Freie Universität Bozen
Libera Università di Bolzano
Università Liedia de Bulsan

Syllabus
Course description

Course title	**Applied resource and energy economics**
Course code	27515
Scientific sector	Secs-P/05
Degree	Master in Data Analytics for Economics and Management – curriculum Data Analytics for Economics
Semester and academic year	semester tbd - 2024/2025
Year	2nd study year
Credits	6
Modular	No

Total lecturing hours	36
Total lab hours	-
Total exercise hours	-
Attendance	suggested, but not required
Prerequisites	not foreseen
Course page	https://www.unibz.it/en/faculties/economics-management/master-data-analytics-economics-management/

Specific educational objectives	The educational objects are consistent with the course curriculum of the Master in "Data Analytics for Economics and Management" with a focus on "Data Analytics for Economists". It is further linked to previous courses in the syllabus and requires understanding of statistical and economic methods. The course explores the importance, the use and challenges of high dimensional and high frequency data and modern quantitative methods such as high dimensional econometrics and machine learning for solving resource and energy economic related questions. A second focus is set on climate change and its implication for the economy in general and in particular commodity and energy markets. In detail, the course is concerned with: 1. Discussion of current challenges and issues in resource and energy economics, with a special focus on climate change and its implications. 2. Train students to manage and work with datasets related to resource and energy economics and markets. 3. Derive from an economic resource or energy model a structural model.

	4. Selection of appropriate quantitative methods to answer the questions in 2) and 3), estimation of such model and their applications and the interpretation of results.

Lecturer	tbd
Scientific sector of the lecturer	Secs-P/05
Teaching language	English
Office hours	TBD
List of topics covered	• Natural resources and energy • Natural resources and economic development • The economics of climate change, externalities, discounting, International agreements • Quantitative analysis of power markets, electricity supply and demand • Quantitative analysis of commodity markets, sequential markets, convergence and divergence of prices • Measuring the recent global shocks and their effects on energy and environment
Teaching format	Frontal lectures, exercises, computer labs, face-to-face discussions and flipped-classroom activities.

Learning outcomes	**1) Knowledge and understanding** The student acquires specific knowledge of resource and energy economics, current issues and challenges and how to formulate, answer and discuss possible solutions using the latest quantitative methods. **2) Apply knowledge and understanding** The student acquires the ability to analyze the business issues that characterize data-based decision support through the application of statistical methods and computational models in the field of resource and energy economics. The student acquires the ability to use and apply models suitable for market analysis and the formulation of economic of commodity and energy markets. **3) Making judgments** Ability to formulate challenges and questions related to current issues in resource and energy economics. Further students will have the ability implement appropriate quantitative tools for both the analysis and the interpretation of economic facts. **4) Communication skills**

	Ability to present in a consistent and precise manner the challenges and current questions in the field. Secondly students will learn how to present solutions supported by data supported quantitative analysis. **5) Learning skills** The course is aimed to provide learning skills on econometric and statistical methods, necessary to address subsequent studies, including advanced courses in mathematics, statistics, computer science, and quantitative economics. These learning skills will be maximally useful in the future professional environment as well as for the empirical analyses required in the final thesis.

Assessment	Final exam and development of group project with presentation on an applied problem where models and techniques illustrated in the course are implemented. The final exam aims at assessing skill 1 (Knowledge and understanding). The computer-based group project allows to verify skills 2, 3 and 4 (Applying knowledge and understanding, Making judgements, Communication skills). Autonomous study and individual preparation leading to class activities (e.g. flipped classrooms) and required to pass the written exam indirectly verifies skill 5 (Learning skills).
Assessment language	English
Evaluation criteria and criteria for awarding marks	The final grade is determined by a written exam (75%) and a written group project (25%) with presentations. The purpose of the exam is to ascertain that students have the knowledge that is required to correctly assess, draw out solutions and discuss problems and challenges related to resource and energy economics. The written group project will train students to formulate and answer as a group an empirical question related to the material taught in the course. A scientific text has to be produced and presented.

Required readings	TBD The taught material will be based on a textbooks and a selection of papers from journals such as "Energy Economics", "The Energy Journal" or "Energy Policy".
Supplementary readings	TBD