COURSE OF STUDY *Physics (LM-17)*

ACADEMIC YEAR *2024-2025*

ACADEMIC SUBJECT *Energy Technologies*

General information	
Year of the course	2nd
Academic calendar (starting and ending date)	1st semester: September - December 2024
Credits (CFU/ECTS):	3
SSD	SECS-P/13
Language	English
Mode of attendance	Compulsory

Professor/ Lecturer	
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Department and address	Via E. Orabona, 4, Bari
Virtual room	Teams Platform
Office Hours (and modalities: e.g., by appointment, on line, etc.)	Monday and Wednesday 12: 30-13: 30 at the Department or on the Teams platform by appointment via email

Work schedule			
Hours			
Total	Lectures	Hands-on (laboratory, workshops, working groups, seminars, field trips)	Out-of-class study hours/ Self-study hours
75	8	30	37
CFU/ECTS			
3	1	2	

Learning Objectives	The aim of the course is to characterize the different energy sources from a technological, economic and environmental perspective. The student must also be able to independently perform an audit and an energy diagnosis of a productive system.
Course prerequisites	\\\

Teaching strategies	Lessons+laboratory
Expected learning outcomes in terms of	
Knowledge and understanding on:	o The student of Energy technologies knows the main technologies used in energy systems also with a view to sustainable development. An indispensable basis will be the knowledge of the methodology for analyzing the company's energy profile. The achievement of these skills will contribute to participation in classroom lessons, exercises in laboratory and the commitment of personal study required by the training activities

Applying knowledge and understanding on:	o The student will be able to understand the current national and international developments of energy technologies. They will also have to master the energy audit and diagnosis tools. The individual study of the proposed texts and the examination of the cases illustrated in the course of the proposed activities contribute to achieving these skills.
Soft skills	● Making informed judgments and choices: The student will have to acquire the ability to analyze the main energy consumption dynamics of a productive system, to be able to operate with autonomy and authority, selecting the necessary tools to govern the problems that companies must face to improve their energy and economic profile. ● Communicating knowledge and understanding The student will be able to effectively communicate ideas and solutions regarding the productive stystems' energy variable. He will be able to dialogue with collaborators in the industrial and professional sphere, clearly explaining his conclusions relating to the topics analyzed. Communication skills will be developed during the various activities that involve the presentation of reports by students and as part of the preparation and discussion of the final exam. ● Capacities to continue learning By participating in classroom activities and laboratories and finally with the preparation of the final exam, the student will have acquired the ability to independently investigate the issues relating to the energy technologies and the implementation of an energy management system in a productive context.
Syllabus	
Content knowledge	The dimension of the energy problem. Elements of energy economics and technology of the various energy systems. The economic laws of energy. World energy supply and demand. The Italian energy situation. Uses of energy in the various economic sectors. Energy, territory and environment. Energy management. Energy efficiency. Energy audit and diagnosis. Energy management systems. Laboratory of energy diagnosis: exercises on carrying out an energy diagnosis; energy models, improvement plans
Texts and readings	Lecture notes by the teacher
Notes, additional materials	\\\
Repository	Lecture notes by the teacher

Assessment	
Assessment methods	Oral examination
Assessment criteria	• Knowledge and understanding The student knows how to manage the energy technologies also with a view to sustainable development and masters the methodology of analyzing the company's energy profile. • Applied knowledge and understanding The student masters the tools of energy audit and diagnosis. • Autonomy of judgment The student has acquired the ability to analyze the main energy consumption dynamics of the company and is able to select the tools necessary to govern the problems that companies must face in order to improve their energy and economic profile. • Communication skills The student will be able to effectively communicate ideas and solutions regarding the analysis of the company's energy variable. • Capacities to continue learning

	The student will have acquired the ability to independently investigate issues relating to the implementation of an energy management system in the company and the use of technologies for the development of energy efficiency projects with a critical approach.
Final exam and grading criteria	The final mark is given out of thirty. The exam is considered passed when the grade is greater than or equal to 18. The oral test consists of the answer to three questions/topics related to the program which contribute equally to the formulation of the final grade. The evaluation criteria of the questions are the following: - Completeness and exhaustiveness of the answer - Argumentative ability - Critical processing.
Further information	
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