Course Overview

The emergence of search engines over the last decade changed drastically the business landscape in many industries. Some traditional business models are now completely outdated, other business models are deeply transformed, and many new models are emerging based on the unprecedented access to vast amounts of information enjoyed by the participants in today’s markets.

This course will examine how search technologies affect business, with a particular emphasis on analytics. Students will first gain an understanding of the basics of how search engines work, and then explore topics such as search ranking, search spam and anti-spam efforts, search engine marketing, keyword auctions, online advertising, collective intelligence, search and privacy, intellectual property, and search of blogs and online communities. Some of the topics that we will discuss:

- How search engines discover and rank web pages
- How users interact with a web site, and how to identify problems and opportunities by analyzing their behavior
- The basics of search engine marketing, the process of keyword-based advertising, and the way that advertisement distribution networks work
- How to harness the wisdom of crowds and what makes a "Web 2.0"-style approach successful.
- How the ideas of privacy and intellectual property are affected by search engine technologies
- The trends for next-generation web search and online advertising.

80% of the grade in this class will be determined based on the individual and group assignments (see below for details). Before registering for this class, make sure you understand and are able to handle the requirement to complete these assignments.

Class Format

The format of the class will be 60% lecture, 30% class discussion, and 10% discussion of the projects. Students are expected to actively engage in class discussions, to have their assumptions challenged, and to bring their various backgrounds to class in order to make it a great experience for themselves and everybody else.
Preliminary List of Topics:

<table>
<thead>
<tr>
<th>Session</th>
<th>Date</th>
<th>Module</th>
<th>Topic</th>
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<tbody>
<tr>
<td>1</td>
<td>Jan 3</td>
<td>Search and Markets</td>
<td>Introduction, Consumer Search, Search in Markets, The Long Tail</td>
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<tr>
<td>2</td>
<td>Jan 3</td>
<td>Basics of Web Search Engines</td>
<td>Search Basics: Crawling, Indexing, Ranking Pagerank, Spam, TrustRank</td>
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<td>3</td>
<td>Jan 5</td>
<td>Web Analytics I</td>
<td>Analyzing Internal Web Traffic</td>
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<td>4</td>
<td>Jan 5</td>
<td>Web Analytics II</td>
<td>Competitive Intelligence</td>
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<td>5</td>
<td>Jan 8</td>
<td>Search Engine Marketing I</td>
<td>Online Advertising, Pay-Per-Click, Search Advertising, AdWords, AdSense</td>
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<td>6</td>
<td>Jan 8</td>
<td>Search Engine Marketing II</td>
<td>Search Engine Analytics, Search Engine Optimization</td>
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<td>7</td>
<td>Jan 8</td>
<td>User Generated Content I</td>
<td>Mining User Generated Content, Sentiment Analysis</td>
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<td>8</td>
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<td>User Generated Content II</td>
<td>Social Media, Social Search</td>
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<td>9</td>
<td>Jan 10</td>
<td>User Generated Content III</td>
<td>Tracking Online Trends, Buzz Tracking</td>
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<td>10</td>
<td>Jan 10</td>
<td>User Generated Content IV</td>
<td>Harnessing the Wisdom of Crowds, Recommender Systems, Reputation, Prediction Markets and Enterprise Applications</td>
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<td>11</td>
<td>Jan 12</td>
<td>Ownership of Electronic Data</td>
<td>Intellectual Property on the Web, Copyrights, Trademarks, Online Privacy</td>
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<td>12</td>
<td>Jan 12</td>
<td>Future Trends</td>
<td>Future Directions and Wrapping Up</td>
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Grading

Grading will be based on:

- Assignments (80%)
- Class Participation and Blackboard Discussion (20%)
- No exams

Absences are highly discouraged and will affect negatively your grade. If you have to miss a class, please notify the instructor beforehand.

Assignments

I am currently planning to have two individual assignments and two group assignments that will be done in teams of 2 students. You can use the respective Blackboard discussion board for finding teammates. All team members will be assigned the same grade for the group assignments. Unless I am told otherwise, I will assume that everyone contributes equally to the project. If this is not the case and to avoid free-riding, if you think that a team member did not work enough you can submit a peer evaluation form evaluating the performance of your teammates. The above number of assignments is tentative and thus may change.

Most of the assignments of this course will be hands-on, giving you real life experience of web analytics, data analysis, search marketing campaigns, and so on. The assignments do not require any programming background. **However you should be able to analyze data using Excel.** For one of your individual assignments it is strongly recommended that you use Pivot Tables in Excel. **If you are not familiar with Excel Pivot Tables, you should be prepared to learn how to use this feature** (at a basic level that can be acquired in a couple of hours by reading the relevant documentation). In addition, your completion of the team assignments will benefit (and will be more interesting) if the team has access to a website where it can collect and
analyze Google Analytics information and where it can drive users via search advertising campaign(s).

Some sample assignments for this course:

- Run and optimize an online advertising campaign, using Google AdWords.
- Analyze the visitorship data of an online website to analyze the effectiveness of different pages. You can use Google Analytics, or tools like CrazyEgg.
- Optimize the keyword campaign of a company by choosing the appropriate keywords and bid amounts, depending on the competition and the rank of the organic pages.
- Analyze (or build) a recommender system for movies, books, and TV Shows using Facebook data.

Readings and Textbook

There is no textbook for this course. The material is very recent and draws from several disciplines such as computer science, economics, statistics, marketing, and sociology.

I will make every effort to make the material self-contained in the slides that will be distributed as handouts in-class and will also be available on Blackboard. I will also provide pointers to additional, supplementary readings.

For some of the material that we cover, the only material available comes from research articles. For other topics, there are books that are useful study companions. Some books with material relevant to this course: *(This list is likely to be updated, so please wait until I post the final version before purchasing any books.)*

- *The Search*, by John Battelle
- *The Long Tail*, by Chris Anderson
- *Web Analytics: An Hour a Day*, by Avinash Kaushik
- *Web 2.0: A Strategy Guide*, by Amy Shuen
- *The Online Advertising Playbook*, by Joe Plummer, Steve Rappaport, Raddy Hall, and Robert Barocci:

Readings and Textbook

The class participation grade will be based on a careful, subjective assessment of the value of your input to classroom learning. We keep track of your contributions towards each class session, and these contributions can include (but are not restricted to) raising questions that make your classmates think, providing imaginative yet relevant analysis of a situation, contributing background or a perspective on a classroom topic that enhances its discussion, and simply answering questions raised in class. Emphasis is placed on the quality of your contribution, rather than merely on its quantity. A lack of preparation, non-constructive classroom comments or improper behavior (such as talking to each other or inappropriate use of your computer) will lower this grade.

Academic Honor Code

You are responsible for maintaining Stern’s Honor Code which mandates zero tolerance for cheating and plagiarism. Violations of the honor code will be prosecuted with a minimum penalty of failure for the course. If you become aware of any violations of the honor code you must take whatever steps are necessary to stop the violators. When submitting assignments, you will be asked to confirm that you have adhered to the honor code by agreeing to the statement: ‘I pledge my honor that I have not violated the Stern Honor Code in the completion of this assignment.’ It is in your best interest that the market place knows that Stern takes honesty seriously as it adds to the value of your degree.