Philadelphia University

Faculty of Engineering - Department of Renewable Energy Engineering

First Semester 2025/2026

Course Information

Title:	**Energy Economics and management (611312)**
Prerequisite:	Introduction to Renewable Energy (611341)
Credit Hours:	3 credit hours (15 weeks per semester, approximately 45 contact hours)
Textbook:	Energy Economics: Concepts, Issues, Markets and Governance by Bhattacharyya, Subhes C.
References:	An Introduction to Energy Economics and Policy by Filippini M and Srinivasan S.
Catalog Description:	This course explores the economic and management principles of modern energy systems, focusing on renewable energy applications and policy in Jordan. Students learn to evaluate energy projects using key financial tools and to develop effective strategies for energy efficiency, demand management, and sustainable resource planning.
Website:	https://www.philadelphia.edu.jo/academics/zalatari/
Instructor:	Dr. Zaid Al Atari **Email**: zalatari@philadelphia.edu.jo **Office**: Engineering building, Room 726. **Lecture hours:** Sat - Mon: 8:15 - 9:30 **Office hours**: Sat - Mon: 9:30 – 11:00 & 12:15 – 13:30

Course Topics

Week	Topic
1-2	Course introduction & Jordan's energy landscape
3	Energy economics fundamentals
4-5	Investment analysis tools and Levelized cost of energy (LCOE)
6	Financing & risk in energy projects
7	Midterm exam
8	Energy demand analysis and forecasting
9-10	Energy efficiency and auditing and Demand-side management (DSM)
11	Integrated energy planning
12	Energy policy and regulation in Jordan
13	Environmental and social aspects of energy decisions
14-15	Student project presentations and Course wrap-up

Course Learning Outcomes (CLOs) and Relation to ABET Student Outcomes:

Upon successful completion of this course, a student should:

CLO 1	Explain the fundamental concepts of energy economics and management and their application to renewable energy systems.	SO 1
CLO 2	Apply basic financial tools (payback, NPV, IRR, LCOE) to evaluate the feasibility and cost-effectiveness of energy projects.	SO 1, SO 6
CLO 3	Analyze energy demand patterns, efficiency opportunities, and DSM strategies to improve energy performance.	SO 2
CLO 4	Evaluate national energy policies, tariffs, and regulatory frameworks affecting renewable energy projects in Jordan.	SO 4
CLO 5	Develop an integrated energy management plan or project proposal for a local site using real data and economic analysis.	SO 3, SO 5
CLO 6	Assess environmental and social considerations in energy decision-making and their influence on sustainable development in Jordan.	SO 4, SO 7

Assessment Instruments:

Evaluation of students' performance (final grade) will be based on the following categories:

Exams:	Midterm written exams will be given and will cover half the semester material.
Quizzes:	Two short quizzes will be given during the semester each one with 5 marks from the total mark.
Project	There will be one or two short group projects throughout the term. For each project, the group will complete one of the challenge problems found within the lecture notes or will do a simple research paper. The group should then print a copy of the project cover page found on the course webpage, follows the instructions, and hand the project to the instructor. Students should work in groups of two to three students and turn in one assignment for the whole group.
Final Exam:	The final exam will cover all the class material.

Grading policy:

Mid Exam	30%
Project and Quizzes	30%
Final Exam	40%
Total:	100%

Attendance policy:

Absence from classes and/or tutorials shall not exceed 15%. Students who exceed the 15% limit without a medical or emergency excuse, acceptable to and approved by the Dean of the relevant college/faculty, shall not be allowed to take the final examination and shall receive a mark of zero for the course. If the excuse is approved by the Dean, the student shall be considered to have withdrawn from the course.

October 2025