

Academic year	2016-17
Subject	11632 - Social and Economic Networks
Group	Group 1, 1S
Teaching guide	B
Language	English

## Subject identification

<b>Subject</b>	11632 - Social and Economic Networks
<b>Credits</b>	1.44 de presencials (36 hours) 4.56 de no presencials (114 hours) 6 de totals (150 hours).
<b>Group</b>	Group 1, 1S (Campus Extens)
<b>Teaching period</b>	First semester
<b>Teaching language</b>	Catalan

## Professors

Lecturers	Horari d'atenció als alumnes					
	Starting time	Finishing time	Day	Start date	Finish date	Office
Rebeca del Carmen Méndez Durón <a href="mailto:rebeca.mendez@uib.es">rebeca.mendez@uib.es</a>	16:00	17:00	Tuesday	12/09/2016	30/06/2017	DB006
Francesc Andreu Rosselló Llompart <a href="mailto:cesc.rossello@uib.es">cesc.rossello@uib.es</a>	You need to book a date with the professor in order to attend a tutorial.					
Antoni Rubí Barceló <a href="mailto:antoni.rubi@uib.eu">antoni.rubi@uib.eu</a>	15:30	16:30	Thursday	12/09/2016	22/01/2017	DB216 (Cita prèvia per email o campus extens)

## Contextualisation

One common hypothesis of network theory is that an actor's position in a network determines in part the constraints and opportunities that she will encounter. Therefore identifying her position is important for predicting her outcomes, decisions, behaviors, and beliefs. The aim of this course is to set the basic network theory concepts and provide the analytical tools to extract and understand an actor's position in big networks and its implications from the sociological and economic perspectives. It implies, for example, retrieving, analyzing, understanding and managing the information from the relationships among organizations, individuals, or from the person's behavior (revealed preferences), etc.

## Requirements

## Skills

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### Specific

- \* CE3. Capacidad para identificar actores centrales, relaciones de influencia y de poder, así como para identificar patrones de intercambio, en redes sociales..
- \* CE6. Saber sintetizar y describir una gran cantidad de datos seleccionando los estadísticos adecuados al tipo de variables y analizar las relaciones existentes entre ellas..
- \* CE12. Capacidad para entender los beneficios del análisis de datos y los elementos que intervienen en el proceso; aplicarlos en la resolución de problemas; elegir las técnicas más adecuadas a cada problema; aplicar de forma correcta las técnicas de evaluación y saber interpretar los modelos y resultados..
- \* CE20. Conocer y utilizar las diferentes técnicas de regresión para el diagnóstico, evaluación, inferencia y posterior toma de decisiones..

### Generic

- \* CG3. Conocer las principales aplicaciones de la ciencia de datos y de las tecnologías asociadas a la economía, empresa y turismo..
- \* CG4. Comprender y utilizar el lenguaje y las herramientas asociadas al análisis de datos para modelizar y resolver problemas complejos, reconociendo y valorando las situaciones y problemas susceptibles de ser tratados utilizando dichas herramientas y las técnicas asociadas..

### Basic

- \* You may consult the basic competencies students will have to achieve by the end of the Master's degree at the following address: [http://estudis.uib.cat/master/comp\\_basiques/](http://estudis.uib.cat/master/comp_basiques/)

## Content

### Theme content

1. Mathematical aspects of social and economic networks.
  - \* Examples of social and economic networks
  - \* Graph theoretical basic concepts
  - \* Measures on a network
  - \* Role assignment
  - \* Fundamental random network models
  - \* Network structure analysis
  - \* Diffusion on networks.
  - \* Learning on networks.
  - \* Exploring networks with R
2. Introduction to game theory
  - \* Basic notions, equilibrium concepts and examples
  - \* Evolutionary game theory
3. Applications of game theory to networks
  - \* Modeling network traffic
  - \* Strategic network formation
  - \* Networked markets
  - \* Matching markets
  - \* Bargaining and power in networks
4. Networks and social behavior
  - \* Social capital
  - \* Identity and trust in networks

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- \* Implications on social performance
- 5. Network applications to business economics
  - \* Individual communication and performance
  - \* Inter and intrafirm networks and economic performance
  - \* Formal vs. informal structure

## Teaching methodology

### In-class work activities

Modality	Name	Typ. Grp.	Description	Hours
Theory classes	Lectures	Large group (G)	Interactive and participative exposition of teaching materials.	18
Practical classes	Hands-on network analysis	Large group (G)	Laboratory sessions for understanding the mathematical principles of networks and analyzing network structure. Professors may ask you to deliver the corresponding reports.	18

At the beginning of the semester a schedule of the subject will be made available to students through the UIBdigital platform. The schedule shall at least include the dates when the continuing assessment tests will be conducted and the hand-in dates for the assignments. In addition, the lecturer shall inform students as to whether the subject work plan will be carried out through the schedule or through another way included in the Campus Extens platform.

### Distance education work activities

Modality	Name	Description	Hours
Group self-study	Final Project Paper	Students will analyze a real social network. They must identify the actors, their roles, their positions and their performance implications.	60
Group self-study	Final Project Presentation	Students will present the main conclusions of their paper.	4
Group or individual self-study	Readings	Students require to read and understand before class the mandatory and recommended readings, to discuss with classmates in class.	50



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### Specific risks and protective measures

The learning activities of this course do not entail specific health or safety risks for the students and therefore no special protective measures are needed.

## Student learning assessment

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### Hands-on network analysis

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Modality	Practical classes
Technique	Real or simulated task performance tests ( <b>non-retrievable</b> )
Description	Laboratory sessions for understanding the mathematical principles of networks and analyzing network structure. Professors may ask you to deliver the corresponding reports.
Assessment criteria	
Final grade percentage:	30%

### Final Project Paper

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Modality	Group self-study
Technique	Papers and projects ( <b>non-retrievable</b> )
Description	Students will analyze a real social network. They must identify the actors, their roles, their positions and their performance implications.
Assessment criteria	
Final grade percentage:	30%

### Final Project Presentation

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Modality	Group self-study
Technique	Oral tests ( <b>non-retrievable</b> )
Description	Students will present the main conclusions of their paper.
Assessment criteria	
Final grade percentage:	10%





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### Readings

Modality	Group or individual self-study
Technique	Oral tests ( <b>non-retrievable</b> )
Description	Students require to read and understand before class the mandatory and recommended readings, to discuss with classmates in class.
Assessment criteria	
Final grade percentage:	30%

### Resources, bibliography and additional documentation

#### Basic bibliography

- Borgatti, S. P., Everett, M. G., & Johnson, J. C. (2013). Analyzing social networks. SAGE Publications Limited.
- Burt, R. S. (2005). Brokerage and closure: An introduction to social capital. Oxford university press.
- Easley, D., & Kleinberg, J. (2010). Networks, crowds, and markets: Reasoning about a highly connected world. Cambridge University Press. Legal and free download from <https://www.cs.cornell.edu/home/kleinber/networks-book/>
- Jackson, M. O. (2008). Social and economic networks (Vol. 3). Princeton: Princeton university press. Legal and free download from <http://web.stanford.edu/~jacksonm/netbook.pdf>
- Scott, J. (2012). Social network analysis. Sage.

