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# DESIGN AND DELIVERY OF AN ONLINE INFORMATION SYSTEMS MANAGEMENT COURSE FOR MBA PROGRAMS

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## ABSTRACT

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| Aim/Purpose | In this paper, we present our experience in design and delivery of a graduate Information Systems Management (ISM) course in an online MBA program. Also presented are a detailed examination of the design and delivery of the online course, survey results of students' perceptions and backgrounds, course evaluation results, best practices and lessons learned, and potential changes and future actions. |
| Background | This graduate ISM course needs to not only cover a broad range of dynamic technology and business topics, but also strike a balance between the width and depth of the content. Effective course design and delivery are critical to improved teaching and learning, especially when the course is delivered online. |
| Methodology | We provided a comprehensive review of the related literature to develop guidelines for the design and delivery of our ISM course; we collected survey data to evaluate the students' backgrounds and their perceptions of the course; we used data analysis and content analysis methods to assess the course evaluation results. |

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| Contribution | A review of the related literature indicates that IS researchers and educators have not adequately studied online graduate education. Given the importance of the graduate ISM course in most MBA programs, and the lack of attention from the IS community, it is critical to address this gap in the research. We believe we have done so with this paper. |
| Findings | The paper's major findings are embedded in a detailed examination of the design and delivery of the online course, survey results of students' perceptions and backgrounds, course evaluation results, best practices and lessons learned, and potential changes and future actions. |
| Recommendations for Practitioners | Even though our experience may not be fully applicable to other institutions, we hope our IS colleagues can learn from the design and delivery of this online course, as well as our best practices and lessons learned to improve the teaching and learning effectiveness in IS online graduate education, in general. Furthermore, we provide instructors with an actionable framework onto which they can map their current course offering, and compare their current pedagogical offering to literature driven best practices for ISM courses, in particular. |
| Recommendations for Researchers | It is our hope that the design and delivery of this online course, and our best practices and lessons learned can inspire our IS colleagues to search for innovative ways to improve the teaching and learning effectiveness in IS online graduate education. In addition, we distill a literature driven framework for ISM courses design and delivery that can help researchers frame their pedagogical research questions. |
| Impact on Society | The online course in this study prepares students for more efficiently and effectively delivering IT systems in organizations. Many MBA students work for non-profits and other socially-focused organizations and are able to use the skills learned in the course for the betterment of society. |
| Future Research | We will continue to monitor the impact of the changes on student learning effectiveness and attempt to identify additional innovative ways to improve the design and delivery of this online ISM course. |
| Keywords | course design and delivery, information systems management course, MBA program, online education |

## INTRODUCTION

An Information Systems Management (ISM) course is typically a required course for MBA programs, especially for MBA students with a concentration in Information Systems (IS), Information Technology (IT), or other related fields of study. This graduate ISM course is comparable to an Introductory Information Systems course at the undergraduate level. It needs to not only cover a broad range of dynamic technology and business topics, but also strike a balance between the width and depth of the covered content. Because the content covered in this course is broad and fundamental, students who struggle with it will inevitably struggle in other more advanced IS courses. In a sense, this ISM course serves as a gateway course for an MBA program with a concentration in IS. Thus, the design and delivery of such a course are critical for improved teaching effectiveness and enhanced student learning, especially when the course is delivered online.

A review of the related literature (see next section for detail), however, suggests that IS researchers and educators have not paid adequate attention to such an important course. The majority of IS education literature focuses on undergraduate courses in either face-to-face or online settings (e.g., Eom

& Ashill, 2016; Freeman & Urbaczewski, 2019; Harden et al., 2018; Riordan et al., 2017). IS researchers and educators have put little effort in online graduate education, let alone the graduate ISM course. Given the importance of the graduate ISM course and the lack of attention from the IS community, it is critical to fill this research gap. This is the motivation and objective for this current research.

This paper provides a review of the related literature, describes the design of the ISM course, details course delivery, presents survey results regarding student perceptions, presents course evaluation results, provides a summary of content, a list of best practices and lessons learned, potential modifications and future actions, and concluding remarks. Even though our experience may not be fully applicable to other institutions, it is our hope that the design and delivery of this online course, and our best practices and lessons learned can inform our IS colleagues and inspire them to search for innovative ways to improve the teaching and learning effectiveness in IS online graduate education in general and with the online graduate ISM course in particular.

The paper proceeds as follows. The next section provides a review of the related literature, identifies the research gap, and makes several important conclusions and observations. The next section describes the design of the course including course description, course objectives, required textbook, topics covered, as well as grade components and grading scale. This is followed by a section that details the delivery of the course, focusing on the five grade components including review questions, case studies, writing assignments, team research project, and exams. Next, we present the results of a survey consisting of nine questions regarding student perceptions of the course and their backgrounds. This is followed by a section that details the course evaluation results including course evaluation administration, overall summative rating, challenge and engagement index (CEI), standard formative items, and standard open-ended questions. Finally, the last section provides a summary of content, a list of best practices and lessons learned, some potential modifications and future actions, and concluding remarks.

## REVIEW OF THE RELATED LITERATURE

In this section, we provide a comprehensive and systematic review of the related literature. The review will focus on IS education in general and IS online graduate education in particular. The themes that we are specifically interested in include (1) the challenges that IS educators are facing and the corresponding proposed solutions, (2) the content that must be covered in such a graduate ISM course, (3) the best delivery approaches especially when such a course is delivered online. These themes will serve as guidelines in the design and delivery of our online graduate ISM course. Another purpose of this literature review is to have a holistic and up-to-date view of the current online graduate IS education, identify research gaps in this area, and illustrate and emphasize why our current research is important and necessary.

IS educators today are facing a variety of challenges regarding the content coverage and best delivery approaches. Harden et al. (2018) identified two major challenges that IS educators must address. The first challenge is keeping course materials current in such a dynamic discipline. The second challenge is the continual need to establish the proper placement for IS within the education system. Law (2014) also pointed out that it is a challenge to provide introductory coverage of the rapidly expanding IS fields. To address this challenge with an integrated approach, Albrecht et al. (2009) at Brigham Young University implemented an integrated, 24 credit hours course block called the "IS Core." The "IS Core" includes eight core IS courses (3 credit hours each): Analysis, Database, Business Programming, Processes and Controls, Application Design, Application Development, Networking, and Project Management. These eight core IS courses can serve as benchmarks for pinpointing what content that needs to be covered in this ISM course.

A variety of curriculum models have been proposed and some case studies have been carried out for the purpose to help IS educators pinpoint the content coverage in some major IS courses. Topi et al.

(2014) proposed a new curriculum model for the master's degree programs in IS. They maintain that IT Management and Strategy should form the core, with technical skills, domain-specific knowledge, and fundamental soft skills being important parts of the capability set that such programs offer. Ramesh and Gerth (2015) presented a case study on the design of an integrated information systems master's core curriculum. Their key areas of innovation that enhance student learning include: (1) sequencing of content, (2) flexible use of faculty strengths, (3) integrated thinking outside of silos, and (4) professional development integrated with coursework. Furthermore, they were able to integrate soft-skill knowledge such as critical thinking, case analysis, problem solving, and effective communication (both written and oral) in a formal manner into the curriculum. Topi et al. (2017) proposed MSIS 2016, a global competency model for graduate degree programs in information systems (see Figure 1). There are three core competencies areas in the MSIS 2016 model, including the areas of IS competencies, areas of individual foundational competencies, and areas of domain competencies. There are nine IS competency areas: (1) Business continuity and information assurance; (2) Data, information, and content management; (3) Enterprise architecture; (4) Ethics, impacts, and sustainability; (5) Innovation, organizational change, and entrepreneurship; (6) IS management and operations; (7) IS strategy and governance; (8) IT infrastructure; and (9) Systems development and deployment. Areas of individual foundational competencies include Critical thinking; Creativity; Collaboration and teamwork; Ethical analysis; Intercultural competency; Leadership; Mathematical and statistical competencies; Negotiation; Oral communication; Problem solving; and Written communication. Domain competencies could be related to specific technical skills and knowledge, application knowhow, legal requirements for technology management, etc. These two curriculum models and the case study can also help in determining what content and areas of competencies to be covered in this ISM course.

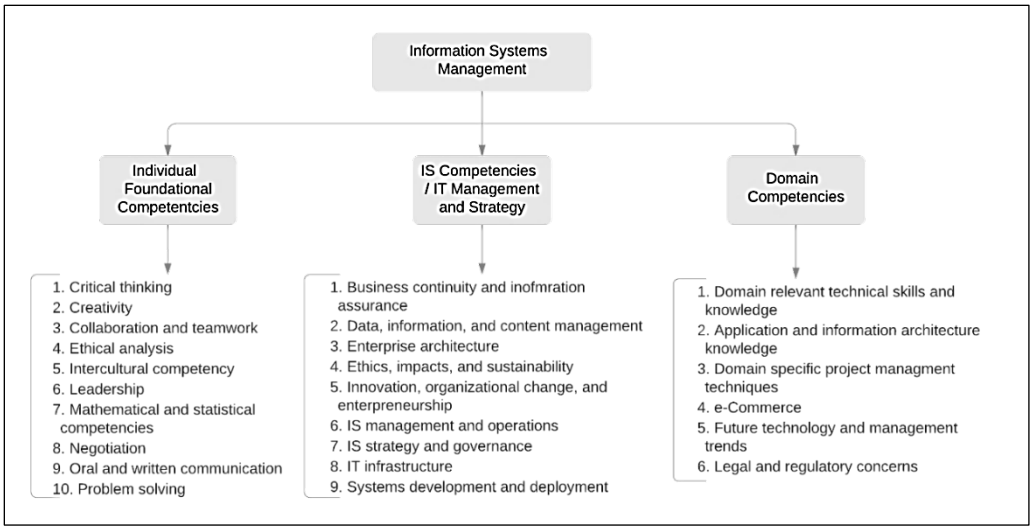


**Figure 1. Information systems management concepts (adapted from Topi et al., 2017)**

In additional to content coverage, course design and delivery are the other two critical pillars for the success of a course. The best approaches of delivering a course have been researched extensively, and they become even more important when almost all courses are forced to be delivered online during a global pandemic such as the one when are currently experiencing. Advancement of Internet and computing technologies make online education in general and online MBA programs in particular more attractive and powerful. "Teaching online is very different from conventional teaching and it is not easy. Planning online coursework is much more demanding and student-teacher relationships, much more complex. Once mistakes are made, it is really difficult to recover fully in an online environment" (Dykman & Davis, 2008a, p. 14). The "adjusting it as you go" approach does not work with online teaching (Dykman & Davis, 2008b). The first step in successful online teaching is a focus on the detailed organization and design of the course. It includes the comprehensive course road

map with course learning objectives and detailed planning for specific assignments and deliverables within each learning unit/module. Freeman and Urbaczewski (2019) analyzed seven possible critical success factors for online graduate business programs and found that only four factors directly affected student satisfaction with the program they examined. These four factors include course conduct, the admissions process, the program's curriculum, and students' past experiences with web-based courses. The findings by Eom and Ashill (2016) suggested that course design, instructor, and dialogue (instructor-student, and student-student) are the strongest predictors of user satisfaction and learning outcomes. The results from a survey carried out by Asamoah et al. (2017) indicated that the structure and organization of the course helped students clearly and concisely assimilate the course content.

Effective course design is a continuous improvement process that includes five interconnected components ("Course design process," n.d.): (1) The identification of learning outcomes; the designing of effective learning experiences comprised of (2) instructional materials, (3) interaction, (4) learning activities; and (5) the development of feedback and measurement strategies that help learners achieve stated learning objectives. Crews and Wilkinson (2015) attempted to align the 2013 Quality Matters higher education rubric standards with the seven principles for good practice in undergraduate education developed by Chickering and Gamson (1987). They expanded the original seven principles for good practice in undergraduate education into eight principles as follows (see Figure 2): (1) Encourages contact between students and faculty; (2) develops reciprocity and cooperation among students; (3) uses active learning techniques; (4) gives prompt feedback; (5) emphasizes time on task; (6) communicates high expectations; (7) respects diverse talents and ways of learning; and (8) emphasizes professionalism.

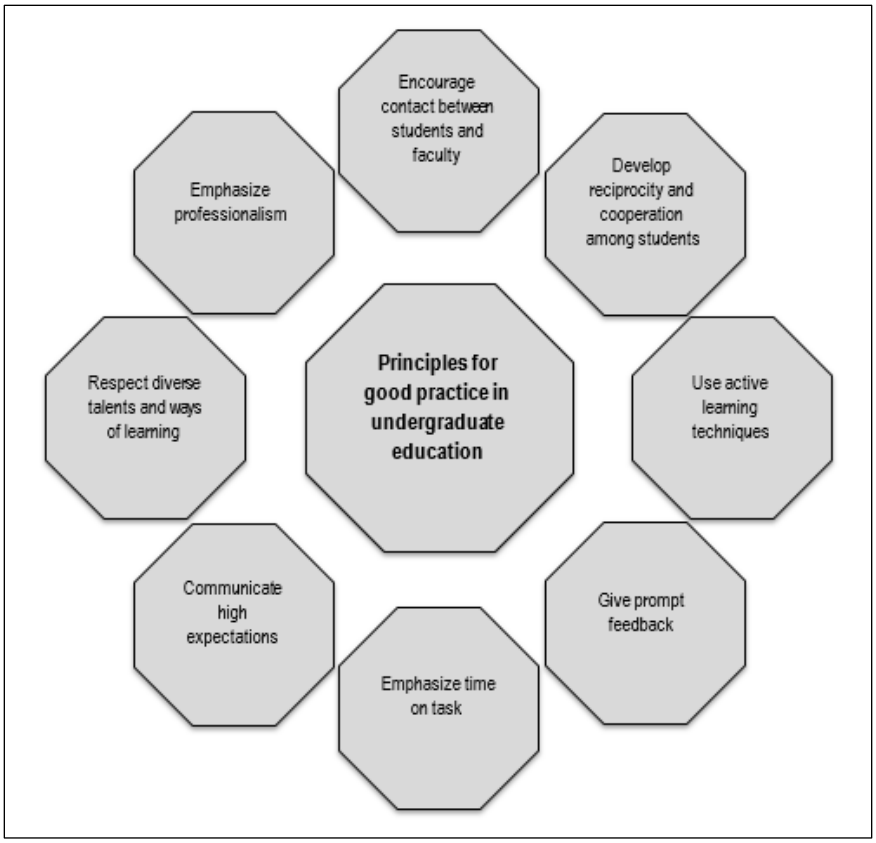


**Figure 2. Principles for good practices in undergraduate education (Crews & Wilkinson, 2015)**

There are three major learning methods, i.e., face-to-face learning, online learning, and blended learning (Chou & Chou, 2011). Online learning is regarded as a radical innovation in learning compared to the incremental innovation occurring in face-to-face learning. Niederman et al. (2016) shared their insights on the relationship between evolving university business models and the adoption of electronic pedagogy. They viewed higher education business models largely in terms of their mixture of income sources. They maintained that the key stakeholders for the topic include not only institutions and individual faculty members, but also students and employers. Chou and Chou (2011) propose that course management systems (CMS) facilitate new communication channels that enhance the experience for learners and instructors. Students like the flexibility and the convenience of online learning but miss the face-to-face interaction with teachers and peers that builds personal learning networks (Waha & Davis, 2014). "Online courses can be effective in helping students to achieve program and course outcomes. Their effectiveness can be improved by preparing faculty to engage students in a variety of learning activities in a rich course environment with timely communication and feedback" (Roth & Klein, 2012, p. 162). Alshare et al. (2011) maintain that both human factors and system factors may impact the success in the online learning environment. Their research findings indicate that the factors of comfort with online learning and perceived web self-efficacy were significant predictors of learner satisfaction, and that comfort with online learning was significant in predicting system usage. Furthermore, instructors must establish clear and measurable expectations for students in online courses and the expectations need to be communicated to the entire class clearly and consistently (Dykman & Davis, 2008c).

"One of the most important aspects of effective business education is to help business students to develop problem solving skills to meet the challenges of the fast-changing business environment. Business educators need to have a greater understanding of problem-solving schemes in order to design innovative curricula that emphasize students' practical skill sets" (Wang & Wang, 2015, p. 42). Prior literature indicates that the case method is often used to engage students in critical thinking, problem-solving, and decision-making (Gill & Ritzhaupt, 2013). Wang and Wang (2011) proposed a model-directed approach to teaching higher order thinking including critical thinking, design thinking, and system thinking. Riordan et al. (2017) describe the redesign and implementation of an introductory information systems class. Their redesign was guided by principles drawn from the experiential and active learning literature. One of their lessons learned is that the instructor should continuously interact with the students while they work. Wu and Sankar (2013) encourage educators to conduct hands-on experience involving real-world projects since they provide valuable additional learning opportunities for students in introductory MIS courses. Lee (2012) confirmed that service-learning had a positive impact on student learning and development along three dimensions: academic learning, interpersonal development, and personal development.

The integration of research and teaching in IS education holds great benefits for both teachers and students (Obwegeser & Papadopoulos, 2016). Chen et al. (2008) suggest that MIS students should undergo training to improve their awareness of and competence in virtual teamwork. "Integrating research into teaching through the assignment of research-related tasks to students can promote students' acquisition of domain knowledge and research skills. The merits of this approach can be further strengthened by having students working in groups and providing the outputs of their involvement in the research-related activities as learning material for their peers" (Natsis et al., 2018, p. 346).

From the review of the related literature, it becomes apparent that the majority of IS education literature focuses on undergraduate courses, and that IS researchers and educators have put inadequate effort in online graduate education. Given the importance of the graduate ISM course and the lack of attention from the IS community, it is critical to fill this research gap. Based on our review of the related literature, we have concluded the following: (1) The design and delivery of an online course are critical to effective learning outcomes. (2) Timely communication and feedback are key for online learning effectiveness. (3) Critical thinking, problem-solving, and decision-making skills should be the

online learning goals for IS students. (4) Integrating research and teaching will benefit both IS teachers and students in online teaching. These conclusions and observations are fully applied in our design and delivery of the proposed online ISM course, as described and elaborated in the following sections. Providing a detailed description of the design and delivery of such an online graduate ISM course will fill the research gap that we have uncovered with our comprehensive and systematic review of the related literature; sharing our best practices and lessons learned with our IS colleagues can inspire them to search for innovative ways to improve the teaching and learning effectiveness in IS online graduate education.

# DESIGN OF THE COURSE

## *COURSE DESCRIPTION*

CIS 636. Information Systems Management. (3 Credits). This course addresses issues related to information systems (IS) management for current and future IS managers and corporate executives. It focuses on management's role in planning, designing, implementing, and controlling IS. Topics include the role and organization of the IS function in the firm, recent technological advances in hardware and software, the implementation of ERP systems, end-user computing, telecommunications, management of systems projects, strategic planning for IS, the use of information for competitive advantage, and the challenges facing today's managers in aligning IS with business strategy and infrastructure. The role of social, environmental, ethical, and global issues in IS strategy, planning, management, and success will also be addressed.

## *COURSE OBJECTIVES*

The student will be able to:

- Identify and describe information systems concepts, models, theories, frameworks, and best practices.
- Evaluate information systems concepts, models, theories, frameworks, and best practices using academic literature.
- Develop information systems solutions to business challenges by synthesizing the components of people, organization, and technology.

## *REQUIRED TEXTBOOK*

In the fall 2018 semester, we used the 12th edition of Essentials of MIS authored by Laudon and Laudon (2017). The detailed information of the textbook is as follows: Laudon, K. C., & Laudon, J. P. (2017). Essentials of MIS (12th ed.). Upper Saddle River, New Jersey: Pearson. ISBN-10: 0134238249. ISBN-13: 978-0134238241. Previously, we have used the 9th edition, the 10th edition, and the 11th edition.

## *TOPICS COVERED*

### Unit 1: The textbook

Twelve chapters from the textbook are covered. Topics include the following: (1) Business Information Systems in Your Career, (2) Global E-Business and Collaboration, (3) Achieving Competitive Advantage with Information Systems, (4) Ethical and Social Issues in Information Systems, (5) IT Infrastructure: Hardware and Software, (6) Foundations of Business Intelligence: Databases and Information Management, (7) Telecommunications, the Internet, and Wireless Technology, (8) Securing Information Systems, (9) Achieving Operational Excellence and Customer Intimacy: Enterprise Applications, (10) E-Commerce: Digital Markets, Digital Goods, (11) Improving Decision Making and Managing Knowledge, and (12) Building Information Systems and Managing Projects.

### Unit 2: Supplemental readings

Fifteen academic articles are assigned to read, analyze, and critique. Sections in the template for the article summary includes the following: (1) Purpose (What are the objectives for writing the paper?); (2) Design / Methodology / Approach (How are the objectives achieved? Include the main methods used for the research and the approach to the topic.); (3) Findings / Conclusions (What was found in the course of the work, and what are the major conclusions? This will refer to analysis, discussion, and results.); (4) Practical Implications (What outcomes and implications for practice, applications, and consequences are identified?); and (5) Critique (Which parts of the paper do you like? Which parts of the paper do you not like? Why?).

### Unit 3: Team research project

Students are organized into teams of 3 (or 4 when necessary). Each team will decide on an IT-related research topic. Four milestone reports are required, including the initial research proposal, the first draft of the paper, the second draft of the paper, and the final paper. The final paper should be publishable in conference proceedings or academic journals.

## *Grade Components*

All homework assignments, projects, quizzes, and exams will be graded within one week of the due date. Students are expected to check their grades and feedback in the learning management system (LMS) regularly throughout the semester. The grade components and their corresponding percentages are listed in Table 1.

**Table 1. Grade components and percentages**

| GRADE COMPONENT | PERCENTAGE |
|---|---|
| Review Questions | 10% |
| Case Studies | 15% |
| Writing Assignments | 20% |
| Team Research Project | 25% |
| Exams | 30% |
| *Total* | *100%* |

## *Grading Scale*

Final grades will be assigned on the basis of the following grading scale: A (90% to 100%), B (80% to 89%), C (70% to 79%), D (60% to 69%), and F (below 60%).

# DELIVERY OF THE COURSE

The online course is built using Instructure's Canvas, a trusted, open-source modern LMS with numerous robust features that support a deep focus on teaching and learning. The online course content is organized into six modules: Lecture PowerPoints, Review Questions, Case Studies, Writing Assignments, Team Research Project, and Exams.

## *Lecture PowerPoints*

Twelve PowerPoint documents are posted under this module. These documents are downloaded from the Instructor Resources section of the Pearson website (the textbook publisher).

## *Review Questions*

Twelve documents are posted under this module. Each document covers one chapter and contains five review questions. All five questions are selected from the list of review questions at the end of the chapter in the textbook. The selection criteria are the learning objectives listed at the beginning of

the chapter in the textbook. For instance, for Chapter 1: Business Information Systems in Your Career, the five selected review questions are as follows:

1. List the six major objectives that businesses use information systems to achieve.
2. List and describe the organizational, people, and technology dimensions of information systems.
3. Use an example to distinguish between data and information.
4. List and describe each of the four steps for solving business problems.
5. Explain critical thinking and describe the relationship of critical thinking to problem solving.

## *CASE STUDIES*

Three cases from the textbook are assigned under this module. In the fall 2018 semester, we have assigned the following three case studies:

1. Case Study 1: Facebook Privacy: What Privacy? Textbook (Laudon & Laudon, 2017), pages 114-146. Answer all 4 case study questions listed on page 146.
2. Case Study 2: Can We Trust Big Data? Textbook (Laudon & Laudon, 2017), pages 222-224. Answer all 4 case study questions listed on page 224.
3. Case Study 3: Google, Apple, and Facebook Struggle for Your Internet Experience. Textbook (Laudon & Laudon, 2017), pages 264-266. Answer all 5 case study questions listed on page 266.

## *WRITING ASSIGNMENTS*

Sixteen writing assignments are assigned under this module. The first writing assignment asks each student to write a biographical sketch about himself or herself. In the biographical sketch, it is required that they include at least their personal background; their education and other professional training; their past work experience, current job, and future career goals; and their significant achievements so far. The minimum length requirement is 400 words.

The remaining 15 writing assignments are 15 academic articles for students to read, analyze, and critique. A summary template (see detail in the previous section) in Microsoft Word format is provided. The 15 academic articles that were used in the fall 2018 semester are listed in the order of the suggested completion date in Table 2.

**Table 2. Fifteen academic articles for student to read, analyze, and critique**

| NUMBER | ARTICLE INFORMATION IN APA FORMAT | THEME |
|---|---|---|
| 1 | Kettinger, W. J., & Li, Y. (2010). The infological equation extended: Towards conceptual clarity in the relationship between data, information and knowledge. *European Journal of Information Systems*, *19*(4), 409-421. | The relationship between data, information, and knowledge |
| 2 | Zhang, X., Nickels, D. W., & Stafford, T. F. (2010). Understanding the organizational impact of radio frequency identification technology: A holistic view. *Pacific Asia Journal of the Association for Information Systems, 2*(2), 1-17. | RFID impact on IT infrastructure, business intelligence, and decision making |
| 3 | DeLone, W. H., & McLean, E. R. (1992). Information systems success: The quest for the dependent variable. *Information Systems Research*, 3(1), 60-95. | IS Success Model |
| 4 | DeLone, W. H., & McLean, E. R. (2003). The DeLone and McLean Model of Information Systems Success: A ten-year update. *Journal of Management Information Systems, 19*(4), 9-30. | An updated IS Success Model |

| NUMBER | ARTICLE INFORMATION IN APA FORMAT | THEME |
|---|---|---|
| 5 | March, S. T., & Smith, G. F. (1995). Design and natural science research on information technology. *Decision Support Systems, 15*(4), 251-266. | Natural science vs. Design science |
| 6 | Hevner, A. R., March, S. T., Park, J., & Ram, S. (2004). Design science in information systems research. *MIS Quarterly, 28*(1), 75-105. | Design science and its seven research guidelines |
| 7 | Carr, N. G. (2003). IT doesn't matter. *Harvard Business Review, 81*(5), 41-49. | IT doesn't matter |
| 8 | Carr, N. G. (2005). The end of corporate computing. *MIT Sloan Management Review, 46*(3), 67-73. | The end of corporate computing |
| 9 | Venkatesh, V., Morris, M. G., Davis, G. B., & Davis, F. D. (2003). User acceptance of information technology: Toward a unified view. *MIS Quarterly, 27*(3), 425-478. | The Unified Theory of Acceptance and Use of Technology (UTAUT) |
| 10 | Porter, M. E. (1979). How competitive forces shape strategy. *Harvard Business Review, 57*(2), 137-145. | The Five Forces Model |
| 11 | Porter, M. E., & Millar, V. E. (1985). How information gives you competitive advantage. *Harvard Business Review, 63*(4), 149-160. | The value chain and strategy |
| 12 | Porter, M. E. (2001). Strategy and the Internet. *Harvard Business Review, 79*(3), 62-78. | Strategy and the Internet |
| 13 | Zhang, X., Hu, T., Dai, H., & Li, X. (2010). Software development methodologies, trends and implementations: A testing centric view. *Information Technology Journal, 9*(8), 1747-1753. | Software development methodologies, trends, and implementations |
| 14 | Orlikowski, W. J. (1992). The duality of technology: Rethinking the concept of technology in organizations. *Organization Science, 3*(3), 398-427. | The duality of technology - the structurational model of technology |
| 15 | Eisenhardt, K. M. (1989). Agency theory: An assessment and review. *Academy of Management Review, 14*(1), 57-74. | Agency theory |

## *TEAM RESEARCH PROJECT*

Four milestones were established for the team research project, including the research proposal, the first draft, the second draft, and the final paper. The specifications and requirements for each milestone are provided in Appendix A.

## *EXAMS*

Three exams are administered throughout the semester. Each exam covers four chapters: exam 1 covers chapters 1-4; exam 2 covers chapters 5-8; and exam 3 covers chapters 9-12. For each chapter there are 25 questions including 5 true-false questions and 20 multiple-choice questions. The time for each exam is four hours, and the students can only attempt the exam once. All the exams are open-book. Students have a six-day window to complete an exam in only one sitting. An announcement (similar to the message below) is posted at 8 AM on the day the exam is open. A reminder announcement regarding the exam is posted at 8 AM three days after the first announcement.

> *Exam 1 will be available from September 20 at 8 am to September 26 at 11:59 pm. It covers chapters 1-4. Each chapter will have 25 questions including 5 true-false and 20 multiple-choice questions. The time for the exam is 4 hours. You can only attempt once. The password for the exam is [xyz]. Please let me know if you have any questions. Thanks.*

## STUDENT PERCEPTIONS AND BACKGROUNDS

To evaluate the students' backgrounds and their perceptions of the course, an online survey was created using SurveyMonkey.com. Using this tool helped ensure anonymity so that students would be more comfortable in sharing their thoughts and perceptions. The survey included nine questions: one ranking question, one rating question, two multiple-choice questions, two short-answer questions, and three essay questions (see Appendix B for the online survey questionnaire). The survey link was distributed to students by both course announcement and course email through Canvas, the university's LMS. Participation in the survey was voluntary and no extra credit was awarded as an incentive for students to take the survey. Of the 58 students enrolled over the past two sections (one in the fall 2017 semester, and one in the fall 2018 semester), 45 (77.59%) students participated in the survey (the full survey results are available upon request).

Question one was a ranking question asking the students to rank the five grade components by assessing their usefulness. The survey results indicated that the grade components (from the most favorite to the least favorite) are Review Questions, Writing Assignments, Case Studies, Exams, and Team Research Project. The ranking scores for Case Studies, Exams, and Team Research Project were comparably similar.

Question two was a rating question asking the students to rate the 15 academic articles for the Writing Assignments whether they like them or not with 1 = strongly dislike and 5 = strongly like. The survey results indicated that the top three most liked articles were (1) Porter and Millar (1985), (2) Porter (2001), and (3) Zhang et al. (2010). The bottom three most disliked articles were (1) Orlikowski (1992), (2) Eisenhardt (1989), and (3) Venkatesh et al. (2003).

Question three was a multiple-choice question asking for the student's gender. The survey results indicated that 30 (66.67%) students were male, 14 (31.11%) were female, and one student did not respond to the question.

Question four was a short-answer question asking for the student's age. The survey results showed that the average age of the students was 33.36 with a standard deviation of 8.69. The highest recorded age was 53, the lowest was 23, and the mode was 26.

Question five was a multiple-choice question asking for the student's work status. The survey results showed that 31 (68.89%) students were working full-time, 6 (13.33%) part-time, and 8 (17.78%) neither.

Question six was a short-answer question asking for the student's tenure with their current position. The survey results showed that the average time that the working students had been in their current position was 6.19 years with a standard deviation of 6.24. The highest recorded tenure was 25 years, the lowest was 0.17 years (i.e., 2 months), and the mode was 3 years.

Question seven was an essay question. It asked whether the student preferred the research project as a team project or an individual project. It also asked the students to specify their reasons in detail. A total of 26 students answered this question. The survey results showed that 18 (69.23%) students preferred the research project as a team project, and 8 (30.77%) preferred it as an individual project. Collaboration, team building, share the work load, diversified viewpoints and perspectives were the most specified reasons why they preferred the research project as a team project. Difficulty in team communication and teamwork coordination, and lack of effort or contribution from team members were the most specified reasons why they preferred the research project as an individual project.

Question eight was an essay question. It asked the students that if they preferred the research project as a team project, how many team members they liked to have in a team. It also asked the students to specify their reasons in detail. A total of 19 students provided usable answers to this question. The survey results showed that 7 students (36.84%) preferred to have four team members in their team, 7 (36.84%) preferred three team members, 4 preferred 2 team members, and 1 preferred 5 or more

team members. "Enough to spread the work but not too many to coordinate" was the typical reason that students preferred three or four team members. "Heightened sense of accountability," "giving all team members a sense of responsibility and making it harder for someone to freeload" were the two reasons why some students preferred a team of two.

Question nine was also an essay question. It asked the students to provide comments, suggestions, and ideas on how to improve the teaching and learning effectiveness of the course. A total of 36 students answered this question. Some of the useful comments, suggestions, and ideas for course improvement are summarized as follows:

- Allow team members to pick their own teams.
- Narrow the writing assignments down to 12.
- More research-oriented IT projects that are related to IoT, Big Data, Cloud Computing, AI, Cyber Security, Data Science, Blockchain, etc.
- Provide recorded lectures.
- Decrease the percentage of total grade for exams and increase that for the research project.
- More case studies.
- Encourage students to use the group discussion board more.
- Reduce the number of questions in each exam; add some essay questions.

# COURSE EVALUATION RESULTS

## *COURSE EVALUATION ADMINISTRATION*

The course evaluation for this course (i.e., CIS 636-I03 - Information Systems Management) was administered at the end of the fall 2018 semester using an online course evaluation system. The students were notified by email that the course evaluations for CIS 636-I03 were open. A link to the evaluation was embedded in the email that could only be accessed by students enrolled in this course. It also notified the students that they would have a week to complete the evaluation. Two reminders were sent via the course evaluation system before the deadline to complete the evaluation: One at three days after the evaluation opened; another at one day before the evaluation closed. The current response rate (the percentage of students who finished the evaluation) was also reported in the two reminder emails. To encourage students to complete the course evaluation, the course instructor (the primary author of this paper) offered two extra points to the student's final 100 points for the class. The course instructor also sent two reminder emails through the LMS. There were 34 students enrolled in the course in the fall 2018 semester; by the evaluation deadline, 32 (94%) students had completed the survey.

## *OVERALL SUMMATIVE RATING*

The overall summative rating represents the combined response of students to the four global summative items and is represented to provide an overall index of the class's quality. The combined median is 4.25 with 0 = lowest and 5 = highest. The four global summative items and students' responses are listed in Table 3.

**Table 3. Summative items and students' responses**

| SUMMATIVE ITEM | N | EXCELLENT (5) | VERY GOOD (4) | GOOD (3) | FAIR (2) | POOR (1) | VERY POOR (0) | MEDIAN |
|---|---|---|---|---|---|---|---|---|
| The course as a whole was: | 32 | 50% | 28% | 16% | 3% | 3% | | 4.5 |
| The course content was: | 32 | 34% | 44% | 19% | | 3% | | 4.1 |

| SUMMATIVE ITEM | N | EXCELLENT (5) | VERY GOOD (4) | GOOD (3) | FAIR (2) | POOR (1) | VERY POOR (0) | MEDIAN |
|---|---|---|---|---|---|---|---|---|
| The instructor's contribution to the course was: | 32 | 44% | 34% | 12% | 6% | | 3% | 4.3 |
| The instructor's effectiveness in teaching the subject matter was: | 32 | 38% | 28% | 22% | 9% | | 3% | 4.1 |

## *Challenge and Engagement Index (CEI)*

The Challenge and Engagement Index (CEI) combines student responses to several items relating to how academically challenging students found the course to be and how engaged they were. The combined CEI is 5.5 with 1 = lowest and 7 = highest.

## *Standard Formative Items*

Students also responded to ten standard formative items (see Table 4). The average median to the ten standard formative items is 4.66 with 1 = strongly disagree and 5 = strongly agree. One interesting observation was that 3% of the surveyed students (i.e., 1 student) chose strongly disagree (1) to almost all the 10 standard formative items.

**Table 4. Standard formative items**

| STANDARD FORMATIVE ITEM | N | STRONGLY AGREE (5) | AGREE (4) | NO OPINION (3) | DISAGREE (2) | STRONGLY DISAGREE (1) | MEDIAN |
|---|---|---|---|---|---|---|---|
| The instructor provided feedback on my assignments. | 32 | 66% | 31% | | | 3% | 4.7 |
| The instructor communicated clearly. | 32 | 50% | 47% | | | 3% | 4.5 |
| The instructor advanced my knowledge of course content. | 32 | 53% | 44% | | | 3% | 4.6 |
| The instructor was available to assist students. | 32 | 59% | 22% | 16% | 3% | | 4.7 |
| The instructor created an environment that supported learning. | 32 | 59% | 31% | 3% | | 6% | 4.7 |
| Course objectives were clear. | 32 | 72% | 25% | | | 3% | 4.8 |
| Instructional materials supported the course objectives. | 32 | 59% | 38% | | | 3% | 4.7 |
| Grading criteria were clear. | 32 | 59% | 34% | | 3% | 3% | 4.7 |

| STANDARD FORMATIVE ITEM | N | STRONGLY AGREE (5) | AGREE (4) | NO OPIN-ION (3) | DISA-GREE (2) | STRONGLY DISAGREE (1) | ME-DIAN |
|---|---|---|---|---|---|---|---|
| Course activities provided me with valuable learning experiences. | 32 | 56% | 31% | 6% | 3% | 3% | 4.6 |

### *STANDARD OPEN-ENDED QUESTIONS*

In the course evaluation, there were four standard open-ended questions: (1) What were the best aspects of this course and/or instruction? (2) What suggestions do you have for improving the course and/or instruction? (3) Describe any difficulties you encountered in accessing course content. (4) Additional comments or suggestions. The complete student responses to these four standard open-ended questions can be found in Appendix C. Some of the relevant comments are presented below:

- "There was a wide range of topics, ideas and practical content and outside research brought into the course. The [professor] exposed the class to valuable and timely information from many disparate sources. The writing assignments really helped me become a subject matter expert."
- "Nothing was difficult to access. Everything had clear instructions, and smooth access."
- "This course not only challenges you and forces you to develop great time management skills, but it also provides real life experience through group activities which provides you the opportunity to engage with different personalities and work styles. Overall a great class and highly recommended. In my opinion the instructor has developed a somewhat overwhelming but yet exceptional learning experience that will develop skills, that will be useful for years to come."
- "This was a great course! The instructor was always quick to respond and grade our work!"
- "The balance of tests, writing and reading is exactly what I expected an MBA level course to be. The format suited me well."
- "[The professor] has put together an impressive and comprehensive course in my opinion because of the real life subject matter contained throughout the course, as well as the knowledge base that I was able to acquire through reading the book, and answering his questions in the review question modules. I was extremely impressed with the course layout in general, and I am sure many students will complain that there was too much homework, but it is my belief that to obtain the substantial knowledge base to succeed, one must put in the time to do so, and that is why I do not have any suggestions for improving the course."

## DISCUSSION

### *SUMMARY OF CONTENT*

In this paper, we have elaborated our experience in designing and delivering an online Information Systems Management course for an MBA program with a concentration in Information Systems. In the design of the course section, we have included the course description, course objectives, required textbook, topics covered, grade components, and the grading scale. In the delivery of the course section, we have detailed the six modules of online course content including Lecture PowerPoints, Review Questions, Case Studies, Writing Assignments, Team Research Project, and Exams. Finally, we presented the student perceptions of the online course and student backgrounds obtained with an online survey with nine questions, as well as the course evaluation results.

## *BEST PRACTICES AND LESSONS LEARNED*

Our comprehensive and systematic review of the related literature indicates that there is a lack of attention to the design and delivery of a graduate ISM course. This paper attempts to fill this research gap. Our review of the literature uncovered the importance of the design and delivery, timely communication and feedback, making critical thinking, problem-solving, and decision-making skills learning goals for IS students, and integrating research into teaching and learning. We have applied these important observations in the design and delivery of our online graduate ISM course. By sharing our experience in design and delivery of such an online graduate ISM course, we have not only attempted to fill the research gap identified, but we have also endeavored to inform and inspire our IS colleagues to improve online graduate IS education.

To better understand the strengths and opportunities for improving our ISM course, we have mapped the main takeaways and characteristics of our course and student feedback onto the eight principles for good practice in undergraduate education (see Table 5). This enables educators to identify areas of improvement and also focus on specific aspects that need to be customized and elevated in order to better meet the needs and expectations of the MBA students.

**Table 5. Mapping of current and future course actions on the eight principles for good practice in undergraduate education**

| PRINCIPLE FOR GOOD PRACTICE | CURRENTLY IN PLACE | ADDITION AND REMEDIATION |
|---|---|---|
| Encourage contact between students and faculty | Respond to students' emails promptly<br>Encourage students to use Discussion Boards on Canvas<br>Grade the assignment submissions as soon as possible and provide specific feedback | Monitor the course more closely and seek students' feedback continuously |
| Develop reciprocity and cooperation amongst students | Team research project | Allow students to choose their own team for the research project |
| Use active learning techniques | Have a steady pace of small assignments<br>Let students read, analyze, and critique academic IS research articles | Provide some video lectures and audio instructions to the course |
| Give prompt feedback | Grade the assignment submissions as soon as possible and provide specific feedback | Provide an overview of the APA style at the beginning of the semester |
| Emphasize time on task | Publish the course roadmap with the complete content online before the semester starts<br>Keep the assignment due dates flexible | Keep the assignment due dates flexible with a fixed time window |
| Communicate high expectations | Course syllabus<br>Grading scales<br>Course roadmap | A welcome message at the beginning of the semester to communicate high expectations specifically |
| Respect diverse talents and ways of learning | Lecture PowerPoints<br>Review questions<br>Case studies<br>Writing assignments<br>Team research project<br>Exams | Decrease the number of writing assignments<br>Increase the number of case studies<br>Split long exams |
| Emphasize professionalism | Case studies<br>Team research project | Update course with new topics of interest to MBA students |

### Publish the course roadmap with the complete content online before the semester starts

Doing this allows students to see the entire structure of the course, the assignments, what they are expected to do, and the general pace of the course. One student commented that "The part of this class I enjoyed the most is the posting of the entire class with all assignments at the beginning of class. This allowed me with my busy work and life schedule to work ahead on assignments when I had time and limited the amount of late assignments."

### Let students read, analyze, and critique academic is research articles

As a graduate course for MBA students with a concentration in Information Systems, it is important that we keep the class both educational and challenging. Challenging students to read, analyze, and critique academic IS research articles will add depth to the course and help students become subject matter experts. When asked "what the best aspects of this course and/or instruction were," several students mentioned that they liked the writing assignments. Some of their comments are copied below:

- "I had a love/hate relationship with reading and critiquing the articles, but overall I think they added a lot of depth to the course."
- "The writing assignments were both challenging and educational."
- "Doing the article summaries helped me dissect the articles and advanced my writing."
- "I really enjoyed reading all of the research papers and writing the group research paper. This was a new experience for me."
- "When I started this course I lamented all the reading, it was my first time reading peer reviewed journals too. About half way through the course I started to notice a drastic improvement in my reading and writing skills. I'd say one of the best aspects of this course is that it does a great job of preparing you for the next step."
- "There was a wide range of topics, ideas and practical content and outside research brought into the course. The [professor] exposed the class to valuable and timely information from many disparate sources. The writing assignments really helped me become a subject matter expert."
- "The writing assignments (WA 1-16) were particularly insightful, and taught me a great deal about the subject matter."

### Keep the assignment due dates flexible

The majority of the MBA students are working adults. They have to balance work, family, school, and other duties. As such, it is almost impossible for them to keep up with all the due dates. We communicate to students that the assignment due dates on Canvas are suggested dates when the assignments should be completed to make timely progress through the course, however, there will not be penalties for late submissions. A final submission due date at the end of the course is set so that we as instructors can keep the course in order.

### Grade the assignment submissions as soon as possible and provide specific feedback

Grading the assignment submissions as soon as possible will improve the communication effectiveness between the instructor and students. First, students still remember their submissions quite well, and when they see the grade and feedback from the instructor, they understand to what the instructor is referring. Second, giving prompt and specific feedback shows that the instructor cares and is more engaging. This will make students more satisfied with the interaction process and thus improve learning effectiveness. This is more important for online courses than that for face-to-face courses. One student's comments are worth noting: "The instructor was very involved in the course. He was responsive, and I never felt this was an online course disguised as a self-study course. This was more

in line with what I expect from an online course at UNA, but sadly this type of course is not the norm at UNA."

### Have a steady pace of small assignments

Throughout the semester, we assign an assignment for every two or three days. These assignments can be regarded as small assignments. It can be a set of review questions, a writing assignment, or a case study. Large assignments such as team research project milestones and exams are spread evenly in the semester. One student said that "I like the course structure and pace. The various components work together well." Another student commented that "The steady pace of small assignments was about perfect." Yet a third student said that "I thought that the course did a great job of teaching the objective through reinforcement of weekly homework."

### Lessons learned

There are several lessons learned that are worth sharing. The first lesson learned is that we failed to let students choose their own team for the research project. Several students complained about this. They said that their teams might have worked more smoothly had they been allowed to pick their own team. The second lesson learned is that we failed to address confusion raised by the APA style. It took some of the students almost one-third of the semester to fully understand how to list and cite a source in APA format. The third lesson learned is that we did not provide video lectures or audio instructions. Even though the course was designed and delivered in a way that it is not necessary to have video lectures or audio instructions, the course evaluations results indicate that some students wanted to have them on Canvas. Going forward, we may consider adding video lectures and audio instructions to the course.

## *Potential Changes and Future Actions*

From the online survey results, the course evaluation results, and our own observations, we plan to make some changes to the online ISM course in the fall 2019 semester.

### Decrease the number of writing assignments

Based on student feedback, we will remove three academic articles so that we will have only 12 academic articles to read, analyze, and critique. Rating scores and no-loss of coverage are the two criteria when deciding on which articles to remove. The first article to be removed is Orlikowski (1992), which has received the lowest weighted rating average amongst all the 15 articles. The second article to be removed is DeLone and McLean (1992); we believe its content is adequately covered in DeLone and McLean (2003). The third article to be removed is March and Smith (1995); we believe its content is moderately covered in Hevner et al. (2004).

### Increase the number of case studies

Currently there are three case studies in the online ISM course. We will add three additional case studies for a total of six case studies. This is in response to student feedback in addition to prior literature indicating that the case method can engage students in critical thinking, problem-solving, and decision-making (Gill & Ritzhaupt, 2013).

### Keep the research project as a team project

This will provide an opportunity for students to work with their peers, communicate with the team, coordinate teamwork, and learn to deal with different personalities and priorities. As for the team size, we will keep it as two or three. This will give each team member the support they want, but not too many to coordinate. This will also give them a sense of responsibility and make it harder for someone to freeload.

### Split the long exams

Some students complained that the as-is exams are too long, and we as instructors have the same feeling. Going forward, we will split each long exam into two. Instead of covering four chapters, each new exam will cover only two chapters. Each chapter will have 25 questions including 5 true-false questions and 20 multiple-choice questions. The time for the exam will be 100 minutes.

### Other potential changes

Other potential changes are derived directly from our lessons learned. Going forward, we plan to: (1) allow students to choose their own team for the research project; (2) address the confusion raised by the APA style at the beginning of the semester; and (3) provide some video lectures and audio instructions to the course. Additionally, the course needs to be updated continuously with new topics of relevance to MBA students. Such topics could outline and detail matters regarding AI, machine learning in business, data analytics, blockchain technologies and their impact on business and other disruptive and emerging technologies that future business managers and entrepreneurs would have to contend with.

### Future actions

Implementing the above changes may have unforeseeable consequences. As such, we will continue to monitor the impact of the changes on student learning effectiveness. We will continue to analyze the course evaluation results and also ask students to complete the online survey. With this feedback, we will attempt to identify additional innovative ways to improve the design and delivery of this online ISM course.

## *CONCLUDING REMARKS*

An online ISM course for MBA programs needs to not only cover a broad range of dynamic technology and business topics, but also strike a balance between the width and depth of the covered content. As such, the design and delivery of such an online course is critical for improved teaching and learning effectiveness. In this paper, we have presented our experience in design and delivery of such an online ISM course for our MBA programs. Our comprehensive and systematic review of the related literature has uncovered the lack of research effort from the IS community in IS graduate education in general and with the online graduate ISM course in particular. This paper has filled the research gap by focusing on our experience in design and delivery of an online graduate ISM course. Also shared with our IS colleagues are our best practices and lessons learned. Even though our experience may not be fully applicable to other institutions, it is our hope that the design and delivery of this online course, and our best practices and lessons learned can inspire our IS colleagues to search for innovative ways to improve the teaching and learning effectiveness in IS online graduate education.

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# APPENDICES

## *APPENDIX A. SPECIFICATIONS AND REQUIREMENTS FOR TEAM RESEARCH PROJECT MILESTONES*

| MILE-STONE | SPECIFICATIONS AND REQUIREMENTS |
|---|---|
| Research Proposal | The purpose of this team research project is to provide students an opportunity to work as a team and learn how to identify a research question, design and implement a research plan, and write a publishable research paper.<br><br>Each team will choose an IT-related topic and write a research paper on it. The paper can be a theory paper, a practical paper, or an empirical paper. A theory paper is typically based on a comprehensive literature review; a practical paper is about solving a business-related issue that you have encountered in your organization; and an empirical paper usually involves data collected through lab experiment, survey, case study, or meta-analysis.<br><br>In your research proposal, try to answer the following three questions:<br>1. What research question are you addressing? This will set the scene for your specific research. What is already known and what is still unknown?<br>2. Why your research question is important? Establish the importance of your research project and answer the question why it is worth pursuing. Highlight the benefits, and the positive expected outcomes.<br>3. How are you going to address your research question? What methods will you use? What do you need? Are there barriers or pitfalls that you can anticipate in your planned research?<br><br>Requirements:<br>1. Minimum 400 words.<br>2. Suggested sections: Paper title, abstract, keywords, introduction, literature review, research method, and expected outcomes.<br>3. At least 6 references in APA format. Each in-text citation must be listed in your References section, and each entry in your References section must be cited within the text of your paper. |
| First Draft | The first draft of your research paper should contain all the major sections of your final paper, but the focus should be the front end of the paper. Once again, your paper should be very clear and specific on the research question; your reasoning and proof should be very convincing on why your research question is important and worth pursuing; and your paper should contain enough details on the methods so that other researchers can duplicate your research easily.<br><br>Requirements:<br>1. Minimum 2,000 words.<br>2. Suggested sections: Paper title, abstract, keywords, introduction, literature review, research method, results, and discussion.<br>3. At least 12 references in APA format. Each in-text citation must be listed in your References section, and each entry in your References section must be cited within the text of your paper. |

| MILE-STONE | SPECIFICATIONS AND REQUIREMENTS |
|---|---|
| Second Draft | The second draft of your research paper should contain all the major sections of your final paper, and the focus will be the back end of the paper. By now, your paper should tell a complete story. You should pay special attention to the structure of the paper, the logic flow of the paper, and the format of the paper. Writing is rewriting; as such, proofread your paper multiple times.<br><br>Requirements:<br>1. Minimum 2,400 words.<br>2. Suggested sections: Paper title, abstract, keywords, introduction, literature review, research method, results, and discussion.<br>3. At least 16 references in APA format. Each in-text citation must be listed in your References section, and each entry in your References section must be cited within the text of your paper. |
| Final Paper | Your Final Paper should tell a complete story. Make sure to review the instructor's change suggestions and address the comments the instructor has provided on your second draft. Again, you should pay special attention to the structure of the paper, the logic flow of the paper, and the format of the paper.<br><br>Specifically, please format your paper according to the following guidelines:<br>1. Papers must be submitted in Microsoft Word, not in PDF or in other formats.<br>2. All text in manuscripts should be in 12-point Times New Roman font. Papers should be single spaced, 0 pt. for before and after spacing, left-justified only - the entire paper, including the abstract and the appendices.<br>3. Figures and tables must be embedded in the body of the paper, either immediately after the reference in the text or as soon as possible thereafter. If you are not referring to a table or figure in the text, you should not include it in the paper.<br>4. **PAPER TITLE** - Separate line centered over text; bold, all caps.<br>5. Author List - Use three lines for each author: name (bold, Title Case), University Name (Title Case), email address (all lower case). List the authors in the order of contributions in descending order, which means to list the person who contributes the most as the leading author.<br>6. **ABSTRACT** - Separate line centered over text; bold, all caps. The text should be a regular paragraph.<br>7. ***Keywords:*** - Separate line, flush left; bold, italic. The list of keywords (all lower case except the first one) should be separated by a comma and end with a period.<br>8. **MAJOR HEAD** - Separate line centered over text; bold, all caps.<br>9. **First Subhead** - Separate line, flush left; bold, Title Case.<br>10. ***Second Subhead*** - Separate line, flush left; bold, italic, Sentence case.<br>11. **Third subhead** - On same line as beginning of text, flush left, bold, Sentence case, followed by a colon.<br>12. Insert one and only one blank line to separate sections, section titles, and paragraphs.<br>13. All figures and tables should be centered. Text in table should be left-justified.<br>14. Figure Title - Centered underneath the figure; bold, Title Case.<br>15. Table Title - Centered above the table; bold, Title Case.<br>16. Page Margins - All 1". |

| MILE-STONE | SPECIFICATIONS AND REQUIREMENTS |
|---|---|
| | 17. Header from Top: 0.5"; Footer from Bottom: 0.5".<br>18. No Header is allowed; only page numbers are allowed for Footer; Use the "*Page **X** of **Y***" format - 10-point Times New Roman font, italic.<br>19. Reference List - Follow the latest APA format; no indentation, use a hanging by 0.5".<br>20. Refer to the provided example when you are not sure about a certain format.<br>Requirements:<br>1. Minimum 2,400 words.<br>2. Suggested sections: Paper title, abstract, keywords, introduction, literature review, research method, results, and discussion.<br>3. At least 16 references in APA format. Each in-text citation must be listed in your References section, and each entry in your References section must be cited within the text of your paper. |

## *APPENDIX B. THE ONLINE SURVEY QUESTIONNAIRE*

| THE ONLINE SURVEY QUESTIONNAIRE |
|---|
| **1. Ranking Question 1 of 1** |
| Please rank the following grade components by assessing their usefulness (1 for the most favorite, and 5 for the least favorite).<br>• Review Questions<br>• Case Studies<br>• Writing Questions<br>• Team Research Project<br>• Exams |
| **2. Rating Question 1 of 1** |
| Please rate the 15 academic articles for the Writing Assignments according to whether you like them or not (1 for Strongly dislike, and 5 for Strongly like)<br>• Kettinger, W. J., & Li, Y. (2010). The infological equation extended: Towards conceptual clarity in the relationship between data, information and knowledge.<br>• Zhang, X., Nickels, D. W., & Stafford, T. F. (2010). Understanding the organizational impact of radio frequency identification technology: A holistic view.<br>• DeLone, W. H., & McLean, E. R. (1992). Information systems success: The quest for the dependent variable.<br>• DeLone, W. H., & McLean, E. R. (2003). The DeLone and McLean Model of Information Systems Success: A ten-year update.<br>• March, S. T., & Smith, G. F. (1995). Design and natural science research on information technology.<br>• Hevner, A. R., March, S. T., Park, J., & Ram, S. (2004). Design science in information systems research.<br>• Carr, N. G. (2003). IT doesn't matter.<br>• Carr, N. G. (2005). The end of corporate computing.<br>• Venkatesh, V., Morris, M. G., Davis, G. B., & Davis, F. D. (2003). User acceptance of information technology: Toward a unified view.<br>• Porter, M. E. (1979). How competitive forces shape strategy.<br>• Porter, M. E., & Millar, V. E. (1985). How information gives you competitive advantage.<br>• Porter, M. E. (2001). Strategy and the Internet. |

| THE ONLINE SURVEY QUESTIONNAIRE |
|---|
| • Zhang, X., Hu, T., Dai, H., & Li, X. (2010). Software development methodologies, trends and implementations: A testing centric view.<br>• Orlikowski, W. J. (1992). The duality of technology: Rethinking the concept of technology in organizations.<br>• Eisenhardt, K. M. (1989). Agency theory: An assessment and review. |
| **3. Multiple Choice Question 1 of 2** |
| What is your gender?<br>• Female<br>• Male |
| **4. Short-Answer Question 1 of 2** |
| What is your age? |
| **5. Multiple Choice Question 2 of 2** |
| Are you currently working full-time or part-time or neither?<br>• Full-time<br>• Part-time<br>• Neither |
| **6. Short-Answer Question 2 of 2** |
| If you are working, about how many years have you been in your current position? |
| **7. Essay Question 1 of 3** |
| For the Research Project, do you prefer it as a team project or an individual project? Why? Please specify your reasons in detail. |
| **8. Essay Question 2 of 3** |
| If you prefer the Research Project as a team project, how many team members do you like to have in a team? Why? Please specify your reasons in detail. |
| **9. Essay Question 3 of 3** |
| Do you have any other comments, suggestions, or ideas on how to improve the teaching and learning effectiveness of this course? |

## *APPENDIX C. FOUR STANDARD OPEN-ENDED QUESTIONS AND STUDENTS' RESPONSES*

| NUM-BER | RESPONSE |
|---|---|
| **Q1. What were the best aspects of this course and/or instruction?** | |
| 1 | The instructor wanted to help us write a journal-worthy paper and offered great feed-back. |
| 2 | I had a love/hate relationship with reading and critiquing the articles, but overall I think they added a lot of depth to the course. |
| 3 | The writing assignments were both challenging and educational. |
| 4 | That it was easy. |
| 5 | Doing the article summaries helped me dissect the articles and advanced my writing. |
| 7 | The content of the course. I was able to relate many topics to my actual job. |
| 8 | I really enjoyed reading all of the research papers and writing the group research paper. This was a new experience for me. |
| 9 | Course work, faculty presence and help on the IS/IT Project management along with Implementation. |
| 10 | Writing assignments and lectures. Textbook reading covered material well. |

| NUM-BER | RESPONSE |
|---|---|
| 11 | When I started this course I lamented all the reading, it was my first time reading peer reviewed journals too. About half way through the course I started to notice a drastic improvement in my reading and writing skills. I'd say one of the best aspects of this course is that it does a great job of preparing you for the next step. |
| 12 | I thought that the course did a great job of teaching the objective through reinforcement of weekly homework. |
| 13 | Very good professor and instruction. |
| 14 | None. |
| 15 | Case studies. |
| 16 | The RQ's were helpful in pulling out important course material. |
| 17 | There was a wide range of topics, ideas and practical content and outside research brought into the course. The Prof. exposed the class to valuable and timely information from many disparate sources. The writing assignments really helped me become a subject matter expert. |
| 18 | The pacing of the course was well laid out. |
| 19 | Clearly stated. |
| 20 | Taught me how to research scholarly journals. |
| 21 | The instructor was very involved in the course. He was responsive, and I never felt this was an online course disguised as a self-study course. This was more in line with what I expect from an online course at UNA, but sadly this type of course is not the norm at UNA. |
| 23 | The schedule and consistency of this course was good. |
| 24 | Team building, reviewing papers. |
| 25 | The writing assignments (WA 1-16) were particularly insightful, and taught me a great deal about the subject matter. |
| **Q2. What suggestions do you have for improving the course and/or instruction?** | |
| 1 | Slightly fewer WAs and more current material for them. |
| 2 | Improve the test bank questions on the exams. Some of them are really vague. |
| 3 | Clarify grading weights in the beginning of the semester. Perhaps offer an explanation when providing feedback on writing assignments. For example, why Harvard Business Review is not italicized vs. the other journals/periodicals. |
| 4 | The assignments were not created in a way to learn but rather just busy work. |
| 5 | Allow the students to pick their team for the group project. |
| 6 | Fewer writing assignments. Picking the favorite ones as at times it felt forced to have to read or understand how they fit into the curriculum. |
| 7 | Maybe more technology involvement. |
| 8 | Teams can be difficult at times. I might open up the team pairings to the class first and then pair up anyone else who does not have a team. |
| 9 | Maybe we can add more into IOT, ML, AI, HANA, SAP, SALES FORCE, etc. |
| 10 | Audio lectures would work better to elaborate on topics than just reading power points and text. |
| 11 | None. |
| 12 | I have really enjoyed courses that the instructor gave audio instruction for the weekly assignment. This provides a great way for remote education to feel connected with the education process. |
| 13 | None. Good as is. |
| 14 | None. |
| 15 | Making the Exam in a shorter version. |

| NUM-BER | RESPONSE |
|---|---|
| 16 | Other tools for learning the material would be great. The WA's included extremely long articles that were sometimes difficult to interpret without practical application. The WA's could correspond with the RQ's. |
| 17 | I hate multiple choice tests. But they are certainly very effective at making sure students learn the material. |
| 18 | It was a bit of a letdown to learn that the school didn't maintain the SAP license. A practical application would have been great in the course. |
| 19 | Stay the same. |
| 20 | Maybe a little more instruction on using citation tools. |
| 21 | Provide video lectures. |
| 22 | I found no value in the weekly writing assignments. At this point in our Academic career, busy work is unnecessary. |
| 23 | I would have more relative case studies than just 3 over the course of a semester. |
| 24 | You are doing a great job! Thank you for helping me out!! |
| 25 | None. |
| **Q3. Describe any difficulties you encountered in accessing course content.** | |
| 3 | Found several case studies mentioned on exams could not be found in my text; although I had the required book edition. |
| 4 | The professor was quick to count off a lot of points for APA reference styling but would rarely offer what was wrong or how to do it correctly. |
| 5 | None. |
| 7 | Nothing was difficult to access. Everything had clear instructions, and smooth access. |
| 9 | Nope. |
| 10 | None. |
| 11 | The modules could have been broken weekly instead of assignment type. I think that would have helped organize the content on the modules page. |
| 12 | None. |
| 13 | None. |
| 14 | None. |
| 15 | None. |
| 16 | None. |
| 17 | No problems at all. |
| 19 | None. |
| 20 | None. |
| 21 | None. |
| 22 | None. |
| 23 | There were no difficulties in accessing the content. |
| 25 | None. |
| **Q4. Additional comments or suggestions.** | |
| 3 | This course not only challenges you and forces you to develop great time management skills, but it also provides real life experience through group activities which provides you the opportunity to engage with different personalities and work styles. Overall a great class and highly recommended. In my opinion the instructor has developed a somewhat overwhelming but yet exceptional learning experience that will develop skills, that will be useful for years to come. |
| 4 | This professor did not teach this course well. |
| 5 | None. |
| 9 | Maybe we can add more into IOT, ML, AI, HANA, SAP, SALES FORCE, etc. |

| NUM-BER | RESPONSE |
|---|---|
| 10 | Great course overall. |
| 11 | None. |
| 12 | More audio instruction on topics. |
| 14 | None. |
| 15 | None. |
| 16 | This was a great course! The instructor was always quick to respond and grade our work! |
| 17 | The balance of tests, writing and reading is exactly what I expected an MBA level course to be. The format suited me well. |
| 20 | Appreciated [the professor's] instruction. |
| 23 | None. |
| 25 | [The professor] has put together an impressive and comprehensive course in my opinion because of the real life subject matter contained throughout the course, as well as the knowledge base that I was able to acquire through reading the book, and answering his questions in the review question modules. I was extremely impressed with the course layout in general, and I am sure many students will complain that there was too much homework, but it is my belief that to obtain the substantial knowledge base to succeed, one must put in the time to do so, and that is why I do not have any suggestions for improving the course. |

## BIOGRAPHIES

**Xihui "Paul" Zhang** is Professor of Computer Information Systems in the College of Business at the University of North Alabama (UNA) in Florence, AL. He received his B.S. and M.S. degrees in Earth Sciences from Nanjing University (1993, 1996), Nanjing, China, and his M.S. and Ph.D. degrees in Management Information Systems from the University of Memphis (2004, 2009), Memphis, TN. His research interests include the social and organizational aspects of Information Systems, software development and testing, as well as business intelligence and data warehousing. His work has appeared in journals, including the *Journal of Strategic Information Systems*, *Information & Management*, *Journal of Database Management*, and *ACM Transactions on Software Engineering and Methodology*, among others. He is a past Managing Editor of *The Data Base for Advances in Information Systems*. He serves on the editorial review board for several academic journals, including the *Journal of Computer Information Systems, Journal of Information Systems Education,* and *Journal of Information Technology Management*.

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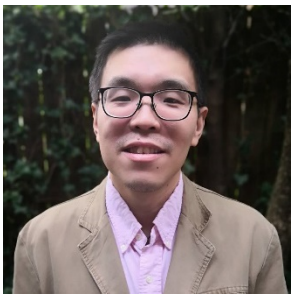

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**Colin Onita** is an Assistant Professor of Accounting Information Systems and SAP Coordinator at the Lucas College and Graduate School of Business of San Jose State University where he teaches topics on Data Analytics, Risk Management, and Cyber Security to graduate and undergraduate students. His research examines issues related to Information Systems Services, Social Networks, Information Security, Business Analytics, and Accounting Information Systems. His work appears in the *European Journal of Information Systems*, *Journal of Strategic Information Systems*, *Journal of Forensic and Investigative Accounting*, and other quality Accounting and IS journals. Colin holds a Ph.D. in MIS from the University of Memphis.