

Enterprise Architecture for IT Auditors

Fall 2020

Instructor

Patrick Wasson

Office: *Online via Zoom*

Office Hours: via Zoom Meeting by appointment

Email: tud34834@temple.edu

e-profile: [Linked In](#)

Class Format: *Online*

Class Meetings: *Tuesday, 5:30pm – 8:00pm*

Where: [Zoom Meeting via Canvas](#)

Website: <https://community.mis.temple.edu/mis5122sec701fall2020/>

Course Description

This course surveys the technology concepts and components that are critical for the IT auditor to understand. It uses an enterprise architecture framework to explore issues of business process, business data, applications and the infrastructure that are necessary to run those applications.

Course Objectives

- Understand the major components which comprise any computing system.
- Explain system software and to contrast system software from application software.
- Identify the connections between each technical topic and its relation to IT Auditing
- Understand the major components of a computer network.
- Illustrate how organizations manage and work with data.
- Explain applications software and to contrast application software with systems software.
- Identify common security vulnerabilities within the web security discipline.
- Comprehend Operating System, Web Server and Database auditing concepts.
- Properly understand how to use the command line and navigate the file system with GUI/CLI

Credit Hours: 3

Required Reading & Materials

Type/Source	Name (indicate if required or optional and add embedded URLs to the material as appropriate)
Textbook(s)	<ul style="list-style-type: none"> • Systems Architecture seventh edition by Burd, 2016, Cengage Learning, ISBN-13 978-1-305-08019-5 or Systems Architecture sixth edition by Burd, 2011, Course Technology, Cengage Learning, ISBN-13 978-0-538-47533-4. • Murach's MySQL 3rd edition by Joel Murach, Mike Murach & Associates, Inc. ISBN 9781943872367 • Murach's Python Programming by Joel Murach, Mike Murach & Associates, Inc. ISBN 9781890774974

Schedule of Topics, Readings, Assignments with Due dates

Course Schedule

**Subject to change at the discretion of the Professors*

Week	Date	Topics	Readings and tasks due
1	8/25/20	MIS Careers and Intro to IT Architecture <ul style="list-style-type: none"> • Introductions • Review Syllabus • Presentation: Module 1 - MIS Careers and Intro to IT Architecture • Activity: What tech skills do IT Auditors need? 	Burd Chapters 1 & 2
2	9/1/20	Computing Systems <ul style="list-style-type: none"> • Presentation: Module 2 – Computing Systems • Tool Demo 	Burd Chapters 4 & 6

3	*9/8/20	<p>Operating Systems</p> <ul style="list-style-type: none"> • Presentation: Module 3 – Operating Systems • Activity: <ul style="list-style-type: none"> ○ Create a Windows Virtual Machine – Vmware ○ Create a Linux Virtual Machine - Vmware ○ Operating Systems Lab 	Burd Chapter 11
4	9/15/20	<p>Networking</p> <ul style="list-style-type: none"> • Presentation: Module 5 – Networking • Tool Demo 	Burd Chapter 9
5	9/22/20	<p>Storage</p> <ul style="list-style-type: none"> • Presentation: Module 4 - Storage • Activity: ○ Storage Exercise (Vmware) 	Burd Chapters 5 and 12
6	9/29/20	<p>Systems Administration</p> <ul style="list-style-type: none"> • Presentation: Module 6 – Systems Administration • Activity: <ul style="list-style-type: none"> ○ Tech Challenge 2 - Active Directory - Accounts, Groups, and Machines ○ Tech Challenge 3 - File Services and Login Scripts.docx ○ Tech Challenge 4 – Audit your Server 	<p>Burd Chapter 14 IT Chapter 6 Auditing Windows Operating Systems (See community site for materials)</p>

7	10/6/20	<p>Command Line Interface Part 1</p> <ul style="list-style-type: none"> • Presentation: Module 7 - Command Line • Activity: <ul style="list-style-type: none"> ○ Activity – Using the Command Line 	<p>Go through tutorial: http://www.cs.princeton.edu/courses/archive/spr05/cos126/cmd-prompt.html</p>
8	10/13/20	<p>Command Line Interface Part 2</p> <ul style="list-style-type: none"> • DOS • Powershell • Linux Shell <ul style="list-style-type: none"> ○ Passwd File ○ ShadowFile ○ Chmod ○ Permissions • Navigating the Windows/Linux File System <ul style="list-style-type: none"> ○ GUI ○ CLI 	TBD
9	10/20/20	<p>Databases- Database Server Auditing</p> <ul style="list-style-type: none"> • Presentation: Module 8 – Intro to MySQL Server • Activity: Tech Challenge 6 - MySQL Server Installation and Audit 	<p>Murach's MySQL Chapters 1, 2, 17, 18 IT-Audit-Checklist_Databases (See community site for materials)</p>
10	10/27/20	<p>Databases- Database Development</p> <ul style="list-style-type: none"> • Presentation: Module 9 – Intro to SQL <ul style="list-style-type: none"> ○ Activity: Murach MySQL Chapter 4 Exercises 1-7 	<p>Murach's MySQL Chapters 3 and 4</p>

11	**11/3/20	<p>Application Server Auditing</p> <ul style="list-style-type: none"> • Presentation: Module 10 – Intro to Programming and Application Servers • Activity: <ul style="list-style-type: none"> ○ Tech Challenge 5 - Web Server Installation ○ Tech Challenge 7 - Visual Studio Installation ○ Audit your Web Server ○ Murach Python Programming Exercises 2-1,3-1 	Murach's Python Programming Chapters 1, 2 and 3
12	11/10/20	<p>Application Software, Coding and Scripting</p> <ul style="list-style-type: none"> • Presentation: Module 11 – Intro to Programming (cont.) • Activity <ul style="list-style-type: none"> • Murach Python Programming Exercises 4-1,5-1 	Murach's Python Programming Chapters 4 and 5

13	11/17/20	<p>Web Application Security</p> <ul style="list-style-type: none">• Presentation: Module 12 - OWASP_Top-10• Activity:<ul style="list-style-type: none">○ Web Hacking Exercise<ul style="list-style-type: none">▪ Tamper Data▪ Web Developer Toolbar▪ SQL Injection	Posted Web Security Readings
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Week	Date	Topics	Readings and tasks due
14	11/24/20	Fall Break – No Class	
15	12/1/20	Final Exam	

* Tuesday 9/8/2020 - Last day to add or drop a course

** Tuesday 10/20/2020 - Last day to withdraw from a course

Technology Requirements:

A number of the Tech Challenges will require the use of VMware

VMware will be installed on the machines in the classroom and on the machines in the MIS labs in Alter 602 and 603. Students will be required to have a fairly high speed external storage device (i.e. USB 3.0 flash drive) with at least 32GB of available storage. They will use this storage device to copy their virtual machines to/from the machines in the classroom and labs.

As an alternative to using an external storage device, students with laptops that have enough capacity and available storage to run VMware will be permitted to use their own laptops. It should also be noted that it is highly recommended that students have a laptop for working on technologies at home. The lab workstations are Microsoft Windows based.

The class will require software to be downloaded such as VMWare, Windows Server 2012/2016, Visual Studio, IDLE, Python, MySQL etc.... All of software that is not freeware can be downloaded under the Temple MIS software agreement at:

https://e5.onthehub.com/WebStore/ProductsByMajorVersionList.aspx?cmi_mnuMain_child=aafc5891-884f-e511-940f-b8ca3a5db7a1&cmi_mnuMain=2b44b80c-dfc9-e111-971c-f04da23e67f6&ws=933e35a0-db9b-e011-969d-0030487d8897&vsro=8

If you cannot access the site please let me know so I can ensure your temple account is added.

Assignments

Each class will involve at least one in-class activity. We will start most activities in-class, however, they must all be completed and submitted to me for a grade before the next class. Some activities may require to be completed outside of class and in which case the assignment must be completed by the student and submitted to the instructor before the next class for a grade. All activities/assignments must be submitted to the instructor for a grade before the next class.

Participation

Much of your learning will occur as you prepare for and participate in discussions about the course material. The activities/assignments and readings have been carefully chosen to bring the real world into class discussion while also illustrating fundamental concepts.

To encourage participation, 35% of the course grade is earned through preparation before class, and participation during and between classes. Evaluation is based on a consistent demonstrated engagement with the process of learning. Assessment is based on what you contribute, not simply what you know.

Participation during class – We will typically start each discussion with “opening” questions about the assigned readings and activities/assignments. I may ask for volunteers, or I may call on you. Students called on to answer should be able to summarize the key issues, opportunities, and challenges in the case study. All students should be prepared to answer these questions.

Another important aspect of in-class participation is completion of in-class assignments and contribution to break-out group activities.

The criteria for class participation includes attendance, punctuality, level of preparation, professionalism, answering questions, discussing readings, contributing to group activities, and contributing to a positive learning environment.

Exams

There will be a final exam for this course. The exam will be comprised of short-answer and longer open-ended questions. Check the schedule for dates.

A missed exam can only be made up in the case of documented and verifiable extreme emergency situations.

Evaluation and Grading

Item	Weight
Attendance/Participation	30%
Class Activities/Assignments	40%
Final Exam	30%
	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 meets and exceeds expectations. It demonstrates originality of thought and creativity. 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 meets expectations. It contains information prescribed for the assignment and demonstrates understanding of the subject matter. There may be some omissions or procedural issues, such as grammar or organizational challenges, but these do not significantly detract from the intended assignment goals.	B or B+
The assignment fails to consistently meet expectations. That is, the assignment is complete but contains significant 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.	B-
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 B-

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 **50% penalty** if they are late. No credit is given for late participation assignments including required posts of comments and In the News articles.
- 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.*

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

Proctorio or a similar proctoring tool may be used to proctor exams or quizzes in this course. These tools verify your identity and record online actions and surroundings. It is your 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 or a similar proctoring tool. Before the exam begins, the proctor may require a scan of the room in which you are taking the exam.

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>