

---

**Academic Year: ( 2023 / 2024 )****Review date: 15-07-2023**

---

**Department assigned to the subject: Social Sciences Department****Coordinating teacher: VILLAMIL FERNANDEZ, FRANCISCO****Type: Compulsory ECTS Credits : 3.0****Year : 1 Semester : 1**

---

## OBJECTIVES

- Knowledge of the principles of scientific research.
- Ability to discern among refutation, confirmation and contrastation.
- Knowledge of different research designs: variable-based, case-based, comparative.
- Ability to combine different research designs.
- Be familiar with the different types of scientific evidence.
- Ability to explain the principles underlying statistical models for social networks.

## DESCRIPTION OF CONTENTS: PROGRAMME

### 1. Introduction

- Importance of research design in social sciences
- What it means to answer a question with empirical evidence
- Types of empirical research

### 2. Research questions

- How to find them and how to work with them
- Description and explanation
- Variables and relationships between variables

### 3. Types of research design and empirical information

- Case studies, comparative studies, quantitative studies with large samples
- Advantages, disadvantages and complementarities
- Types of empirical evidence
- Unit of analysis and variability
- Measurement problems

### 4. Causality

- Prediction, correlation, probability
- Causal effects and causal mechanisms
- Mechanism-based explanations
- Levels of explanation: macro, meso, micro
- Directed Acyclic Graphs

### 5. Problems in causal inference

- Confounding, selection bias, collider bias, etc.
- Problems of internal and external inference
- Ecological fallacy, diffusion, external validity, etc.

### 6. Research design to identify causal relationships

- Ideal of experimental method in natural sciences
- Counterfactuals and how to approach them
- Advantages and disadvantages of causal inference design

### 7. Introduction to the logic of causal inference methodology

- Understanding the most common techniques: experiments, difference-in-differences, RDD, matching, etc.

## LEARNING ACTIVITIES AND METHODOLOGY

### Training Activities:

- Theoretical-practical classes
- Laboratory practical sessions
- Tutorials
- Group work
- Individual student work
- Partial and final examinations

### Teaching Methods:

- Presentations in the professor's lecture room with computer and audiovisual support, in which the main concepts of the subject are developed and a bibliography is provided to complement the students' learning.
- Critical reading of texts recommended by the subject professor: Press articles, reports, manuals and/or academic articles, either for later discussion in class, or to expand and consolidate knowledge of the subject.
- Resolution of practical cases, problems, etc. raised by the professor, either individually or in a group.
- Presentation and discussion in class, under the moderation of the professor, of topics related to the content of the subject, as well as practical case studies.
- Developing pieces of work and reports, individually or in group.

## ASSESSMENT SYSTEM

**% end-of-term-examination:** 40

**% of continuous assessment (assignments, laboratory, practicals...):** 60

- Participation in the class (20%)
- Individual or group work done during the course (40%)
- Final exam (40%)

In the extraordinary call, the evaluation system will be as follows:

- 1) Exam: 100%

## BASIC BIBLIOGRAPHY

- Ethan Bueno de Mesquita & Anthony Fowler Thinking clearly with data: A guide to quantitative reasoning and analysis, Princeton University Press, 2021
- Nick Huntington-Klein The Effect: An Introduction to Research Design and Causality, Chapman and Hall/CRC Publishing, 2021
- Scott Cunningham Causal Inference: The Mixtape, Yale University Press, 2021