**The Hong Kong University of Science & Technology**
**Department of Accounting**

# ACCT4710 –Data Analytics and Applications in Accounting

## Tentative Course Syllabus – L1 Spring 2023

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| Instructor: | Xinlei Li |
| Office: | Room 6051 (LSK Business Building) |
| Email: | acxinlei@ust.hk |
| Classes: | L1: Monday/Wednesday 9:00 – 10:20 LSKG012 |
| Office hours: | By appointment |
| Class Website: | http://canvas.ust.hk/ |
| TA: | Vincent LEUNG |
| | vincentltm@ust.hk |


## Course Description

Data has proliferated in business and managers and accountants need to understand the implications for decision-making and tap into the data to provide better insights into a firm/client/customer/supplier, etc. This course is intended to provide students with an understanding of data analytic thinking and terminology as well as hands-on experience with data analytics tools and techniques. Students should leave this course with the skills necessary to translate accounting and business problems into actionable proposals that they can competently present to managers and data scientists. While there will be some use of tools in this course, the focus of this class is on concepts, not algorithms or statistical math.

## Course Objectives

Upon the completion of this course, you should be able to:

1. Understand and apply basic knowledge and applications in information systems and accounting information systems.
2. Apply and demonstrate knowledge of the nature and role of data analytics and how important it is to accountant.
3. Apply and understand big data issues and utilize data mining, data modeling, data analysis and data visualization techniques to solve accounting and business related issues.
4. Synthesize theory and applications to prepare students for the dynamics of professional accounting practice.
5. Demonstrate and provide hands-on experience to develop skills with selected business analysis and data analytics technologies.

## Textbook and Supplementary Readings

V. Richardson, K.L. Terrell, R.A. Teeter, *Data Analytics for Accounting*, 3rd Edition, McGraw Hill

**Course Schedule (Subject to Change)**

| Dates | Chapter No. | Topic | **Learning objectives** | Practice Problems |
|---|---|---|---|---|
| Feb 6, 8 | 1 | Data Analytics in Accounting and Business | Define Data Analytics.<br>Understand why Data Analytics matters to business.<br>Explain why Data Analytics matters to accountants.<br>Describe the Data Analytics Process using the IMPACT cycle.<br>Describe the skills needed by accountants.<br>Explain how to translate common business questions into fields and values. | 1 |
| Feb 13, 15 | 2 | Mastering the data | Understand how data are organized in an accounting information system.<br>Understand how data are stored in a relational database.<br>Explain and apply extraction, transformation, and loading (ETL) techniques.<br>Describe the ethical considerations of data collection and data use. | 2 |
| Feb 20, 22 | 3 | Performing the test plan and analysing the results | Understand four categories of Data Analytics.<br>Describe some descriptive analytics approaches, including summary statistics and data reduction.<br>Explain the diagnostic approach to Data Analytics, including profiling and clustering.<br>Understand predictive analytics, including regression and classification.<br>Describe the use of prescriptive analytics, including machine learning and artificial intelligence. | 3 |
| Feb 27, Mar 1 | 1-3 | | Comprehensive Case: Dillard's Store Data Part 1 | |
| March 6: 9 am | | | Exam 1 in class | |
| Mar 8, 13 | 4 | Communicating results and visualizations | Differentiate between communicating results using statistics and visualizations.<br>Determine the purpose of your data visualization.<br>Choose the best chart for your dataset.<br>Refine your chart to communicate efficiently and effectively.<br>Communicate your results in a written report. | 4 |

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| Mar 15, 20 | 5 | The Modern Accounting Environment | Understand how automation has created a data-rich environment where technology helps accountants, auditors, and managers improve the decisions being made.<br>Understand different approaches to organizing enterprise data and common data models.<br>Describe the appropriate tasks and approaches to automating procedures.<br>Evaluate continuous monitoring techniques and alarms.<br>Understand cloud-based collaboration platforms. | 5 |
| Mar 22, 27 | 4-5 | | Comprehensive Case: Dillard's Store Data Part 2 | |
| March 29 9 am | | | Exam 2 in class | |
| April 3, 12 (No class on April 5， 10) | 6 | Audit data analytics | Understand different types of analysis for auditing and when to use them.<br>Understand basic descriptive analyses techniques used in auditing.<br>Define and describe diagnostic analytics that are used in auditing.<br>Characterize the predictive and prescriptive analytics used in auditing. | 6 |
| April 17, 19 | 7 | Managerial Analytics | Explain how the IMPACT model applies to management accounting problems.<br>Explain typical descriptive and diagnostic analytics in management accounting.<br>Evaluate the use of KPIs as part of a Balanced Scorecard.<br>Assess the underlying quality of data used in dashboards as part of management accounting analytics.<br>Understand how to address and refine results to arrive at useful information provided to management and other decision makers. | 7 |
| Apr 24, 26 | 8 | Financial Statement Analytics | Understand different types of financial statement analysis.<br>Explain how to create and read visualizations of financial statement data.<br>Describe the value of text mining and sentiment analysis of financial reporting.<br>Describe how XBRL tags financial reporting data. | 8 |
| May 3, 8 (No class on May 1) | 6-8 | | Comprehensive Case: Dillard's Store Data Part 3 | |
| Exam 3 | | | **TBA** | |

**Grading Scheme**

| Description | Weight |
|---|---|
| Exam 1 | 20% |
| Exam 2 | 20% |
| Exam 3 | 40% |
| Practice problems & In class exercises (10% each) | 20% |
| Total | 100% |

**Exams**

You are expected to complete the exams at the specified time in the course schedule. For Exam 1 and 2, no make-up exams will be given except for medical reasons, and you must inform me by email BEFORE the start of the exam. Supporting medical documents should be submitted by email within 24 hours of the start of the exam. The weight of the missed exam 1 or 2 will be shifted to Exam 3.

**Practice problems and in-class exercises**

These problems aim to improve your understanding of and familiarity with the topics. You are strongly encouraged to do additional practice in preparing for the exams. Practice problem solutions are posted on Canvas.

We grade practice problems based on effort only. You will get a full score of 1.25 point (i.e., 1.25% towards your final grade) as long as you make a fair effort for the homework, 0.5 points for little effort, and 0 point for no submission on time.

I will give simple in-class exercises every class to check your understanding of the topic in real time. Please come to the class and upload your answer to Canvas in real-time to get 0.5 point (i.e., 0.5% towards your final grade). You can get a full 10% if you make a fair effort to attempt 20 out of 22 in-class exercises. It means you can miss two in-class exercises.

**Conduct of This Course**

**Class Preparation:** Students who read the textbook or slides before classes will benefit more from the class. The "demonstration cases" at the end of each chapter in the textbook are very good guidance for your self-study.

**Class Participation:** Focus on the class and avoid any distractions. I expect you to be actively involved in all class discussions, including asking and answering questions and sharing your knowledge and experiences.

**Ask questions on Canvas Discussion Board:** Please use the discussion board on Canvas to ask questions after class because it benefits other students with a similar question. **Therefore, I will NOT answer such questions by email**. I will check the discussion board regularly every week on the morning your homework is due & your exam date. You are encouraged to reply to other students' questions on Canvas as part of a supportive learning environment.

**Maintain the highest standard of integrity:** Cheating and plagiarism are **strictly prohibited**