MIS 5203 – Systems and Infrastructure Lifecycle Management
Spring 2019

Instructor

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Course Description

This course introduces students to the methods used as organizations builds an enterprise information system architecture within an environment of internal control. Topics include information system planning, management and usage, the development, acquisition and maintenance of these technologies and their impact on the organization's business processes.

Course Objectives

1. Evaluate the business case for the proposed investments in information systems acquisition, development, maintenance and subsequent retirement to determine whether it meets business objectives.
2. Evaluate IT supplier selection and contract management processes service levels and requisite controls are met.
3. Evaluate the project management framework and controls to determine whether business requirements are achieved in a cost-effective manner while managing risks to the organization.
4. Conduct reviews to determine whether a project is progressing in accordance with project plans, is adequately supported by documentation, and has timely and accurate status reporting.
5. Evaluate controls for information systems during the requirements, acquisition, development and testing standards, procedures and applicable external requirements.
6. Evaluate the readiness of information systems for implementation and migration into production to determine whether project deliverables, controls and the requirements are met.
7. Conduct post-implementation reviews of systems to determine whether project deliverables, controls and the requirements are met.

Textbook and Readings and Reference Material

Textbooks	Valacich J.S. and George J.F., 2017, Modern Systems Analysis and Design, Eighth Edition, Pearson Education, Inc., ISBN-13: 978-0-13-420492-5
ISACA	CISA Review Manual 26th Edition, 2015, ISACA, ISBN 978-1-60420-367-7
	"COBIT 2019: Framework Introduction and Methodology", ISACA, ISBN 978-1-60420-763-7
	"COBIT 5: Enabling Processes", 2012, ISACA, ISBN 978-1-60420-241-0
	Chaudhuri, A., von Solms, SH, Chaudhuri, D. (2011), "Auditing Risks in Virtual IT Systems"
	Gelbstein, E. (2015) "Auditors and Large Software Projects, Part 1"
	Gelbstein, E. (2015) "Auditors and Large Software Projects, Part 2"
	Gelbstein, E. (2015) "Auditors and Large Software Projects, Part 3"
	Helskanen, A.LJK (2012) "Project Portfolio Management"
	Kancharia, M. and Bhattacharjee, S. (2010) "Realizing Benefits of IT Investments: Overcoming the Silver-bullet View"
	Raval, V. and Sharma, R. (2017) "Mitigating the Risk Factors of IT Project Failure"
	Singleton, T. (2014) "The Logical Reason for Consideration of IT"
	Singleton, T. (2014) "The Core of IT Auditing"
	Singleton, T. (2012) "Auditing Applications, Part 1"
	Singleton, T. (2012) "Auditing Applications, Part 2"
	Singleton, T. (2011) "Understanding the New SOC Reports"
	Singleton, T. (2010) "IT Audits of Cloud and SaaS"
FedRAMP	"CSP Authorization Playbook – Getting Started with FedRAMP"
FIPS	PUB 199 "Standards for Security Categorization of Federal information System and Information Systems"
NIST	Special Publication 800-34 Revision 1 "Contingency Planning Guide for Federal Information Systems"
	Special Publication 800-53A Revision 4 "Assessing Security and Privacy Controls in Federal Information Systems and Organizations"
	Special Publication 800-53 Revision 4 "Security and Privacy Controls for Federal information Systems and Organizations"
	Special Publication 800-64 Revision 2 "Security Considerations in the System Development Life Cycle" (SDLC)
SANS	Hein, R. (2004) "The Application Audit Process – A Guide for Information Security Professionals"
Harvard Business Publishing (HBP)	Harvard Business Publishing CoursePack: https://hbsp.harvard.edu/import/594229
	• Haggerty, N.R.D., Venkatagiri, S. and Ramastry, C.S. (2011) "Mudra Communications"
	• Jeffery, M. and Sweeney, R.J. (2006) "Teradata Data Mart Consolidation Return on Investment (ROI) at GST"
	• McFarlan, F.W. (1981) "Portfolio Approach to Information Systems"
Misc.	INTOSAI (2008) "Why IT Projects fail, Best Practices Guide"
	Peppard, J. (2016) "A Tool to Map Your Next Digital Initiative", Harvard Business Review

Schedule of class topics:

Unit #	Topics	Date
1	Introduction	1/15
2	Information System Development Life Cycle (SDLC)	1/22
3	*Case Study 1 – "Teradata Data Mart Consolidation Return on Investment at GST"* Project Initiation and Selection	1/29
4	Project Planning and Management	2/5
5	Requirements Analysis – Processes	2/12
6	Requirements Analysis – Data	2/19
7	**Midterm Exam**	2/26
8	*Case Study 2 – "Mudra Communications"* Design - Database	3/12
9	Design – User Experience	3/19
10	Development	3/26
11	Implementation and Testing	4/2
12	Post-Implementation	4/9
13	Maintenance Project Presentations	4/16
14	Review Project Presentations	4/23
	Final Exam	5/7

Assignments

The readings, questions, and case study assignments will bring the real world into class discussion while illustrating fundamental concepts.

1. **Readings:** Below is the reading schedule you are responsible for completing. Check the class website for updates and changes to the readings. Complete each reading and answer reading discussion questions posted to the class website before each class:

Unit #	Readings
1	• ISACA "The Logical Reason for Consideration of IT" • ISACA "The Core of IT Auditing" • HBP "Portfolio Approach to Information Systems" • INTOSAI (2008) "Why IT Projects fail, Best Practices Guide"
2	• MSAD Ch. 1 "The Systems Development Environment", pp.3-25 • MSAD Ch. 2 "The Origins of Software", pp. 26-41 • CISA Ch. 3 "Section One: Overview", pp. 137-147 • CISA Ch. 3.5 "Business Application Development", pp. 165-183 • CISA Ch. 3.8 "Development Methods", pp. 204-206 • CISA Ch. 3.11 "System Development Tools and Productivity Aids, pp.219-221
3	• Case Study 1 - HBP "Teradata Data Mart Consolidation ROI at GST" • MSAD Ch. 4 "Identifying and Selecting Systems Dev. Projects, pp. 87-108 • MSAD Ch. 5, "Initiating and Planning Systems Development Projects 111-127 • CISA Ch. 3.2 "Benefits Realization", pp. 151-154 • ISACA "Realizing Benefits of IT Investments: Overcoming the Silver-bullet View"

	• ISACA "Project Portfolio Management"
4	• MSAD Ch. 3 "Managing the Information Systems Project, pp. 44-76 • MSAD Ch. 5, "Initiating and Planning Systems Development Projects 111-127 • CISA Ch. 3.3 "Project Management Structure", pp.155-159 • CISA Ch. 3.4 "Project Management Practices", pp. 159-165 • ISACA "Auditors and Large Software Projects, Part 1" • ISACA "Mitigating the Risk Factors of IT Project Failure"
5	• MSAD Ch. 6 "Determining System Requirements", pp.147-179 • MSAD Ch. 7 "Structuring System Process Requirements", pp.182-216 • MSAD Ap. 7A "Object-Oriented Analysis and Design: Use Cases", pp.217-231 • MSAD Ap. 7B O-Oriented Analysis and Design: Activity Diagrams, pp. 232-236 • MSAD Ap. 7C "Object-Oriented Analysis and Design", pp.237-245 • MSAD Ap. 7D "Business Process Modeling", pp.246-252 • CISA Ch. 3.5 "Business Application Development", pp. 165-172 • COBIT 5: Enabling Processes.: Ch. 5, "Manage Requirements Def.", pp. 129-131
6	• MSAD Ch. 8 "Structuring System Data Requirements", pp. 255-289 • MSAD Ch. 8 Appendix "Object-Oriented Analysis and Design: Object Modelling – Class Diagrams", pp.290-304 • CISA Ch. 3.8 "Development Methods", pp.206-209 • NIST "Security Considerations in the SDLC", pp.1-20
8	• Case Study 2 – HBP "Mudra Communications" • MSAD Ch. 9 "Designing Databases", pp.311-350 • ISACA "Auditors and Large Software Projects, Part 2"
9	• MSAD Ch. 10 "Designing Forms and Reports" • MSAD Ch. 11 "Designing Interfaces & Dialogues" • NIST "Contingency Planning Guide for Federal Information Systems", Ch. 3.2 pp. 15-19, Appendix B, Appendix F
10	• MSAD Ch. 12 "Designing Distributed and Internet Systems" • CISA Ch. 3.5 "Business Application Development", pp. 173-177 • CISA Ch. 3.5.3 "Integrated Resource Management Systems", p. 182 • CISA Ch. 3.5.4 "Risk Associated with Software Development", pp.182-183 • CISA Ch. 3.13 "Application Controls" • CISA Ch. 3.7 "Business application Systems" • NIST "Security Considerations in the SDLC", pp.21-31
11	• MSAD Chapter 13 "System Implementation" • CISA Chapter 3.5 "Business Application Development", pp. 177-181 • CISA Chapter 3.6 • CISA Chapter 3.9 • ISACA "Auditing Risks in Virtual IT Systems" • ISACA "IT Audits of Cloud and SaaS"
12	• CISA Chapter 3.5 "Business Application Development", pp. 181-182 • ISACA "Understanding the New SOC Reports" • FedRAMP CSP Authorization Playbook
13	• MSAD Chapter 14 "Maintaining Information Systems" • CISA Chapter 3.10 • ISACA "Auditors and Large Software Projects, Part 3" • NIST "Security Considerations in the SDLC", pp.32—39

2. **Answer Questions:** Questions for each topical unit and case studies will be available on the class website, under "WEEKLY DISCUSSIONS". Beginning the second week of class you are expected to post your answer to each question on the class website blog or upload your answers in PDF format to Canvas by **noon Saturday** of the weekend prior to class. Provide a thoughtful but brief (paragraph or two) analysis as your answer to each question. To post on the class website, click "Leave a Comment". Instructions for posting answers to Canvas will be provided along with questions on the class website.

   Late and missing submissions of answers will result in lost credit for the assignment.

   Post and/or upload your answers to the assignments and case studies and come to class prepared to discuss your answers in-detail.

   Case Studies: Case study analysis will be conducted in three phases:

   i. Individual preparation is done as homework assignments that prepare each student to contribute in group discussion meetings. It will prepare you to learn from what others say. To fully benefit from the interchange of ideas about a case's problem, however, you must possess a good understanding of the facts of the case and have your own ideas. Studying the case, doing your homework and answering the questions readies you to react to what others say. This is how we learn.

   ii. Group discussions are informal sessions of give and take. Come with your own ideas and leave with better understanding. By pooling your insights with the group you advance your own analysis. Discussions within small groups is also helpful for those uncomfortable talking in large classes to express their views and gain feedback.

   iii. Class discussion advances learning from the case, but does not solve the case. Rather it helps develop your understanding why you need to gain more knowledge and learn concepts that provide the basis of your intellectual toolkit you develop in class and apply in practice.

Case Study Schedule:

Unit	Case Studies	Answers Due	Class Discussion
3	Case Study 1: "Teradata Data Mart Consolidation Return on Investment at GST"	1/28	1/29
8	Case Study 2: "Mudra Communications"	3/11	3/12

Participation

Your participation through comments on the class website in class discussions is critical. Evaluation is based on you consistently demonstrating your thoughtful engagement with the material. Assessment is based on what you contribute. The frequency and quality of your contributions are equally important.

Each week, in addition to posting your answers to weekly assignments of reading questions, you are also expected to participate through written postings to the class blog:

- **Comments and discussion of other students' answers to weekly reading discussion questions.** Read the answers of others to the discussion questions, and contribute at least three (3) substantive posts that include your thoughtful comments as you participate in the discussion of the answers to questions with your

classmates. The posting of the comments is due by Monday @ 11:59 AM of each week.

Team Project Presentation

During Unit #2 students will be organized into Case Study / Project teams. After the midterm exam teams will receive a presentation topic and will follow up by developing a presentation covering the assigned topic. During our last two classes project teams will have 15 minutes to present their project deliverables, following by questions and answer (Q&A) session. The teams not presenting will be responsible for attending and asking questions.

Exams

There will be two exams given during the semester. Together these exams are weighted 25% of each student's final grade.

Below is the exam schedule:

Date	Exam
Feb. 26	Midterm Exam
May 7	Final Exam

Both exams will consist of multiple-choice questions. You will have a fixed time (e.g. 50 minutes) to complete the exam. The Midterm Exam will occur during Unit #7 and the Final Exam will occur during finals week after the last class.

A missed exam can only be made up in the case of documented and verifiable extreme emergency situation. No make-up is possible for the Final Exam.

Quizzes

At the end of many class units I will provide you with a practice quiz consisting of multiple-choice questions modeled after the content of the CISA certification exam. Quizzes are for practice only. They will not count towards your final grade. The goals for the quizzes are twofold: 1) help you become familiar with technical information security areas requiring additional study and attention, and 2) help you gain skills that improve your test taking abilities.

Weekly Cycle

As outlined above in the **Assignments and Participation** sections, much of your learning will occur as you prepare for and participate in discussions about course content. To facilitate learning course material, we will discuss course material on the class blog in between classes. Each week this discussion will follow this cycle:

When	Actor	Task	Type
Thursday	Instructor	Post reading questions	
Saturday 11:59 AM	Student	Post answers to reading questions	Assignment
Monday 11:59 AM	Student	Post 3 comments to others' answers	Participation
Tuesday	Both of Us	Class meeting	Participation
Wednesday	Instructor	Post Wrap-up notes	

Evaluation and Grading

Item	Weight
Assignments	25%
Participation	25%
Team Project	25%
Exams	25%
	100%

Grading Scale			
94 – 100	A	73 – 76	C
90 – 93	A-	70 – 72	C-
87 – 89	B+	67 – 69	D+
83 – 86	B	63 – 66	D
80 – 82	B-	60 – 62	D-
77 – 79	C+	Below 60	F

Grading Criteria

The following criteria are used for evaluating assignments. You can roughly translate a letter grade as the midpoint in the scale (for example, an A- equates to a 91.5).

Criteria	Grade
The assignment consistently exceeds expectations. It demonstrates originality of thought and creativity throughout. Beyond completing all of the required elements, new concepts and ideas are detailed that transcend general discussions along similar topic areas. There are no mechanical, grammatical, or organization issues that detract from the ideas.	A- or A
The assignment consistently meets expectations. It contains all the information prescribed for the assignment and demonstrates a command of the subject matter. There is sufficient detail to cover the subject completely but not too much as to be distracting. There may be some procedural issues, such as grammar or organizational challenges, but these do not significantly detract from the intended assignment goals.	B-, B, B+
The assignment fails to consistently meet expectations. That is, the assignment is complete but contains problems that detract from the intended goals. These issues may be relating to content detail, be grammatical, or be a general lack of clarity. Other problems might include not fully following assignment directions.	C-, C, C+

The assignment constantly fails to meet expectations. It is incomplete or in some other way consistently fails to demonstrate a firm grasp of the assigned material.	Below C-

Late Assignment Policy

An assignment is considered late if it is turned in after the assignment deadlines stated above. No late assignments will be accepted without penalty unless arrangements for validated unusual or unforeseen situations have been made.

- The exercise assignments will be assessed **a 20% penalty** each day they are late. No credit is given for assignments turned in over five calendar days past the due date.
- You must submit all assignments, even if no credit is given. **If you skip an assignment, an additional 10 points will be subtracted from your final grade in the course.**
- Plan ahead and backup your work. ***Equipment failure is not an acceptable reason for turning in an assignment late.***

Citation Guidelines

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

Plagiarism and Academic Dishonesty

All work done for this course: examinations, homework exercises, blog posts, oral and written presentations — is expected to be the individual effort of the student presenting the work.

Plagiarism and academic dishonesty can take many forms. The most obvious is copying from another student's exam, but the following are also forms of this:

- Copying material directly, word-for-word, from a source (including the Internet)
- Using material from a source without a proper citation
- Turning in an assignment from a previous semester as if it were your own
- Having someone else complete your homework or project and submitting it as if it were your own
- Using material from another student's assignment in your own assignment

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

Student and Faculty Academic Rights and Responsibilities

The University has adopted a policy on Student and Faculty Academic Rights and Responsibilities (Policy # 03.70.02).

Additional Information

Availability of Instructor	▪ Please feel free to contact me via e-mail with any issues related to this class. I will also be available at the end of each session. Please note that these discussions are to address questions/concerns but are NOT for helping students catch up on content they missed because they were absent. Note: I will respond promptly when contacted during the week ▪ I am available to meet personally with you: ✓ Immediately before or after class ✓ During class breaks
Attendance Policy	▪ Class discussion is intended to be an integral part of the course. Therefore, full attendance is expected by every student. ▪ If you are absent from class, speak with your classmates to catch up on what you have missed.
Class Etiquette	▪ Please be respectful of the class environment. ▪ Class starts promptly at the start time. Arrive on time and stay until the end of class. ▪ Turn off and put away cell phones, pagers and alarms during class. ▪ Limit the use of electronic devices (e.g., laptop, tablet computer) to class-related usage such as looking up terms and taking notes. Restrict the use of an Internet connection (e.g., checking email, Internet browsing, sending instant messages) to before class, during class breaks, or after class. ▪ Refrain from personal discussions during class. Please leave the room if you need to speak to another student for more than a few words. If a student cannot refrain from engaging in private conversation and this becomes a pattern, the students will be asked to leave the classroom to allow the remainder of the students to work. ▪ During class time speak to the entire class (or breakout group) and let each person "take their turn." ▪ Be fully present and remain present for the entirety of each class meeting.