Syllabus

Descrizione corso

Titolo insegnamento	Economics and Management of Energy Systems
Codice insegnamento	45520
Titolo aggiuntivo	
Settore Scientifico-Disciplinare	IEGE-01/A
Lingua	Inglese
Corso di Studio	Corso di laurea magistrale in Ingegneria energetica
Altri Corsi di Studio (mutuati)	
Docenti	dott. Margherita Molinaro, Margherita.Molinaro@unibz.it https://www.unibz.it/en/faculties/engineering/academic-staff/person/43550
Assistente	
Semestre	Secondo semestre
Anno/i di corso	Opt.
CFU	6
Ore didattica frontale	36
Ore di laboratorio	24
Ore di studio individuale	90
Ore di ricevimento previste	18
Sintesi contenuti	The course is aimed at presenting some methods and tools for the Management of Energy Systems. The theoretical concepts are referred to the energy sector also through some case studies and applied projects. The first part of the course focuses on quality management tools. The second part focuses on business planning and investment analysis. The third part outlines the basic elements of project management.
Argomenti	List of topics covered:

dell'insegnamento	Part 1 - QUALITY MANAGEMENT TOOLS • Risk management techniques • New product development tools • Customer satisfaction analyses • Case study applications on quality management tools in the energy industry Part 2 - INVESTMENTS ANALYSIS AND BUSINESS PLANNING • Investment analysis: criteria for evaluating investments under certainty conditions; methods comparison • Other calculations of cost-effectiveness: break-even analysis; the choices of make or buy • Business planning • Case study applications and business plan development in the energy sector Part 3 - PROJECT MANAGEMENT • Introduction to project management principles • Time control and management • Costs control and management • Case study applications of project management tools in the energy industry
Parole chiave	Quality management; investment analysis; business planning; project management
Prerequisiti	
Insegnamenti propedeutici	
Modalità di insegnamento	The teaching format is based on frontal lectures and applied projects. In addition to a solid theoretical background, a special attention will be devoted to specific exercises and case studies discussion. Several case studies and practical examples will allow the students a better understanding and application of the acquired theoretical knowledge in practice.
Obbligo di frequenza	Not mandatory.
Obiettivi formativi specifici e risultati di apprendimento attesi	(1) Knowledge and Understanding • Basic understanding of management and business administration • To know the main methods of investment analysis

	• To know some quality management tools useful in the energy sector (2) Applying knowledge and understanding • Analysis and solution methods • Ability to formulate the analysis of profitability of an investment, choosing the appropriate method • Ability to formulate the analysis of economic convenience (3) Making judgements • Systems Thinking - overview of the business organization • Ability to transfer the knowledge and methods learned to real practical applications (4) Communication skills • Ability to structure and prepare scientific and technical documentation describing project activities with language specific to the scientific area (5) Ability to learn • Ability to autonomously extend the knowledge acquired during the study course by reading and understanding.
Obiettivi formativi specifici e risultati di apprendimento attesi (ulteriori info.)	
Modalità di esame	The students will be evaluated on some applied projects that they will develop during the course. The projects will concern risk management applied to energy systems, new product development applied to energy systems, balance sheets analysis, business planning applied to energy systems, time and cost management applied to energy systems. The projects will be developed by a group composed by (up to) 3 students. Every student will present part of each project. The students will be evaluated also on all the theoretical contents of the course through an oral exam at the end of the course. Formative assessment: projects development during the course; ILOs assessed: 2, 3, 5. Summative assessment: 100% oral examination, including presentation and discussion of the assigned projects (about 1 hour); ILOs assessed: all except 5.

Criteri di valutazione	The assessment is given by the evaluation of the clarity of answers, mastery of language (also with respect to teaching language), ability to summarize and establish relationships between topics, ability to apply theory to concrete cases/project works.
Bibliografia obbligatoria	Lecture slides and notes.
Bibliografia facoltativa	Quality Management: Tools, Methods and Standards, by Sartor and Orzes (Emerald, 2020) Industrial Project Management, by Tonchia (Springher, 2018)
Altre informazioni	Connections with other courses: The course offers approaches and tools to evaluate and manage all the possible investments regarding Energy Systems. From this perspective, the course is strongly related to most of the LM-30 courses. Professional applications of the covered topics: Every industrial sector is interested in these competences.
Obiettivi di Sviluppo Sostenibile (SDGs)	Energia rinnovabile e accessibile, Innovazione e infrastrutture, Buona occupazione e crescita economica