

Course Syllabus
BA 5200 – Information Systems Management and Data Analytics
College of Business
Spring 2024

Instructor Information

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Course Information

Course Number: BA 5200
Course Name: Information Systems Management and Data Analytics
Course Location: Chem Sci B002
Class Times: MWF 9:00am – 9:50am
Prerequisites: Must be enrolled in one of the following Level(s): Graduate; must be enrolled in one of the following Major(s): Data Science, Applied Natural Resource Econ., Accounting, Business Administration

Course Description/Overview

Focuses on management of IS/IT within the business environment. Topics include IT infrastructure and architecture, organizational impact of innovation, change management, human-machine interaction, and contemporary management issues involving data analytics. Class format varies, such as lecture, group discussion, integrative case studies, and projects.

Course Learning Objectives

This course is intended to provide students with an understanding of the strategic and operational use of data and information systems within organizations. Data and information systems bridge functions, organizational boundaries, and work positions. Understanding how information systems are used in organizations will prepare students to be wise consumers of technology as they make technology-related decisions. The course prepares students to:

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1. Understand the strategic, managerial, and operational value of data and information systems.
2. Understand the organizational, political (corporate), social, and technical issues surrounding the development and use of data and current and emerging information systems/technologies in organizations.
3. Benchmark competing technologies.
4. Solve business problems through analysis of problem domains using applications of information technology.
5. Manage a multi-team business IT/Analytics project
6. Organize and work effectively with others to achieve an IT/data-related outcome.

Course Resources

Course Readings

- Analyzing and Designing Systems to Generate Value: Diverse Perspectives (Wall)
- Programming for Business Analytics Professionals: An Introduction to Python (Wall)
- Other readings as assigned or researched by students

Required Course Software

- Some software may be used during the course, such as word processing software, spreadsheets, integrated development environments, etc. The software will be available on MTU lab computers or will be open source software that students may use for free on their own devices.
- All students should bring a computing device to class on which to load and access software that will be used during the course.

Grading Scheme

<i>Letter Grade</i>	<i>Percentage</i>	<i>Grade points/credit</i>	<i>Rating</i>
A	93% & above	4.00	Excellent
AB	87% – 92%	3.50	Very good
B	82% – 86%	3.00	Good
BC	76% – 81%	2.50	Above average
C	70% – 75%	2.00	Average
CD	65% – 69%	1.50	Below average
D	60% - 64%	1.00	Inferior
F	59% and below	0.00	Failure
I	Incomplete; given only when a student is unable to complete a segment of the course because of circumstances beyond the student's control.		

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Graded Activities

Grades will be based on the following activities:

Reflection Essays (5 reflections x 100 points)	500
Course Product Assignment	400
Course Product Participation	100
Total Points	1000

Late Assignments

If exams are to take place in class, attendance on the date of exams is mandatory. Exceptions may be made for exams in the case of valid and documented emergencies. No late work is accepted after the last official day of classes (the last day of classes does not include finals week). Late work will be subject to a 10% decrease in the assignment grade for each day late, up to 40% off.

Reflections Essays

Throughout the semester, students will answer reflection essay questions based on course content and the course product assignment, and monitor progress toward course goals. Reflections will be reported 5 times throughout the semester. The reflection reports will be graded at the end of the semester as a cumulative document, though it is also expected that students will turn in an individual report on the due dates to ensure reflections are happening at the expected times. Each report should be between 3 pages long: double spaced, Arial 12 point font, 1 inch margins. Repeating the essay questions does not count toward page length. Where requested, the essay response should be supported with citations.

Grades will not be assigned for reports until the compiled reflection essay report is provided at the end of the semester. Each report will NOT be graded individually. Grades will be based on the insightfulness of the answers, demonstrated progress toward goals, and a clear evolution in thought over the course of the semester. An assignment sheet with more details will be provided.

Reading/Research/Discussion Participation

Throughout the semester, students will read assigned readings and research other topics related to important IS and data management practices. Students are expected to complete all readings and find meaningful readings through personal and collective research as required by the Course Product assignment and weekly suggested research topics. All assigned readings should be completed before class on the week that they will be discussed. Students will also answer a series of discussion questions before class each week pertaining to the readings and class project on Canvas to ensure all students are prepared for class discussions.

IS/business analytics is a large topic area and we cannot cover everything. As such, many of the readings/research topics will be determined organically based on the needs of the

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course project. Thus, students must demonstrate flexibility. The research topics in the schedule are subject to change based on needs of the Course Product assignment.

Students should be prepared to engage in thoughtful discussion both online and in class based upon readings and their research. Many discussions will need to lead toward important decisions for the Course Product assignment. This is a Master's level course and is not a traditional lecture course. As such, students are expected to demonstrate mastery of many topics on their own.

Failure to prepare and participate weekly in discussion boards and in the classroom will result in extremely low participation grades. If you have difficulties speaking out in public settings, it may be beneficial to speak with counseling services to help you cope with any feelings that may arise during the semester. You will be expected to face fears and self-defeating perceptions you might have that limit your ability to succeed in your career and in life more generally.

Failing to show up to class prepared with the material will affect your Course Product Participation grade. Course Product Participation is outlined below.

Course Product Assignment

Students will work with others in the course to develop an information system product with analytics capabilities with multiple features. Students will be required to act as a small business over the course of the semester to identify and design the system product. Students will be expected to effectively organize themselves; identify and analyze a real-world problem, including existing competition; design a solution as an information system with analytics capabilities around the problem; prototype, test, and refine the solution (the end result will still be an early prototype); and manage and improve the entire process thereof. Students will be expected to use Agile management practices to complete this multi-team product assignment.

Students who do not significantly contribute to the course product **may be fired from the activity** and receive a 0 for the activity at the discretion of the professor. Students who are fired will receive a 0 for Course Product Participation points as well. Students who are not fired, but do not continually contribute meaningfully to the product will receive a reduced grade. The reduced grade will be determined by multiplying the percent grade for Course Product Participation by the collective course grade received for the product assignment.

Grades will be based on the development and use of good management practice throughout the semester, the quality and originality of the product idea, and on a business report (i.e., business plan) and idea pitch presentation.

See the team project assignment sheet for details about the course product activity and for a rubric.

Students will likely need to speak with others outside of the classroom to analyze the problem and design the product. Failure to act in a professional manner with individuals outside the course will result in a 0 on the course product and for course product

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participation, resulting in an F in the course. No one that you interview should be coerced to participate and the privacy of these participants should be protected. Treat others with respect.

The resulting product will be open sourced.

Course Product Participation

Course Product Participation encompasses participation with classmates on the Course Product activity. This grade will be assessed by the professor based on your performance throughout the semester and possibly by peer feedback forms if needed. To receive full participation points, you should behave in a professional manner and contribute substantially each week to the success of your team throughout the course of the semester. You are allowed to express different ideas and opinions with your classmates, but you should present them in a professional manner. Most importantly, you are expected to carry your weight. If you cannot behave professionally and contribute meaningfully, you will be fired from your team and receive a 0 for produce participation and the course product assignment.

It is expected that as a course, you will design your management practices (with the caveat that Agile practices should be used) to allow all students to have work to accomplish each week. Nobody should be idle at any point during the semester, as would be expected in industry by Lean Management and other management methodologies.

In case of sickness that prohibits work, students should plan with their classmates and be prepared to make up for lost time. Professionalism is expected. If students fail to meet demands, weekly worklogs may be instituted to monitor individual effort and contribution.

Your individual Course Product Assignment grade will be weighted by your participation score percentage. For example, if the Course Product Assignment were graded at 390/400 for the entire class and you received a score of 90/100 (i.e., 90%) for the Course Product Participation, your individual Course Product Assignment score would be adjusted downward to $390 \times 90\% = 351/400$.

No make up is available for participation points. You must attend and participate to receive participation points.

Grading will be based upon the following rubric:

90-100%: Student provided meaningful work toward the product every week.

80-89%: Student worked each week, but the work provided wasn't always meaningful.

60-70% (71-19% intentionally missing): Students missed a few weeks of work. Efforts to make up for lost time were minimal. Work wasn't always meaningful. Some complaints were issued by other students over the course of the semester.

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50% or less (51-59% intentionally missing): Students missed several weeks and/or provided sub-par work throughout the semester. Several complaints were issued by other students over the course of the semester.

Course Policies

Students are expected to attend and participate in class sessions. Students are expected to behave in a professional manner during class. Students are expected to treat each other with the respect and courtesy that is displayed in professional settings. Communication skills are extremely important in the business world. My expectations for your written and oral communications are very high. Make sure your communications are professional, logical, and clear.

Per university policy, students are expected to work at least 6 hours per week on course assignments outside of class time. If it seems that this time is not being put into the course and product assignment, weekly worklogs may be required.

Collaboration/Plagiarism Rules

Collaboration on individual discussion questions is not allowed. Discussion questions are used to assess your individual understanding and knowledge of the subject matter.

The course product should be an original thought after benchmarking existing solutions. Creating a product that others have created without important modifications to the product and/or business model will be considered plagiarism.

Any sources used in your assignments should be properly cited. Give credit where it is due. You may not simply copy and paste content from others' work. Excessive plagiarism as determined by the professor will result in a 0 on the assignment/essay.

University Policies

Student work products (e.g., exams, reflections/essays, projects, etc.) may be used for purposes of university, program, or course assessment. All work used for assessment purposes will not include any individual student identification.

Michigan Tech has standard policies on academic misconduct and complies with all federal and state laws and regulations regarding discrimination, including the Americans with Disabilities Act of 1990. For more information about reasonable accommodation for or equal access to education or services at Michigan Tech, please call the Dean of Students Office, at (906) 487- 2212 or go to http://www.mtu.edu/ctl/instructional-resources/syllabus/syllabus_policies.html

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Tentative Course Schedule

The readings for each week should be read by the beginning of the week so that you are prepared for classroom discussion.

-This schedule is subject to change as needed-

Week Of	Class Discussion	Readings & Research	Deliverables
Week 01 (01/08)	Introduction to course; Communication technology; Course Product problem formation; Identify core values and expectations; Structuring teams	Syllabus Course Product Assignment Sheet <i>Independent Research Ideas:</i> Entrepreneurial opportunity search and exploration; Communication technology (e.g., Slack, Discord, Teams, etc.)	Communication/Project Technology Decisions/Setup (e.g., Zoom, Slack, Discord etc.) Due 01/12 by end of class
Week 02 (01/15)	Structure/methods for completing the Course Product activity; (remote discussions) No class Monday; Martin Luther King, Jr. Day	Chapter 2 of Systems Design Text (skim where you are familiar with the concepts) https://hbr.org/2018/05/agile-at-scale <i>Independent Research Ideas:</i> Organizational and team structure; Agile product/project management methodologies; Project management software; Supporting remote work	Course Project Charter Draft Due 01/21 at 10:00pm
Week 03 (01/22)	Users and Value Assessment Solution benchmarking	Chapter 3 of Systems Design Text (skim where you are familiar with the concepts) (Matook and Maruping 2014 MISQE) (Ward et al 2008 MISQE) <i>Independent Research Ideas:</i> Benchmarking; Interviewing; Surveying; Focus groups; Empathizing with users/customers; Designing business metrics	Reflection Essay 1 Due 01/28 at 10:00 pm Product Vision Document Due 01/28 at 10:00pm

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Week 04 (01/29)	Modeling the Problem Domain	Chapter 4 of Systems Design Text (skim where you are familiar with the concepts) https://www.youtube.com/watch?v=BwkNceoybvA Independent Research Ideas: Business process modeling; Storyboarding	
Week 05 (02/05)	Designing and Prototyping for Value No class Friday; Winter Carnival Recess starts 02/07 at 10:00 pm	Chapter 5 of Systems Design Text (skim where you are familiar with the concepts) (Ranganathan et al 2011 MISQE) Independent Research Ideas: Prototyping; Programming; Managing software development; Software architecture; Adobe XD; Figma	Product Deliverable 1 Due 02/07 at 9:00 am
Week 06 (02/12)	Database Design and Implementation	Chapter 6 of Systems Design Text (skim where you are familiar with the concepts) https://solidproject.org/about (Sambra et al 2016) Independent Research Ideas: SQL database design; NoSQL database design; Big Data; Data warehousing	Reflection Essay 2 Due 02/18 at 10:00 pm
Week 07 (02/19)	Digital Transformation and Citizen Development	(Carroll and Maher 2023 MISQE) (van Giffen and Ludwig 2023 MISQE)	Product Deliverable 2 Due 02/21 at 9:00 am
Week 08 (02/26)	Spring Break. Enjoy!		
Week 09 (03/04)	Business Automation	(Lacity and Willcocks 2016)	

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	October Recess starts Wednesday at 10:00pm	(Lacity and Wilcocks 2021) (Martin 2019)	
Week 10 (03/11)	Data Collection and Analytics in Python	Chapter 6 of Programming Text (skim where you are familiar with the concepts) Chapter 10 of Programming Text (skim where you are familiar with the concepts)	Product Deliverable 3 Due 03/13 at 9:00 am
Week 11 (03/18)	Introduction to Machine Learning in Python	Chapter 11 of Programming Text (skim where you are familiar with the concepts) https://hbr.org/2016/06/visualizations-that-really-work	Reflection Essay 3 Due 03/24 at 10:00 pm
Week 12 (03/25)	Large Language Models (LLMs) and Business	https://hbr.org/2023/04/create-winning-customer-experiences-with-generative-ai https://arxiv.org/pdf/1706.03762.pdf (seminal article that led to ChatGPT and many other LLMs) https://arxiv.org/abs/2306.06031 (GPT model for Finance) Supplemental material. API documentation for some large language models https://platform.openai.com/docs/api-reference/introduction https://docs.llama-api.com/quickstart	Product Deliverable 4 Due 03/27 at 9:00 am
Week 13 (04/01)	Cost and Process Considerations in Developing AI Systems	(Zhang et al 2020 MISQE) https://venturebeat.com/2021/06/22/how-transfer-learning-can-boost-business-efficiency/ https://keras.io/getting_started/intro_to_keras_for_engineers/	Reflection Essay 4 Due 04/07 at 10:00 pm

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		https://keras.io/guides/transfer_learning/	
Week 14 (04/08)	Reflection Essay 5 worktime - Monday Project worktime – Wednesday/Friday	Reading based on project needs	Product Deliverable 5 Due 04/10 at 9:00 am
Week 15 (04/15)	Reflection Essay 5 worktime - Monday Project worktime – Wednesday/Friday	Reading based on project needs	Final Report/Prototype/Presentation Due 04/19 at 10:00 pm Reflection Essay 5 Due 04/19 at 10:00 pm Reflection Essay Report Compilation Due 04/19 at 10:00 pm

Changes to schedule in red

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