جامعة الإسراء
ISRA UNIVERSITY

Course Syllabus

According to JORDAN National Qualification Framework (JNQF)

Course Name: Energy Economics and Efficiency

Course Number: 04084282

General Course Information:

Course title	Energy Economics and Efficiency
Course number	04084282
Credit hours	3h (theory)
Education type	Face-to-Face
Prerequisites/corequisites	4084281
Academic Program	Renewable Energy Engineering
Program code	REE
Faculty	Engineering
Department	Renewable Energy Engineering Department
Level of course	Fourth-year
Academic year /semester	2022/2023 First Semester
Awarded qualification	B.Sc.
Other department(s) involved in teaching the course	None
Language of instruction	English & Arabic
Date of production/revision	2022/2023

Course Coordinator:

Coordinator'sname	Dr.Nour Khlaifat
Office No	3rd floor,4348
Office Phone extension number	
Office Hours	(Sunday, Tuesday, Thursday): 10:00-12:00,
Email	noor.alkhlaifat@iu.edu.jo

Other Instructors:

Instructorname	-
Office No	
Office Phone extension number	
Office Hours	
Email	

Course Description*(English/Arabic)*:

English	The Energy Economics and Efficiency course describes energy intensity and efficiency in modern economies across the entire energy chain. With an emphasis on analysis, energy flow analysis, lifecycle energy accounting, economic analysis, technology evaluation, and policies/strategies for adopting high energy efficiency standards. In addition, this course introduces the basic concepts of energy economics and explains how simple economic tools can be used to analyze contemporary energy issues.
Arabic	

Textbook: ***Author(s), Title, Publisher, Edition, Year, Book website.***

1. Turner, & Doty, S. (2006). Energy management handbook (Sixth edition.). Fairmont Press.

2. Bhattacharyya. (2011). Energy Economics Concepts, Issues, Markets and Governance (1st ed. 2011.). Springer London.

References: ***Author(s), Title, Publisher, Edition, Year, Book website.***

1. Martinez, Ebenhack, B. W., & Wagner, T. (2019). Energy Efficiency: Concepts and Calculations. Elsevier Science & Technology.

Course Educational Objectives (CEOs):

1.	To develop an awareness of the importance of energy efficiency.
2.	To introduce fundamentals of energy efficiency in buildings, industry, urban, and transportation sectors.
3.	To introduce energy audit methodologies and reduce energy consumption in building, industry, urban, and transportation sectors.
4.	To introduce renewable energy for enhanced energy efficiency.
5.	

IntendedLearning Outcomes (ILO's):

a.	Subject Intended learning outcomes (ILOs) describe what students are expected to know and be able to do at the end of the course. These outcomes are related to the knowledge, skill and competence that students acquire:	**Relationship to CEOs**	**Contribution to PLOs**	**Bloom Taxonomy Levels***	**Descriptors****
b. A	Knowledge and Understanding:				
c. A1	Be able to know the principles and effective energy management.	1+2	1+2+4	1	K
d. A2	Be able to know the different types of auditing.	1+2	1+2+4	6	S
e. A3	Be able to know economic energy analysis.	1+2+3	1+2+4	4	C
f. B	Intellectual skills:				
g. B1	Understand how can save and	3+4	1+2+3	2	S

	manage the power in the electrical system				
h. C	Subject specific skills:				
i. C1	Be able to know the fundamentals of thermal insulation design theory, insulation materials, insulation selection, insulation thickness, etc.	1+2+3+4	1+2+3	3	K
j. D	Transferable skills:				
k. D1	Understand cogeneration system design and analysis	1+2+3+4	1+2+3	5	S
l. D2	Be able to know energy storage systems, storage capacity, and storage economics.	1+2+3+4	1+2	6	C

***Bloom Taxonomy Levels**

Level#	1	2	3	4	5	6
Level Name	Knowledge	Comprehension	Application	Analysis	Evaluation	Synthesis

**** Descriptor (National Qualification Framework Descriptors): K : Knowledge, S: Skill, C: Competency.**

Program Learning Outcome (PLOs):

Program Learning Outcomes describe what students are expected to know and be able to do by the time of graduation. These relate to the knowledge, skills, and behaviours that students acquire as they progress through the program. A graduate of the (_____) program will demonstrate:	Descriptors**		
	K	S	C

1.	An ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics.			
2.	An ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors.			
3.	An ability to communicate effectively with a range of audiences.			
4.	An ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts.			
5.	An ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives			
6.	An ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions			
7.	An ability to acquire and apply new knowledge as needed, using appropriate learning strategies			
8.				
9.				
10.				
11.				

**** Descriptors according to the national qualifications framework (K: knowledge, S: skill, C: Competency)**

Teaching Methods and Assignments:

Development of ILOs is promoted through the following teaching and learning methods:
Interactive videos
Practice Labs
Discussion Forums
Quizzes
Other Interactive online activities
Integrative Projects
Reports

Course Policies:

A- Attendance policies:

The maximum allowed absences is 15% of the lectures.

B- Absences fromexams andhandingin assignmentson time:

Midterm exam can be retaken based on approval of excuse by the instructor's discretion.

Not handing assignment on time will incur penalties.

C- Academic Health and safetyprocedures

D- Honesty policy regarding cheating, plagiarism, and misbehaviour:

Cheating, plagiarism, misbehaviourwill result in zero grade and further disciplinary actions may be taken.

E- Grading policy:

- All homework isto be posted online through the e-learning system.
- Exams will be marked within 72 hours and the marked exam papers will be handed to the students.
- Activities (Course Videos, Practice labs, Discussion Forums, Quizzes)_**20__%**
- Midterm_**30__%**
- Final Exam **__50_%**

F- Available university services that support achievement in the course:**E-Learning Platform, Labs, Library.**

Required equipment:

- **PC / Laptop with webcam and mic**
- **Internet Connection**
- **Access to the IU E-Learning Platform at: https://elearn.iu.edu.jo/**
- **E-learning plan**
- Satisfaction questionnaires for online and face-to-face learning
- Software for e-learning
- Training

Assessment Toolsimplemented in the course:

- Final Exam
- Midterm Exam
- Quizzes
- Homework
- Practice Labs
- Discussion Forums
- Periodic reports for learning assessment
- Improvement plans for online or face-to-face teaching
- Others:…….

Responsible Persons and their Signatures:

Course Coordinator	**Dr.Nour khlaifat**	**Completed Date**	**23/ 10/2022**
		Signature	

Received by (Department Head)		**Received Date**	/ /
		Signature	