

## **The Economics of Networks**

European University Institute

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### **Course Overview**

Social networks have profound effects on individuals behavior and economic outcomes. They are critical for the trade of goods and services. They influence our opinions, which products we buy, how much education we obtain. They shape our political attitudes and our likelihood of succeeding professionally. They are important in determining how diseases spread and they are essential to understanding the optimal design of organisations and the optimal design of policies based on peer effects. These premises, which find empirical support in a variety of studies, are the motivation for the tremendous interest in the economics of networks.

The course provides an overview of the theoretical work that has been developed in the economic of networks.

### **Assessment**

You can choose between these two options.

*a. Critical Review.* Develop a critical review of one article. The critical review should be composed of three parts. The first part should briefly summarise the analysis conducted in the paper and the principal insights of the article. The second part should describe in more details the methodology adopted, the main results obtained and the intuitions behind the results, the relation with the existing literature and the contribution of the paper with respect to existing work. The final part should emphasise the weakness of the paper and possible extensions of the framework. Overall, the critical review should not be more than five pages. Quality is better than quantity. A good critical review can be delivered in 3 pages. Indeed, once you make an initial draft of your critical review, you would do well to review it and see if you can make the same points with fewer words. Doing so will improve your final output.

Please send me an email with the article you want to review by 12.00a.m. January 9th, 2017. The article has to be approved by me. The critical review should be submitted by 12.00

a.m. January 23rd 2017. You should submit the review by email to me. Please send me a pdf file and the subject of the email should be "critical review YOUR NAME".

b. You can select a network application of your choice and use the methods of the class and materials you find on the application to draft an essay of no more than five pages in pdf that develops some aspect of the network application. You can focus on a narrow question or provide a broader summary of issues. Often, a narrower focus is best, but this is up to you. There are two steps to completing the paper. First, you draft a paper proposal of one page, describing your topic/issue. Proposals in pdf are to be submitted by 12.00a.m. January 9th, 2017 via email. Second, you will have two more weeks to execute your proposal and submit, via email, your final paper of at most five pages in pdf by 12.00 a.m. January 23rd 2017.. Note, quality is much more important than quantity. Indeed, once you make an initial draft of your paper, you would do well to review it and see if you can make the same points with fewer words. Doing so will improve the paper.

### **Outline:**

**Lecture 1.** Introduction and Tools

**Lecture 2.** Introduction and Tools

**Lecture 3.** Network Formation: Economic models of network formation and statistical models of network formation;

Bala, V. and S. Goyal (2000), A Non-Cooperative Model of Network Formation, *Econometrica* .

Jackson, M. and J. Wolinsky (1996), A strategic model of social and economic networks, *Journal of Economic Theory*

Jackson, M. and B.W. Rogers (2007), Meeting strangers and friends of friends: how random are social networks? *American Economic Review*

**Lecture 4:** Network Games: Complete information, incomplete information and endogenous networks;

**Lecture 5:** Network Games: Complete information, incomplete information and endogenous networks;

Ballester, C., Calv, A. and Y. Zenou (2006), Who's Who in Networks. Wanted: the Key Player, *Econometrica*.

Bramoull, Y., R. Kranton and M. D'Amours (2014), Strategic Interaction and Networks. *American Economic Review*.

Goyal, S. and A. Galeotti (2008), Law of the few. *American Economic Review*.

Galeotti, A., S. Goyal, M. Jackson, F. Vega-Redondo and L. Yariv, (2010), Network Games, *Review of Economic Studies*.

**Lecture 6:** Some Experiments on Networks Formation and Networks Games;

Charness, G., F. Feri, M. A. Melndez-Jimnez and M. Sutter, 2014, Experimental Games on Networks: Underpinnings of Behavior and Equilibrium Selection, *Econometrica*.

**Lecture 7:** Applications: Influencing the influencers: targeted advertising and targeted pricing;

Campbell, A. (2012), Tell Your Friends! Word of Mouth and Percolation in Social Networks. *American Economic Review*.

Galeotti, A. and Goyal, S. Influencing the Influencers: A Theory of Strategic Diffusion. *Rand Journal of Economics*.

**Lecture 8:** Applications: Influencing the influencers: targeted pricing;

Fainmesser and Galeotti, 2015, Pricing network effects. *The Review of Economic Studies*

Bloch, F. and N. Querou (2013). Pricing in Social Networks. *Games and Economic Behavior*

Candogan, O., K. Bimpikis, and A. Ozdaglar (2012). Optimal Pricing in Networks With Externalities. *Operations Research*

**Lecture 9:** Applications: Trading and Networks.

**Lecture 10:** Applications: Trading and Networks.

Choi, S., A. Galeotti and S. Goyal (2016), Trading in networks: theory and experiment. Forthcoming *The Journal of European Economic Association*

Condorelli, D. A. Galeotti and L Renou (2016), Bilateral Trading in Networks. *The Review of Economic Studies*.

Manea, M. (2013), Intermediation in Networks. Mimeo.

### **Additional Readings**

The Oxford Handbook of the Economics of Networks, edited by Y. Bramouille, A. Galeotti and B. Rogers.

Social and Economic Networks, by M. O. Jackson

Connections: an introduction to the economics of networks, by S. Goyal

Complex networks, by F. Vega-Redondo.