Systems and Infrastructure Lifecycle Management

MIS 5203   Spring 2023

Instructor:	William Bailey
Office hours:	By appointment
Contact Information:	William.Bailey@temple.edu
Zoom Dates:	CST: 8:00 am – 12:00 pm (noon) – February 26 – March 5 (CST/UTC+8) EST: 7:00 pm – 11:00 pm – February 25 – March 4 (EST/UTC -5) *Note – times in Canvas, or on the Community site, will appear as EST (UTC-5).*
Zoom Link:	https://temple.zoom.us/j/99829258584?pwd=d3AwMXI3TDFuR3kva2VFbWpiUEZTQT09
Link to Canvas:	https://templeu.instructure.com
Credit Hours:	3.00
Link to Class Website:	https://community.mis.temple.edu/mis5203sec951spring2023/

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.

Required Reading & Materials

The required textbooks for this course were chosen as the text(s) are globally available.

There are previous editions of both of these required texts, but the content within the text(s), chapter and page alignment is different, and will be missing content used in the course. In the case of the CISA Review Manual, this text is available in print or electronic format, is utilized in other courses in the program, so students either already have the text, or will be using it future courses.

For the other reading materials, these are either accessible on the Community (blog) site, or are freely available documents.

Textbooks (required)	Valacich J.S. and George J.F., 2021, Modern Systems Analysis and Design, Ninth (Global) Edition, Pearson Education, Inc., ISBN-13: 978-1-292-35162-9
	CISA Review Manual 27th Edition, 2019, ISACA, ISBN 978-1-60420-767-5
ISACA	"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
	Subramanian, S., Swaminathan M, B. (2017), "Security Assurance in the SDLC for the Internet of Things"
	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"
	PUB 200 "Minimum Security Requirements for Federal Information and Information Systems"
NIST Special Pubs. (SPs)	"Secure Software Development Framework (SSDF) Version 1.1: Recommendations for Mitigating the Risk of Software Vulnerabilities
	Special Publication 800-160 Volume 1 "Systems Security Engineering: Considerations for a Multidisciplinary Approach in the Engineering of Trustworthy Secure Systems"
	Special Publication 800-160 Volume 2 "Developing Cyber Resilient Systems: A Systems Security Engineering Approach"
	Special Publication 800-34 Revision 1 "Contingency Planning Guide for Federal Information Systems"
	Special Publication 800-37 Revision 2 "Risk Management Framework for Information Systems and Organizations: A System Life Cycle Approach for Security and Privacy"
	The following are referenced in the Special Publications above: SP800-53 Rev 5 – Security and Privacy Controls for Information Systems and Organizations

	SP800-53A Rev 5 – Assessing Security and Privacy Controls in Information Systems and Organizations
	SP800-53B – Control Baselines for Information Systems and Organizations (SP800-53 Rev 5)
SANS	Hein, R. (2004) "The Application Audit Process – A Guide for Information Security Professionals"
Misc.	Davis, N. (2013) "Secure Software Development Life Cycle Processes"
	INTOSAI (2008) "Why IT Projects fail, Best Practices Guide"
	Peppard, J. (2016) "A Tool to Map Your Next Digital Initiative", Harvard Business Review

Technology Requirements

The expectation for online courses is that students participate both by video and audio. All students are required to have a working camera and headset during class times. Class sessions are recorded, and the recordings are posted shortly after class, please be aware that anything said during class sessions will be included and posted.

- Headphones
- Webcam: You are required to keep your webcam on during the duration of the class session
- Recommended Internet Speed: 8mbps download & 5mbps upload.
  https://www.google.com/?q=internet%20speed%20test
- Please note: Hard-wired connections are more consistent than Wi-Fi for Zoom sessions

Course Objectives

Upon completion of this course, students will be able to (program competency in parentheses):

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.

Method of Instruction

This is an online course, with twelve synchronous virtual classes held using Zoom, a video conferencing tool. Please plan your time accordingly. This class has been rigorously designed to effectively help students reach the course objectives through various deliverables. Attention to the course schedule and the suggested order of assignment completion is key to student success. It is incumbent upon students to work through all materials provided, attend optional office hours and ask questions as they come up to ensure successful completion of all deliverables in a timely fashion.

Assessment

Participation
Your participation during the virtual class discussion 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.

Exam
There will be three exams given during the semester. Together these exams are weighted 30% of each student's final grade (10% per exam).

Each exam will consist of multiple-choice questions. You will have a fixed time (e.g. 50 minutes) to complete the exam. The first exam, which is administered during unit 7, will cover the material from units 1 through 6. The second exam, will cover the units after the first exam. The last exam, delivered after our final session, includes topics from the entire course.

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 last 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.

Attendance
- 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.

Canvas
Canvas is the university's current Learning Management System (LMS). For resources and/or Canvas related questions or issues please use the Help (?) feature in the Canvas Global Navigation for assistance via phone or a 24-hour Chat feature. Visit the "Tech Support" page in our Canvas Course for additional resources.

Community
The "Community" site contains many readings related to the course. When reviewing this syllabus, you will encounter many readings that have been downloaded from sites where distribution is permitted, and we store copies of these documents within the "Community" site to ensure that you will be able to retrieve the documents in the midst of the course.

Zoom Virtual Classes
This course will meet using Zoom. Zoom is downloaded to your computer the first time you use it and does require regular updates; please download the latest version of Zoom **here** and open the downloaded file to install the app

before the course begins. If you have already downloaded Zoom for a previous course, click **here** for instructions on updating to the latest version.

Make sure you enter your first name and last name correctly when signing into your Zoom session. **While there are ways to join a Zoom session through mobile phone, this should only be used in an emergency.** Please log into the virtual classes before the scheduled class time, as we will begin promptly. You can access the virtual classes in Canvas under the "Zoom" link in your Course Navigation. Students in classes with Zoom registration enabled can also access sessions via the link that is emailed to them.

Fox Online Graduate programs encourage students new to Zoom to join a student Zoom Walkthrough. Attendance to a pre-course Zoom Walkthrough is suggested for those new to the online course structure to test your audio and video prior to your first meeting. A list of Zoom Walkthroughs can be found here.

Grade Breakdown

Item	Group or Individual	Weight
Assignments	Individual	20%
Reading Reflections	Individual	20%
Team Project	Group	25%
Participation	Individual	5%
Exams	Individual	30%
Total		100%

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 enough 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-

Course Activities & Schedule:

Assignment Descriptions:

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" • INTOSAI (2008) "Why IT Projects fail, Best Practices Guide"
2	• MSAD Ch. 1 "The Systems Development Environment" • MSAD Ch. 2 "The Origins of Software" • 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	• MSAD Ch. 4 "Identifying and Selecting Systems Dev. Projects • 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 • MSAD Ap. 3A "Object-Oriented Analysis and Design: Project Management" • MSAD Ch. 5, "Initiating and Planning Systems Development Projects • 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" • MSAD Ch. 7 "Structuring System Process Requirements" • MSAD Ap. 7A "Object-Oriented Analysis and Design: Use Cases" • MSAD Ap. 7B "Object-Oriented Analysis and Design" • MSAD Ap. 7C "Business Process Modeling" • 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" • MSAD Ch. 8 Appendix "Object-Oriented Analysis and Design: Object Modelling – Class Diagrams" • CISA Ch. 3.8 "Development Methods", pp.206-209
8	• 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"
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"

Answer Questions

1. Questions for each topical unit and case studies will be available on the class website, You are expected to post your answer to each question in .DOC or .PDF format to Canvas prior to class. Provide a thoughtful but brief (paragraph or two) analysis as your answer to each question. 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. <u>Individual preparation</u> 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. <u>Group discussions</u> 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. <u>Class discussion</u> 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.

Participation:

Your participation during the virtual class discussion 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.

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. On the last day of on-site 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.

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.*

Course Schedule
Subject to change at the discretion of the Professor(s)

Date	Topic	Assignment
Session 1	Introduction to SDLC	**Read:** • Unit 1 Readings • Unit 2 Readings **Complete:** • Unit 1 Questions • Unit 2 Questions
Session 2	Initiating and Selecting Projects	**Read:** • Unit 3 Readings • Unit 4 Readings **Complete:** • Unit 3 Questions • Unit 4 Questions • Case Study 1: "Teradata Data Mart"
Session 3	Project Planning, Requirements	**Read:** • Unit 5 Readings • Unit 6 Readings **Complete:** • Unit 5 Questions • Unit 6 Questions
Session 4	System Design	**Read:** • Unit 7 Readings • Unit 8 Readings **Complete:** • Unit 7 Questions • Unit 8 Questions
		Complete: Exam 1 (online)
Session 5	Development	**Read:** • Unit 9 Readings • Unit 10 Readings **Complete:** • Unit 9 Questions • Unit 10 Questions
Session 6	Implementation	**Read:** • Unit 11 Readings • Unit 12 Readings • Unit 13 Readings **Complete:** • Unit 11 Questions • Unit 12 Questions

Date	Topic	Assignment
		• Unit 13 Questions **Submit:** *Draft* Project Presentations
Session 7		**Present:** Project Presentations **Submit:** Project Presentations
		Complete: Exam 2 (online)
Session 8	**Course Review**	**Review of All Topics**
		Complete: Final Exam by Monday 3/6 Midnight EST
		Submit: e-SFF University Final Evaluations Refer to TU Portal for deadline

University Policies

TEMPLE AND COVID-19

Temple University's motto is Perseverance Conquers, and we will meet the challenges of the COVID pandemic with flexibility and resilience. The university has made plans for multiple eventualities. Working together as a community to deliver a meaningful learning experience is a responsibility we all share: we're in this together so we can be together.

Attendance Protocol and Your Health

Instructors are required to ensure that attendance is recorded for each in-person or synchronous class session. The primary reason for documentation of attendance is to facilitate contact tracing, so that if a student or instructor with whom you have had close contact tests positive for COVID-19, the university can contact you. Recording of attendance will also provide an opportunity for outreach from student services and/or academic support units to support students should they become ill. Faculty and students agree to act in good faith and work with mutual flexibility. The expectation is that students will be honest in representing class attendance.

Video Recording and Sharing Policy

Any recordings permitted in this class can only be used for the student's personal educational use. Students are not permitted to copy, publish, or redistribute audio or video recordings of any portion of the class session to individuals who are not students in the course or academic program without the express permission of the faculty member and of any students who are recorded. Distribution without permission may be a violation of educational privacy law, known as FERPA as well as certain copyright laws. Any recordings made by the instructor or university of this course are the property of Temple University. Any unauthorized redistribution of video content is subject to review by the Dean's office, and the University Disciplinary Committee. Penalties can include receiving an F in the course and possible expulsion from the university. This includes but is not limited to: assignment video submissions, faculty recorded lectures or reviews, class meetings (live or recorded), breakout session meetings, and more.

Code of Conduct Statement for Online Classes Online Behavior

Students are expected to be respectful of one another and the instructor in online discussions. The goal is to foster a safe learning environment where students feel comfortable in discussing concepts and in applying them in class. If for any reason your behavior is viewed as disruptive to the class, you will be asked to leave and you will be marked absent from that class. Please read the university policy concerning disruptive behavior:

> *The disruptive student is one who persistently makes inordinate demands for time and attention from faculty and staff, habitually interferes with the learning environment by disruptive verbal or behavioral expressions, verbally threatens or abuses college personnel, willfully damages college property, misuses drugs or alcohol on college premises, or physically threatens or assaults others. The result is the disruption of academic, administrative, social, or recreational activities on campus.*

Online Classroom Etiquette

The expectation is that students attending online courses will behave in the same manner as if they were in a live classroom. Be courteous and professional in your location, attire and behavior. Specifically, your location should reflect a clean and professional appearance - not a bedroom, crowded conference room, loud restaurant/bar, etc. Your attire should mirror what you might wear to a live classroom. We expect that students will not disrupt class through visuals or verbal outbursts, such as but not limited to, conversations with other people in the room, engaging in inappropriate behavior while you are in class or distracting the class in any other way. In addition, students should refrain from doing something in their online class that they would not do in a live classroom. which includes eating large meals, drinking

alcohol, vaping, getting up often and leaving the online class (not staying at their computer). You should arrive on time and leave when the class is over. If there is an emergency of some kind, notify your faculty member via email or the chat function in Zoom.

Online exam proctoring

Zoom, Proctorio or a similar proctoring tool may be used to proctor exams and quizzes in this course. These tools verify your identity and record online actions and surroundings. It is the learner's responsibility to have the necessary government or school issued ID, a laptop or desktop computer with a reliable internet connection, the Google Chrome and Proctorio extension, a webcam/built-in camera and microphone, and system requirements for using Proctorio, Zoom, or a similar proctoring tool.

Student and Faculty Academic Rights & Responsibilities

Freedom to teach and freedom to learn are inseparable facets of academic freedom. The University has a policy on Student and Faculty Academic Rights and Responsibilities (Policy #03.70.02) which can be accessed at policies.temple.edu.

Inclement Weather Policy

Please be advised that while Temple University campuses may close for inclement weather, online courses are not on-campus and therefore are still expected to meet. Your instructor will contact you regarding any adjustments needed in the event of a power outage or severe circumstances. Should you have any questions, please contact the professor.

Academic Honesty

Learning is both an individual and a cooperative undertaking. Asking for and giving help freely in all *appropriate* setting helps you to learn. **You should represent only your own work as your own.** *Personal integrity* is the basis for intellectual and academic integrity. Academic integrity is the basis for academic freedom and the University's position of influence and trust in our society. University and school rules and standards define and prohibit "academic misconduct" by all members of the academic community including students. You are asked and expected to be familiar with these standards and to abide by them. A link to Temple's Policy on Academic Dishonesty can be found at the following link: https://grad.temple.edu/resources/policies-procedures

Disability Statement

Any student who has a need for accommodations based on the impact of a documented disability or medical condition should contact Disability Resources and Services (DRS) in 100 Ritter Annex (drs@temple.edu; 215-204-1280) to request accommodations and learn more about the resources available to you. If you have a DRS accommodation letter to share with me, or you would like to discuss your accommodations, please contact me as soon as practical. I will work with you and with DRS to coordinate reasonable accommodations for all students with documented disabilities. All discussions related to your accommodations will be confidential.

Temple University's Technology Usage Policy

This site includes information on unauthorized access, disclosure of passwords, and sharing of accounts. https://secretary.temple.edu/sites/secretary/files/policies/04.71.11.pdf