



Academic year	2012-13
Subject	11015 - Collective phenomena in social dynamics
Group	Group 1, 2S
Teaching guide	C
Language	English

Subject identification

Subject	11015 - Collective phenomena in social dynamics
Credits	0.75 in-class (18.75 hours) 2.25 distance (56.25 hours) 3 totals (75 hours).
Group	Group 1, 2S
Teaching period	2nd semester
Teaching language	English

Lecturers

Lecturers	Timetable for student attention					
	Starting time	Finishing time	Day	Start date	Finish date	Office
José Javier Ramasco Sukia jose.ramasco@uib.es						There are no defined sessions
Maximino San Miguel Ruibal mrs260@uib.es						There are no defined sessions

Degrees where the subject is taught

Degree	Character	Academic year	Studies
Master's Degree in Physics of Complex Systems	Optional		Postgraduate degree

Contextualisation

This course provides an introduction to the research area of collective social phenomena and socio-technical systems using the concepts and methods of statistical and nonlinear physics.

Requirements

Concepts needed in this course can be acquired in the compulsory courses of the Structural Module

Skills

Specific

1. E3: Capacity for analysis and visualization of numerical data and knowledge of interactive interfaces.





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Generic

1. TG1: To be able to describe, both mathematically and physically, complex systems in different situations.
2. TG2: To acquire the capacity to develop a complete research plan covering from the bibliographic research and strategy to the conclusions..
3. TG3: To write and describe rigorously the research process and present the conclusions to an expert audience..
4. TG4: To acquire the ability to ask questions, read and listen critically and participate actively in seminars and discussions..
5. TG5: To knowing to disseminate and present the concepts acquired at a non-expert..
6. TG6: To acquire high power computation skills and advanced numerical methods capabilities in applications to problems in the context of complex systems..
7. TG7: To acquire skills making possible the dialogue and cooperation with researchers with different backgrounds, including social scientists..

Content

Theme content

1. Social Consensus. Interaction mechanisms: Imitation, majority rule, social pressure
 - * Schelling's segregation model
2. Voter Model
 - *
 - *
 - *
3. Diffusion and Contagion Processes
 - *
 - *
 - *
4. Threshold Models
 - *
 - *
 - *
5. Axelrod's model for cultural dissemination
 - * Globalization-Polarization transition in regular and complex networks.
 - * Cultural drift.
 - * Mass media effects.
6. Game theory models
 - *
 - *
 - *
7. Coevolution of states and interaction networks. Group formation

Teaching methodology





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In-class work activities

Modality	Name	Typ.Gr.	Description
Theory classes	Lectures	Large group (G)	Students will be exposed to the basic concepts and methodologies in the description and modelling of collective social phenomena.
Assessment	Oral presentation	Large group (G)	Oral presentations of specific follow-up of subjects explained in the lectures

Distance education work activities

Modality	Name	Description
Group or individual assignments self-study		The student has to solve assigned exercises and give an oral presentation of the solution
Group or individual self-study	Preparation of oral presentation	The student will learn about a specific subject and prepare an oral presentation of the subject.

Riscs específics i mesures de protecció

Les activitats d'aprenentatge d'aquesta assignatura no comporten riscos específics per a la seguretat i salut de l'alumnat i, per tant, no cal adoptar mesures de protecció especials.

Workload estimate

Modality	Name	Hours	ECTS	%
In-class work activities		18.75	0.75	25
Theory classes	Lectures	15	0.6	20
Assessment	Oral presentation	3.75	0.15	5
Distance education work activities		56.25	2.25	75
Group or individual self-study	assignments	20	0.8	26.67
Group or individual self-study	Preparation of oral presentation	36.25	1.45	48.33
Total		75	3	100

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





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whether the subject work plan will be carried out through the schedule or through another way included in the Campus Extens platform.

Student learning assessment

Lectures

Modality	Theory classes
Technique	Other methods (Non-recoverable)
Description	Students will be exposed to the basic concepts and methodologies in the description and modelling of collective social phenomena.
Assessment criteria	Participation and questions during the lectures

Percentage of final qualification: 15% following path A

Oral presentation

Modality	Assessment
Technique	Oral tests (Non-recoverable)
Description	Oral presentations of specific follow-up of subjects explained in the lectures
Assessment criteria	Quality of contents
	Presentation
	Answer to questions

Percentage of final qualification: 45% following path A

assignments

Modality	Group or individual self-study
Technique	Oral tests (Recoverable)
Description	The student has to solve assigned exercises and give an oral presentation of the solution
Assessment criteria	Quality of contents
	Presentation
	Answer to questions

Percentage of final qualification: 25% following path A

Preparation of oral presentation

Modality	Group or individual self-study
Technique	Oral tests (Recoverable)
Description	The student will learn about a specific subject and prepare an oral presentation of the subject.
Assessment criteria	Initiative and search for material in the subject





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Percentage of final qualification: 15% following path A

Resources, bibliography and additional documentation

Basic bibliography

-C. Castellano, S. Fortunato, V. Loretto, Statistical Physics of social dynamics, Rev. Mod. Phys. 81, 509 (2009)

- R. Axelrod, The complexity of cooperation: Agent based models of competition and collaboration, Princeton Univ. Press (1997)

Complementary bibliography

http://ifisc.uib-csic.es/research/research_social.php

Interactive computer simulations in http://ifisc.uib-csic.es/research/research_complex.php

Other resources

