Contact Information and Details
- Skype: john.joseph.horton
- Twitter: @johnjhorton

Teaching Fellow: Evan D. Sadler <http://people.stern.nyu.edu/eds321/>
- Skype: evandsadler

Meeting Times & Locations:
- Section 1: MW, 2:00pm - 3:15pm, Tisch Building, Room UC19
- Section 2: MW, 3:30pm - 4:45pm, Tisch Building, Room UC19

Office Hours:
- Horton:
  - Dates & Times (Sign-up here: <http://goo.gl/OWUmYt>)
    - Tuesdays, 9:00am to 10:30am
    - Tuesdays, 1:00pm to 5:00pm
  - Location
    - Office is located in Room 81, on the 8th Floor of the Kaufman Management Center. Here <http://goo.gl/mjysVS> is a video showing how to get to my office from the 8th floor elevators.
  - Policy
    - Use the Google Calendar to sign-up in advance. Also, try asking your questions in the Skype chat first. If you don't feel comfortable asking in “public,” message me privately and I’ll “ask for a friend” in the group chat or just answer directly.

- Sadler:
  - Dates and Times
    - Thursdays, 2:00pm to 5:00pm by appointment
  - Location
    - KMC, 8th floor, room 179
  - Policy
    - Send me an e-mail in advance, esadler@stern.nyu.edu. Some weeks I may need to change my schedule. I’m also happy to answer questions via e-mail.

Course Goals
This course is premised on the idea that information technology changes society and business in understandable ways. Our focus will be on what the best social science---both theory and empirics---can tell us about what information technology does---and is doing---to individual workers, firms, markets and economies. At the end of the course, I want you to be able to
reason about questions at the intersection of technology and society.

A secondary goal is to expose you to a variety of technologies and methods that are having a large impact on how we understand and interact with technology. Examples include databases, online advertising, data analytics, recommender systems and online experiments. This secondary, more practical focus, is designed not for your gain mastery of these technologies, but to move you from “don’t know what you don’t know” to “know what you don’t know.” We are in a golden age for autodidacts, but you have to know what to learn.

Policies & Grading

**Attendance**

Come to class. You need to come to the lectures to understand the material. If you are running late, please still come to class, but take your seat quietly at the back of the room. Being late and being absent can both adversely affect your class participation grade. Bring your namecard. If you forget it, make one by hand.

**Homeworks**

Embedded within this syllabus are, for each module, links to submit homeworks online. Homework is due before the start of class. Homeworks can be done collaboratively. However, each student needs to submit his own homework. Four grades are possible: Check Plus, Check, Check Minus and No Credit (for submitting nothing). There’s generally a homework due every class. No credit for late homework, but I will throw out your two (2) lowest homework grades.

**Laptop Policy & Note-taking**

Always bring your laptop to class. You will, from time to time, need to complete quick in-class quizzes and surveys. You can have your laptop open during lectures to follow along with the slides.

**Email**

Unless you have a question that is of a private nature, do not use email to ask questions. Instead, use the Google Docs “commenting” feature to ask you question, directly on this memo, or try the section Skype chats. Helpfully participating in chats is another way to improve your participation grade. If you use Google docs commenting, mention me in the comment (+john.joseph.horton@gmail.com). There is no need to email to set-up office hours. For an example of how commenting works, see the comment about this sentence.

**Testable Materials**

I will maintain a Google Doc, available here <http://goo.gl/rq3JcH> that, for each session, has the “testable” material for that session. What is here---along with material from the homework and the assignments---will make up the content of the Midterm and Final Exams.
**Class Notifications**
I will send a weekly email with links to the readings, special announcements, homework notes etc. To sign up for this email, go here <http://goo.gl/AFEtuk>. This will be the official source of information about the course.

**Remote Office Hours/Section Chats**
I have set up two Skype chat rooms, one for each Section. If you have not done so already, please add me as a contact on Skype. My Skype username is john.joseph.horton. Let me know your section (1 meets at 2:00pm, 2 meets as 3:30pm) and I'll add you to the appropriate room.

**Assignments**
There are four 3 individual assignments. For each assignment, regardless of what technology you use, turn your work into a PDF, then label the file as follows:
- `section_<s>_lastname_assignment_<n>_<NetID>.pdf`

So, for example, if I were in Section 2, my Assignment 1 submission would look like this:
- `section_2_horton_assignment_1_jjh13.pdf`

To submit, email your file as an attachment to: john_45c8@sendtodropbox.com

Assignment 1: Databases (Graded out of 16)
- Description: [http://goo.gl/8yvgea](http://goo.gl/8yvgea)
- Due Date: February 10th, 11:59pm EST
- [Answer Key](http://goo.gl/8yvgea)

Assignment 2: IT and a New Venture
- Description: [http://goo.gl/0sJPab](http://goo.gl/0sJPab)
- Due Date: March 10th, 11:59pm EST.
- Re-write to recover up to half of lost points (optional), due April 16th, 11:59pm EST

Assignment 3: IT and Marketing combined with Experimentation
- Due Date: May 5th, 11:59pm EST.

Assignment Collaboration: You can talk to others, but you need to cite whom you got help from and what was the nature of that help. Example: “Reference: John Horton showed me how to do an inner join for Problem 1.” If you got no help, please state that as so in the assignment. Excessive assistance of that form could adversely affect your grade.

**Grading**
- 50% - Final and Midterm Exams
- 25% - Three Assignments
- 15% - Group Project (Practicum)
- 5% - Homework
- 5% - Professionalism
Course Content

Textbook
There is no textbook for this course.

Lesson Modules
1. IT and Labor (S4 & S5)
2. IT and the Firm (S6 & S7)
3. IT and Business Strategy (S8 & S9)
4. Crowdsourcing (S11)
5. IT and Marketing (S15 & S16)
6. IT and Innovation (S19 & S20)
7. IT and Marketplaces (S25 & S26)
8. The Economics of Information Goods (S16 & S17)

Instructor Practicum Topics
1. Databases (S2 & S3)
2. Visualization (S8)
3. Experimentation (S18)

Potential Student Practicum Topics
1. Data visualization
2. Recommender systems
4. Crowdsourcing and Crowdfunding
5. Online surveys and market research
6. Writing a Product Requirement Documents (PRD)
7. Auctions
8. Google Analytics

How Student Practicums will work
Early in the semester, each of you will give your preference over a collection of potential practicum topics. Based on preferences, we will divide the class into groups of about 4-5 students.

Preference Elicitation: http://goo.gl/Kbuv29
Update: Assigned Practicum Groups (Assigned Presentation Dates Now Included)

Requirements
- Prepare a 3 - 4 page Google Document that explains the idea, works some examples and includes a list of both references and online tutorials
• Prepare and deliver a 20 minute in-class presentation/exercise, given live & prepared as a screen cast
• Prepare a 20 minute in-class exercise
• A homework assignment to be completed & graded after the discussion

Grading criteria for student projects will come from a combination of technical correctness, pedagogical quality and how well you engage with the other students.

There is a memo due on April 14th. This should be a pretty far-along progress report on how your group is doing. Here is the link to the memo: http://goo.gl/FB6RhE.

**Midterm and Final Notes**

For both the midterm and the final, students are allowed to have a SQL cheatsheet, which I will prepare and distribute in printed form, before the exam. Review slides for the mid-term.
<table>
<thead>
<tr>
<th>#</th>
<th>Date</th>
<th>Day</th>
<th>Topic</th>
<th>Notes</th>
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<tbody>
<tr>
<td>S1</td>
<td>27 JAN</td>
<td>M</td>
<td>Introduction to IT in Business and Society</td>
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<tr>
<td>S2</td>
<td>29 JAN</td>
<td>W</td>
<td>Databases I</td>
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<td>S3</td>
<td>03 FEB</td>
<td>M</td>
<td>Databases II</td>
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<td>S4</td>
<td>05 FEB</td>
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<td>IT and Labor Lecture</td>
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<td>S5</td>
<td>10 FEB</td>
<td>M</td>
<td>IT and Labor Discussion</td>
<td>Assignment 1 Due</td>
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<td>S6</td>
<td>12 FEB</td>
<td>W</td>
<td>Data Analytics &amp; Visualization I</td>
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<td>17 FEB</td>
<td>M</td>
<td>President's Day - No Class</td>
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<td>S7</td>
<td>19 FEB</td>
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<td>IT and the Firm Lecture</td>
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<td>S8</td>
<td>24 FEB</td>
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<td>IT and the Firm Discussion</td>
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<td>S9</td>
<td>26 FEB</td>
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<td>IT and Business Strategy Lecture</td>
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<td>S10</td>
<td>03 MAR</td>
<td>M</td>
<td>IT and Business Strategy Discussion</td>
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<td>S11</td>
<td>05 MAR</td>
<td>W</td>
<td>Crowdsourcing</td>
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<tr>
<td>S12</td>
<td>10 MAR</td>
<td>M</td>
<td>Midterm Review</td>
<td>Assignment 2 Due</td>
</tr>
<tr>
<td>S13</td>
<td>12 MAR</td>
<td>W</td>
<td>Midterm Exam</td>
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<td>17 MAR</td>
<td>M</td>
<td>No Class - Spring Break</td>
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<td></td>
<td>19 MAR</td>
<td>W</td>
<td>No Class - Spring Break</td>
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<td>S14</td>
<td>24 MAR</td>
<td>M</td>
<td>Midterm Return and Review</td>
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<tr>
<td>S15</td>
<td>26 MAR</td>
<td>W</td>
<td>IT and Marketing Lecture</td>
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<tr>
<td>S16</td>
<td>31 MAR</td>
<td>M</td>
<td>IT and Marketing Practical Exercise</td>
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<tr>
<td>S17</td>
<td>02 APR</td>
<td>W</td>
<td>IT and Experiments Lecture</td>
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<tr>
<td>S18</td>
<td>07 APR</td>
<td>M</td>
<td>Lost Class due to Fire Alarms</td>
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<tr>
<td>S19</td>
<td>09 APR</td>
<td>W</td>
<td>IT and Experiments Practical Exercise</td>
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<tr>
<td>S20</td>
<td>14 APR</td>
<td>M</td>
<td>IT and Innovation Lecture</td>
<td>Student Presentation Memo Due. Sample memo and instructions here: <a href="http://goo.gl/FB6RhE">http://goo.gl/FB6RhE</a></td>
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<tr>
<td>S21</td>
<td>16 APR</td>
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<td>IT and Innovation Discussion</td>
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<td>S22</td>
<td>21 APR</td>
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<td>IT and Marketplaces Lecture</td>
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<td>23 APR</td>
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<td>IT Related Externalities</td>
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<td>28 APR</td>
<td>M</td>
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<td>Student Presentations: Crowdfunding</td>
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<td>Online Advertising Groups</td>
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<td>● Section 1: <a href="http://goo.gl/7g0fl3">http://goo.gl/7g0fl3</a></td>
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<tr>
<td>30 APR</td>
<td>W</td>
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<td>Student Presentations - Google Analytics and Recommender Systems Groups</td>
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<tr>
<td>05 MAY</td>
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<td>Student Presentations - Online Market Research and Programming in the Browser Groups</td>
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<td>Assignment 3 Due. Description <a href="#">here</a></td>
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<tr>
<td>07 MAY</td>
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<td>Final Exam Review Session</td>
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<tr>
<td>09 MAY</td>
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<td>Crowds 2.0 @ NYU Stern</td>
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<tr>
<td>12 MAY</td>
<td>M</td>
<td></td>
<td>Final Exam</td>
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Session Plans

S1: Introduction to Information Technology in Business and Society

Date(s): January 27th, 2014
Status: Finalized.
Slide: [http://goo.gl/JK8Tv5](http://goo.gl/JK8Tv5)
Overview: This lecture is an overview of the course topics, homeworks, assignments and grading policy. There is no separate discussion day for this lecture—we will discuss issues as they come up.

Readings:
- Read this syllabus.

Homework:
- Due *in class* (only homework where this is true)
  - Submit homework [here](http://goo.gl/k35cco).
  - Sign-up for the email list [here](http://goo.gl/AFEtuk).

S2 & S3: Databases

Dates: January 29th and February 3rd.
Slides: [http://goo.gl/1sVbH4](http://goo.gl/1sVbH4)
Status: Finalized.
Overview: This two-part module is partly lecture, partly hands-on exercise. The focus is on understanding the basics of relationship databases and gaining familiarity with SQL.

Readings:
- January 29th
  - [Relational database overview](http://en.wikipedia.org/wiki/Relational_database)
- February 3rd:
  - None.

Homework:
- Due before start of class, on January 29th:
  - First, read the short Wikipedia articles on relational databases. Then complete the *beginner* portion of the W3 Schools SQL tutorial, available [here](http://goo.gl/N9M0sG). The tutorial goes from "Intro" to "SQL Injection." When you have completed the tutorial, submit the online homework [here](http://goo.gl/arNhkg).
- Due before start of class, on February 3rd
  - Complete the rest of the SQL tutorial and take the 20 question online SQL quiz, available [here](http://goo.gl/ICnJOh). Record the numbers of the questions you got wrong or print a PDF. Do not lose your grading sheet! Submit the online homework [here](http://goo.gl/nqBShp). Solutions available [here](http://goo.gl/AFetuk).
S04 & S05: IT and Labor

**Dates:** February 5th (Lecture) and February 10th (Rest of Lecture; Discussion)

**Slides:** [http://goo.gl/tERP3S](http://goo.gl/tERP3S)

**Status:** Finalized.

**Overview:** This module focuses on understanding how firms decide how much labor to employ and how this decision is affected by IT. We will also partially discuss how IT affects labor markets.

**Readings**
- February 5th:
  - None
- February 10th:
  - “Why Workers are Losing the War Against Machines” by Erik Brynjolfsson and Andrew McAfee
  - “Wiring the Labor Market” by David Autor
  - “How Technology Wrecks the Middle Class” by David Autor

**Homework**
- February 5th:
  - None
- February 10th:
  - Submit homework here: [http://goo.gl/6REXsT](http://goo.gl/6REXsT)

S06: Data Visualization

**Date(s):** February 12th

**Status:** Finalized.

**Slides:** [http://goo.gl/k0N5iW](http://goo.gl/k0N5iW)

**Overview:** This is mixed lecture/hands-on module on data visualization. We will discuss the main goals of visualization and common pitfalls and make some of our visualizations using the simple Google Spreadsheet tools.

**Readings:** None.

**Homework:** None.

S07 & S08: IT and the Firm

**Date(s):** February 19th and February 24th

**Slides:** [http://goo.gl/i8H6Yq](http://goo.gl/i8H6Yq)

**Status:** Finalized.

**Overview:** This module focuses on understanding the nature of the firm and how IT affects those boundaries. We will also focus on how IT innovation changes the space of permissible contracts.

**Readings:**
- February 19th:
February 24th:
- “Computer-Mediated Transactions” by Hal Varian
- “Four Formal(izable) Theories of the Firm” by Robert Gibbons, Section 1 of paper only
- “The Need for Standardization in Crowdsourcing” by Panos Ipeirotis and John Horton

Homework:
- February 19th:
  - None.
- February 24th:
  - Submit homework here: <http://goo.gl/pVP01B>

S09 & S10: IT and Business Strategy
Date(s): February 26th and March 3rd
Status: Finalized.
Slides: http://goo.gl/a2Rt9N
Overview: This lecture introduces the Porter “5 Forces” model of business strategy and then discuss how these components are influenced by IT. For the discussion, we will have a guest---Elenor Mak, the CEO of Keaton Row.
Readings:
- February 26th:
  - None
- March 3rd
  - Check out: https://www.keatonrow.com/
  - “Keaton Row will Change the Way You Buy Clothes Online. Fashion Retailers Take Note,” by Kai Falkenberg, Forbes
  - “The Five Competitive Forces that Shape Strategy” by Michael Porter
  - “What Killed Michael Porter’s Montior Group? The One Force that Really Matters.” by Steve Denning

Homework:
- February 26th: None
  - None
- March 3rd:
  - Submit homework here: http://goo.gl/plPFbn

S11: Crowdsourcing
Date: March 5th
Status: Finalized.
Slides: http://goo.gl/PZzJ8Q
Overview: This lecture discusses the emerging crowdsourcing field/industry.
Readings: None.
Homework: None.

S15 & S16: IT and Marketing
Dates: March 26th & March 31st
Status: Finalized.
Slides: http://goo.gl/67HCm
Overview: This lecture introduces the fundamentals of how search-based advertising works.
Readings:
- March 26th:
  - None.
- March 31st:
  - “eBay Study Says Strong Brands Like eBay Don't Need Google Ads”
  - “21 Call to Action Examples and 3 Rules for Effective CTAs”
Homework:
- March 26th:
  - None.
- March 31st:
  - Add your “creatives” to your slide in your section. You should come up with at least two variants of an online ad (platform of your choice) and be prepared to defend your approach orally in class. You may partner up in teams.
    - Section 1: http://goo.gl/GCVyLo
    - Section 2: http://goo.gl/e4vVSR

S17 & S18: Experimentation
Dates: April 2nd and April 7th
Status: Finalized.
Slides:
- April 2nd:
  - http://goo.gl/KSUS8r
- April 7th:
  - http://goo.gl/aoapbg
Overview: This lecture and in-class exercise will introduce the basic logic of causal inference, with a particular focus on online experimentation.
Readings:
- April 2nd:
  - “How Do We Know?” by Eric Posner
- April 7th:
- “The Online Laboratory: Conducting Experiments in a Real Labor Market”
- “Seven Pitfalls to Avoid when Running Web Experiments”

- Reference Readings (FYI; Not Required)

**Homework:**
- None.

### S19 & S20: IT and Innovation

**Dates:** April 14th and April 17th

**Status:** Finalized.

**Slides:** [http://goo.gl/BtzxLn](http://goo.gl/BtzxLn)

**Overview:** This lecture and in-class exercise will discuss the importance of the innovation to human material well-being, the public policy approaches to improving innovation and how IT is thought to change the nature of innovation.

**Readings:**
- April 14th: None.

**Homework:**
- April 14th: None
- April 16th: **Due by 12 noon on April 16th**
  - Pick two points in the assigned reading that you disagree with and add them to the appropriate slide. Be prepared to discuss them in class. You can re-organize into multi-person teams, but add a note to “your” slide:
    - Section 1
    - Section 2

### S21: IT and Marketplaces

**Dates:** April 21st, 2014

**Slides:** [http://goo.gl/CwpkBn](http://goo.gl/CwpkBn)

**Overview:** This class is a lecture and discussion on the nature of marketplaces.

**Readings:**
- Required
  - None.
- Optional/FYI
  - [“The Economics of Internet Markets”](http://karimlakhani.com/economics-of-internet-markets/)
  - [“Spam Economics”](http://karimlakhani.com/spam-economics/) by David Reilly
  - [“Online Labor Markets”](http://karimlakhani.com/online-labor-markets/) by John Horton
Practicum Topic Descriptions

Google Analytics
The industry standard for analyzing web traffic is Google Analytics. This online software lets the owner of a website track and analyze their traffic. Teams in this practicum will explain how Google Analytics works, show how to instrument a simple page and prepare a meaningful analysis based on some visitor traffic.

Crowdsourcing/Crowdfunding
The emergence of online labor markets are making it possible to tap geographically dispersed pools of workers to complete tasks. Many of these tasks would have been too difficult or expensive to accomplish before. For this practicum, the team will discuss how to use Mechanical Turk to accomplish some task. The focus will be on best practices.

Writing a Product Requirements Document
Great software features and products start with an understanding of the needs to users and what problem the feature will solve.

Predictive Modeling
At its core, most of the excitement (hype?) about “big data” is about using the vast amounts of collected information to predict customer behaviors and tailor products, pitches, recommendations etc. accordingly. This “tailoring” hinges upon some predictive model. Teams with this practicum will show how linear regression---executed in Excel or any other language/program---can be used to construct a predictive model and make predictions. Emphasis will be placed on turning raw data into “features.”

Recommender Systems
A tremendously useful and interesting consequence of electronic commerce has been the use of so-called recommender systems. These systems can collect others’ preferences and buying habits and then use this information to make algorithmic recommendations. Teams with this
practicum will discuss where recommendation systems are used and how they work at a broad level.

**Auctions**
From eBay to Google AdWords, auctions have proven to be a key “technology’ online.