MIS5203 – Systems & Infrastructure Lifecycle Management I
Spring 2017

About the Instructor

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Office hours: Online or by appointment

Class Location and Time

Classroom / Virtual	Thursdays - 5:30 PM – 8:00 PM
Location	Main Campus Alter Hall 609
Class blog	http://community.mis.temple.edu/itacs5203spring2017/

Course Description

Enterprise's primary business objectives are to successfully market and sell their services and products to customers, and to make profits to its investors. Information Systems & Infrastructure Lifecycle Management plays a crucial role in the realization and success of those objectives.

In this course, students will learn the fundamentals, processes, risks, and controls around Information Systems & Infrastructure Lifecycle Management that are essential to the success of the company.

Students will learn what is an information system, how is the system developed, what are the success factors to ensure system success, what is the governance role played by senior management, stakeholders and committees involvement, project management, business objectives, systems requirements, engineering design and architecture, development and testing, quality assurance, production planning and control, maintenance of the system, third party vendors, and the entire gamut of system development life cycle.

The course will review theory based on the CISA Review Manual 2016 (or 2015) and blend with industry insights and practices. It will bring out the best of both world's i.e. theory and applied skills to the table which will benefit the students in understanding the infrastructure system development life cycle.

The skills learned in this class will help jump start students who take to auditing as a profession. It will also help students in the IT world of software development and testing.

Course Objectives

MIS5203 – Systems & Infrastructure Lifecycle Management I
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The primary objective of the course MIS5203 is to teach the concepts, processes and controls around acquisition, development, and implementation of systems and infrastructure.

Additionally, it will review *Chapter 3 – Information Systems Acquisition, Development and Implementation* of the *Certified Information Systems Auditor (CISA) Review Manual 2016* to aid the student better understand and prepare for the Information Systems Audit and Control Association's (ISACA) *CISA* exam.

The course will also discuss on a real-world example system development life cycle project and prepare the students to enter the work force with high level knowledge of the SDLC methodology, processes, risks, and controls environment, and how to audit the SDLC.

Required Text and Readings

The lectures and assignments will be based on:

- CISA Review Manual 2016 (26th edition) by ISACA

For additional guidance and recommendations:

- CISA Review Questions, Answers & Explanations Manual, 11th Edition by ISACA

Assignments

The reading assignments, weekly classroom involvement, quiz or test of knowledge, and mid-term and final term activities have been carefully chosen to bring the real world into class discussion while also illustrating fundamental concepts. Your participation in the online and class discussions is critical. Evaluation is based on you consistently demonstrating your engagement with the material. Assessment is based on what you contribute. The frequency and quality of your contributions are equally important.

Syllabus

Week #	Date	Class Activity	Reading Assignment Due Prior to Class
1	1/19	➢ ***Introductions*** Each student will provide a 30 second elevator speech: • Your name • Class year • 2 facts & 1 fiction • Expectations from MIS5203 ➢ ***Class Objectives and Expectations***	➢ ***Classroom Involvement*** Proactive involvement in all class sessions will be expected. Ask questions, share perspectives, challenge responses, and answer questions. ➢ ***Knowledge Statements*** The following knowledge statements will be discussed in today's class:

		Compliance expected of students will be explained: • Timing and schedule • Attendance • Participation • Assignments and Exams • TU policies and rules ➢ ***CISA Review Manual - talking points*** The talking points will focus on ***governance***, ***execution***, and ***sponsorship*** of projects: • Benefits realization (3.2) • Project management structure (3.3) ➢ ***Practitioner's audit perspective*** Enterprise insights will be shared: • Enterprise, BOD, Sr. Management • Business objectives and goals • Risks and controls • Organizational chart and PMO	• *KS3.1 – Knowledge of benefits realization practices……* • *KS3.2 – Knowledge of project governance mechanisms……* ➢ ***References*** Today's class will be based on the following the sections in the CISA Review Manual: • 3.2, 3.2.1, 3.2.2., 3.2.3 • 3.3, 3.3.2, 3.3.3, 3.3.5, 3.3.6 • 3.4, 3.4.1, 3.4.2 • 3.5.2 • 3.14.2 • Exhibit 3.3
2	1/26	➢ ***CISA Review Manual - talking points*** The talking points will focus on PM ***structure, methodology*** and ***risks***: • Project management practices (3.4) • Business application development (3.5) • Development Methods (3.7) • Infrastructure Development / Acquisition Practices (3.8) • Process improvement practices (3.11) ➢ ***Practitioner's audit perspective*** • Risk scenarios to project management • PM oversight over SDLC phases ➢ ***Quiz or Test of Knowledge (TOK)***	➢ ***Knowledge Statements*** Students are expected to read the following knowledge statements and come prepared for the class: • *KS3.3 – Knowledge of project management control frameworks, practices and tools……* • *KS3.4 – Knowledge of risk management practices applied to projects……* ➢ ***References*** Students are expected to read the following sections in the CISA Review Manual and be prepared for today's class, and quiz or TOK: • 3.3.5, 3.4, 3.4.1, 3.4.2, 3.4.3, 3.4.4 • 3.5.2, 3.5.4 • 3.7, 3.7.1, 3.18 • 3.11, 3.11.1, 3.11.2, 3.11.3, 3.11.4 • 3.14.2
3	2/2	➢ ***CISA Review Manual - talking points*** The talking points will focus on enterprise ***architecture*** and IT architecture, ***risks*** and ***controls***, requirements ***analysis***:	➢ ***Knowledge Statements*** Students are expected to read the following knowledge statements and come prepared for the class:

		• Infrastructure development / Acquisition practices (3.8) ➢ ***Practitioner's audit perspective*** • Control objectives and risk mitigation • Business requirements vs. System requirements ➢ ***Quiz or Test of Knowledge (TOK)***	• *KS3.5 – Knowledge of IT architecture related to data, applications and technology……* ➢ ***References*** Students are expected to read the following sections in the CISA Review Manual and be prepared for today's class, and quiz or TOK: • 3.8, 3.8.1, 3.8.3, 3.8.6 • Exhibit 3.18, 3.19, 3.21, 3.22, 3.23, 3.24
4	2/9	➢ ***CISA Review Manual - talking points*** The talking points will focus on use of ***vendors*** and related risks, ***contract*** management and service level agreements (***SLA***), ***right*** to audit, ***legal*** involvement, and Request for Proposal (***RFP***): • Infrastructure development / Acquisition practices (3.8) ➢ ***Practitioner's audit perspective*** • Vendor related risks • SAS70, SSAE16, SOC1 / 2 ➢ ***Quiz or Test of Knowledge (TOK)***	➢ ***Knowledge Statements*** Students are expected to read the following knowledge statements and come prepared for the class: • *KS3.6 – Knowledge of acquisition practices……* ➢ ***References*** Students are expected to read the following sections in the CISA Review Manual and be prepared for today's class, and quiz or TOK: • 3.8.4, 3.8.5
5	2/16	➢ ***CISA Review Manual - talking points*** The talking points will focus on how business systems are ***engineered*** through the life cycle methodology, and associated ***risks***: • Business application development (3.5) ➢ ***Practitioner's audit perspective*** • Software engineering & IEEE Standards • System software, interfaces, and interaction • Conceptual elements and business requirements • Waterfall vs Agile ➢ ***Quiz or Test of Knowledge (TOK)***	➢ ***Knowledge Statements*** Students are expected to read the following knowledge statements and come prepared for the class: • *KS3.7 - Knowledge of requirements analysis and management practices……* ➢ ***References*** Students are expected to read the following sections in the CISA Review Manual and be prepared for today's class, and quiz or TOK: • 3.5, 3.5.1, 3.5.2, 3.5.3, 3.5.4
6	2/23	➢ ***CISA Review Manual - talking points***	➢ ***Knowledge Statements***

		The talking points will focus on ***stakeholder*** expectations, requirements analysis, project success ***criteria***, and use of ***V-model*** to mitigate risk of not meeting requirements: • Business application development (3.5) • Project Management Structure (3.3) ➢ ***Practitioner's audit perspective*** • System requirements definition, analysis, walk-through, updates, and approval • Audit analysis and success factors, expected control objectives, management's review-point meetings ➢ ***Quiz or Test of Knowledge (TOK)***	Students are expected to read the following knowledge statements and come prepared for the class: • KS3.8 – Knowledge of project success criteria and risks…… ➢ ***References*** Students are expected to read the following sections in the CISA Review Manual and be prepared for today's class, and quiz or TOK: • 3.5, 3.5.1, 3.5.2, 3.5.3, 3.3.5, 3.3.6 • Exhibit 3.8, 3.9, 3.10
7	3/9	➢ ***Mid-term activities*** • For a real-world example company that is planning to develop a software system, MIS5203 students will team up into smaller groups. Each group will ***analyze*** the company's business objectives, ***define*** system requirements, ***design*** and ***architect*** the system, ***write*** pseudo code, ***prepare*** Quality Assurance test plan such as UAT, system testing, protocol analysis, and ***simulate*** steps to migrate the system to production. The group will ***present*** their SDLC project to the class. Class will ***critique*** on the project's SDLC phases while the group will ***defend***. • Mid-term activity exam 1	➢ ***References*** • A fictitious company will be used to simulate the real world SDLC project • Details will be explained in the six preceding classes progressively • Exam 1 will be based on the CISA review manual. Instructor will design multiple choice questions.
8	3/2	➢ ***CISA Review Manual - talking points*** The talking points will focus on ***input*** and ***output data***, controls to ensure authorization, accuracy, and completeness of data: • Application controls (3.12)	➢ ***Knowledge Statements*** Students are expected to read the following knowledge statements and come prepared for the class: • *KS3.9 – Knowledge of control objectives and techniques……* ➢ ***References***

		➢ ***Practitioner's audit perspective*** • Unit and integration testing • Review test data and approval • Controls ➢ ***Quiz or Test of Knowledge (TOK)***	Students are expected to read the following sections in the CISA Review Manual and be prepared for today's class, and quiz or TOK: • 3.12, 3.12.1, 3.12.2, 3.12.3 • Exhibit 3.28, 3.29, 3.30
9	3/16	No class today. Enjoy your spring break!	No class today. Enjoy your spring break!
10	3/23	➢ ***CISA Review Manual - talking points*** The talking points will focus on various system development ***methodologies*** including Waterfall, Rapid, and Agile: • Business application development (3.5) • Development methods (3.7) • Infrastructure development / Acquisition practices (3.8) ➢ ***Practitioner's audit perspective*** • In-house developed vs acquired systems • Offshore development and security controls • Agile challenges ➢ ***Quiz or Test of Knowledge (TOK)***	➢ ***Knowledge Statements*** Students are expected to read the following knowledge statements and come prepared for the class: • *KS3.10 – Knowledge of system development methodologies and tools……* ➢ ***References*** Students are expected to read the following sections in the CISA Review Manual and be prepared for today's class, and quiz or TOK: • 3.5.1, 3.7, 3.7.1, 3.7.2, 3.7.3, 3.7.4, 3.7.5, 3.7.6,3.7.7, 3.7.8, 3.7.9, 3.8 • Exhibit 3.17, 3.18, 3.19
11	3/30	➢ ***CISA Review Manual - talking points*** The talking points will focus on ***Quality Assurance*** (QA), User Acceptance Testing (***UAT***), and test plans: • Auditing application controls (3.13) • Project Management Structure (3.3) • Business application development (3.5) ➢ ***Practitioner's audit perspective*** • Development vs Test vs Production environments • System / regression testing, black box testing, sandbox environment • Manager's controls assessment ➢ ***Quiz or Test of Knowledge (TOK)***	➢ ***Knowledge Statements*** Students are expected to read the following knowledge statements and come prepared for the class: • *KS3.11 – Knowledge of testing methodologies and practices related to information systems development……* ➢ ***References*** Students are expected to read the following sections in the CISA Review Manual and be prepared for today's class, and quiz or TOK: • 3.12.2, 3.12.3, 3.13.4, 3.13.6, 3.13.7, 3.3.6, 3.5.2 • Exhibit 3.29, 3.30, 3.31

12	4/6	➢ ***CISA Review Manual - talking points*** The talking points will focus on ***configuration*** management, ***change*** management, and ***release*** management: • Information systems maintenance practices (3.9) • Information systems operations (4.2) ➢ ***Practitioner's audit perspective*** • Baselining of critical and high risk configuration parameters and value setting • Build testing and certification • Change requests, normal vs emergency changes, approvals, ticketing and documentation, change reconciliation • Periodic reconciliation of configuration parameter values in production environment • Periodic scanning and penetration testing for configuration changes, vulnerabilities and errors, and remediation and escalation procedures ➢ ***Quiz or Test of Knowledge (TOK)***	➢ ***Knowledge Statements*** Students are expected to read the following knowledge statements and come prepared for the class: • *KS3.12 – Knowledge of configuration and release management……* ➢ ***References*** Students are expected to read the following sections in the CISA Review Manual and be prepared for today's class, and quiz or TOK: • 3.9, 3.9.1, 3.9.2, 4.2.7 • Exhibit 3.25, 4.8
13	4/13	➢ ***CISA Review Manual - talking points*** The talking points will focus on ***migration*** of application and data to the new system, ***tools*** for the migration, and ***process improvement*** practices: • Business application development (3.5) • System development tools and productivity aids (3.10) • Process improvement process (3.11) ➢ ***Practitioner's audit perspective*** • Continuous monitoring of processes • Key Performance Indicators (KPI) • Key Risk Indicators (KRI)	➢ ***Knowledge Statements*** Students are expected to read the following knowledge statements and come prepared for the class: • *KS3.13 – Knowledge of system migration and infrastructure deployment practices……* ➢ ***References*** Students are expected to read the following sections in the CISA Review Manual and be prepared for today's class, and quiz or TOK: • 3.5.2, 3.10.2, 3.11, 3.11.1, 3.11.2, 3.11.3, 3.11.4 • Exhibits 3.12, 3.13, 3.14, 3.26, 3.27

		• Metrics reporting for process improvements • Gating criteria of applications for migration • Data migration risks and controls ➢ ***Quiz or Test of Knowledge (TOK)***	
14	4/27	➢ ***Final term activity*** • For the real-world company's system development life cycle project the student teams will ***document*** IT processes, process objectives, risks to the objectives, ***design*** controls to mitigate the risks, ***prepare*** test steps to assess the design of controls, ***prepare*** test steps to assess the effectiveness of controls, and ***present*** their Process, Risks, and Controls (PRC) Matrix to the class. Class will ***critique*** on the project, and the presenting team will ***defend***. • Final term activity Exam 2	➢ ***References*** • A fictitious company will be used to simulate the real world SDLC project • Details will be explained progressively in the prior classes leading up to this final term activity • Exam 2 will be based on the CISA review manual. Instructor will design multiple choice questions.
15	4/20	➢ ***CISA Review Manual - talking points*** The talking points will focus on post implementation review, closing down the project with recommendations of future improvement opportunities, lessons learned, and formal review of the project's success: • Benefits realization (3.2) • Project management practices (3.4) • Business application development (3.5) • Auditing systems development, acquisition and maintenance (3.14) ➢ ***Practitioner's audit perspective*** • Stakeholder meeting on what worked and did not • Operational effectiveness testing ➢ ***Quiz or Test of Knowledge (TOK)***	• ***Knowledge Statements*** Students are expected to read the following knowledge statements and come prepared for the class: • *KS3.14 – Knowledge of post implementation review objectives and practices……* • ***References*** Students are expected to read the following sections in the CISA Review Manual and be prepared for today's class, and quiz or TOK: • 3.2.3, 3.4.4, 3.5.2, 3.14.8

16	5/4	➢ ***Semester Final Exam*** • Exam format and details will be explained about four weeks prior to the final exam	Be honest, prepare well, get adequate rest the night before, and take the exam confidently. Good luck!

Note: Late submissions for quiz and TOK will result in no credit earned for the assignment

Evaluation and Grading

Item	Weight
°Participation (in class and online)	10%
[1]Mid-term presentation and exam 1	20%
[2]Final-term presentation and exam 2	20%
[3]Quiz or Test of Knowledge	20%
~Final exam	30%
	100%

°Participation – ask questions, share perspectives, challenge responses, and answer questions.
[1]Mid-term presentation – define business objectives, identify risks, design controls to mitigate the risks, present to the class, and respond to critiquing.
[2]Final term presentation - prepare test steps, perform control effectiveness testing, present control test results to the class, and respond to critiquing.
[3]Quiz or Test of Knowledge – read the questions and choose the right answers.
~Final exam – read CISA Review Manual and classroom notes, answer questions.

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 are the criteria 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-

Participation

The reading assignments, quiz, and group project have been carefully chosen to bring the real world into class discussion while also illustrating fundamental concepts. Your participation in the online and class discussions is critical. Evaluation is based on you consistently demonstrating your engagement with the material. Assessment is based on what you contribute. The frequency and quality of your contributions are equally important. Quiz will be handed out in the classroom or posted online for completion within an established timeframe.

Each week you will need to participate in various ways:

1) Weekly Reading Questions
Each week on Saturday (PM), you will find a post that includes several discussion questions. You will be expected to answer the questions based on the classroom discussions and your week's readings by Tuesday @11:59 PM. A paragraph or two of thoughtful analysis is expected for your initial answer to the question. I also expect that you will contribute at least four answers / comments each week to the general classroom discussion.

2) Classroom Involvement
You must come prepared to discuss all of the weekly readings and questions in detail when we meet in the class / Webex.

Fictitious real-world group project's company structure, governance, standards, policies, systems and infrastructure will not vary; however, your group's risks and controls statements may vary.

- Be clear about the questions and your position on them. Take a position.
- Instead of general observations that apply to any problem, draw details from your analysis, thoughts, and observations, and map directly to those key facts and issues. Google or Bing for additional knowledge and cite them in defense of your line of reasoning and thinking. ISACA, SAN, ISC2, NIST, ISO, IIA, and other reliable sources maybe your source of justification. General yahoo responses or internet graffiti will render your defense weak.
- Think like an auditor or a friendly cop and nail your responses
- Provide a balanced perspective. For example, when making a recommendation explain the pros and cons, providing both the rationale (the why) as well as its feasibility (the how).

Exams

There will be three (3) exams during the semester. Mid-term activity exam 1, Final term activity exam 2, and Semester final exam. Each exam will be conducted in classroom and online (using Blackboard). Together these exams are weighted 30% of your final grade. Check the schedule for the dates.

Mid-term activity exam and Final term activity exam format will be finalized in the class. Semester final exam will consist of multiple-choice, fill in the blank and short answer questions.

You will turn in your answers to all exams on the respective dates when they will be held. If you will be physically present in the class, you will turn in your answers by end of class hour (see schedule for exam dates). If you will attend online, you will submit online your answers by end of class hour.

In general, the exams will not be cumulative but focused on the course materials that was taught since the beginning of last exam. However, some concepts highlighted in class as a 'Core Principle' or 'This may be on the Final' may appear on any of the exams.

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

Weekly Cycle

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

- You: Read, view, etc. content for week (see course Schedule above)
- Me: Post Questions (Saturday PM)
- You: Respond to questions and read & respond to other's answers (through

Tuesday 11:59 pm). **Note**: Four substantive posts a week will be considered a B

- Us: Class (Thursday)
- Me: Post summary note (if any) (Monday)

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.

- Class contributions cannot be turned in late. If you miss contributing prior to class for that week's discussion / questions you will receive no credit for it.
- 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: papers, examinations, homework exercises, blog posts, laboratory reports, oral 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 this class. In cases of cheating, both parties will be held equally responsible, i.e. both the student who shares the work and the student who copies the work. Penalties for such actions are given at my discretion, and can range from a failing grade for the individual assignment, to a failing grade for the entire course, 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) which can be accessed through the following link: http://policies.temple.edu/getdoc.asp?policy_no=03.70.02

For more details see the class blog:
http://community.mis.temple.edu/itacsMIS5203spring2017/

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 after class ✓ By appointment by phone
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 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.