

Data Analytics for Internal & Performance Auditing

AP/MSMP6150

WINTER 2024

YORK UNIVERSITY

Course Information

Course Director: Bartosz Amerski

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Day and Time of Live Webinar: Weds 6-9 pm

Location: IBM Markham

Delivery Method and Remote Classroom: Classes will be conducted in person during class scheduled times.

Remote Teaching / ZOOM

If remote teaching is necessary, Zoom will be used. Throughout the entire Zoom lecture, students will be required to have their camera turned on and need to be visible (no black screens). Audio must also be available. Part of the lectures may also be pre-recorded and will be posted on eClass. Links to the Zoom meetings will be posted each week on the course website. Regardless of delivery mode, during the class time, students will be engaged in various activities which will require speaking to the entire class, completing assigned tasks and submitting them to eClass.

Technical Requirements for the Remote Classroom

(in case we need to return to remote teaching)

In addition to being able to access resources on eClass (including documents, recorded lecture videos and quizzes) students are encouraged to attend the weekly live (or Zoom if required) webinars and to participate with a stable, higher-speed internet connection through the use of a webcam and microphone

Equipment requirements: You will need the following equipment to successfully partake in the course:

- › laptop/desktop computer;
- › webcam and microphone;
- › reliable internet connection.

Please note, using a tablet device **is not permissible** as it will not provide you with the necessary functionality to conduct required in-class activities.

Internet speed: Zoom recommends 800kbps/1.0Mbps (up/down) bandwidth for group calls. can test their Internet speed through tests, such as [Speedtest](#), or typing into Google ‘what is my Internet speed?’

Please review the following link for full details of Zoom [system requirements](#). Minimum computer requirements are 2GHz dual core processor and 4Gb of RAM.

Quiet space: All classes will require video to be turned on and as such you will need to have access to a quiet space for the duration of your class times.

Zoom username: For participation tracking purposes, please also ensure your zoom user name contains your legal name. If you go by a different name please include both names with your legal name in brackets.

Zoom help guides: In order to prepare for your zoom classes you may wish to partake in various training videos offered by zoom - [Zoom Help and Guides](#).

The following links provide details of zoom best practices and an additional YorkU user guide:

- › [Zoom@YorkU Best Practices](#)
- › [Zoom@YorkU User Reference Guide](#)

Organization of the course

The entire course, including the submission of assignments, participation/discussion and test-taking, will take place on eClass. Each section is scheduled to meet at a particular time and day each week, and attendance will be taken.

This course is divided into 12 weekly sessions that sequentially introduce the topic of Data Analytics for Internal & Performance Auditing to students. This course is designed to introduce students to the meaning of analytics in the internal and government auditing functions. The course focus is on the role of the professional internal or government auditor performing a variety of assurance engagements in a “big data” universe. The types of engagements explored in the course include performance audits, compliance audits, operational audits, fraud, and IT systems audits. The objective of the course is to develop the technical knowledge with an emphasis of use of data tools and data analysis and practical knowledge necessary to be a competent professional auditor.

For each session there is a series of assigned readings that must be completed. You are encouraged to start each week by completing these readings.

There will be assigned discussion/practice questions from the course textbook, Tableau exercises / posted on eClass that should then be attempted before the start of the weekly classes / webinar. The questions assigned are to help you assess whether you understand the material and to help you prepare for assignments. The exercises are assigned to help you develop skills on using data analytics applications such as Tableau.

Course Website: eClass

Office hours: In person – Wednesdays 9-10 pm or over at other times over Zoom.

Expanded Course description

The course focus is on the role of the professional internal or government auditor performing a variety of assurance and non-assurance engagements in a “big data” universe. The types of engagements explored in the course include: performance audits, compliance audits, operational audits, fraud, IT systems audits and consulting engagements. The objective of the course is to develop the technical knowledge, with an emphasis of use of data tools and data analysis, and the practical knowledge necessary to be a competent professional auditor.

The course will aid in the development of the students’ competence in data analytics as it relates to: the auditor’s professional judgment, risk analysis and research skills to support an audit plan. Students will develop an understanding of the audit life cycle and the use of data analytics throughout each phase of the audit life cycle.

Students will understand and use a variety of tools and software available to conduct data analytics. Through the use of case studies and simulations, students will work with visualization and audit specific software and develop an understanding of: how to identify the relevant data for the specific problem at hand, how to frame a query, and, how to effectively present data. Students will also determine which type of analytics, descriptive, predictive, or prescriptive, to apply to the particular issue.

Students will also develop skills in interpreting and communicating the data analytic outcomes to key stakeholders. Finally, students will develop skills in continuous auditing and continuous monitoring and will develop skill in identifying and executing follow-up procedures.

Course Objectives and Learning Outcomes

Course Objectives

Upon completion of this course, you will be able to:

- › Understand how data analytics fits within the Internal Audit and Performance Audit Functions
- › Plan an audit
- › Execute and audit
- › Communicating Audit Results and Continuous Monitoring

Learning Outcomes

Upon the successful completion of this course, students will be able to:

- › Understanding the role of internal and government auditors and the types of audits they perform.
- › Recognize how the two roles can use of data analytics to fulfil their responsibilities
- › Understand and differentiate data analytics from other methods of audit evidence collection and testing techniques.
- › Articulate the benefits and challenges of using data analytics.
- › Understand the need for professional judgement and scepticism in the era of “Big Data”
- › Explain the audit life cycle and data analytics
- › Prepare an annual audit plan based on risks
- › Explain the audit life cycle and the understand use of data analytics throughout each phase of the life cycle
- › Identify how different types of data can be used to support and enrich an audits risk assessment
- › Identifying the data sources and transforming data for use in audit analytics.
- › Explain Structured vs unstructured data sources
- › Explain Internal versus external data sources
- › Explain Direct versus indirect measures
- › Determine the reliability of the data
- › Determine objectivity of the data source
- › Question the procedures and assumptions behind the data
- › Determine the unknowns that need to be investigated
- › Explain the barriers to data integration
- › Prepare the audit program
- › Execute the audit program
- › Creating effective data visualizations
- › Communicate audit results including the use of data visualizations
- › Understand continuous auditing (automation, exception reports) and continuous monitoring

Course readings

- › Accounting Information Systems, 1st Edition: Connecting Careers, Systems, and Analytics – Savage, 2022, WILEY. EPUB ISBN: 978-1-119-74442-9
- › [Tableau Training Videos](#)

› [LinkedIn Learn Tableau Essential Training](#)

Any additional required reading materials will be posted on the course web site.

Warning: Photocopying more than 10% of a textbook is illegal and may involve penalties. Do not duplicate textbooks or obtain these photocopies. Students are reminded of York University's policy regarding academic dishonesty as outlined in the York student calendars.

Evaluation

Course Work	Due Date	Weight
Class Attendance and Participation (See below for details)	All modules	15%
Class Activities	See Course Schedule	60%
Term Paper	TBD	25%
Total		100%

Class Individual Participation and Attendance

This course is designed to encourage active participation. In each live seminar, we will be completing individual/group class activities (to be posted to the course the weekly webinars). Participation marks of 9% will be assigned for engagement and participation. Engagement (coming prepared for the lecture) and participation (contributing to peer learning environment by asking questions and addressing questions when we take up the activities) combine to make 9%. Attendance will be taken each week and is worth 6% in total.

NOTE: Students must submit their assignments to Turnitin.com using eClass - instructions will be given at the first session.

Students must complete the Group Assignment and Individual Assignment by the deadlines. Failure to do will result in a zero grade

Course policies

Prerequisites/Co-Requisites:

Prerequisites: 1) Acceptance to the master's in science in Management Practice program.
Course credit exclusions: None.

Students are personally responsible to ensure that they have the required prerequisites as stated in the course outline or in the course calendar.

Academic honesty and integrity

In this course, we strive to maintain academic integrity to the highest extent possible. Please familiarize yourself with the meaning of academic integrity by completing [SPARK's Academic Integrity module](#) at the beginning of the course. Breaches of academic integrity range from cheating to plagiarism (i.e., the improper crediting of another's work, the representation of another's ideas as your own, etc.). All instances of academic dishonesty in this course will be reported to the appropriate university authorities, and can be punishable according to the [Senate Policy on Academic Honesty](#).

Turnitin

To promote academic integrity in this course, students will be normally required to submit their written assignments to Turnitin (via eClass) for a review of textual similarity and the detection of possible plagiarism. In so doing, students will allow their material to be included as source documents in the Turnitin.com reference database, where they will be used only for the purpose of detecting plagiarism. The terms that apply to the University's use of the Turnitin service are described on the Turnitin.com website.

Course information

All students are expected to familiarize themselves with the following information:

- › [Student Rights & Responsibilities](#)
- › [Academic Accommodation for Students with Disabilities](#)

Refer to pages 9-12 of this course outline for relevant regulations regarding exam deferrals, academic honesty, graded feedback, examinations, and student accommodation policies

Schedule of readings and activities

Sessions	Discussion Topics	Assignments and Readings – May be Updated from Time to Time
Session 1 Jan 10	Data – Useful Information – Decision Making › Introductions › Course Introduction › What is the purpose of auditing? › What is the purpose of financial accounting? › What is the purpose of managerial accounting? › What is professional scepticism? › Characteristics of useful information › How is information used in decision making	Required Readings: › eClass – The Demand for Audit and Other Assurance Services › Textbook Chapter 1 – Accounting as Information Cases: Salmon Valuation – Application of Professional Judgement
Session 2 Jan 17	Risk and Risk Assessment › Describe the nature of risk › Classify risks into different risk categories › Determine the quantitative value of risk › Explain how businesses respond to risk	Required Readings: Textbook Chapter 2 – Risk and Risk Assessments Class Activity: Calculating Risk Scores Cases: Hospital Patient Safety Blockbuster (article)
Session 3 Jan 24	Risk Management and Internal Controls › What are internal controls › Distinguish between three functions of internal controls › Characterize control by its location and implementation method › Explain the three lines of defense to ensure effectiveness of internal controls › Describe the importance of frameworks in an internal control environment	Required Readings: Textbook Chapter 3 – Risk Management and Internal Controls Class Activities: Selecting the Appropriate Control Assessing Control Environment Cases: Economic Stimulus Program Metrolinx GO Planning

Sessions	Discussion Topics	Assignments and Readings – May be Updated from Time to Time
Session 4 Jan 31	Audit & Assurance Part 1 › The difference between internal auditors and external auditors › What is Value-for-Money (VFM) Auditing? › The 3Es – Economy – Efficiency – Effectiveness › Limitations of the VFM Auditing	Required Readings: › Textbook Chapter 19 – Audit and Assurance › EClass – Office of the Auditor General of Ontario (Pages 1 to 14 only) Cases: › Bridge Inspections › Not Enough Inspectors › Smart Meter Report (<i>only pages 362 to 370 and 390 – start at “Additional Costs of Implementing Smart Metering” and end at 391</i>)
Session 5 Feb 7	Audit & Assurance Part 2 › What are Accounting Cycles? › What are Audit Assertions? › Understanding Audit Evidence › Management vs. Auditor Responsibilities › Effective Professional Judgment	Required Readings: › eClass – Assertions › eClass – Evidence Cases: Growcer
Session 6 Feb 14	Understanding the Ontario Government › Federal vs. Provincial Responsibilities › The Legislative Assembly of Ontario › OAGO’s Relationship with the Assembly › Organization of Government › Governance Structures in the OPS › Decision-making documents › Cabinet and Cabinet Committees › Estimates, Budgets and Multi-Year Plans › TB Orders, Transfer Payments and Orders in Councils	Required Readings: › eClass – Comptroller › eClass - Standing Committee PAC Cases: N/A Data Analytics Assignment: Introduction to Analytics Mindset – TechWear Assignmet
Feb 21 – No Class – Reading Week		

Sessions	Discussion Topics	Assignments and Readings – May be Updated from Time to Time
Session 7 Feb 28	Data Analytics – Part 1 › How to use data analytics to explore a new data set › Analysis of data captured over time › Advanced data analytics techniques that are impacting the accounting industry › Introduction to Tableau	Required Readings: Textbook Chapter 17 – Data Analytics Class Activities: Selecting Data Analytics Technieques Cases: Tarion – Call Center Operations Data Analytics Assignment: Julias Cookies – Tableau
Session 8 Mar 7	Data Analytics - Part 2	Required Readings: N/A Data Analytics Assignment: Analytics Mindset – TechWear Assignmet
Session 9 Mar 14	Data Visualization › The relationship between storytelling and data visualization › How to apply design fundamentals › Exploring data sets using visualizations › Using data visualizations to present insights to decision makers	Required Readings: Textbook Chapter 18 – Data Visualization Class Activities: › Design a Dashboard (Group) › Select the most suitable visualization › Critique visualizations (Group) Data Analytics Assignment: Tarion and Data Visualization – Tableau Public

Sessions	Discussion Topics	Assignments and Readings – May be Updated from Time to Time
Session 10 Mar 21	Audit Perspective on Software and Systems Implementation › Data processing in an information system › Information systems for startup businesses › Information systems for expansion and growth › How companies strive for an ideal state in information systems › Information systems implementation failures › Impact of information system implementation failures	Required Readings: Textbook Chapter 4 – Software and Systems Cases: SAMS Data Analytics Assignment: Julias Cookies – Tableau
Session 11 Mar 28	Audit Perspective on Data Storage and Analysis › Types of data › How we store our data › Characteristics of data › How we use our data › Issues with data transfer › Impact of poorly transferred data	Required Readings: Textbook Chapter 4 – Software and Systems Class Activities: Specifying characteristic of big data Cases: › SAMS › Metrolinx IT and Security › Ontario Bridge Management System Data Analytics Assignment: Julias Cookies – Tableau
Session 12 April 4	Fraud › Types of fraud › How accounting professionals manage the risk of fraud › How to identify and prevent asset misappropriation schemes › The impact of fraud on financial statements	Required Readings: Textbook Chapter 15 – Fraud Cases: › Fair Hydro Plan › Cancellation of Mississauga and Oakville Gas Power Plants

Relevant University Regulations

Deferred Exams: Deferred standing may be granted to students who are unable to write their final examination at the scheduled time or to submit their outstanding course work on the last day of classes. Details can be found at [Deferred Standing](#).

Any request for deferred standing on medical grounds must include an [Attending Physician's Statement form](#); a "Doctor's Note" will not be accepted.

[DSA Form](#) (Unless suspended by the University)

In order to apply for deferred standing, students must register at [LAPS Website](#).

Followed by handing in a completed DSA form and supporting documentation directly to the main office of the School of Administrative Studies (282 Atkinson) or by email at apsas@yorku.ca and add your ticket number to the DSA form. The DSA and supporting documentation must be submitted no later than five (5) business days from the date of the exam. These requests will be considered on their merit and decisions will be made available by logging into the above mentioned link. No individualized communication will be sent by the School to the students (no letter or e-mails).

Students with approved DSA will be able to write their deferred examination during the School's deferred examination period. No further extensions of deferred exams shall be granted. The format and covered content of the deferred examination may be different from that of the originally scheduled examination. The deferred exam may be closed book, cumulative and comprehensive and may include all subjects/topics of the textbook whether they have been covered in class or not.

Academic Honesty: The Faculty of Liberal Arts and Professional Studies considers breaches of the Senate Policy on Academic Honesty to be serious matters. The Senate Policy on Academic Honesty is an affirmation and clarification for members of the University of the general obligation to maintain the highest standards of academic honesty. As a clear sense of academic honesty and responsibility is fundamental to good scholarship, the policy recognizes the general responsibility of all faculty members to foster acceptable standards of academic conduct and of the student to be mindful of and abide by such standards. Suspected breaches of academic honesty will be investigated and charges shall be laid if reasonable and probable grounds exist.

Students should review the York [Academic Honesty policy](#) for themselves.

Students might also wish to review the interactive [on-line Tutorial](#) for students on academic integrity.

Grading Scheme and Feedback Policy: The grading scheme (i.e. kinds and weights of assignments, essays, exams, etc.) shall be announced, and be available in writing, within the

first two weeks of class, and, under normal circumstances, graded feedback worth at least 15% of the final grade for Fall, Winter or Summer Term, and 30% for 'full year' courses offered in the Fall/Winter Term be received by students in all courses prior to the final withdrawal date from a course without receiving a grade, with the following exceptions:

Note: Under unusual and/or unforeseeable circumstances which disrupt the academic norm, instructors are expected to provide grading schemes and academic feedback in the spirit of these regulations, as soon as possible. For more information on the [Grading Scheme and Feedback Policy](#).

In-Class Tests and Exams - the 20% Rule: For all Undergraduate courses, except those which regularly meet on Friday evening or on a weekend, tests or exams worth more than 20% will not be held in the two weeks prior to the beginning of the official examination period. For further information on the 20% Rule, please visit: [Policy Website](#).

Reappraisals: Students may, with sufficient academic grounds, request that a final grade in a course be reappraised (which may mean the review of specific pieces of tangible work). Non-academic grounds are not relevant for grade reappraisals; in such cases, students are advised to petition to their home Faculty. Students are normally expected to first contact the course director to discuss the grade received and to request that their tangible work be reviewed. Tangible work may include written, graphic, digitized, modeled, video recording or audio recording formats, but not oral work. Students need to be aware that a request for a grade reappraisal may result in the original grade being raised, lowered or confirmed. For reappraisal procedures and information, please visit the Office of the Registrar site at: [Grade Reappraisal](#).

Accommodation Procedures: LA&PS students who have experienced a misfortune or who are too ill to attend the final examination in an ADMS course should not attempt to do so; they must pursue deferred standing. Other students should contact their home Faculty for information. For further information, please visit: [Support](#).

Religious Accommodation: York University is committed to respecting the religious beliefs and practices of all members of the community and making accommodations for observances of special significance to adherents. For more information on religious accommodation, please visit: [Religious Accommodation](#).

Academic Accommodation for Students with Disabilities (Senate Policy) The nature and extent of accommodations shall be consistent with and supportive of the integrity of the curriculum and of the academic standards of programs or courses. Provided that students have given sufficient notice about their accommodation needs, instructors shall take reasonable steps to accommodate these needs in a manner consistent with the guidelines established hereunder. For more information, please visit the [Counselling and Disability Services website](#).

York's disabilities offices and the Registrar's Office work in partnership to support alternate exam and test accommodation services for students with disabilities at the Keele campus. For more information on [alternate exams and tests](#). Please alert the Course Director as soon as possible should you require special accommodations.

Effective date: May 2023