

TO 412

Data Driven Management Decision Making

Previously Named: Big Data Tools



Course Overview. The need to access, gather, manage and analyze data has become an essential part of any business decision process. Whether working in finance, marketing, or consulting, the ability to combine specific discipline knowledge with advanced data tools is clearly a sought after skill.

In this course students learn how to work with **large data sets** in order to derive **business insights** in a variety of business disciplines. To do so, students get hands-on practice with a number of **software tools** that are often used by companies to **access, manage, visualize and explore real data** in a range of business contexts.

Tools Taught. This course teaches basic tools used for the acquisition, management, and visualization of large data sets. Students learn how to:

- Create, manage, and query databases via **SQL**;
- Quickly construct insightful visualizations of multi-attribute data using **Tableau**;
- Use the **Python** programming language to manage data as well as connect to **APIs** to efficiently acquire public data (e.g. from Twitter).

After taking this course, students will be able to construct large data sets that source underlying data from multiple sources and form initial hypotheses based on visualization.

Unique Setup. This course includes a large portion of **hands-on work**. After learning new material in a lecture, students will **work in teams during class time** on an assigned list of tasks. A final team project will enable students to integratively apply all the covered tools to a real-world context.

Guest Speakers. The course includes one or two guest lectures providing students with the opportunity to hear firsthand how Big Data is being used by companies for strategic advantage.

Programming. As the so-called digital economy grows, there is a growing need for analysts and managers who can either code by themselves, or understand enough of coding to have meaningful conversations with their programmers. TO 412 is a great introduction to programming.

Who Should Take This Course? TO 412 is a Professional Capstone. This course intends to help students in being successful in their initial career. After taking TO 412, students starting their first job will be able to **independently query data from their company database, visualize the data and answer managerial questions effectively giving them a competitive advantage over their peers**. Students will also learn how to think about data, what to look for, what tools to use, what common errors to avoid, what questions to ask, what measures are relevant for different business questions and more.

The tools and concepts taught in this course would be very useful for students going into **consulting, marketing, product management, and business analytics**. Students going into these jobs will be expected to know how to retrieve data from companies' databases and then query and analyze the data in order to make the right business decisions. This course teaches students how to approach situations requiring the use of data, how to acquire the needed data, query it, and present the results visually in a way that is easy to communicate to other managers

Feedback from prior students: How TO 412 is helping them in Current Job

- While some may argue that there are dedicated data science resources to rely on, a working understanding of these tools and their capabilities is invaluable as it not only allows a consultant to understand how to align the best tool to the analysis required, but also builds credibility and streamlines interactions with data science business partners. As such, I have found TO 412 to be one of the most applicable classes I took in my senior year at Ross. (**Associate at the Boston Consulting Group**)
- TO 412 was truly the most useful class I took in college! I use SQL and Tableau all the time in my job, and am planning to use python at work soon. It was so great to have background knowledge about big data tools going into work, so I did not feel like I was starting as a complete beginner. (**Business analyst at Capital One**)
- I work as a data analyst at Uber and I use lessons from TO 412 on a daily basis. It was by far the most useful class I took in Ross for my job. (**Data analyst in Uber**)
- While many reports are standardized across our business, I am often finding myself needing additional data to answer questions. When I need to access more data, the only way to retrieve this data is by using SQL queries. I think that everyone on my team that doesn't know SQL is at a disadvantage/actively learning SQL. Your class has given me a leg up (working at **Amazon**)
- TO412 was the best introduction to programming from a business perspective that I could have asked for and will undoubtedly be valuable to my future career in management consulting and beyond.