UAB
Universitat Autònoma de Barcelona

2020/2021

Spatial Analysis and Models

Code: 101623
ECTS Credits: 6

Degree	Type	Year	Semester
2501002 Geography and Spatial Planning	OB	3	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

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Use of Languages

Principal working language: catalan (cat)

Some groups entirely in English: No

Some groups entirely in Catalan: Yes

Some groups entirely in Spanish: No

Teachers

Ana Vera Martin

Prerequisites

There is no prerequisites in this course.

Objectives and Contextualisation

Space Analysis and Models is taught in the third course in the Degree in Geography and Land Use Planning is taught.

The objectives are:

- Use the scientific method in the formalization, resolution and interpretation of Geography Models.
- To achieve the different levels of abstraction that models provide as a tool for interpreting geographical and social phenomena.
- To formulate and solve cases of spatial analysis using the different types of models and statistical analysis.
- Use of geographical information at various scales, performing the interpretation of results.
- Develop the skills of self-employed and teamwork.

Competences

- Acting and intervening in the territory and its management, displaying the practical and experimental nature of geographical formations.
- Analysing and interpreting environmental problems.
- Identifying the spatial relationships on different territorial levels through the relationships between nature and society through time dimension.
- Mastering the necessary theoretical knowledge in order to pose geographical problems in an integrated way and combining a generalist approach with a specialised analysis.

- Producing innovative and competitive proposals in research and professional activity.

Learning Outcomes

1. Drawing up innovative proposals.
2. Explaining the spatial relationships on different territorial levels in the field of territorial planning through the relationships between nature and society.
3. Interpreting the environmental problems of spatial planning.
4. Planning the territory in order to improve its management.
5. Posing problems related to the management of resources and territory.

Content

BLOCK 1. Introduction to modeling and the scientific method

1. Models: concept and type. The models of the Nodal Region by P. Haggett.
2. The scientific method. Deductive inductive. The scale in geographic analysis. The positivist and normative approaches.
3. The theoretical, normative, methodological, technical and instrumental assumptions of the models.

BLOCK 2. Theory of Networks

1. Topological networks and graphs: concepts and techniques. Compare the properties of connectivity and accessibility.
2. Connectivity models.
3. Topological accessibility models.
4. Non-topological accessibility models.

BLOCK 3. Interaction Models

1. Concept of Interaction. Variables and parameters. Types of models. The friction of distance.
2. The space unit: area and center. Efficiency of limits, movement and packaging.
3. The unrestricted gravity model.
4. Gravity models with restriction at source and in destination restriction.
5. The gravity model with double restriction: origin and destination.
6. The Population Potential model. Single Circle (MCU) and Double Circle (MCD).
7. The rupture point model.

BLOCK 4. Allocation Models

1. Assignment Models (1). General approach of allocation models.
2. Assignment Models (2). Resolution

BLOCK 5. Linear Programming and Simplex Method

1. Linear Programming (1). Introduction.
2. Linear Programming (2). Graphic Method.
3. Simplex Method (1).
4. Simplex Method (2).
5. Simplex Method (3). Computer resolution system (LINDO program).

BLOCK 6. Transport Models

1. Transport model (1). Theoretical approach.
2. Transport model (2). Prototype example
3. Transportation model (3). Example of a prototype with LINDO.

BLOCK 7. Localization Model - Assignment (L - A)

1. Theoretical approach of Models of L - A.
2. Development of model L - A.
3. Resolution of a practical case L-A.

Methodology

The teaching methodology and evaluation proposed in the guide may undergo some modification depending on the restrictions on attendance imposed by the health authorities.

The subject is structured from supervised and autonomous supervised activities where the student will learn to develop interactively in the contents of the subject with the support of the teaching staff, at different levels.

The contents of the subject will be developed through the following activities:

- Oral presentations.
- Reading of books and articles (individual activity of the students complementary to the work of classroom).
- Exercise of classroom exercises and the computer lab based on statistical information, both in theoretical situations and in real cases.
- Research work in a small group, related to the class syllabus.

The practical activity is structured in two axes:

1. Guided and tutored practices in each of the subjects. The activities can be of different types such as: text comments, methodological and theoretical knowledge verification or problem solving (manually and through specific software).
2. Completion of a group work that combines Network Theory, Interaction Models and Location-Assignment Models.

In the different examples gender aspects will be taken into account.

Activities

Title	Hours	ECTS	Learning Outcomes
Type: Directed			
Classes, exercices and exams	47	1.88	3, 4, 5
Type: Supervised			
Supervision of exercices and course work	20	0.8	2, 3, 4, 5, 1
Type: Autonomous			
Own study, exercicies and course work	55	2.2	3, 4, 5, 1

Assessment

The assesment activities are the following:

1 - Theoretical and practical exam to evaluate the contents. It consists of two partial examinations with a duration of one hour and a half each with a weight of 40% of the note.

Assessment of the exam: From the theoretical part the relevance of the answer will be assessed, the degree of knowledge being obtained on the subject. And, in the practical part, the approach, resolution and interpretation of the results will be assessed separately, as well as the correct execution of the calculations. To pass the exam you must have a 5 on each part of the exam.

2 - The practical part, will be carried out in group, the activities will be delivered during the semester:

2.1 - Individual assessment practices with a weight of 20% of the mark.

2.2 - Course work with a weight of 40% of the mark.

Assessment of the practices: The formal aspects, the correct calculation of the indicators (as long as this is the objective of the practice), the adequate realization of a structured analysis on the results obtained, the interpretation of the results, in the case Specific of the analyzes of the texts will be especially valued the capacity to extract and exhibit the most relevant information and relate it to the contents of the subject.

Assessment of the course work: The formal aspects, the approach of the objectives, the problem and the models used for an improvement in the planning of the services, the definition of the analysis variables, the resolution of the results, discussion, conclusions and oral presentation in class.

Continuous assessment makes the delivery of all learning activities mandatory to be able to complete the course.

The practices delivered after the date fixed by the calendar will have a maximum score of 5.

In order to take part in the examination it is necessary to have delivered all the practices.

The delivery of 70% of the course activity will be Suspense. Those who do not reach 70% will have a non-valuable.

PLAGIARISM

In the event of a student committing any irregularity that may lead to a significant variation in the grade awarded to an assessment activity, the student will be given a zero for this activity, regardless of any disciplinary process that may take place. In the event of several irregularities in assessment activities of the same subject, the student will be given a zero as the final grade for this subject.

RE-EVALUATION

Only people who have given ALL the evidences of the practical part (practices and course work) can only be submitted to the recovery. Recovery is for those parts of the exam that are suspended.

NOTE

In the event that tests or exams cannot be taken onsite, they will be adapted to an online format made available through the UAB's virtual tools (original weighting will be maintained). Homework, activities and class participation will be carried out through forums, wikis and/or discussion on Teams, etc. Lecturers will ensure that students are able to access these virtual tools, or will offer them feasible alternatives.

Assessment Activities

Title	Weighting	Hours	ECTS	Learning Outcomes
Course Exercicies	20%	15	0.6	2, 3, 4, 5, 1
Course work	40%	10	0.4	2, 3, 4
Exam	40%	3	0.12	2, 5

Bibliography

Basic References

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Complementary References

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