



Jordan University of Science and Technology
Faculty of Engineering
Mechanical Engineering Department

ME558 Sustainable Energy Conversion

First Semester 2021-2022

Course Catalog

3 Credit Hours. Identifying and modeling different energy resources. Identifying the systems that generate, convert, utilize and store these resources. The course focuses on energy resources, conversion, storage and utilization. Topics include: solar energy calculations and solar systems such as solar ponds, photovoltaic cells, solar collectors, solar distillers, solar cooling, etc. . . , wind energy, ocean energy, hydropower, oil shale, waste energy, geothermal energy, biogas energy, etc .

Text Book

Title	Solar Energy
Author(s)	Sukhatme, S. P. (1996),
Edition	2nd Edition
Short Name	SE
Other Information	

Course References

Short name	Book name	Author(s)	Edition	Other Information
PSE	Principles of Sustainable Energy	Kreith, F. and Kreider, J.	1st Edition	
CN	Class Notes.	Mohammad Al-Nimr	1st Edition	

Instructor

Name	Prof. Mohammad Al-Nimr
Office Location	M5 L3
Office Hours	
Email	malnimr@just.edu.jo

Class Schedule & Room

Section 3:

Lecture Time: Sun, Tue : 17:00 - 18:30

Room: منصة الكترونية

Section 4:

Lecture Time: Sun, Tue : 18:30 - 20:00

Room: منصة الكترونية

Prerequisites

Line Number	Course Name	Prerequisite Type
253431	ME343 Fluid Mechanics	Prerequisite / Study

Mapping of Course Outcomes to Program Student Outcomes	Course Outcome Weight (Out of 100%)	Assessment method
1. Educate the student about the energy crisis and situation [a, f]. [1A, 1E]	8%	
. Familiarize the student with different energy sources and their applications [a]. [1A]	8%	
Familiarize the students with the basics of energy storage [a, c, e, h]. [1A, 1C, 1E, 1H]	8%	
Familiarize the students with solar radiation calculations [a, c, e, h]. [1A, 1C, 1E, 1H]	8%	
. Analyze the main solar thermal energy systems and familiarize the student with their calculations. [a, c, e, h]. [1A, 1C, 1E, 1H]	8%	
. Analyze the PV systems and familiarize the student with their calculations. [a, c, e, h]. [1A, 1C, 1E, 1H]	8%	
. Analyze the wind energy resource and familiarize the student with windmill calculations [a, c, e, h]. [1A, 1C, 1E, 1H]	8%	
. Analyze the hydropower energy resource and familiarize the student with their calculations [a, c, e, h]. [1A, 1C, 1E, 1H]	8%	
Familiarize the students with fuel cells technology and basic calculations [a, c, e, h]. [1A, 1C, 1E, 1H]	8%	
Identify and analyze different ocean energy resources [a, c, e, h]. [1A, 1C, 1E, 1H]	8%	
Identify and analyze biomass energy and others . . . [a, c, e, h]. [1A, 1C, 1E, 1H]	8%	
Familiarize the students with thermoelectric systems calculations. [a, c, e, h]. [1A, 1C, 1E, 1H]	8%	
Getting brief idea about importance of H2 [1A, 1C, 1E]	4%	

Relationship to Program Student Outcomes (Out of 100%)																	
A	B	C	D	E	F	G	H	I	J	K	SLO1	SLO2	SLO3	SLO4	SLO5	SLO6	SLO7
33.33		21.33		25.33			20										

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