

Advanced Methodology in Social Research

Code: 44038
ECTS Credits: 6

Degree	Type	Year	Semester
4313228 Social Policy, Employment and Welfare	OT	0	2

The proposed teaching and assessment methodology that appear in the guide may be subject to changes as a result of the restrictions to face-to-face class attendance imposed by the health authorities.

Contact

Name: Pedro López Roldán
Email: Pedro.Lopez.Roldan@uab.cat

Use of Languages

Principal working language: spanish (spa)

Teachers

Francesc Josep Miguel Quesada
Joan Miquel Verd Pericàs
Oriol Barranco Font

Prerequisites

Basic knowledge and skills are needed in relation to the methodology of the social sciences, the design of social research and the methods and techniques of production and analysis of qualitative and quantitative data.

Objectives and Contextualisation

The objective of the Advanced Social Research Methodology module [ASRM] is the theoretical and applied knowledge of the methodology and the diversity of advanced methods and techniques in the analysis of data for social research, addressing various methodological perspectives, both quantitative and qualitative

This general objective is complemented by three specific ones:

1. Orient the process of conducting a research work establishing the criteria and the necessary tasks of its methodological design and the relevant application of research methods and techniques in order to adapt them to theoretical models and achieve the rigor of scientific research.
2. Acquire the skills of using the software corresponding to the data analysis techniques used.
3. Provide information and learning of research methods and techniques with applied character, with special reference to the research lines of the module's professors and the Department's research teams.

Given the exceptional situation arising from the Covid-19 pandemic and the uncertainty of the health situation for the next academic year, the teaching dynamics and evaluation criteria may be adapted to the needs of each moment. This Teaching Guide collects the usual information with face-to-face teaching. In the case of having to organize teaching and learning differently, in particular, combining face-to-face and online formats, the Teaching Guide will be modified in accordance with the guidelines given by the Faculty and the University.

What do you want to do ?
New mailCopy
What do you want to do ?
New mailCopy

Competences

- Continue the learning process, to a large extent autonomously
- Design and conduct research projects on work, gender and social policy, using advanced qualitative and quantitative research techniques.
- Put forward innovative proposals for the relevant field of study.
- Use acquired knowledge as a basis for originality in the application of ideas, often in a research context.
- Use and manage bibliography and IT resources in the field of study.

Learning Outcomes

1. Continue the learning process, to a large extent autonomously.
2. Critically examine a research project from a methodological perspective, identifying the different designs, methods and techniques, and their advantages and disadvantages.
3. Put forward innovative proposals for the relevant field of study.
4. Use acquired knowledge as a basis for originality in the application of ideas, often in a research context.
5. Use and manage bibliography and IT resources in the field of study.
6. Use computer programs at an advanced level to analyze the results of the implementation of the methods and techniques learned during the master.

Content

The contents of the module are structured around 4 thematic blocks:

Multivariate Analysis of Statistical Data [MASD]
Advanced Qualitative Analysis [AQA]
Social Network Analysis [SNA]
Computational Social Simulation [CSS]

1. Multivariate Analysis of Statistical Data [MASD]. 10 hours
Prof. Pedro López-Roldán

A first objective of the block is to provide an overview of the different multivariate statistical data analysis techniques. Given the variety and extent of existing statistical procedures for the treatment of sociological information, we choose to consider in this part of the module some of these most fundamental analysis techniques that facilitate the establishment of conceptual bases and subsequently deepen the knowledge of these and other analysis procedures. Interdependence analysis techniques will be discussed: on the one hand, contingency tables and log-linear analysis, on the other, factor analysis and classification analysis in order to develop a methodology for the construction of typologies. The course will provide the basis for the selection of techniques covered, with a very applied orientation aiming that students acquire sufficient elements so that they can use the knowledge of these techniques in their research.

The training has two elements that are necessary for its follow-up and its use. The first is the knowledge and use of the essential mathematical and statistical tools for analysis; the corresponding information will be given in a basic and balanced way for the formalization of these procedures but where the main objective is the understanding and interpretation of the information they generate for the realization of an applied study. The second is the use of statistical software that will illustrate and apply the knowledge related to the different analysis procedures.

2. Advanced Qualitative Analysis [AQA]. 10 hours

In this block, it is intended, in the first place, to critically reflect on qualitative data collection methods, with special emphasis on interviews and focus groups as well as on analysis of documents. The objective is that the students can recognize and reflect critically on the theoretical and epistemological foundations of these techniques and, in addition, acquire the necessary technical instruments to carry out a systematic, transparent and rigorous analysis.

On the other hand, in relation to the data analysis, this block will focus on two types of analysis procedures that have certain points in common, but also important differences: the Content Analysis and the Constant Comparative Method (Grounded Theory). The necessary guidelines will be given so that these analytical orientations can be applied through the qualitative analysis program ATLAS.ti. As a result of the course, students should have the necessary technical knowledge to be able to develop an analysis of textual data (but also visual or sound) with the help of specific software and, in addition, situate methodologically and epistemologically their approach.

3. Analysis of Social Networks [SNA]. 8 hours

Prof. Joan Miquel Verd

The analysis of social networks is an interdisciplinary approach and a privileged starting point to renew our vision of social reality. In this thematic block the theoretical and methodological bases of the analysis of social networks, the procedures to collect, analyze and interpret matrices of reticular data with specialized software and different current applications of social network analysis will be presented. With this content it is expected that students can identify the conditions in which the introduction of social network analysis is feasible and appropriate in the design of an investigation and, in addition, they can collect, analyze and combine this data with other types of information. to formulate and / or contrast hypotheses of interest.

4. Computational Social Simulation [CSS]. 4 hours

Prof. F. J. Miguel Quesada

The use of social simulation computer models (computational social simulation) is an alternative to the sociological analysis' classical perspectives based upon the "language of variables" (explanatory factors) and on the "interpretation of meaning" (hermeneutics) that attempts to articulate useful issues of both perspectives. The advantages and problems of an experimental approach for understanding and explaining (and replicating) social processes are emphasized, to the point of allowing real people to interact and "live" within a virtual environment in order to study their behaviour and mental contents. In a single session, a brief introduction to the epistemological sense of working with "virtual societies" built and put into operation with own resources of Artificial Intelligence is provided, as well as a technical approach to a simple tool that allows this construction.

Content of the program

BLOCK 1. Multivariate analysis of statistical data [MASD]

1. Introduction to multivariable analysis

1.1. Presentation of the block: contents, dynamics and evaluation

1.2. Analysis techniques in analysis models and designs

1.3. General concepts and classification of multivariable analysis techniques

2. Multivariate analysis of contingency tables

2.1. Presentation and nomenclature of the analysis of contingency tables (ATC)

2.2. Analysis of the relationship between variables: independence, association and control

2.3. The log-linear analysis (ALL)

3. Typological construction methodology

3.1. The factorial analysis

3.1.1. The principal components factor analysis (ACP)

3.1.2. The factorial analysis of correspondences (ACO)

3.2. The classification analysis (ACL)

BLOCK 2. Advanced Qualitative Analysis [AqA]

1. Current approaches on data quality and validity
2. Textual materials for analysis
 - 2.1. Types and characteristics of materials and data
 - 2.2. The production of the data and its quality, validity and reliability
3. Current approaches in textual qualitative analysis
 - 3.1. Types of analysis
 - 3.2. The interpretation of the data
 - 3.3. Validity and rigor in the qualitative analysis
4. The generalization and theorization in the qualitative -textual- analysis
 - 4.1. Types and strategies of qualitative generalization
 - 4.2. Theorization based on qualitative studies
5. Content analysis
 - 5.1. Introduction. Content analysis and lexicometric analysis in social research
 - 5.2. Characteristics and procedures of qualitative content analysis
6. The constant comparative method
 - 6.1. The grounded theory and the constant comparative method
 - 6.2. Characteristics and procedures of the constant comparative method
7. The use of CAQDAS in the analysis of qualitative data
 - 7.1. The use of computer tools in the analysis of qualitative data. The CAQDAS in context
 - 7.2. The qualitative content analysis conducted with Atlas.ti
 - 7.3. The constant comparative method made with Atlas.ti

BLOCK 3. Social Network Analysis [SNA]

1. Introduction.
 - 1.1. Concepts, origins and applications of social network analysis.
 - 1.2. Basic principles of social network analysis.
 - 1.3. Basic definitions.
2. Obtaining the information. Samples and data.
 - 2.1. Sociocentric networks.
 - 2.2. Personal networks
3. Measures
 - 3.1. Of centrality.
 - 3.2. Cohesion
 - 3.3. Of position and structure.
4. Analysis of textual networks

BLOCK 4. Computational Social Simulation [CSS]

1. The modeling in the CC.SS .: Definition, Types and Use.
2. Social Computational Models based on Agents (ABM)
 - 2.1. Social simulation methods
 - 2.2. Social systems: Micro-Macro model and (inter) action with emerging effects
 - 2.3. Artificial Intelligence and ABM Modeling Tools
3. Netlogo v5
 - 3.1. Installation and first steps. Examples
 - 3.2. Self-learning resources
4. Design of virtual societies with Netlogo
 - 4.1. Structure and User Interface (GUI)
 - 4.2. Basic elements: agents, attributes, procedures
 - 4.3. Basic orders: ASK
 - 4.4. Groups of agents: Agentsets vs. Breeds
 - 4.5. Command blocks: Conditional and loops
 - 4.6. Results: Plots, Output, Files.
 - 4.7. Advanced elements: links between agents (links) and mental representations (list / vectors / arrays)

- 4.8. Design of virtual experiments: Behavior Analyzer.
 4.9. Design of experiments with human agents: Participation within virtual societies

What do you want to do ?

New mailCopy

What do you want to do ?

New mailCopy

What do you want to do ?

New mailCo

What do you want to do ?

New mailCopy

Methodology

The module will combine master teaching, in which the theoretical contents and examples of each module content will be presented and in which a dynamic that facilitates active and participatory learning will be fostered, with various training activities for teaching and learning the subject:

1. Seminars of analysis of readings and study of cases with their presentation and debate.
2. Individual and group follow-up tutorials.
3. Realization of exercises in the classroom and practices in the computer room to know, apply and interpret the information of each analysis technique and the procedure for obtaining it with the corresponding software.

In the Virtual Campus of the module, in a Moodle environment, all the information, materials and activities of the module are available.

Activities

Title	Hours	ECTS	Learning Outcomes
Type: Directed			
Classroom practices	13	0.52	2, 3, 1, 4, 5, 6
Master classes	19	0.76	2, 3, 1, 4, 5, 6
Type: Supervised			
Group and individual tutorials on the basis of social research and monitoring and correction of the exercises and works of the module	15	0.6	2, 3, 1, 4, 5, 6
Type: Autonomous			
Individual preparation of the activities in the classroom and the work of evaluation	66	2.64	2, 3, 1, 4, 5, 6
Readings	37	1.48	2, 3, 1, 4, 5, 6

Assessment

The final grade of the module will be the result of the weighted average of each of the four blocks. In particular, the evaluation of each block will be the following:

BLOCK 1. Multivariate Analysis of Statistical Data [MASD]

The evaluation of the block will require a practical work of data analysis. From considering the relationships between various variables, they will have to be analyzed in order to construct a typology using in combination the factor analysis and classification analysis procedures. The work will be presented in the format of a research article where the formulation of a sociological model with the corresponding statement of the hypotheses of relationship between the variables, the presentation of the analysis design used and the subsequent testing of that model will be reported. with the analysis and interpretation of the data. The work will have a maximum length of 8 pages (about 3000 words) of writing, including the graphs and tables prepared, in addition to the bibliography and the annex.

BLOCK 2. Advanced Qualitative Analysis [AQA]

Active participation and the critical capacity demonstrated in the discussions of the compulsory readings made in class are essential. From this participation will be extracted a first element of assessment of the work of the students. On the other hand, this note can be complemented by a practical work in which the student will have to apply the ATLAS.ti computer program with a maximum length of 8 pages (about 3000 words) of writing. With this exercise the student can increase the grade to a maximum of three points. If any person does not pass or cannot be evaluated from the discussion of the readings due to their lack of participation, they must compulsorily perform the ATLAS.ti exercise. In this case, the maximum grade that can be obtained will be a 6.

BLOCK 3. Social Network Analysis [SNA]

The evaluation will be carried out in the first place from the elaboration of a research work (the work will have a maximum length of 8 pages, about 3000 words, of writing). Secondly, the presence in the classes and the participation in the sessions will also be valued. Students will be stimulated so that the research work is carried out interactively and in working groups, with a maximum of 3 students, to favor learning, the comparison of case studies. On the other hand, it will be ensured that the subject chosen for this work has to do totally or partially with the research of the final thesis. Likewise, session 4 will be reserved for a moment to prepare the research work.

BLOCK 4. Computational Social Simulation [CSS]

The evaluation of this block will imply the attendance and follow-up of the sessions in the classroom, as well as the delivery of an operational adaptation of the computational model used in class, which "improves" some specific aspect of the represented phenomenon. This delivery will be individual or in pairs, and will consist of an executable file (NetLogo model) plus a report with information on the improvement proposed, the results of the obtained results exploitation, the statement of conclusions and a critical comment on the methodology put into practice (PDF format).

What do you want to do ?
New mailCopy
What do you want to do ?
New mailCop
What do you want to do ?
New mai
What do you want to do ?
New mailCopy

Assessment Activities

Title	Weighting	Hours	ECTS	Learning Outcomes
Practical exercise of Computacional Social Simulation	13,5%	0	0	2, 3, 1, 4, 5, 6

Practical work of qualitative data analysis	31,25%	0	0	2, 3, 1, 4, 5, 6
Practical work of quantitative data analysis	31,25%	0	0	2, 3, 1, 4, 5, 6
Practical work of social network analysis	25%	0	0	2, 3, 1, 4, 5, 6

Bibliography

Multivariate Analysis of Statistical Data [MASD]

Basic bibliography

López-Roldán, P.; Fachelli, S. (2015). *Metodología de la Investigación Social Cuantitativa*. Bellaterra (Cerdanyola del Vallès): Dipòsit Digital de Documents, Universitat Autònoma de Barcelona. 1a. edició.

<http://ddd.uab.cat/record/129382> | <http://pagines.uab.cat/plopez/content/misc>

Further reading

Aldás, J.; Uriel, E. (2017). *Análisis multivariante aplicado con R*. Madrid: Paraninfo.

Ato García, M.; López García, J.J. (1996). *Análisis estadístico para datos categóricos*. Madrid: Síntesis.

Bailey, K. D. (1994). *Typologies and Taxonomies. An Introduction to Classification Techniques*. Thousand Oaks (California): Sage.

Cea d'Ancona, M. A. (2002). *Anàlisis multivariable. Teoría y pràctica en la investigación social*. Madrid: Síntesis.

Christensen, R. R. (1997). *Log-linear models and logistic regression*. New York: Springer-Verlag.

Correa Piñero, A. D. (2002). *Análisis logarítmico lineal*. Madrid: La Muralla.

Greenacre, M. J. (2008). *La práctica del análisis de correspondencias*. Madrid: Fundación BBVA.

<http://www.fbbva.es/TLFU/tlfu/esp/publicaciones/libros/fichalibro/index.jsp?codigo=300>

Hernández Encinas, L. (2001). *Técnicas de taxonomía numérica*. Madrid: La Muralla.

Hosmer, D. W. Lemeshow, S. (2000). *Applied logistic regression*. New York: John Wiley and Sons.

Joaristi Olariaga, L.; Lizasoain Hernandez, L. (1999). *Análisis de correspondencias*. Madrid: La Muralla.

Jovell, A. J. (1995). *Análisis de regresión logística*. Madrid: Centro de Investigaciones Sociológicas.

Marradi, A. (1990). Classification, typology, taxonomy. *Quality & Quantity*, 24, 129-157.

Menard, S. W. (2010) *Logistic Regression. From introductory to Advanced Concepts and Applications*. Thousand Oaks, California: Sage Publications.

Powers, D. A.; Xie, Y. (2008). *Statistical Methods for Categorical Data Analysis*. Bingley, U.K.: Emerald. 2a. edició.

Sánchez Carrión, J.J. (1999). *Manual de análisis estadístico de los datos*. Madrid: Alianza. Manuales, 055.

Sánchez Carrión, J. J. (Ed.) (1984). *Introducción a las técnicas de multivariable aplicadas a las ciencias sociales*. Madrid: Centro de Investigaciones Sociológicas.

Sánchez Carrión, J. J. (1989). *Análisis de tablas de contingencia. El uso de los porcentajes en ciencias sociales*. Madrid: Centro de Investigaciones Sociológicas-Siglo XXI.

VV.AA. (1996). La construcció de tipologies. Exemples. Monogràfic de *Papers*. *Revista de Sociologia*, 48. <http://ddd.uab.cat/search?cc=papers&f=issue&p=02102862n48&rg=100&sf=fpage&so=a&ln=en>

Advanced Qualitative Analysis [AQA]

Bibliografia bàsica

Miles, Matthew B.; Huberman, A. Michael; Saldaña, Johnny (2014): *Qualitative Data Analysis. A Methods Sourcebook*. Thousand Oaks, California: Sage. 3ª edición. Capítulos 4 a 10.

Verd, Joan Miquel; Lozares, Carlos (2016): *Introducción a la investigación cualitativa. Fases, métodos y técnicas*. Madrid: Síntesis. Capítulo 11.

Further Reading

Bauer, M. W.; Gaskell, G. (ed.) (2000). *Qualitative Researching with Text, Image and Sound. A Practical Handbook*. Londres: Sage.

Beaud, S.; Weber, F. (2003). *Guide de l'Enquête de Terrain*. Paris : La Découverte (especialmente capítulos 5, 6, 7 y 8).

Coffey, A.; Atkinson, P. (2005). "Los conceptos y la codificación", en Amanda Coffey i Paul Atkinson: *Encontrar el sentido a los datos cualitativos*. Alicante: Universidad de Alicante.

Fielding, N. G.; Lee, R. M. (1998). *Computer analysis and Qualitative Research*. Londres: Sage

Flick, U. (ed.) (2014). *The Sage Handbook of Qualitative Data Analysis*. Los Angeles·London·New Delhi·Singapore·Washington DC: Sage.

Flick, U.; Von Kardorff, E.; Steinke, I. (2004). *A Companion to Qualitative Research*. Londres: Sage.

Herzog, B.; Ruiz, eds. (2019). *Análisis sociológico del discurso*. València: PUV

Krippendorff, K. (2004). *Content Analysis: An Introduction to its Methodology*. Thousand Oaks, California: Sage. 2ª edición.

Lewins, A.; Silver, Ch. (2007). *Using Software in Qualitative Research. A Step-by-Step Guide*. Londres: Sage.

Miles, M. B.; Huberman, A. M. (1994). *Qualitative Data Analysis. An Expanded Sourcebook*. Thousand Oaks, California: Sage. 2ª edición.

Navarro, P.; Díaz, C. (1994). "Análisis de contenido", en Juan Manuel Delgado y Juan Gutiérrez (ed.): *Métodos y técnicas cualitativas de investigación en ciencias sociales*. Madrid: Síntesis.

Richards, L. (2005). *Handling Qualitative Data. A Practical Guide*. Londres: Sage.

Ryan, G. W.; Bernard, H. R. (2000). "Data Management and Analysis Methods", en Norman K. Denzin i Yvonna S. Lincoln (eds.): *Handbook of Qualitative Research*. Thousand Oaks, California: Sage. 2ª edición.

Social Networks Analysis [SNA]

Basic bibliography

Lozares, C., Verd, J. M. (2015). "Bases socio-metodológicas del análisis de redes sociales". En Manuel García Ferrando, Francisco Alvira, Luis Enrique Alonso, Modesto Escobar (eds.): *El anàlisis de la realitat social. Mètodes i tècniques de investigació*. Madrid: Alianza Editorial. 4ª edición.

Molina, J. L. (2001). *El análisis de redes sociales. Una introducción*. Barcelona: Ediciones Bellaterra.

Further reading

Galaskiewicz, J.; Wasserman, S. (1993). "Social Network Analysis. Concepts, Methodology, and Directions for the 1990". *Sociological Methods & Research*, 22 (1):3-22.

Granovetter, M. (1973). The Strength of Weak Ties. *American Journal of Sociology*, 78 (6), 1360-1380.

Knoke, D.; Kuklinski, J. H. (1982). *Network analysis*. Newbury Park, London: Sage.

Lemieux, V. (1999). *Les réseaux d'acteurs sociaux*. París: PUF.

Lozares, C. (1996). "La teoría de redes sociales". *Papers*, 48:103-126.

Lozares, C. (2005). "Bases socio-metodológicas para el Análisis de Redes Sociales". *Empiria* 10: 9-35.

Lozares, C. (2006). "Las representaciones fácticas y cognitivas del relato de entrevistas biográficas: un análisis reticular del discurso". *REDES, Revista hispana para el análisis de redes sociales*, vol. 10.

<http://revista-redes.rediris.es>

Lozares C., López-Roldán, P., Verd, J. M., Martí, J., Molina, J. L., Bolívar, M., Cruz, I. (2011) "El análisis de la Cohesión, Vinculación e Integración sociales en las encuestas Ego-net". *REDES-Revista hispana para el análisis de redes sociales*, vol. 20. <http://revista-redes.rediris.es>

Lozares, C., Verd, J. M., Martí, J., López-Roldán, P. (2003). "Relaciones, redes y discurso: revisión y propuestas en torno al análisis reticular de datos textuales". *Revista española de investigaciones sociológicas*, 101: 175-200.

Lozares, C., Verd, J. M. (2011). "De la Homofilia a la Cohesión social y viceversa". *REDES-Revista hispana para el análisis de redes sociales*, vol. 20. <http://revista-redes.rediris.es>

Lozares, C., Verd, J. M., Cruz, I., Barranco, O. (2014). "Homophily and heterophily in personal networks. From mutual acquaintance to relationship intensity". *Quality & Quantity*, 48: 2657-2670

Martí, J., Lozares, C., (2008). "Redes organizativas locales y capital social: Enfoques complementarios desde el análisis de redes sociales". *Portularia. Revista de Trabajo Social*. 8 (1): 23-39.

Requena, F. (1991). "Redes sociales y mecanismos de acceso al mercado del trabajo." *Sociología del Trabajo*, 1990-1991, 11:117-140.

Scott, J. (1991). *Social Network Analysis*. Newbury Park, London: Sage.

Verd, J. M., Lozares, C., Martí, J., López, P. (2000). "Aplicació de les xarxes socials a l'anàlisi de la formació invisible en l'empresa". *Revista Catalana de Sociologia*, 11, 87-104

Verd, J. M., Martí, J. (2000). "Muestreo y recogida de datos en el análisis de redes sociales", *Qüestió, Quaderns d'Estadística i Investigació Operativa*, 23 (3): 507-524.

Verd, J. M., Lozares, C. (2012). *Reconstructing Social Networks through Text Analysis: From Text Networks to Narrative Actor Networks*. En Dominguez, Silvia y Hollstein, Betina (Eds): *Mixed Methods Social Networks Research. Design and Applications*. Cambridge: Cambridge University Press.

[Wasserman, S.](#); [Faust, K.](#) (2013) *Análisis de redes sociales. Métodos y aplicaciones*. Madrid: Centro de Investigaciones Sociológicas. [Edición original en inglés publicada en 1994]

Computational Social Simulation [CSS]

Basic bibliography

- Axelrod, R. (1986). An evolutionary approach to norms. *The American Political Science Review*, 80(4), 1095-1111.
- Axelrod, R. (2005). Agent-based Modelling as a Bridge Between Disciplines. En K. L. Judd & L. Tesfatsion (Ed.), *Handbook of Computational Economics, Vol. 2: Agent-Based Computational Economics*. Handbooks in Economics Series, North-Holland.
- Edmonds, B., Hernández Iglesias, C., & Troitzsch, K. G. (2008). *Social simulation technologies, advances, and new discoveries*. Hershey, PA: Information Science Reference.
- Epstein, J. M. (2007). *Generative Social Science: Studies in Agent-Based Computational Modeling*. Princeton, NJ: Princeton University Press.
- Epstein, J. M. & Axtell, R. (1996). *Growing Artificial Societies: Social Science from the Bottom Up*. MIT Press, Cambridge: MA.
- Gilbert, N. (2007). *Agent-Based Models*. SAGE Quantitative Applications in the Social Sciences (Vol. 153). London: London: Sage Publications.
- Gilbert, N. & Troitzsch, K. G. (2007). *Simulación para las ciencias sociales*. Madrid: McGraw-Hill.
- INSISOC. (2010). Manual de Netlogo en español. <<http://sites.google.com/site/manualnetlogo/>> (21/12/2010)
- Johnson, T. & al. (2010). *Laboratorio de Aprendizaje de NetLogo*. <http://online.sfsu.edu/~jjohnson/NetlogoTranslation/index.html> (21/12/2010)
- López Paredes, A. (2004). *Ingeniería de sistemas sociales*. Valladolid: UVA.
- Macy, M. (2002). From Factors to Actors: Computational Sociology and Agent-Based Modeling. *Annual Review of Sociology*, 28, 143-166.
- Marney, J. P. & Tarbert, H. F. E. (2000). Why do simulation? *Journal of Artificial Societies and Social Simulation*, 3(4).
- Miguel, F. J. & Hassan Collado, S. (2012). "La investigación mediante simulación social multiagente". En Arroyo y Sádaba (ed.) *Metodología de la investigación social, innovaciones y aplicaciones*. Madrid: Síntesis, Cap. 14.
- Railsback, S. F. & Grimm, V. (2012). *Agent-based and individual-based modeling: a practical introduction*. Princeton: Princeton University Press.
- Schut, M. (2007). *Scientific handbook of simulation of collective intelligence*. <<http://www.mpcollab.org/MPbeta1/node/143>> (21/12/2010)
- Teahan, W. J. (2010). *Artificial Intelligence: Agent Behaviour*. <<http://bookboon.com/en/textbooks/it-programming/artificial-intelligence-agent-behaviour-i>> (04/05/2012).
- Vidal, J. M. (2009). Fundamentals of Multiagent Systems. <<http://www.scribd.com/doc/2094479/Fundamentals-of-Multiagent-Systems>>
- What do you want to do ?
New mailCopy
What do you want to do ?
New mailCopy