ACCT 640 Big Data Analytics in Accounting

2024 Spring – 3 Credit Hours
W 6:00 pm - 8:50 pm … CAB2020

Syllabus

INSTRUCTOR	Dr. Ming F. Taylor
EMAIL	Through Canvas Inbox; or ming.f.taylor@njit.edu (include ACCT640 in the subject line)
OFFICE	Central Avenue Building (CAB) 4015; Virtual Office: https://njit.webex.com/meet/mfang
OFFICE HOURS	Thu 12-2pm or by appointment
COURSE WEBSITE	All materials and announcements can be accessed from Canvas (njit.canvas.edu)

Course Description

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.

The course will focus both on an analytical mindset and hands-on practice with data analytics tools. The course will start with a general data analytical mindset and then move on to apply them to solve specific accounting problems in areas including Financial, Managerial, Auditing, Taxation, and Forensic accounting. Each module follows the sequence of Concept – Example – Practice. 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 Learning Outcomes

After completing this course, students should be able to:
1. Describe in detail the purpose of data analytics and how it can create value for accountants.
2. Describe the IMPACT model and how it can be used to address most accounting issues that can be addressed by accountants.
3. Demonstrate proficiency in multiple software tools to manage data, perform test analyses, communicate findings through text, tables and visualizations.

4. Explain how data analytics can be used in accounting, auditing, managerial accounting and financial accounting to find patterns, errors, and anomalies and find insights useful to decision making.
5. Describe and demonstrate different types of test approaches that can be used to gather insights in decision making.

Course Materials

Textbook

"Data Analytics in Accounting", 3e By Vernon Richardson and Katie Terrell and Ryan Teeter (DAA). Ebook or Physical version are both fine. Earlier editions are acceptable, but it is your responsibility to check the differences between the book and our lecture notes.

Cases and projects posted by the instructor. All course materials except the textbook will be posted on Canvas.

Course Website

Please go to CANVAS. The Canvas site is where most course materials are posted. Make sure you have an NJIT UCID and password so that you are able to access Canvas. I will use Canvas to post announcements and supplemental materials throughout the semester. So, please be sure to check the site (canvas.njit.edu) frequently. Please contact helpdesk (973-596-2900) for problems associated with Canvas.

Software

This course has two tracks, a Microsoft track or a Tableau track. The Microsoft track uses a combination of Microsoft tools, including Excel, Power Query, Power BI, and Power Pivot. The Tableau track uses Tableau Prep and Tableau Desktop. Demonstrations will mostly be done in Tableau because it is compatible with both Windows and Mac OS. But instructions for using PowerBI will be provided, and you can succeed in this course with the supplemental materials if you choose the Microsoft track. In addition to the above, we will also learn some basic SQL for data management.

You do not have to stick to one of the two tracks. I encourage you to explore and experiment with multiple tools. Here are instructions to obtain Tableau and PowerBI:

- Tableau Desktop and Tableau Prep: https://www.tableau.com/academic/students

    o Ensure that your students register using their .edu email address, this is the best way to ensure that they can gain access to the free academic license.

    o The link will download Tableau Desktop to your students' computers (regardless of whether they have a PC or a Mac).

- o Once Tableau Desktop is downloaded, the students can download Tableau Prep through the Tableau Desktop application.

- Microsoft products:

    - o Excel works on a Mac, although the menu paths will occasionally be slightly different.

    - o Power BI and the related tool (Power Query and Power Pivot) are only available on PC. If you would like your students who have PC laptops to download Power BI, they can do so for free through the following link: https://powerbi.microsoft.com/en-us/desktop/

    - o In this course, we use the desktop version of Power BI (not the web app). The menu paths are different on the web app and some of the advanced analytics are not possible via the web app.

Grading and Evaluation

Participation/Attendance	10pts
In-class labs	48pts
Unit quizzes	20pts
Final project/presentation	30pts
Total	108pts

You are encouraged to find a study partner for In-class Labs and the Final Project. Lab Assignments and the Final Project will be submitted in study partners unless you choose to work individually.

Deliverables

Students will be evaluated on successful completion of a series of in-class labs, final project proposals, and a final presentation, as indicated below.

In-class labs
Students will be given a set of tasks to complete, documenting their process and interpreting their results. Instructions will be given at the midpoint of each meeting block and deliverables at the end of the meeting block (except as noted in the instructions).

Unit quizzes
After each unit, you will be given an individual quiz covering the topics and discussion presented.

Final presentation
To show proficiency and understanding of data analytics techniques, students may work individually or with a partner to evaluate accounting data using the IMPACT framework,

perform analysis, develop a meaningful dashboard, and create a formal presentation demonstrating the process and results in video presentation.

Grading Scale

A	B+	B	C+	C	D	F
90%	85%	80%	75%	70%	60%	<60%

Incompletes (I) are only given under special circumstances such as severe illness … not for being unprepared for class or exams.

Statement About Disability Accommodation: Educational access is the provision of classroom accommodations, auxiliary aids and services to ensure equal educational opportunities for all students regardless of their disability. If you are in need of accommodations due to a disability please contact Scott Janz (oars@njit.edu), Associate Director of the Office of Accessibility Resources & Services (OARS), Kupfrian Hall 201, to discuss your specific needs. A Letter of Accommodation Eligibility from the OARS authorizing your accommodations will be required. Accommodations need to be requested in advance and will not be granted retroactively.

Statement on Academic Integrity
"Academic Integrity is the cornerstone of higher education and is central to the ideals of this course and the university. Cheating is strictly prohibited and devalues the degree that you are working on. As a member of the NJIT community, it is your responsibility to protect your educational investment by knowing and following the academic code of integrity policy that is found at: http://www5.njit.edu/policies/sites/policies/files/academic-integrity-code.pdf.

Please note that it is my professional obligation and responsibility to report any academic misconduct to the Dean of Students Office. Any student found in violation of the code by cheating, plagiarizing or using any online software inappropriately will result in disciplinary action. This may include a failing grade of F, and/or suspension or dismissal from the university. If you have any questions about the code of Academic Integrity, please contact the Dean of Students Office at dos@njit.edu"

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EXAM CODE OF CONDUCT
To minimize cheating during an exam

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NJIT policy requires that all midterm and final exams must be proctored, regardless of delivery mode, in order to increase academic integrity. Note that this does not apply to essay or authentic based assessments.

In this course you will be required to use the LockDown Browser and Proctoring in-class. Webcams are not required unless in-class proctoring is not possible due to uncontrollable reasons such as worsening of the pandemic. In such cases you will be required to use LockDown Browser + Webcam (Respondous Monitor) to ensure academic integrity for exams. Please see NJIT's

response to questions about online proctoring [here](). See below for more information about how exams will be proctored in this course.

Respondus LockDown Browser

Respondus LockDown Browser is a locked browser for taking assessments or quizzes in Canvas. It prevents students from printing, copying, going to another URL, or accessing other applications during a quiz. If a Canvas quiz requires that LockDown Browser be used, students will not be able to take the assessment or quiz with a standard web browser. Students may be required to use LockDown Browser with a webcam (Respondus Monitor), which will record students during an online exam.

The webcam can be built into your computer or can be the type that plugs in with a USB cable. Watch this [short video]() to get a basic understanding of LockDown Browser and the webcam feature. A student [Quick Start Guide (PDF)]() is also available.

Respondus Lockdown Browser and Monitor does not work with Linux and Chromebooks at this time. Please visit the Respondus Knowledge Base article on computer requirements for additional information.

The LockDown Browser integration with *Classic Quizzes* still requires students to (1) manually start LockDown Browser, (2) log into Canvas, and (3) navigate to the quiz that requires LockDown Browser.

1. Download and install LockDown Browser from this link: http://www.respondus.com/lockdown/download.php?id=264548414
2. Once your download and installation has finished, locate the "LockDown Browser" shortcut on your desktop and double-click it. (For Mac users, launch "LockDown Browser" from the Applications folder.)
3. You will be brought to the Webauth Authentication Service page, where you can log in with your NJIT UCID and password.
4. From your Dashboard or under "Courses", click on the course in which you have to take the exam that requires LockDown Browser.
5. After you enter the course, find the exam and click on it.
6. Click the "Take the Quiz" button. Once a quiz has been started with LockDown Browser, you cannot exit until the "Submit Quiz" button is clicked.
7. If you are required to use a webcam (Respondus Monitor), you will be prompted to complete a Webcam Check and other Startup Sequence steps.

Questions or problems can be submitted via web form by going to: https://servicedesk.njit.edu and clicking on the "Report your issue online" link. You may also call the IST Service Desk with any questions at 973-596-2900.

Tentative Course Schedule

Week	Date	Topic	Reading / Lab Assignments
		Unit 1: Data Analytics Tools	
1	1/17	**Course Overview** **Data Analytics in Accounting and Business** • Demand for analytics • Overview of Accounting Analytics • Big Data • Data mining • Other techniques	📖 DAA: Chapter 1 Find a Study Partner Install Software **Supplementary Materials (LinkedIn Learning Course):** 💻 Excel: Power Query (Get & Transform) 💻 Learning Power BI Desktop
2	1/24	**Ask the Questions** • Asking accounting questions • Identifying appropriate tools	💻 Lab 1-1 or 1-2 or 1-3 **Complete Tableau Training:** 💻 Get Started with Tableau Prep 💻 Get Started with Tableau Desktop
		Unit 2: Data Analytics Models	
3	1/31	Master the Data • Data Requests • Data Quality • Extract, Transform, Load • Cleaning Data	📘 **Unit 1 Quiz** 📖 **DAA: Chapter 2** **Complete Either Microsoft or Tableau Tracks:** 💻 Lab 2-4 Resolve Common Data Problems 💻 Lab 2-5 Generate Summary Statistics
4	2/7	Perform the Analysis • Descriptive Analytics • Diagnostic Analytics • Predictive Analytics • Prescriptive Analytics	📖 **DAA: Chapter 3** **Complete Either Microsoft or Tableau Tracks:** 💻 Lab 3-1 Descriptive Analytics 💻 Lab 3-2 Diagnostic Analytics 💻 Lab 3-3 Predictive Analytics
5	2/14	Share the Story • Data Visualization • Sorting • Pattern recognition • Categorization • Outlier detection • Dashboards	📖 **DAA: Chapter 4** **Complete Either Microsoft or Tableau Tracks:** 💻 Lab 4-1 Visualize Declarative Data 💻 Lab 4-2 Visualize Exploratory Data 💻 Lab 4-3 Create Dashboards

		Unit 3: Auditing Analytics	
6	2/21	The Modern Audit and Tests of Controls • Working papers • Continuous auditing • Data timing and frequency • Reperformance and recalculation • Segregation of duties and the authorization matrix • Field checks	📘 **Unit 2 Quiz** 📖 **DAA: Chapter 5** **Pick Either Microsoft or Tableau Track:** 💻 Lab 5-1 Create a Common Data Model 💻 Lab 5-2 Create a Dashboard
7	2/28	Substantive Testing and Tests of Transactions • Automatic confirmations • Inventory valuation • Statistical analysis • Clustering and outlier detection • Benford's analysis	📖 **DAA: Chapter 6** **Pick Either Microsoft or Tableau Track:** 💻 Lab 6-1 Evaluate Trends and Outliers 💻 Lab 6-2 Diagnostic Analytics Using Benford's Law
		Unit 4: Managerial Analytics	
8	3/6	Generating key performance indicators • Why firms use key performance indicators • The balanced scorecard and finer metrics • Queries that generate KPIs Evaluation of KPI production	📘 **Unit 3 Quiz** 📖 **DAA: Chapter 7** **Pick Either Microsoft or Tableau Track:** 💻 Lab 7-2 Create a Balanced Scorecard Dashboard 💻 🌎 Lab 7-5 Create Advanced Performance Models
9	3/20	Variance Analysis and Cost Prediction Visualizations, continued	**Pick Either Microsoft or Tableau Track:** 💻 Lab 7-1 Evaluate Job Costs
		Unit 5: Financial Statement	
10	3/27	Using financial statement data • XBRL • Calculating financial ratios • Using Sparklines and other charts	📘 **Unit 4 Quiz** 📖 **DAA: Chapter 8** **Pick Either Microsoft or Tableau Track:** 💻 Lab 8-1 Create a Horizontal and Vertical Analysis using XBRL 💻 Lab 8-2 Create Dynamic Common Size Financial Statements

11	4/3	Sentiment analysis in management disclosure and analysis • Overview of text mining • Sentiment dictionaries • Performing sentiment analysis	**Pick Either Microsoft or Tableau Track:** 💻 Lab 8-3 Analyze Financial Statement Ratios 💻 Lab 8-4 Analyze Financial Sentiment
		Unit 6: Tax Analytics	
12	4/10	Tax Analytics Discussion	📘 **Unit 5 Quiz** 📖 **DAA: Chapter 9** **Pick Either Microsoft or Tableau Track:** 💻 Lab 9-1 Descriptive Analytics: State Sales Tax Rates 💻🌎 Lab 9-3 Calculate Total Sales Tax Paid
13	4/17	Tax strategy and planning	**Pick Either Microsoft or Tableau Track:** 💻🌎 Lab 9-4 Estimate Sales Tax Owed 💻🌎 Lab 9-5 Online Sales Tax
14	4/24	**Final Projects and Presentations**	📘 **Unit 6 Quiz** **Submit Final Project Document and Video** 💻 **DAA: Chapter 10**

Tentative schedule ... subject to change. Students will be notified in class of any changes to the Course Schedule.