**NEW YORK UNIVERSITY**
**Stern School of Business**
**Data Management and Analysis**
**Summer 2018**

## Instructors

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| **Seth Rosensweig** | seth.rosensweig@pwc.com |
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Scott Shimp will be the primary point of contact for the course. Please email scott.m.shimp@pwc.com and copy sshimp@stern.nyu.edu. For urgent matters, Scott can also be reached at 347-601-9323.

Office hours are after class and by appointment. Regular class times are Mondays and Wednesdays, 5:30pm – 8:25pm. Two classes are rescheduled for Fridays due to conflicts (see Course Schedule below).

## 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, 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. We introduce concepts in data management and analysis, review the use of spreadsheets and SQL (Structured Query), and introduce tools for visual analytics and statistical programming. We discuss how to apply these skills to business and audit areas such as internal controls, substantive testing, risk assessment, and data governance. In addition, we survey topics such as machine learning and XBRL (eXtensible Business Reporting Language) and consider the impact of analytics in industry and on the audit profession. The course concludes with a final project to 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 analysis
2. Demonstrate knowledge of trends in data management and analysis
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)
- Notepad++ or equivalent text editor (open source)
- R (open source)
- Rstudio (open source)
- Arelle (open source)

## Grading Policy

| Grade Components | Percent |
|---|---|
| Assignments | 45% |
| Midterm | 15% |
| Final project | 30% |
| Class participation | 10% |
| Total | 100% |

## Assignments

There will be three homework assignments to practice the application of key tools (Excel/SQL, Tableau, and R) to data analysis problems.

## Midterms

There will be one midterm. The midterm 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 homework assignments will best prepare you for the midterm.

## 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 the midterm. 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 post lecture notes, readings, and other course material. 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. The regular classroom locations are T-UC04 for Section I (ACCT-GB.6416.60) and T-UC15 for Section II (ACCT-GB.6416.61). ***The sections will meet together for the first class on May 23 in T-UC25.***

| Session | Date | Section I (ACCT-GB.6416.60) | Section II (ACCT-GB.6416.61) |
|---|---|---|---|
| 1 | Wed, May 23 | Introductory concepts (Rosensweig/Harrington/Shimp) | |
| 2 | Wed, May 30 | Getting started with Excel and SQL (Shimp) | Getting started with Excel and SQL (Harrington) |
| 3 | Fri, June 1 | Excel and SQL II (Shimp) | Excel and SQL II (Harrington) |
| 4 | Mon, June 4 | Artificial Intelligence and Statistical programming with R I (Shimp) *Due: Excel/SQL Assignment* | Visual analytics and Tableau I (Rosensweig) *Due: Excel/SQL Assignment* |
| 5 | Wed, June 6 | Statistical programming with R II (Shimp) | Tableau II (Harrington) |
| 6 | Fri, June 8 | Visual analytics and Tableau I (Harrington) | Artificial Intelligence and Statistical programming with R I (Shimp) |
| 7 | Mon, June 11 | Tableau II (Harrington) *Due: R Assignment* | Statistical programming with R II (Shimp) *Due: Tableau Assignment* |
| 8 | Wed, June 13 | Big data and XBRL (Shimp) *Midterm* | Applications of analytics in auditing (Chakraborty/Harrington) *Midterm* |
| 9 | Mon, June 18 | Applications of analytics in auditing (Chakraborty/Harrington) *Due: Tableau Assignment* | Big data and XBRL (Shimp) *Due: R Assignment* |
| 10 | Wed, June 20 | Industry perspective on data and analytics (Rosensweig) + Project work | |
| 11 | Mon, June 25 | Project work (Shimp/Chakraborty/Harrington) | Project work (Shimp/Chakraborty/Harrington) |
| 12 | Wed, June 27 | *Final Project Presentations* | *Final Project Presentations* |