

COURSE OUTLINE AND SYLLABUS

COURSE DATA

Name of course:	Networks and Social Media
Academic year:	2013-14
Year in the Program:	3 rd and 4 th
Trimester:	1 st
Degree:	IBE/ADE/ECO
Course code:	22961
Number of ECTS credits:	5
Hours of dedication:	125
Language of instruction:	English
Professor:	Kalyan Talluri

PRESENTATION

Social media and network businesses have become very prominent over the last five years. A large body of academic literature has come up trying to understand this phenomena, often based on existing sociological theories on networks, crowds, behavior and information diffusion. The objective of this course is to give students an introduction to this emerging area to pursue careers in information related industries.

The course is interdisciplinary and will cover elements from marketing, operations research, economics, computer science and sociology.

COURSE CONTENTS

- Concrete Examples
- Graph Theory and Social Networks
- Game Theory
- Markets and Strategic Interaction on Networks
- Network Dynamics: Population Models
- Network Dynamics: Structural Models
- Institutions and Aggregate Behavior
- Applications in marketing, campaigning, social movements

The course is rigorous and rather mathematical; we study models, algorithms, and their analysis. Students are expected to know the mathematics covered in Mates 1,2, 3 as well as Probability and Statistics. We will follow the textbook fairly closely, so that should give you an idea of the level of mathematics.

COURSE ORGANIZATION

The course duration is 10 weeks. The course is divided into theory lectures (or classes) and seminars. There are two (theory) classes per week, each lasts for 80 minutes. In addition, there are 8 seminars, each lasts for 80 minutes.

The seminars are dedicated to practice of the theoretical issues discussed in the class. Hence, the group is divided into 3 seminar subgroups, in each about a third of the students participate. During the seminars the students will have the chance to demonstrate their knowledge (acquired

during the lectures and (mainly) through solving homework problems) and to gain further practice.

COURSE SKILLS

GENERAL SKILLS

Instrumentals

1. Ability to analyze and synthesize
2. Ability to organize and plan
3. General basic mathematical knowledge
4. Problem solving
5. Written and spoken capabilities

Interpersonal

6. Criticism

Systemic

7. Research abilities
8. Learning capacities
9. Autonomous work
10. Ability to generate new ideas (creativity)

Other

11. Written and oral communication abilities using a specialized language (mathematics).

SPECIFIC SKILLS

1. Model formalization of different settings through mathematical language.
2. Solutions of mathematical models.
3. Knowledge of basic tools in mathematical analysis and linear algebra and their applications to economics and business.

EVALUATION

The grading is **based** on the following components. See the final grade section on how the grade will be given.

Final Exam: 60%

The final exam will take place at the end of the quarter and will last for two hours. The exam will cover all the material discussed and taught in class and in the seminars, as well as the recommended reading and the problem sets. It will cover both theoretical and practical aspects of the material. It counts 60% of the final grade.

A necessary, but not sufficient condition, to pass the course, is that students must have a score on the final exam of at least 4 out of the total 10.

Continuous Evaluation: 40%

This part of the grade will be based on the evaluation of all the activities that will take place during the quarter: problem sets, participation in the seminars (including solving and discussing practice problems), and at least one presentation based on individual study.

The grading of the specific components is:

1. Problem-solving and seminars: There will be short quizzes throughout the course testing class preparation and understanding. The first quiz will be during seminar 1 based on the material during the first two weeks. You are expected to hand in problem set solutions

- but they will not be graded. The instructor might cold-call during the seminars to answer a short quiz question or explain your homework solution. **24%**.
2. Presentations: **16%**. Groups of three students are expected to make a short presentation (25 minutes) based on individual study and research. The presentations will start in the 2nd or 3rd seminar and there will be two to three presentations during each seminar class. The topics will be assigned by the instructors.

Based on above you can calculate a weighted average of your performance (eg: 63.54/100)

Final Grade: The final grade that will enter your official record is a score from 0-10 (fractional values allowed). This grade will be given as follows: The total based on the Final Exam and Continuous evaluation will be calculated as a weighted average with the weights as described above. The entire class will be sorted based on this total. **The assignment of the final grades is entirely at the discretion of the instructor**, but will respect the ranking by weighted average. Top 1 to 2% will get a Matricula d' Honor. At most 10% will get an Excelente. The grade may or may not be a translation of your weighted average (eg: 63.54% does not mean an automatic grade of 6.354, but **could** be stepped down to 5.5 or 6 (*suficiente*) or may even be moved up to a *notable* if the exams were very difficult).

Make-up final Exam:

If you get a final grade below 5.0, it is considered a fail and you have to take a make-up exam. In the make-up exam the grade will be calculated in the following manner. The make-up exam final grade will count for 80%. The other 20% will be based on your class performance. The date of the make-up exam will be posted on Aula Global.

REFERENCES

TEXT BOOK

Networks, Crowds, and Markets: Reasoning About a Highly Connected World by David Easley and Jon Kleinberg

There is a pre-production version of this book freely available on the web. However, it is over 700 pages, so I posted a version formatted **to be printed 4-pages-per-side** on Aula Global. Please use this for printing.

Other recommended books:

Social and Economic Networks by M. Jackson

Crowds and Power by E. Canetti

COURSE OUTLINE

We will follow the text book closely in the same order as the chapters. Section IV (chapters 13, 14, 15) will however be omitted as it is covered in the class Computational Marketing in the 3rd trimester.

METHODOLOGY

Students are supposed to do the following weekly assignments:

- Attending the (theoretical) classes
- Individual study: solving and reviewing problems, reviewing the material taught in the class and the text book.
- Before attending the seminars: answering the problem sets questions.
- Attending the seminars and handing in the assigned problem sets.

CLASS RULES

1. **No mobile phones, tablets or computers can be turned on in the classroom.** This policy is strictly followed and students will be asked to leave if found using any of these gadgets.
2. No plagiarism, cheating or copying will be tolerated. If detected, the grades of **all** involved parties may be reduced down to Fail and reported to the Dean's office.
3. You are expected to be punctual.

OFFICE HOURS

KALYAN TALLURI
kalyan.talluri@upf.edu
Office 20.2E74

Office hours: