

SYLLABUS DEL CORSO

Synthetic Indicators for Sustainability

2627-2-F7603Q028-F7603Q02801

Aims

By the end of this module, students will be able to define, implement, and interpret indicators to measure, monitor progress, and evaluate intervention policies in sustainability. In particular, they will be able to:

- define indicators by selecting the proper method (knowledge and understanding)
- explain the methods and critically interpret the constructed indicators (knowledge and understanding; making judgements)
- perform statistical analysis using statistical software to implement and compute indicators (applying knowledge and understanding)
- communicate the results and explain the methods to an audience that might not be familiar with statistical methods (communication skills)
- learn independently and explore further methodological extensions or novel national and international indicators (learning skills).

Contents

- Definition of conceptual model and indicator
- Indicator construction
- Computation using statistical software and interpretation of indicators
- Examples of national and international indicators for sustainability

Detailed program

Definition of conceptual model and indicator:

- Introduction to the core definitions of conceptual frameworks and indicators
- Classification of indicator types based on the analyzed phenomenon, scope, information content, and structural construction

Steps to construct indicators:

- Developing a robust theoretical framework
- Criteria for variable selection and data screening
- Missing data treatment and imputation techniques
- Normalization, weighting, and aggregation methods

Computation using statistical software and interpretation of indicators:

- Hands-on computational implementation of indicators using statistical software
- Practical guidelines for the correct interpretation of synthetic indexes

Examples of national and international indicators for sustainability:

Review of international frameworks (e.g., indicators designed to monitor the progress of the UN Sustainable Development Goals).

Prerequisites

Basic concepts of descriptive statistics

Teaching form

Face-to-face lectures and practical laboratory activities:

- 10 hours, in-person lectures, delivered didactics
- 10 hours, in-person lectures, interactive teaching
- 10 hours, in-person lectures, interactive teaching to produce a report on a case study, to be analysed by the students in groups

Textbook and teaching resource

- OECD/European Union/EC-JRC (2008), Handbook on Constructing Composite Indicators: Methodology and User Guide, OECD Publishing, Paris, <https://doi.org/10.1787/9789264043466-en>.
- Mazziotta, M., & Pareto, A. (2025). Statistics for Composite Indicators. Springer.
- Slides
- Scientific papers made available on the e-learning website of the course
- Data and code for practical sessions made available on the e-learning website of the course

Semester

First semester

Assessment method

For the assessment method and evaluation, please refer to the syllabus of the course "Laboratory of Data management and synthetic indicators for sustainability"

Office hours

After scheduling an appointment via e-mail

Sustainable Development Goals

QUALITY EDUCATION
