MIS5101 – Data Management and Warehousing

Fall 2010, CRN 093222, Section 001
Wednesday, 5:30 – 8:00pm
Alter Hall, Room 745
Course blog: http://community.mis.temple.edu/mis5101fall10/

Instructor
Steven L. Johnson
Assistant Professor, Management Information Systems
Email: steven@temple.edu; web: http://stevenljohnson.org
Office hours by appointment and Wednesday 2:30 – 4:30pm, Speakman 201C

Course Description
The goal of the course is to understand the use, management, and design of database management systems. Topics covered include data modeling, database design, structured query language, warehousing, and data administration using a modern database management tool.

Course Objectives
• Understand how data is organized to facilitate analysis.
• Understand the principles of transaction-oriented data, and how information is stored and retrieved from a data source.
• Identify ways in which data quality can be compromised and apply remedies.
• Identify and compare sources and methods of capturing data throughout a business process.
• Use data mining techniques to identify associations and trends among data.
• Apply data mining and business intelligence techniques to solve specific business problems.
• Communicate analysis results back to management for ongoing quality assurance and process improvement.
• Integrate data across multiple sources, transforming it into a single view.
• Understand and select appropriate data visualization techniques to effectively communicate results.
• Explain how digital/information goods and traditional goods differ in structure and management.

Required Text
The materials for this course are drawn from multiple sources. There is no required textbook for this course.

There is a set of required case studies which you can purchase online (see the “Purchasing Case Studies” section of the syllabus). Also, there are additional assigned readings throughout the course. Some of these are chapters of books that are available for free electronically via the Temple library. The remainder are available for free on the web.
Course Overview

This course is about data, information and knowledge management. We are living in an era of unprecedented creation and consumption of data. Digital information goods differ in fundamental ways from their pre-cursors. Organizations are struggling with how to turn the flood of data into actionable information. Strategic advantages accrue to organizations that can effectively manage social and technical knowledge processes.

The course has four major modules. The first module (weeks 1 through 4) introduces basic concepts that appear in the rest of the course. It all introduces you to both the case study method and class projects.

In the second module (weeks 5-7), we focus on issues involving the integration of data across multiple sources. We cover both technical and social issues involved with data management and knowledge management initiatives. This module includes hands-on experience with Google analytics, an example of a web-based analytical tool.

In the third module (weeks 8-12), we focus on how to apply business intelligence solutions to solve business problems. Topics includes data mining, data visualization, identifying key performance indicators, and effective communication of data analysis results.

In the final module (week 13), we focus specifically on information security and ethical issues that arise from data aggregation and data mining. Finally, you will make group presentations (week 14) of a business case for a technology initiative. The class concludes with a final exam during the exam period.

The Learning Environment

Your contributions directly impact the value you and your fellow students gain from this course. To that end, you can contribute to a supportive learning environment by meeting these expectations:

• Arrive on time and stay until the end of class.
• Turn off cell phones, pagers and alarms while in class.
• Limit the use of electronic devices (e.g., laptop, tablet computer) to class-related usage such as taking notes. Restrict the use of an Internet connection (e.g., checking email, Internet browsing, sending instant messages) to before class, during class breaks, or after class.
• During class time speak to the entire class (or breakout group) and let each person “take their turn.”
• Be fully present and remain present for the entirety of each class meeting.

The learning environment extends beyond our weekly class meeting. In addition, you are expected to:

• Provide substantive comments on the class blog.
• Extend online discussions by reading and commenting on other students blog entries.
• Fulfill commitments to group members to successfully complete group projects.
Evaluation and Grading

This course offers students multiple opportunities to demonstrate learning. The five major components of the course grade are:

<table>
<thead>
<tr>
<th>Deliverable</th>
<th>Percentage</th>
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<tbody>
<tr>
<td>Participation (incl. blog posts)</td>
<td>20%</td>
</tr>
<tr>
<td>Case study analyses (two)</td>
<td>20%</td>
</tr>
<tr>
<td>Final exam</td>
<td></td>
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<tr>
<td>Individual project report</td>
<td>10%</td>
</tr>
<tr>
<td>Group project report and presentation</td>
<td>30%</td>
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</tbody>
</table>

Each component is described in detail below. Grading is based on the following criteria:

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Grade</th>
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<tbody>
<tr>
<td>The assignment consistently exceeds expectations. It demonstrates originality of thought and creativity throughout. Beyond completing all of the required elements, new concepts and ideas are detailed that transcend general discussions along similar topic areas. There are few mechanical, grammatical or organizational issues that detract from the presented ideas.</td>
<td>A- or A</td>
</tr>
<tr>
<td>The assignment consistently meets expectations. It contains all the information prescribed for the assignment and demonstrates a command of the subject matter. There is sufficient detail to cover the subject completely but not too much as to be distracting. There may be some procedural issues, such as grammar or organizational challenges, but these do not significantly detract from the intended assignment goals.</td>
<td>B-, B, B+</td>
</tr>
<tr>
<td>The assignment fails to consistently meet expectations. That is, the assignment is complete but contains problems that detract from the intended goals. These issues may be relating to content detail, be grammatical, or be a general lack of clarity. Other problems might include not fully following assignment directions.</td>
<td>C-, C, C+</td>
</tr>
<tr>
<td>The assignment constantly fails to meet expectations. It is incomplete or in some other way consistently fails to demonstrate a firm grasp of the assigned material.</td>
<td>Below C-</td>
</tr>
</tbody>
</table>

Participation

The educational objectives of this course relate to the ability to apply general concepts and knowledge to specific situations. The issues around the use of information technology in organizations do not present themselves in a neatly packaged form with a clear-cut boundary. Nor do they come with a well-defined set of decision criteria. Indeed, decisions often involve difficult choices which require character, responsibility and sensitivity. After all, we are not just dealing with technology. We are also dealing with people and organizations.

Discussion pedagogy puts students in an active learning mode, challenges you to accept substantial responsibility for your own learning, and gives you first-hand appreciation of and
experience in the application of knowledge to practice. Through a discussion pedagogy you are encouraged to use your knowledge and experiences to build, test, and modify your own management concepts through dialogues with the instructor and fellow students.

In summary, much of your learning will occur as you prepare for and participation in discussions about the course material. The course material has been carefully chosen to bring the real world into class discussion while also illustrating fundamental concepts. Learning is something you do, not something that happens to you.

To encourage participation, 20% of the course grade is earned through preparation for class, participation during class, and participation between classes. Evaluation is based on a consistent demonstrated engagement with the process of learning. That is, rather than an assessment of what you know the participation assessment is based on what you contribute.

1) **Preparation for class** – at the beginning of each class you will turn in a brief summary of the reading assigned for that class period. To facilitate discussion, please keep a copy for yourself in addition to the copy you turn in!

Your weekly summary will briefly address these three questions:
   a. What is one key point you took away from each assigned reading? (One-two sentences per reading.)
   b. What is one key point you learned from the reading as a whole? (One-two sentences maximum.)
   c. If you were facilitating today’s discussion, what question would you ask your fellow classmates?

2) **Participation during class** – We will typically start each class with “opening” questions about the assigned readings and case study. Students called up to answer should be able to summarize the key issues, opportunities, and challenges in the case study. All students should be prepared to be answer these questions.

If for some reason you feel unprepared to respond to a question, you may say “pass” and I will call on another student. To earn full participation credit, keep the total number of “passes” to a minimum over the course of the semester.

Another important aspect of class participation is completion of in-class assignments and contribution to break-out group activities.

3) **Participation between classes** – To facilitate on-going learning of course material, we will also discuss course material on the class blog in between class. You will post case study analyses to the course website. Reading and commenting on these analyses will further the quality of our in-class discussions.

Also, I will post a discussion question on the class blog 24-48 hours after each class meeting. The question will relate to the assigned reading, a topic discussed in class,
or a relevant current event. Every student is expected to read and contribute to the online class discussion each week.

Overall criteria for participation includes attendance, punctuality, level of preparation, professionalism, answering questions, discussing readings, discussing case studies, contributing to group activities and contributing to a positive learning environment. Recognizing that students sometimes have unavoidable conflicts, the baseline for expected participation is assessed on one less week than the number of scheduled class meetings.

**Case Study Analyses**

In addition to carefully reading and preparing to discuss each of the assigned case studies, students will also prepare an in-depth analysis of two case studies during the semester. You may choose from one of the case studies during weeks 2-7 and from one of the cases during 8-13.

For each case study I have provided several discussion questions. Pick one question and respond to it in depth. The successful case study analysis will not exceed one single-spaced page with 11 point Times New Roman font and one-inch margins. Do not prepare a separate cover page, instead put your name, the class section number (MIS5001-402), and the case name in the top-left corner of the header.

The process for submitting your case study analysis is as follows:

1. Submit the case study analysis via email to me (at steven.l.johnson@temple.edu) no later than Monday 5pm, two days before the case study is to be discussed in Monday evening’s class. The file should be in Microsoft word (.DOC or .DOCX) or compatible (.RTF) format.

2. Post your case study analysis to the class blog some time between Monday 5pm and Tuesday 5pm (the earlier the better).

Late submissions for either deadline will not receive assignment credit.

There is no one particular style for a good case study analysis. But, there are some common elements to excellent submissions:

- The opening of the case study analysis makes it immediately clear what case study and what question is being addressed.
- Specific details are cited regarding facts and problems of the case study. Instead of general observations about information technology or organizations that apply to virtually any problem, specific details are drawn from the case study itself. The more that analyses, observations, and suggestions are tied to the facts and problems presented in the case study, the stronger the write-up is.
- At the same time, each case study is specifically chosen to illustrate general lessons. Thus, after analyzing the details of a case study it is appropriate to discuss how
specific issues in that case study have broader application beyond that immediate case study.

- Provide a balanced perspective in analyzing the case study. For example, when making a recommendation explain both the rationale for a recommendation (the why) as well as its feasibility (the how). Well-considered recommendations include discussion of potential threats to success as well as rationale for an organization’s ability to overcome them. Again, the most convincing arguments are those that draw on specific facts and data presented in the case study.

**Final Exam**

There will be one final exam during the final exam period at the end of the semester. It will be comprised of short-answer and longer open-ended questions. The format and expectations for the questions will be very similar to what you do when preparing for class, in completing case study analyses, and participating in blog posts.

A missed exam can only be made up in the case of documented and verifiable extreme emergency situations.

**Group Project Report and Presentation**

The individual and group project are related. Your individual project will contribute to your team project effort. Therefore, coordination is required in choosing topics for the individual and group project. A detailed description of the assignment will be posted to the class website.

Students may choose their own groups of three or four members each. Because group work requires close coordination, I recommend considering compatibility in availability (e.g., work/class times, work/home location and other constraints) before finalizing group membership.

A list of group members is due to me no later than beginning of class on 9/15/2010 (week 3).

A proposed topic for both the group project report and your individual project reports is due to me no later than the beginning of class on 9/22/2010 (week 4).

The group project report and presentation is due no later than the beginning of class on 12/8/2010 (week 14).

**Individual Project Report**

For the individual project, you will prepare an analysis of a technology, application, or technology vendor that supports the creation, identification, acquisition or use of knowledge. The report will include analysis of both technical and business aspects of the technology. A detailed description of this assignment will be posted to the class website.
The proposed topic for your individual project report is due to me no later than the beginning of class on 9/22/2010 (week 4). The individual project report is due no later than the beginning of class on 10/27/2010 (week 9).

**Late Assignment Policy**
An assignment is considered late if it is turned in after the assignment deadlines stated above. No late assignments will be accepted without penalty. All assignments will be assessed a 10% penalty (subtracted from that assignment’s score) each day they are late. No credit will be given for assignments turned in more than one week past the due date. However, you must submit all assignments, even if no credit is given. If you skip an assignment, an additional 10 points will be subtracted from your **final grade** in the course.

Plan ahead and backup your work. **Equipment failure is not an acceptable reason for turning in an assignment late.**

**Purchasing Case Studies**
Purchase the assigned case studies online from Harvard Business School (HBS) Publishing. All of the case studies are available through a page I have specifically set up for this course at the HBS Publishing website. The case studies cost $3.95 each.

This is the course URL: [http://cb.hbsp.harvard.edu/cb/access/6765750](http://cb.hbsp.harvard.edu/cb/access/6765750)

Make sure you use the URL (don’t just search for my name) and double-check to make sure you are ordering the correct cases. You will need to register in order to purchase the cases.

Once you purchase the case study through this site, you can immediately download an electronic copy. If you lose your copy, you can download additional copies from HBS Publishing until the end of the semester.

**Citation Guidelines**
If you use text, figures, and data in reports that was created by others you must identify the source and clearly differentiate your work from the material that you are referencing. If you fail to do so you are plagiarizing. There are many different acceptable formats that you can use to cite the work of others (see some of the resources below). The formats are not as important as the intent. You must clearly show the reader what is your work and what is a reference to someone else’s work.

**Academic Honesty**

*Academic honesty and integrity constitute the root of the educational process at Temple University. Intellectual growth relies on the development of independent thought and respect for the thoughts of others. To foster this independence and respect, plagiarism and academic cheating are prohibited.*
Plagiarism is the unacknowledged use of another individual's ideas, words, labor, or assistance. All coursework submitted by a student, including papers, examinations, laboratory reports, and oral presentations, is expected to be the individual effort of the student presenting the work. When it is not, that assistance must be reported to the instructor. If the work involves the consultation of other resources such as journals, books, or other media, those resources must be cited in the appropriate style. All other borrowed material, such as suggestions for organization, ideas, or actual language, must also be cited. Failure to cite any borrowed material, including information from the internet, constitutes plagiarism.

Academic cheating results when the general rules of academic work or the specific rules of individual courses are broken. It includes falsifying data; submitting, without the instructor's approval, work in one course that was done for another; helping others to plagiarize or cheat from one's own or another's work; or undertaking the work of another person.

The penalty for academic dishonesty can vary from a reprimand and receiving a failing grade for a particular assignment, to a failing grade in the course, to suspension or expulsion from the University. The penalty varies with the nature of the offense. Students who believe that they have been unfairly accused may appeal through their school/college's academic grievance procedure and, ultimately, to the Graduate Board if academic dismissal has occurred.

Of course, behavior like this will not be tolerated in this class. In cases of cheating, both parties will be held equally responsible, i.e. both the student who shares the work and the student who copies the work. Penalties for such actions are given at my discretion, and can range from a failing grade for the individual assignment, to a failing grade for the entire course.

**Student and Faculty Academic Rights and Responsibilities**

The University has adopted a policy on Student and Faculty Academic Rights and Responsibilities (Policy # 03.70.02) which can be accessed through the following link: http://policies.temple.edu/getdoc.asp?policy_no=03.70.02.

**Special Needs and Accommodations**

If you have any special needs or accommodations, please address them with the instructor during the first two weeks of the semester.

**Acknowledgements**

This syllabus represents the collaborative efforts of MIS department Profs. Schuff, Weinberg, Yoo, and Johnson. I gratefully acknowledge the contributions of my colleagues.
Schedule

Note: Complete all readings in advance of the referenced class meeting.

Business Case Studies

<table>
<thead>
<tr>
<th>Week</th>
<th>Number</th>
<th>Name</th>
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<tbody>
<tr>
<td>2</td>
<td>KEL383-PDF-ENG</td>
<td>Balancing Access with Accuracy for Infant HIV Diagnostics in Tanzania (A)</td>
</tr>
<tr>
<td>4</td>
<td>M309-PDF-ENG</td>
<td>SKOLAR, M.D.: Is There a Business for Web-Based Information for Doctors?</td>
</tr>
<tr>
<td>5</td>
<td>603066-PDF-ENG</td>
<td>Intermountain Health Care</td>
</tr>
<tr>
<td>7</td>
<td>608107-PDF-ENG</td>
<td>Global Knowledge Management at Danone</td>
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<tr>
<td>8</td>
<td>610075-PDF-ENG</td>
<td>Data.gov</td>
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<tr>
<td>10</td>
<td>709403-PDF-ENG</td>
<td>In-Vitro Fertilization: Outcomes Measurement</td>
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<tr>
<td>13</td>
<td>706040-PDF-ENG</td>
<td>deCODE Genetics: Hunting for Genes to Develop Drugs</td>
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<td></td>
<td>R0705A-PDF-ENG</td>
<td>Dark Side of Customer Analytics (HBR Case Study and Commentary)</td>
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Assigned Reading

The assigned readings may be changed with prior notice based upon the pace and needs of the class and other unforeseen circumstances. Any change or other information about the class will be announced in class or on the class website.

<table>
<thead>
<tr>
<th>Week</th>
<th>Articles</th>
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</table>
| 2    | **Case study:** Balancing Access with Accuracy for Infant HIV Diagnostics in Tanzania (A)  
  [http://www.ssireview.org/site/printer/drowning_in_data/](http://www.ssireview.org/site/printer/drowning_in_data/) |
| 3    | Readings available electronically at no charge to you via:  
<table>
<thead>
<tr>
<th>Week</th>
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</tr>
</thead>
</table>
| 4    | **Case study:** SKOLAR, M.D.: Is There a Business for Web-Based Information for Doctors?  
| 5    | **Case study:** Intermountain Health Care  
Additional readings to be announced: check course blog |
| 6    | Additional readings to be announced: check course blog |
| 7    | **Case study:** Global Knowledge Management at Danone  
| 8    | **Case study:** Data.gov  
Additional readings to be announced: check course blog |
| 9    | Additional readings to be announced: check course blog |
| 10   | **Case study:** In-Vitro Fertilization: Outcomes Measurement  
Additional readings to be announced: check course blog |
| 11   | Additional readings to be announced: check course blog |
| 12   | Additional readings to be announced: check course blog |
| 13   | **Case study:** deCODE Genetics: Hunting for Genes to Develop Drugs  
**Case study:** Dark Side of Customer Analytics (HBR Case Study and Commentary)  
Additional reading to be announced: check course blog |
## Assignments, Topics and Discussion Questions

<table>
<thead>
<tr>
<th>Class</th>
<th>Assignments, Topics and Discussion Questions</th>
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| Week 1: 9/1 Introduction | Course introduction  
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Syllabus Review  
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Introduction to Data, Information and Knowledge Management |
| Week 2: 9/8 Introduction | **Topic: Data Access**  
\  
*Discussion Questions:*  
\  
- What test(s) would you recommend for initial roll-out in Tanzania? Why?  
- Assume that one of the three tests is the sole choice for roll-out (choose one). What specific communication strategy would you use among key stakeholders to gain support for this test?  
- What is another example you can think of with a trade-offs between information access and accuracy? When is it better to favor access? When is it better to favor accuracy? |
| Week 3: 9/15 Introduction | **Deadline to Form Groups**  
\  
**Topic: Data Quality**  
\  
*Discussion Questions:*  
\  
- Looking back on last week’s case study, how could you describe the roll-out scenarios in terms of data and information.  
- Consider an organization you work for now (or have worked for recently). How would you describe its organizational memory?  
- How do senior management needs for data typically differ from the needs of the person who entered the data?  
- What are typical challenges in integrating information? |
| Week 4: 9/22 Introduction | **Deadline for Proposed Group and Individual Project Topics**  
\  
**Topic: Digital Information Goods**  
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*Check course blog for discussion questions* |
| Week 5: 9/29 Data Integration | **Topic: Data-Driven Management**  
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*Check course blog for discussion questions* |
| Week 6: 10/6 Data Integration | **Topic: Data Analytics**  
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*Check course blog for discussion questions* |
| Week 7: 10/13 Data Integration | **Deadline for First Case Study Analysis**  
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**Topic: Knowledge Management**  
\  
*Check course blog for discussion questions* |
<table>
<thead>
<tr>
<th>Class</th>
<th>Assignments, Topics and Discussion Questions</th>
</tr>
</thead>
</table>
| Week 8: 10/20 Business Intelligence | **Topic: Introduction to Business Intelligence**  
*Check course blog for discussion questions* |
| Week 9: 10/27 Business Intelligence | **Individual Project Assignment Due**  
**Topic: Data Visualization**  
*Check course blog for discussion questions* |
| Week 10: 11/3 Business Intelligence | **Topic: Outcome Measures**  
*Check course blog for discussion questions* |
| Week 11: 11/10 Business Intelligence | **Topic: Identifying Key Performance Indicators**  
*Check course blog for discussion questions* |
| Week 12: 11/17 Business Intelligence | **Topic: Reporting Results**  
*Check course blog for discussion questions* |
| 11/24       | **No Class: Schedule Adjustment**  
Temple University runs Friday schedule |
| Week 13: 12/1 Information Security | **Deadline for Second Case Study Analysis**  
**Topic: Security, Privacy and Data Mining**  
*Check course blog for discussion questions* |
| Week 14: 12/8 | **Group Project Due**  
**Group Presentations** |
| Exam Week: 12/15 | **Final Exam** |