NEW YORK UNIVERSITY – STERN SCHOOL OF BUSINESS
DEPARTMENT OF ACCOUNTING
INTERNAL CONTROLS & ACCOUNTING INFORMATION SYSTEMS –
A DATA ANALYTICS PERSPECTIVE (ACCT-GB.3315)
SPRING 2022

Instructor: Prof. Joel Lanz, MBA, CPA/CGMA/CITP, CFE, CISSP, CISA, CISM
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Office Hours: M and W 1:45-3:00 and by appointment.
Phone: 516-933-3662 (If I do not pick up, please leave a message with alternate times to return your call – weekend and evening telephone appointments are possible).
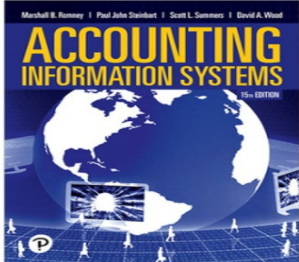
Class Sections of Internal Controls and Accounting Information Systems:

DATES	ACCT-GB.3315 Section # (CRN)	DAY	TIME	LOCATION
1/31-5/9	M2 (2463)	M W	3:00-4:20 PM	KMEC 3-120
1/31-5/9	M1 (2462)	M W	4:30-5:50 PM	KMEC 3-120

Course Description:

The purpose of this course is to help prepare you for a successful career in public practice, industry, or government by understanding how accountants and other financial professionals rely on, manage and translate data generated by accounting information systems and other technology-related data sources to guide clients and organizations in making better business decisions in an increasingly complex and data-driven world. Using an accountant's perspective, the course will integrate the study of big-data analytics and technology and the application of related software to the establishment and management and auditing of internal control systems.

Course Materials:

ACCOUNTING INFORMATION SYSTEMS 15th EDITION	The class's required text is "Accounting Information Systems, 15th Edition, Romney, Steinbart, Summers, and Wood, There are multiple ISBN's for the following: ISBN-13: 9780135572832 (PEARSON). Students can purchase any format that best suits their needs and budgets (electronic, paper, or hardcover). The text is required for the class.

The Professor will provide additional materials, including case assignments, on the course website. Please review unit lecture outline on the course website for required exercises, assignments, and other course expectations, including supplemental information for syllabus contents. The course website also contains instructions for obtaining Tableau.

Assessment and Grade Determination:

SEGMENT	% OF GRADE	DESCRIPTION
Exam #1 - AIS Foundations	32%	Exams consist of multiple-choice questions with the potential to include student-developed "qualified" questions. The exam questions' level of difficulty will be like that of professional accounting-related certification exams (e.g., CPA, CMA, CISA, CIA) and will test your ability to apply, analyze and evaluate the course materials. Depending on the quality of student exam questions submitted, each exam may include up to 25% to 35% of "qualified student-submitted questions."
Exam #2 - Cybersecurity, Information Security & Trust Service Criteria	40%	
Exam #3 - Analytics	14%	
Case Analysis - Analytics	14%	You will obtain a free academic software license for both Tableau (has both Windows and MAC). Tableau provides videos that will allow you to quickly learn foundational software features to complete the assigned case (I will provide a list of recommended videos on the course website). You will work on selected case studies to develop your data analytics and visualization skills. I will provide further information on requirements during the semester (dues dates in the second half of the semester).
"OPT-IN" Value Add Provided to Class	0-3 bonus grading points	I invite you to participate in classroom discussions and in-class exercises during each class meeting. To do so usually requires that you appropriately prepare for class. Preparation involves completing "before class" activities identified for the particular class session. This preparation will include reading the assigned texts, viewing professor videos, and other tasks depending on the lecture. Alternative ways of adding "value to the class" involve participating in the "what have you learned forums," assisting other students in the help forums, and submitting "qualified multiple choice" questions for exam consideration. Please contribute throughout the semester as a lack of contribution in one week cannot be made up for in another week. Review for bonus grading points requires submitting a log of all your contributions. I will review further requirements and provide a log template during class.
Selection of submitted question for exam	Min. ½ bonus grading point	I will add a ½ grading bonus grading point to your calculated grade for each of your submitted questions that I use on an exam.

The following grading guidelines serve as a basis for determining grades: A's – awarded for excellent work; B's – awarded for good or very good work; C's – awarded for adequate work; and F's - awarded for unsatisfactory or inadequate work.

You will find that the "Accounting Information System" course differs from other accounting courses as it is not financial or numerical based. *You may need to adopt a different study process than what might have worked well for you in other accounting courses. Consider leveraging study techniques used in Auditing, Management, MIS, and Economics courses in developing your study plan. Innovative, creative problem solving, and "outside the box" thinking will help you master course contents and grading components*.

A helpful technique is to assume the owner or CFO's role of a business familiar to you. As you prepare and study the course materials, ask yourself how an owner or CFO would use the information presented and apply it to their business. We will primarily use the Retail industry to illustrate course concepts during the course.

Tentative Course Lecture and Exam Schedule (Subject to Change)

Please refer to the unit lecture outline on Brightspace for preparation, readings, homework, and other course expectations. Please note the three colors used to identify contents for each exam.

DATES	TOPICS
1/31 (M)	Unit A - Course Orientation and Introduction
2/2 (W) & 2/7 (M)	Unit B - AIS Foundations Explain how an AIS adds value to an organization, how it affects and is affected by corporate strategy and its role in a value chain. We will look at the need for AIS through the perspective of a retailer (which will serve as a baseline example throughout the semester). Appreciate the role of ERP, using videos of Oracle NetSuite as an example.
2/9 (W) & 2/14 (M)	Unit C - Business Technologies and the Accountant Review of ERP and introduction to how emerging technologies impact the accounting profession. Discuss the new finance and the skills required to succeed. We will also consider how emerging technologies impact traditional accounting and audit functions. We will lay the technology foundation for the semester.
2/16 (W)	Unit D - IT Auditing (Part 1) Although many students may think that IT auditing is limited to financial audit support - it goes beyond that. We will focus on crucial ITGC concepts and then explore how other accounting-related disciplines leverage this expertise, especially in providing advisory services as a practitioner or executive.
2/21 (M)	President's Day (No class)
2/23(W)	Unit D - IT Auditing (Part 2)
2/28 (M)	Unit E - Control and AIS This unit briefly reviews key concepts (internal audit) that you probably had in auditing and your undergrad courses. You will gain an appreciation for the critical frameworks such as COSO-ERM and CoBIT (as COSO-ICFR is covered in auditing) and how they are used by the profession.
3/2 (W)	Time allotted for Exam 1 (online) or Catch-up (if needed).
3/7 (M)	A limited review of Exam 1 (most challenging questions) and begin Unit F
3/9 (W)	Unit F - Information and Cybersecurity (continues after Spring Break) Organizations are under increasing pressure to demonstrate that they are managing cybersecurity threats and have effective processes and controls in place to detect, respond to, mitigate, and recover from breaches and other security events. To meet that need, the AICPA has introduced various cybersecurity risk assurance and advisory services that build upon the profession's experience in auditing systems and organization controls. This unit will discuss the more common cybersecurity threats and the cybersecurity risk management programs needed to prevent, detect and respond to security breaches.
3/14 (M) & 3/16 (W)	Spring Break (No class)
3/21 (M), 3/23 (W) 3/28 (M) & 3/30 (W)	Unit F - Information and Cybersecurity (continued)
4/4 (M) 4/6 (W) 4/11 (M)	Unit G - SOC Reports and other Trust Services Criteria (Confidentiality, Privacy, Processing Integrity, and Availability) Clients may engage a CPA to examine and report on controls at a service organization related to various types of subject matter, for example, controls that affect user entities' financial reporting or controls that affect the security, availability, and processing integrity of the systems or the confidentiality or privacy of the information processed for user entities' customers. This unit builds on the information security background obtained in the previous unit. It discusses the three different SOC for Service Organizations engagements (SOC 1®, SOC 2®, and SOC 3®) that involve reporting on controls at a service organization. We will also briefly discuss the new AICPA reporting for

	Cybersecurity Risk.
4/13 (W)	Time allotted for Exam 2 (online) or Catch-up (if needed).
4/18 (M)	A limited review of Exam 2 (most challenging questions) and begin Unit H
4/20 (W) & 4/25 (M)	Unit H - Introduction to Data Analytics in Accounting After briefly reviewing database management concepts, the unit will introduce foundational data analytic concerns of interest to accounting and financial professionals. We will explore this role from the perspective of one of the Big 4 firms. Topics include the importance of data and analytics in business, asking the right questions, introducing the extracting, transforming, and loading relevant data (i.e., the ETL process), basic data analytics techniques, and Interpreting and sharing the results with stakeholders.
4/27 (W) 5/2 (M) & 5/4 (W)	Unit I - Practical Analytics in Accounting This last unit focuses on the practical challenges of Analytics for Accountants. We will discuss problems relating to transforming data into useful information, including additional discussions relating to ETL (extract-transform-load) and ensuring data accuracy. The unit also highlights critical data visualization presentation practices. Students will complete selected hands-on exercises.
5/9 (M)	Catch-up
5/16 (M)	Exam 3 - Delivery Mode (online vs. in-person) to be determined

Course Objectives/Goals (What I hope you will learn from the course):

GB 3315 will help prepare you for an increasingly complex world where technology continues to influence and disrupt existing business models and service delivery strategies. My goal is to prepare you for a successful transition to public practice, industry, or government by understanding how to audit, use, and participate in the design of accounting information systems.

During our time together, you will learn how to assess, design, and consider the impact of IT risks and corresponding controls on financial reporting and business operations. Our lectures, discussions, and assignments will focus on how managers address IT and business processes to help achieve organizational objectives and ensure accurate financial reporting. Through selected tasks that simulate real-world professional accounting challenges, you will gain confidence in your developing abilities to assess system controls and to effectively design risk mitigation strategies for systems for which you provide assurance or advisory services. Some of you will use this knowledge directly or contribute to various aspects of acquisition and merger due diligence assignments. As appropriate, we also examine selected IT-related regulatory and financial reporting developments.

You will be graduating into an increasingly competitive global marketplace clamoring for professionals who can provide better information assurance and the ability to facilitate business development opportunities and performance. IT professionals have the technical expertise necessary to ensure the secure configuration of IT hardware or the proper deployment of technology solutions. Yet, their solutions lack the CPA's or financial manager's perspective and ability to understand the complicated business implications, governance challenges, and risks associated with technology.

Observations on The CPA Exam

I appreciate that our profession's CPA licensing exam is on your mind for many of you. The current Exam Blueprint for BEC with changes effective July 2021 contained important changes to the BEC exam. GB 3315 will help you gain confidence in answering the BEC section's information technology and corporate governance topics and selected information technology-related topics in the AUD section.

Some of you may already be following the new CPA exam (CPA Evolution initiative) scheduled to begin in January 2024. The CPA Evolution initiative intends to ensure that newly licensed CPAs have the required knowledge and skills best suited to serve clients, businesses, and the public. As the profession and the world navigate a new routine, the education required of CPA candidates and the CPA Exam itself will adapt to address the emerging skills and competencies necessary in today's marketplace. The new core-plus discipline model will allow candidates to show enhanced competency in a chosen discipline within the profession. Information

Systems and Controls is one of the three discipline areas you can demonstrate increased competency.

General Course Notices and Policies

COVID Matters:

Please refer to NYU's COVID website at https://www.nyu.edu/life/safety-health-wellness/coronavirus-information.html. You will find NYU's hub for the latest COVID-19-related guidance and information on that site.

As it relates to our class:

- In the event that a student needs to be out of class, relevant materials (including recorded video of the class) will be shared on NYU Brightspace. Please contact me if you will be out of class and need accommodations.
- In the event that the course needs to be offered entirely online for a particular class meeting, we will meet synchronously at the standard class time using Zoom. Additional instructions about particular details of class meetings or work will be emailed to you and in the event of a shift to online instruction (through Brightspace).
- In the event that a student needs to be out of class, we are recording each class session and making them available in NYU Brightspace. All students should access them there.

Weather Issues:

Please monitor the University and Stern's website for the latest announcements. I recognize that some students (including me) may commute from the suburbs or other regions, and travel into the city may not be feasible. If the school may be open, but the Professor may not be able to commute into the city, we will switch to remote class for that day. I will try to advise through Brightspace by Noon, and we will switch to remote through Zoom, similar to the COVID protocol. If you need to know before Noon or unsure of the status, please email or call me.

Re-Grading:

Students are encouraged to respect the Professor's grading system's integrity and authority and discouraged from pursuing arbitrary challenges. If a student feels that an error has been made in grading an individual assignment or assessing the overall course grade, a request to have the grade re-evaluated may be submitted. Students should submit such requests in writing to the Professor within seven days of receiving the grade, including a brief written statement supporting the concern.

Class Conduct and Participation:

Please attend class and be thoroughly prepared to discuss the assigned readings and assignments to maximize various course grades. To facilitate class and group discussions, please ensure that your video is on (unless we discuss before class why your video will be off – as penalties will be assessed). Please mute your audio until you intend to speak. Professional standards continually evolve and change. As part of their professional development, students will need to learn how to monitor these issues and maintain their competencies.

Students must engage in appropriate professional behavior that includes prompt arrival to class (via NYU Classes). Other expectations include courteous participation in class (i.e., being attentive while others are speaking,

dedicating your attention to this class while the lecture is in session, leaving class at the designated time), and professional preparation for class. To prepare for class professionally, you should read the assignments before class, watch videos, solve assigned problems, engage in class discussions (or optional forums), and actively participate in group activities.

Contributions and class participation during our use of cases and assignments constitute an integral part of our shared experience. Your active participation helps me evaluate your overall performance as a student (as well as making the class more interactive and engaging for all of us as we address issues that many Accounting professionals consider complex and challenging). I value the quality of your participation more than the quantity. Some find it uncomfortable to present viewpoints in a large group setting or even to partner on a team- yet, contributing to discussions and being an active team member is an essential part of your professional development and future success as a CPA. Please do not hesitate to contact me if you are looking for "equivalent" ways to contribute in a manner that makes you feel comfortable. One way is to participate in the online forums

Miscellaneous Class Policies and Strategies

Professional Courtesy

If someone's behavior is disturbing you, please let me know. We must respect everyone's learning environment.

Make-up Exams & Assignments

As exams are expected to be administered online class, the need for make-up exams will not be granted except in EXTREMELY AND UNUSUAL situations. Any exceptions are at the sole discretion of the instructor.

Academic Integrity:

Integrity is critical to the learning process and to all that we do here at NYU Stern. As members of our community, all students agree to abide by the NYU Stern Student Code of Conduct, which includes a commitment to:
- Exercise integrity in all aspects of one's academic work, including, but not limited to, the preparation and completion of exams, papers, and all other course requirements by not engaging in any method or means that provides an unfair advantage.
- Acknowledge the work and efforts of others when submitting written work as one's own. Ideas, data, direct quotations, paraphrasing, creative expression, or any other incorporation of the work of others should be fully referenced.
- Refrain from behaving in ways that knowingly support, assist, or in any way attempt to enable another person to engage in any violation of the Code of Conduct. Our support also includes reporting any observed violations of this Code of Conduct or other School and University policies that are deemed to affect the NYU Stern community adversely.

NYU STERN Policies:

Unless specifically identified in the syllabus, default Stern policies apply to this course. The school expects that students will conduct themselves with respect and professionalism toward faculty, students, and others present in class and will follow the rules laid down by the instructor for classroom behavior. Students who fail to do so may be asked to leave the classroom. Students are encouraged to work together for homework assignments.
Course evaluations are beneficial to students who come after you and to us. Please complete them thoughtfully. Your class will be recorded for educational purposes. The entire Stern Student Code of Conduct applies to all students enrolled in Stern courses and is available at:
- Undergraduate College: http://www.stern.nyu.edu/uc/codeofconduct

- Graduate Programs: http://w4.stern.nyu.edu/studentactivities/involved.cfm?doc_id=102505

Student Contact Information

Student contact information must be kept current to receive important notices from the school and me. Your contact information is **online via your NYU Brightspace course email**. Please check your local address, local phone number, and emergency contact information on the school's Web and revise as needed. All-important class notices, including class communications, will be sent only to your NYU Classes email address.

Students with Disabilities

If you have a qualified disability and will require academic accommodation of any kind during this course, you must notify me at the beginning of the course and provide a letter from the Moses Center for Students with Disabilities (CSD, 998-4980, www.nyu.edu/csd) verifying your registration and outlining the accommodations they recommend. If you need to take an exam at the CSD, you must submit a completed Exam Accommodations Form to them at least one week before the scheduled exam time to be guaranteed accommodation.

DON'T BE SHY – CONTACT ME IF HELP IS NEEDED. In-person appointments available before and after class, telephone or skype on most weeknights and weekends (yes, weekends) Alternatively, call my number anytime, and if possible, I will respond. If leaving a message, provide three alternative times (and send an email – so that I can respond) so that we can agree on a time.

SECTION: COURSE DESIGN CONSIDERATIONS

References and additional reading

CIS Controls. Report no: v 7.1, Center for Internet Security.
Framework for Improving Critical Infrastructure Cybersecurity. Publication no. v 1.1, National Institute of Standards and Technology, April 16. 2018.
"CPA Exam Blueprints," available at https://www.aicpa.org/becomeacpa/cpaexam/examinationcontent.html
"Model Information Technology Curriculum," AICPA, 2020
Various AICPA Service Organization Control suite of services publications available at (https://www.aicpa.org/interestareas/frc/assuranceadvisoryservices/sorhome.html.
Various CPA Journal articles authored by the Professor.
Various COSO guidance publications are available at https://www.coso.org/Pages/guidance.aspx.
Various ISACA CoBIT-related publications available at http://www.isaca.org/cobit/pages/default.aspx
Various IMA publications on Technology and Analytics available at www.imanet.org.

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Influence of recent Professional organization activities on course design:

Per the AICPA's Model Information Technology Curriculum:

Information technology affects accounting professionals in every sector and service line. As we move into the future, technology will help them automate today's manual auditing and accounting processes so they can spend more time on analyzing the data, protecting sensitive client data or their organization's network, while understanding and anticipating the potential risks involved with the new or improved processes. At the core of accounting is information and data. Whether we focus on how to analyze, secure or audit that information, accounting professionals must understand how to utilize technology and evaluate associated risk. With the rise in the utilization of computer assisted auditing techniques (CAATs), tax operations, management reporting via visualization and dashboards, cloud technologies and automation, it is imperative that accountants be proficient in technology.

Technological innovation is not only allowing accounting professionals to deliver core audit and tax services more effectively and efficiently, but also creating new opportunities for them to deliver value to clients and employers. There is growing demand for accounting professionals with specialized skills and knowledge of technology and systems to help organizations achieve their business goals, manage the risk technology introduces as well as meet information governance, risk and compliance needs. As evidenced by the statistics that follow, advisory service opportunities in areas such as IT risk, business intelligence, data analysis and cybersecurity continue to grow.

The AICPA recently introduced a variety of new assurance services enabling professionals to provide assurance services for technology-related environments, including the SOC suite of services (SOC for Service Organizations and SOC for Cybersecurity). Students will be able to differentiate between these services and help management implement the results of these reports into an overall risk management program.

COSO issued the 2017 update to the *Enterprise Risk Management — Integrated Framework* to address the evolution of enterprise risk management and the need for organizations to improve their approach to managing risk to meet the demands of an evolving business environment. The updated document, *Enterprise Risk Management — Integrating with Strategy and Performance*, highlights the importance of considering risk in both the strategy-setting process and in driving performance. COSO subsequently published other papers to aid the practitioner to implement recommendations provided.

ISACA (formerly known as Information Systems Audit and Control Association) engages in the development, adoption, and use of globally accepted, industry-leading knowledge and practices for information systems including the development and administration of the Certified Information Systems Auditor (CISA) and Certified Information Systems Manager (CISM) programs. ISACA is also responsible for the development and maintenance of CoBIT, a leading framework for the Governance and management of enterprise IT.

The course is composed of the following topics and their approximate percentage of course time:
- Conceptual foundations of Accounting Information Systems including IT Audit (20%)
- Evaluating technology-based internal controls from an enterprise risk perspective using COSO-ICFR, COSO-ERM, CoBIT, and other AIS-related recognized frameworks (20%)
- Consideration of pervasive and general IT controls including AICPA-related technology products including but not limited to the Services Organization Controls (SOC) suite of services (20%)
- Cybersecurity Risk Management from an Accountant's perspective (20%)
- Data Analytics and Visualization for Accountants including application controls, computer assisted tools (20%)