

COURSE DESCRIPTION / SYLLABUS

Faculty	College of Engineering				
Department	Renewable Energy Engineering	NQF level	7		
Course Title	Energy and the Environment	Code	703435	Prerequisite	
Credit Hours	3 credits	Theory	100%	Practical	0
Course Leader	Dr. Amer Al-Canaan	E-mail	a.alcanaan@jadara.edu.jo		
Lecturer	Dr. Amer Al-Canaan	E-mail	a.alcanaan@jadara.edu.jo		
Lecture time	18:00- 19:30 Sunday, Tuesday	Classroom		Attendance	Online
Semester	Second 2021/2022	Production	October 2021	Updated	March 2022

Short Description

This course gives students an introduction to quantitative concepts related to energy and the environment. The course provides students with a working knowledge of the critical issues facing energy extraction, cultivation, transformation, transportation, consumption, disposal and environmental impacts.

This course aims to analyse the root of the environmental consequences of human activity. This course will be a focus on environmental degradation, measuring tools and focus on the root causes of this degradation from a cultural, social and historical perspectives, including expectations of progress, development and economic growth.

Course Objectives

1. Identify the ecosystem and the most important elements in the ecosystem
2. Identify global warming and greenhouse Gases.
3. Identify the climate change and the main cause of the climate change
4. To provide a basic understanding of the EIA process as it is used for research, planning, project or program evaluation, monitoring, and regulatory enforcement.
5. To introduce students to the legal, economic, social, administrative, and technical process of preparing and/or evaluating environmental impact documents.
6. To relate the uses of scientific research to practical situations in project planning and decision-making.

Course Intended Learning Outcomes (CILOs)

A. Knowledge - Theoretical Understanding

- a1. Understand/identify the various types of energy sources and their impact on global warming, greenhouse gas emission and aquatic systems. (K1)
- a2. Explain/compare the effects of dangerous wastes, hazardous materials, chemicals (pesticides, fertilisers, ..etc) and exposure to radioactive waste on human health and on the ecosystem and

propose solutions to reduce air/marine/ground pollutions. (K2)
B. Skills - Generic Problem Solving and Analytical Skills
b.1. Compute/estimate power and other energy related quantities such as the effective solar power that can be harvested per unit area. (S1)
C. Skills - Communication, ICT, and Numeracy
b.3. Teamwork to prepare a report on renewable energy and environmental issues including advantages and disadvantages of renewable sources or discuss various pollution types, discuss solutions and present work in oral and written form. (S3)
Teaching and Learning Methods
E-learning (Microsoft Teams), group work learning.
Assessment Methods
Group work (Term Project/Presentation, Assignments)
Quizzes
Midterm Exam
Final Exam

Course Contents					
Week	Hours	CLOs	Topics	Teaching & Learning Methods	Assessment Methods
1.	3	a.1	Introduction	eLearning, Teams, discussions	
2.	3	a.1	Ecosystem and sphere	eLearning, Teams, discussions	
3.	3	a.1, a.2, b3	Sustainable development definition and principle	eLearning, Teams, discussions	Group work #1
4.	3	a.1, a.2	Sustainable development definition and principle	eLearning, Teams, discussions	
5.	3	a.1, a.2	Energy-Environmental-Impacts Assessment _EIA (screening, scoping, monitoring,.....)	eLearning, Teams, discussions	Quiz-1
6.	3	a.1, a.2	Energy-Environmental-Impacts Assessment _EIA (screening, scoping, monitoring,.....)	eLearning, Teams, discussions	
7.	3	a.1,	Energy-Environmental-Impacts Assessment _EIA (screening, scoping,	eLearning, Teams, discussions	Midterm exam

		a.2	monitoring,.....)		
8.	3	a.1, a.2	Air Dispersion Models	eLearning, Teams, discussions	
9.	3	b.1, b3	Solving a problem	eLearning, Teams, discussions	Group work #2
10.	3		MID term Exam	eLearning, Teams, discussions	
11.	3	a.1, a.2	Climate Change	eLearning, Teams, discussions	Quiz-2
12.	3	a.1, a.2	Pollution sources and effects	eLearning, Teams, discussions	
13.	3	a.1, a.2	Pollutant types	eLearning, Teams, discussions	
14.	3	a.1, a.2	Environment and pollution relationship	eLearning, Teams, discussions	
15.	3	a.1, a.2	Environment and economic relationship	eLearning, Teams, discussions	
16.	3	a.1, a.2, b.1	Review, and final exam	eLearning, Teams, discussions	Final exam

Infrastructure	
Textbook	1. Energy and the Environment: Choices and Challenges in a Changing World 4 th , Global Digital Press 2017.
References	1. Ideology, Social Theory and the Environment. Oxford: Rowman & Littlefield, 2003, William D., 2. Energy, Environment, and Climate, R. Wolfson, 2008
Required reading	Environmental Impact and Institutional Adjustment: Application of Foster's Principles to Solid Waste Disposal, Andrew Larkin Pages 43-61 Published online: 06 Jan 2016
Electronic materials	Power point presentations, book, lectures
Other	

Course Assessment Plan						
Assessment Method	Grade	CLOs				
		a.1	a.2	b.1	b.3	c.2
First (Midterm)	30	20.7	7.2	2.1		
Second (if applicable)						
Final Exam	50	41	7	2		
Coursework	20					
Coursework assessment methods	Assignments					
	Case study					
	Discussion and interaction/participation					
	Group work activities				10	
	Lab tests and assignments					
	Presentations/attendance					
	Quizzes		10			
Total	100	71.7	14.2	4.1	10	

Plagiarism
<p>Plagiarism is claiming that someone else's work is your own. The department has a strict policy regarding plagiarism and, if plagiarism is indeed discovered, this policy will be applied. Note that punishments apply also to anyone assisting another to commit plagiarism (for example by knowingly allowing someone to copy your code).</p> <p>Plagiarism is different from group work in which several individuals share ideas on how to carry out the coursework. You are strongly encouraged to work in small groups, and you will certainly not be penalized for doing so. This means that you may work together on the program. What is important is that you have a full understanding of all aspects of the completed program. To allow proper assessment that this is indeed the case, you must adhere strictly to the coursework requirements as outlined above and detailed in the coursework problem description. These requirements are in place to encourage individual understanding, facilitate individual assessment, and deter plagiarism.</p>