

**COURSE OF STUDY** Innovation, Governance and Sustainability  
**ACADEMIC YEAR 2023-2024**

**ACADEMIC SUBJECT** Statistics for sustainability

Antonella Massari – Paola Perchinunno – Corrado Crocetta

General information	
Year of the course	<i>First Year</i>
Academic calendar (starting and ending date)	<i>Second semester 26 February-14 June</i>
Credits (CFU/ETCS):	6 CFU
SSD	<i>Secs-S/01</i>
Language	<i>Italian</i>
Mode of attendance	<i>Recommended</i>

Professor/ Lecturer	
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Department and address	DEMDI University of Bari
Virtual room	Microsoft Teams
Office Hours (and modalities: e.g., by appointment, on line, etc.)	Prof. Massari Tuesday 11.00-13.00 a.m. and Friday 11.00-13.00 a.m. Prof. Perchinunno Monday and Wednesday h. a.m. 10 - 12 -Prof. Corrado Crocetta Wednesday h.a.m. 10-12 For an appointment, contact the teacher by email

Work schedule			
Hours			
Total	Lectures	Hands-on (laboratory, workshops, working groups, seminars, field trips)	Out-of-class study hours/ Self-study hours
48	36	12	
6 CFU	4,5	1,5	

<b>Learning Objectives</b>	The course provides the methodological tools necessary for the statistical analysis of phenomena related to the study of sustainability
<b>Course prerequisites</b>	Knowledge of descriptive and inferential statistics

<b>Teaching strategie</b>	<i>Lessons-Seminars-Exercises</i>
<b>Expected learning outcomes in terms of</b>	
<b>Knowledge and understanding on:</b>	The course aims to provide the student with a critical knowledge of the methodologies and statistical tools related to sustainability
<b>Applying knowledge and</b>	The methodologies used, which include the analysis of empirical

<b>understanding on:</b>	cases relating to sustainability alongside frontal teaching, will allow the student to acquire applicative statistical skills relating to the study domain.
<b>Soft skills</b>	<ul style="list-style-type: none"> <li>• <i>Making informed judgments and choices</i> Through the study divided into lectures that include seminars in which the active participation of the student is requested with the discussion of real cases, the student learns to adequately interpret the results obtained from the statistical analysis carried out and acquires comparison skills and aptitude for problem solving</li> <li>• <i>Communicating knowledge and understanding</i> , The student will learn how to communicate, with adequate statistical technical language, in relation to the case studies developed</li> <li>• <i>Capacities to continue learning</i> Through the study of teaching, the student acquires the ability to transform the results obtained through statistical methodology into useful information for the study of sustainability.</li> </ul>
<b>Syllabus</b>	
<b>Content knowledge</b>	<p><i>Course introduction:</i> measuring sustainability.</p> <ul style="list-style-type: none"> <li>- The sustainability indicators of the BES: economic, environmental, and social indicators.</li> <li>- Methods of statistical analysis for the study of the relationships between variables: <ul style="list-style-type: none"> <li>• Multiple regression</li> <li>• Partial correlation</li> </ul> </li> <li>- Analysis of historical series for the study of the temporal evolution of phenomena.</li> <li>- Introduction to geostatistics for the study of the spatial evolution of phenomena.</li> </ul> <p><i>Seminars</i></p> <ul style="list-style-type: none"> <li>- BES indicators and ISTAT environmental statistics.</li> <li>- Big data, Artificial intelligence, and machine learning for sustainability.</li> </ul> <p>Indicators for the circular economy.</p>
<b>Texts and readings</b>	<ul style="list-style-type: none"> <li>• Girone, Crocetta, Massari, "Statistica", Bari, Cacucci, 2019 (chapters 14 and 16)</li> <li>• De Iaco, Maggio, Palma, Posa, "Metodi di analisi geostatistica per dati temporali ed areali" Giappichelli, 2018 (par 1.1, 1.2, 1.3, 2.1, 2.2)</li> </ul> <p>Posa, De Iaco "Geostatistica teoria e applicazioni" Giappichelli, 2009 (chapters 1 to 5)</p>
<b>Notes, additional materials</b>	Supplementary didactic material and bibliographical indications will be given during the lessons
<b>Repository</b>	<i>Recommended text, any supplementary teaching material will be distributed during the lessons and inserted in the teams class</i>

<b>Assessment</b>	
Assessment methods	The candidate must demonstrate knowledge of the issues addressed during the course through an oral test, with discussion of empirical cases
Assessment criteria	<ul style="list-style-type: none"> <li>• <i>Knowledge and understanding</i> Statistical methodology relating to indicators, multivariate statistical analysis, analysis of historical and spatial series</li> <li>• <i>Applying knowledge and understanding</i> Knowing how to use the acquired methodology to empirical cases</li> <li>• <i>Autonomy of judgment</i> Ability to interpret the results relating to the analysis of the phenomena treated</li> <li>• <i>Communicating knowledge and understanding</i> Ability to expose the topics covered in an exhaustive manner and with adequate technical language</li> <li>• <i>Communication skills</i> adequate technical language</li> <li>• <i>Capacities to continue learning</i>  Ability to transform the results obtained through statistical methodology into useful information for the study of sustainability</li> </ul>
Final exam and grading criteria	The evaluation will derive from the evaluation of the level of knowledge of the methodological part and from the interpretative capacity of the concrete cases
<b>Further information</b>	
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