EVOLVING INFORMATION NETWORKS
COMP 4206/5310

Instructor: Evangelos Kranakis, Room: 5360 HP, Office hrs: Wed 12:00 to 14:00 pm.

1 COURSE DESCRIPTION

Convergence of social and technological networks. Interplay between information content, entities creating it and technologies supporting it. Structure and analysis of such networks, models abstracting their properties, techniques for link analysis, search, mechanism design, power laws, cascading, clustering and connections with work in social sciences.

1.1 CONTENTS OF LECTURES

Basic material covered is derived from *Networks, Crowds, and Markets: Reasoning About a Highly Connected World* by David Easley and Jon Kleinberg. Parts of the course may also be based on papers published only in journals and/or conference proceedings. Following material will be covered.

1. Week 01: (Jan 08) Network Science, Overview, Outline
2. Week 02: (Jan 15) Graphs, Ties
3. Week 03: (Jan 22) Contexts
4. Week 04: (Jan 29) Relationships
5. Week 05: (Feb 05) Braess Paradox Assignment 1: Due
6. Week 06: (Feb 12) Markets & Information
7. Week 07: (Feb 26) Matching Markets
8. Week 08: (Mar 04) Link Analysis, Power Laws
9. Week 09: (Mar 11) Small World, Cascading
10. Week 10: (Mar 18) In Class Exam
11. Week 11: (Mar 25) Class Presentations
12. Week 12: (Apr 01) Class Presentations Assignment 2: Due

2 STUDENT REQUIREMENTS

The course is attended by both graduate (G) and undergraduate (UG) students; course work will differ for the two groups. Following are the requirements for the course.
2.1 GRADING & COURSE WORK

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2.2 TESTS

You should study everything that was covered in class. No Books/Notes/Computing Devices of any kind allowed during the test!

2.3 Additional Details & Requirements

1. Students must submit to instructor a one-page abstract of the proposed project. In addition, students must make an oral presentation of their selected project/paper (this is not the same as written project) in-class (usually in powerpoint).

2. The project paper should be about 15 pages double spaced and the presentation of the project/paper must have the quality of a journal publication.

3. Students must submit to instructor 1) the presentation in electronic form, 2) the final project in pdf, and 3) source code.

4. Several projects will be suggested. The topic of the project may be suggested by the student (subject to approval of instructor), must be relevant to the material covered in the course and could be based on a very recent research paper.

3 USEFUL BOOKS

Your study should be based on the lecture notes as well as additional material provided. Although I may not follow the books below you can use them as a guide for supplementary material and further study.

- The Structure and Dynamics of Networks, by Newman-Barabasi-Watts (eds)- Princeton University Press. (Not Required)

You can purchase the book(s) from any bookstore. There are many more sources and books available on the internet.