NEW YORK UNIVERSITY
Stern School of Business
Data Management and Analytics
Summer 2017

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Course Description

The practice of auditing and accounting is fundamentally tied to data and our ability to analyze it. Whether the data resides in spreadsheets or databases, text documents or public web sites, we can use it to gain valuable insights into the financial performance of a business. You may also hear popular terms like data science, big data, machine learning, and advanced analytics and wonder what they mean for a career in industry or professional services. This course provides concepts and tools for making sense of data and performing data analysis. From simple calculations to sophisticated statistical models, data analysis calls for asking the right questions; acquiring, transforming, and analyzing data; and effective presentation of results. In the first half of the course, we introduce concepts in data management and analytics and three essential tools: spreadsheets, Structured Query Language (SQL), and visual analytics. We show how to apply these skills to internal controls, substantive testing, risk assessment, and data governance for the audit. In the second half of the course, we survey advanced topics such as machine learning and the eXtensible Business Reporting Language (XBRL) and discuss the impact of analytics in industry and on the audit profession. The course concludes with a final project in which students will demonstrate end-to-end data analysis skills.

Our objectives for the course are:

1. Demonstrate knowledge of terms, methods, and tools for data management and analytics
2. Demonstrate knowledge of trends in data management and analytics
3. Demonstrate how to acquire, transform, analyze, and visualize data
4. Demonstrate how to solve problems in accounting and auditing using data and analytics

Required Text and Material

Readings will be announced in class and on NYU Classes. Readings will be accessible online or through the NYU Library.

The course will require the following software:

- Microsoft Excel or equivalent spreadsheet software
- DB Browser for SQLite (open source)
- Tableau (academic license)

In addition, the following software is strongly recommended:

- Notepad++ or equivalent text editor (open source)
- R (open source)
- Rstudio (open source)
- Arelle (open source)

Grading Policy

Grade Components	Percent
Midterm I	20%
Midterm II	20%
Final team project	50%
Class participation	10%
Total	100%

Midterms

There will be two midterms in this course. The midterms will be a combination of multiple choice and short answer/essay questions about data analysis concepts and tools. Material will be taken from class lectures and readings. Participating in class exercises and completing any assigned reading will best prepare you for the exams.

Final Project

Students will be assigned to groups of 4-5 to collaborate on a final project that demonstrates end-to-end data analysis skills. Details of this project will be introduced following Midterm I. However, students can expect that successful projects will involve the following:

- Execution of audit analytics on a sample data set
- Original analysis of the sample data set
- Presentation of insights based on the team's analysis
- Development and presentation of a novel concept for audit analytics
- Supporting documentation, scripts, and files

Attendance and Participation

We encourage you to participate fully and contribute to in-class discussions to get the most out of the curriculum. We will consider your level of participation and professionalism in your final grade. Because our curriculum incorporates in-class exercises, case studies, demonstrations, and discussions, your success depends on your attendance. Although we understand there are times when you may not be able to attend a class, habitual absences will hurt your performance.

During class, please silence all mobile devices.

NYU Classes

We will use NYU Classes regularly to email you, post lecture notes, post case studies, readings, and other course material so please make sure you are correctly registered and checking the course site on a regular basis.

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.

- Clearly acknowledge the work and efforts of others when submitting written work as one's own. Ideas, data, direct quotations (which should be designated with quotation marks), 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 adversely affect the NYU Stern community.

- The entire Stern Student Code of Conduct applies to all students enrolled in Stern courses and can be found here: www.stern.nyu.edu/uc/codeofconduct

- To help ensure the integrity of our learning community, prose assignments you submit to NYU Classes will be submitted to Turnitin. Turnitin will compare your submission to a database of prior submissions to Turnitin, current and archived Web pages, periodicals, journals, and publications. Additionally, your document will become part of the Turnitin database.

General Conduct & Behavior

Students are also expected to maintain and abide by the highest standards of professional conduct and behavior. Please familiarize yourself with Stern's Policy in Regard to In-Class Behavior & Expectations (http://www.stern.nyu.edu/portal-partners/current-students/undergraduate/resources-policies/academic-policies/index.htm) and the NYU Disruptive Behavior Policy (http://www.nyu.edu/about/policies-guidelines-compliance/policies-and-guidelines/bullying--threatening--and-other-disruptive-behavior-guidelines.html).

Students With Disabilities

If you have a qualified disability and will require academic accommodation of any kind during this course, you must notify us 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 will need to take an exam at the CSD, you must submit a completed Exam Accommodations Form to them at least

one week prior to the scheduled exam time to be guaranteed accommodation.

Suggested Readings

- Thomas H. Davenport, Jeanne G. Harris, and Robert Morison, *Analytics at Work: Smarter Decisions, Better Results* (2010)
- John W. Foreman, *Data Smart: Using Data Science to Transform Information Into Insight* (2013)

Course Schedule

Please note the following schedule is subject to change. Classes will meet in Tisch Hall, UC 25, except for class on June 15, which will meet in UC 19.

Session	Date	Topic
Part I: Core concepts and skills		
1	Mon, May 22	Introductory concepts
2	Wed, May 24	Getting started with data analytics: Excel
3	Wed, May 31	Database management and the structured query language (SQL)
4	Fri, June 2	Data control framework and design assessment
5	Mon, June 5	Visual analytics: Tableau ***Midterm I***
6	Wed, June 7	Applications of data analytics in the audit profession
Part II: Advanced topics and final project		
7	Wed, June 14	Machine learning, artificial intelligence, and big data
8	Thu, June 15	XBRL for finance and accounting
9	Mon, June 19	Industry perspective on data and analytics ***Midterm II***
10	Wed, June 21	Data analytics and the future of accounting
11	Mon, June 26	Course review and project work
12	Wed, June 28	***Final Project Presentations***