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Description

Today's business world is more complex and interconnected than ever before. This offers both a challenge and an opportunity for today's managers. In this course we will take a scientific approach based on models and randomized controlled trial experiments to understand how we can take advantage of social dynamics. *The course emphasizes specific cutting edge tools that students can apply in their workplace today* to help spread products and information through word of mouth, social media, and other social networks; to make better predictions by capturing crowd wisdom and mining web data on collective behavior and consumer sentiment; and to speed problem solving and innovation through crowdsourcing and open innovation platforms. Topics covered include social networks, social media, tipping points, social contagion, herd behavior, the wisdom of crowds, crowdsourcing, and prediction markets.

Grading

Your grade will be based on homework assignments that will give you practice using the tools discussed in class and a take home final exam that will evaluate your understanding of the class concepts and how those concepts can be applied in your own workplace. The assignments will determine 30% of your final grade and the final exam will count for 70%.

Late exams and assignments will be penalized 20%. Exams and assignments more than 72 hours late will not be accepted. Absolutely no exceptions to this policy will be granted.

Readings

The course packet readings reinforce and supplement the material from the lectures. *All of the readings are optional.* Readings labeled as reference repeat material covered in class.

Honor Code

As with all Kellogg courses, by enrolling in this course, you agree to abide by the Kellogg Honor Code (http://www.kellogg.northwestern.edu/stu_aff/policies/honorcode.htm). In this course, you may (and are encouraged to) discuss the individual assignments with your fellow students; however, the finished product that you submit should be entirely your own work. The final exam is to be done individually without discussion with anyone. You may use the course pack, slides, and handouts, as well as your own notes for reference, but any work that you submit should be entirely your own.

Schedule
Warning: This schedule is subject to change

Day 1 — Social Dynamics

Session 1. Social Dynamics.
How social influence creates unpredictable successes, catastrophic failures, and radical transformations.

Samuel J. Palmisano, "A Note to Fellow CEOs," *Capitalizing on Complexity: Insights from the Global Chief Executive Officer Study*, IBM, 2010.

Michael J. Maubossin and Tim Sullivan, "Embracing Complexity," *Harvard Business Review*, September 1, 2011.

Session 2. Predicting the Present.
The Billion Prices Project. Predicting box office success, the DJIA, and election outcomes with Twitter. Sentiment analysis with Amazon Mechanical Turk. Twitterbombs, Astroturfing, and Truthy. The "Measure and React" strategy.

Hal Varian, "Predicting the Present," *Google Think Quarterly: The People Issue*.

Duncan Watts and Steve Hasker, "Marketing in an Unpredictable World," *Harvard Business Review*, 2006.

Duncan J. Watts, "A Twenty-first Century Science," *Nature*, 445: 489, February, 2007.

Kurt Kleiner, "Bogus Grass-roots Politics on Twitter," *Technology Review,* November 2, 2010.

Day 2 — Big Data

Session 1. Googling.
Google Flu Trends. Using search data from Google to identify trends and target markets.
✳ *In Class Activity. Predicting the Present with Google.*

Hal Varian, "Predicting the Present," *Google Think Quarterly: The People Issue*.

Session 2. Big Data and The Wisdom of Crowds.
Prediction markets, the averaging principle, and the wisdom of crowds. The relative benefits of accuracy and diversity in crowd forecasts.
✳ *In Class Activity. How Fast Can a Cheetah Run the Hundred Meter Dash?*

PJ Lamberson, "You Don't Need 'Big Data'." http://social-dynamics.org/?p=239. (Reference)

Day 3 — Crowdsourcing and Open Innovation

Session 1. Crowdsourcing and Unstructured Data.
How to tell if a model was photoshopped. Training computers with crowds. Running experiments with Amazon Mechanical Turk.

Jeff Howe, "The Rise of Crowdsourcing," *Wired*, June, 2006.

Eric Bonabeau, "Decisions 2.0: The Power of Collective Intelligence," *MIT Sloan Management Review*, Winter 2009, 50(2): 45—52.

Session 2. Leveraging Crowds for Problem Solving and Innovation.
When and why diverse groups outperform high ability groups. The NetFlix Prize. Fold-It.

Eliot Van Buskirk, "How the Netflix Prize Was Won," *Wired*, September 22, 2009.

Eric Siegel "Casual Rocket Scientists: An Interview with a Layman Leading the Netflix Prize, Martin Chabbert," *Predictive Analytics,* September, 2009.

Scott E. Page, "Making the Difference: Applying a Logic of Diversity," *The Academy of Management Perspectives,* 21(4): 6-20, 2007.

K.R. Lakhani and J.A. Panetta, "The Principles of Distributed Innovation," Innovations: Technology, Governance, Globalization 2, no. 3 (2007): 97-112.

Day 4 — Going Viral

Session 1. Going Viral.
Why do some things take-off while others don't? Modeling contagion and the viral tipping point. Passive and active viral features. Big seed viral campaigns for subcritical contagions.

Jill Lepore, "It's Spreading," *The New Yorker,* June 1, 2009.

PJ Lamberson, "What it takes to 'Go Viral'," Available online at
http://bit.ly/goingViral (Reference)

Session 2. An Introduction to Networks.
Modeling social interactions using networks. An introduction to Gephi and mapping networks.
� *In Class Activity. Mapping Your Own Network.*

Nicholas Christakis and James Fowler, *Connected*, Chapter 1: "In the Thick of It," p. 3-32. Little, Brown and Co., New York.

Day 5 — Network Analytics: Influentials and Social Segmentation

Session 1. Network Analytics.
Collecting and analyzing network data. Network metrics. Centrality measures. Degree distributions, and scale-free networks. The degree distribution of the class.
✳ *In Class Activity. Mapping the Social Network of the Class.*
✳ *In Class Activity. How Many Walters Do You Know? Computing the Degree Distribution of the Class.*

David Easley and Jon Kleinberg. *Networks, Crowds, and Markets.* Section 2.4.

M. E. J. Newman. *Networks: An Introduction*. Sections 2.1, 3.1, 3.2, 3.3, 3.4, 3.5, and 3.7.

Session 2. The Myth of the Influential and Social Segmentation.
How much is an influential worth? Community detection and modularity.

Malcolm Gladwell, "Six Degrees of Lois Weisberg," *The New Yorker,* January 11, 1996.

Clive Thompson, "Is the Tipping Point Toast?" *Fast Company,* January 28, 2008.

Duncan J. Watts, "The Accidental Influentials," *Harvard Business Review*, February, 2007: 22—23.