#### MODERN MARKET MECHANISMS: SYLLABUS

Economics 4v98/5v98
Spring 2014
Hamkamer TBA
Tues/Thurs 2:00–3:15 p.m.
Prof. Scott Cunningham
Department of Economics
Baylor University
254-537-2239
scunning@gmail.com
Hankamer 365
11:00am to 12:30pm Wed/Fri, or by appointment

#### **COURSE DESCRIPTION**

The economic, social, business, and political worlds are highly interconnected. The structure of connections between workers, banks, and trading partners can affect the efficiency and equity of markets. Network analysis provides tools for characterizing these connections and help us to think about the role they play in the allocation of resources. The course begin with an overview of methods for describing networks and network data. We then explore a number of different ways in which the social and economic worlds are connected, including: how information travels through social networks and how this can lead to fads; how markets connect buyers and sellers and the relationship between social power and market position; how the structure of social networks influences the diffusion of beliefs; the dynamics of segregation, technology adoption, and other "tipping points"; the structure and fragility of financial networks, and the role of job referral networks in the allocation of labor.

#### **COURSE OBJECTIVES**

The primary objective of this course for undergraduates is for students to learn:

- to develop an understanding of the role of matching and networks in modern markets, as well as the unique problems associated with each
- · to apply game theoretic models to modern market environments, and
- to analyze a network using models from class accompanied by empirical analysis of an originally collected dataset.

#### **COURSE OUTCOMES**

Course objectives are measures via the course assignments which assess acquired substantive knowledge and analytical ability via written work. See below under "Coursework, Grades, and Grading Policies".

### COURSEWORK, GRADES, AND GRADING POLICIES

Undergraduate final course grades will be according to the following distribution: Graduate final course grades will be according to the following distribution:

- · Homework (25%)
- · Midterm (25%)
- · Projects (25%)
- Final exam (25%)

#### **TEXTBOOKS**

Primary (and mandatory) texts are:

**EK:** Easley, David and Jon Kleinberg, 2010. <u>Networks, Crowds and Markets</u> Cambridge University Press.<sup>1</sup>

### Supplemental (but not mandatory) materials are:

**B:** Barabasi, Albert-Laszlo 2002. Linked: How Everything is Connected to Everything Else and What it means for Business, Science and Everyday Life.<sup>2</sup>

MJ: Jackson, Matthew O., 2008. Social and Economic Networks.<sup>3</sup>

**RS:** Roth, Alvin E. and Marilda A. Sotomayor, 1992. Two-Sided Matching: A Study in Game-Theoretic Modeling and Analysis. Econometric Society Monographs (Book 18). Cambridge University Press.<sup>4</sup>

G: Gibbons, Robert, 1992. Game Theory for Applied Economists. Princeton University Press.<sup>5</sup>

All other readings are available online, either through a link to an electronic journal or through library e-reserve. Links will be distributed to students via the instructor's course website as the semester progresses. Some of the readings are technical pieces from economics journals. The degree to which a student needs to be familiar with the details of a paper will be clear from the emphasis given to the paper in lecture.

#### EXAMS (50%)

I will give two exams during the semester, one at the midterm and one during final exam period. The first exam will cover material we have covered prior to the midterm. The second exam will cover material introduced between the midterm and end of the semester and will <u>not</u> be cumulative.

You must take exams during the scheduled times. I will not administer make-up exams. If you have an excused absence from the first midterm, its weight will be added to the weight of the final in determining your course grade. An unexcused absence from an exam will result in a score of zero on that exam.

#### **PROJECTS (25%)**

You will complete two projects this semester that apply methods of network analysis to some topic of economic interest. The first project will introduce you to the tools of complex network analysis through a software package called Gephi. The first project is worth 10 percent of your final grade. The second project will apply the tools you pick up in the first project, as well as other concepts from the course, to a topic of your choosing. The second project is worth 15 percent of your final grade.

<sup>&</sup>lt;sup>1</sup>http://www.amazon.com/Networks-Crowds-Markets-Reasoning-Connected/dp/0521195330/

<sup>&</sup>lt;sup>2</sup>http://www.amazon.com/Linked-Everything-Connected-Business-Everyday/dp/0452284392/

<sup>&</sup>lt;sup>3</sup>http://www.amazon.com/Social-Economic-Networks-Matthew-Jackson/dp/0691148201

<sup>&</sup>lt;sup>4</sup>http://www.amazon.com/Two-Sided-Matching-Game-Theoretic-Econometric-Monographs/dp/0521437881/

<sup>&</sup>lt;sup>5</sup>http://www.amazon.com/Theory-Applied-Economists-Robert-Gibbons/dp/0691003955/

### HOMEWORK (25%)

I will collect homework once per week consisting of problems from the textbook and additional analytical and essay questions.

# ATTENDANCE

If you miss more than 7 classes, Baylor policy requires that I fail you.

# ACADEMIC HONESTY

All students must be familiar with and abide by Baylor's Code of Academic Conduct, which is available online at http://www.baylor.edu/honorcode/index.php?id=44060. I take matters of academic honesty very seriously. A student who commits academic dishonesty disrespects the hard work of his classmates. Any student found cheating, plagiarizing, or colluding during the course will be referred to the Associate Dean. If you fall behind in your coursework and even feel tempted to be dishonest, please see me first so that we find a way for you to turn in your work late (but with some penalty). That said, students are encouraged to study together and to collaborate on homework, although each student must write up her own homework.

## **TENTATIVE SCHEDULE AND TOPICS**

The following is a rough outline of the topics we will cover in class:

- · Introduction: Networks and their Role in Economics
- · Graph Theory and Social Networks
  - · Graphs
  - Strong and Weak Ties
  - · Networks and Social Structure
- · Markets and Strategic Interaction in Networks
  - $\cdot \,$  Overview of Game Theory and Auctions
  - · Matching Markets
  - Trading Networks
  - · Bargaining and Power in Networks
- · Information, Network Effects and Social Interactions
  - · Information Cascades
  - · Network Effects
  - · Power Laws and Rich-Get-Richer Phenomena
- $\cdot\,$  The Effect of Network Structure on Social Behavior
  - · Cascading Behavior in Networks
  - · Small-world and search
- · Social Interactions in the Labor Market