
Ch. 14 From Imaging to Unveiling  
**Exercise:** Data Mining using SAS Viya (Visual Statistics) |
| 16 12/9 | Decision Dashboard Example Presentation  
Team project presentation  
Course Review |
| 17 12/16| **Final Exam Week:** Concept Test (due at 11:59 pm on 12-16) |

**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.*