Syllabus

Kursbeschreibung

Titel der Lehrveranstaltung	Einführung in Datenmanagement und Datenanalyse
Code der Lehrveranstaltung	27601
Zusätzlicher Titel der Lehrveranstaltung	
Wissenschaftlich-disziplinärer Bereich	SECS-S/01
Sprache	Englisch
Studiengang	Master in Politik öffentlicher Institutionen und innovative Governance
Andere Studiengänge (gem. Lehrveranstaltung)	
Dozenten/Dozentinnen	dr. Giulia Bertagnolli, Giulia.Bertagnolli@unibz.it https://www.unibz.it/en/faculties/economics-management/academic-staff/person/49312 Dott. mag. Andrea Molinari, Andrea.Molinari@unibz.it https://www.unibz.it/en/faculties/engineering/academic-staff/person/3420 dr. Tun-I Hu, TunI.Hu@unibz.it https://www.unibz.it/en/faculties/economics-management/academic-staff/person/48974
Wissensch. Mitarbeiter/Mitarbeiterin	
Semester	Erstes Semester
Studienjahr/e	1
KP	8
Vorlesungsstunden	48 (24 Bertagnolli + 24 Molinari)
Laboratoriumsstunden	6 (Hu)
Stunden für individuelles	

Studium	
Vorgesehene Sprechzeiten	24 (12 Bertagnolli + 12 Molinari)
Inhaltsangabe	This course equips students with practical computer skills tailored to the public sector, including data extraction, database management with SQL, data visualization using PowerBI, and data handling and analysis in R. It emphasizes realworld applications such as processing administrative data, conducting statistical analysis, and producing interpretive reports that inform evidencebased policymaking. Ultimately, students will gain confidence in using these tools to extract insights, communicate findings, and support effective governance.
Themen der Lehrveranstaltung	1. Data Management Fundamentals, 2. Data Visualization, 3. Introduction to R, 4. Descriptive Analysis, 5. Time Series Data, 6. Survey Data.
Stichwörter	Data management, Data visualization, Descriptive data analysis, Time Series, Regression, Data analysis with R.
Empfohlene Voraussetzungen	B1 level in English is required to sit the exam. Students without a background in statistics are strongly recommended attending the Preparatory Course in Statistics scheduled at the beginning of the first semester.
Propädeutische Lehrveranstaltungen	
Unterrichtsform	The course will combine in-class explanations of data analysis procedures with problem-solving activities and the discussion of case studies. Students will be encouraged to participate actively, providing them with the opportunity to develop their problem-solving skills in realistic and applied contexts.
Anwesenheitspflicht	Attendance is recommended, but not mandatory.
Spezifische Bildungsziele und erwartete Lernergebnisse	Knowledge and understanding The student will acquire targeted knowledge of techniques and analysis tools necessary for understanding and interpreting economic and business phenomena related to public administration in a quantitative manner in order to support decision-making and management processes. Knowledge of statistical inference, linear models and their generalisations will be consolidated. Knowledge will also be

acquired in the management of the main computer systems useful for the analysis, interpretation, visualisation and communication of data, commonly used in public administrations.

The student acquires the knowledge of economic theory necessary to understand and analyse economic and business phenomena in the public sector in order to support decision-making processes. Knowledge of public policy and the tools necessary for the design of sustainable policies will be consolidated. Knowledge related to the labour market, education and health will also be deepened, functional to the development of public policy analysis and evaluation skills.

Ability to apply knowledge and understanding

The student will acquire the ability to:
- apply and implement statistical and econometric analysis techniques focusing on different types of datasets, including large datasets;
- interpret results deriving from statistical and econometric analysis in the contexts of interest to companies and public bodies.

Autonomy of judgement

The student will acquire the ability to:
- apply acquired knowledge to interpret economic and business phenomena in order to make managerial and operational decisions in the context of public administration;
- select data and use appropriate information to describe a problem concerning the design, implementation and evaluation of public sector projects and policies, aiming at innovation and improvement of processes, products and results;
- relate models and empirical evidence in the study of public policy phenomena.

Communication skills

The student will acquire the ability to communicate effectively in oral and written form the specialised content of the individual disciplines, using different registers according to recipients and communicative and didactic purposes, and to evaluate the

	formative effects of his/her communication. Learning skills The student will acquire the ability to: - use information technology autonomously to carry out bibliographical research and investigations and for one's own training and continuing education; - identify thematic links and establish relationships between different cases and contexts of analysis; - frame a new problem systematically and generate appropriate taxonomies; - develop general models from the phenomena studied.
Spezifisches Bildungsziel und erwartete Lernergebnisse (zusätzliche Informationen)	
Art der Prüfung	1. Voluntary midterm exam covering the first half of the course materials (data management fundamentals and data visualization) and 2. Mandatory final exam covering either the second half of the course or the entire course. The final grade will be a weighted average of the midterm exam (50%) and final exam (50%). Students that do not take the midterm or reject their midterm grade will be given a longer final exam that will count for 100% of the final grade.
Bewertungskriterien	Students will be evaluated on their ability to: Understand and apply data management, visualization, and analysis techniques (both correct procedures and accurate solutions are essential); summarize and interpret descriptive statistics, as well as R code, and common outputs; demonstrate analytical thinking and clarity in communication; interpret exam questions accurately, providing correct, well-reasoned answers; establish connections between topics, demonstrating critical thinking skills.
Pflichtliteratur	Data Visualization with R OSDC MiniSeries: Reproducible Research (available here). Additional materials and references will be provided by the lectures

	throughout the course.
Weiterführende Literatur	Stock, James H. and Mark W. Watson. Introduction to Econometrics. Pearson, 2014
Weitere Informationen	
Ziele für nachhaltige Entwicklung (SDGs)	Hochwertige Bildung