



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

ME536 Renewable Energy Lab

Summer Semester 2019-2020

Course Catalog

1 Credit Hours. Hands-on laboratory experiments in the area of sustainable energy. The fundamental principles required will be provided prior to laboratory experimentation. Topics covered include but are not limited to, solar-thermal energy and photovoltaics, energy storage in batteries and ultra-capacitors, wind energy, ethanol production from corn and sugar and bio-diesel extraction from algae, A field-trip is also included as a part of this course.

Text Book

Title	Laboratory Manual, All the relevant material will be provided in the lectures and tutorials. Lecture slides and tutorial material are on the ELearning and should be downloaded from the E-Learning by the students. Any of the renewable energy resources are adequate for this course
Author(s)	LAb manual
Edition	1st Edition
Short Name	1
Other Information	

Instructor

Name	Prof. Ghassan Tashtoush
Office Location	M5 L2
Office Hours	
Email	gtash@just.edu.jo

Class Schedule & Room

Section 1:
 Lecture Time: Sat, Thu : 14:30 - 17:30
 Room: LAB

Prerequisites		
Line Number	Course Name	Prerequisite Type
255352	ME535 Design Of Renewable Energy Systems	Prerequisite / Study

Tentative List of Topics Covered		
Weeks	Topic	References
Weeks 1, 2, 3, 4, 5, 6, 7, 8, 9, 10	Wind and solar 1. Acquiring Physical Phenomena 2. Solar Cell Characteristics 3. Wind Turbine power curve Thermal solar principles 4. Thermosiphon circulation principle 5. pumped circulation 6. Effects of some parameter on unit efficiency Positive exchange membranes (PEM) fuel cell 7. load effect in hydrogen flow rate, power and efficiency curves. 8. Polarization curve	

Mapping of Course Outcomes to Program Student Outcomes	Course Outcome Weight (Out of 100%)	Assessment method
? Learn about technology and tools used to investigate energy questions. ? Critically evaluate, compare and contrast experimental approaches to finding energy solutions. ? Understand and analyze Renewable energy systems ? Discover scientific principles and concepts for experimental approaches to finding energy solutions. ? Provide adequate inputs on a variety of issues in harnessing Renewable Energy. [10SLO3, 10SLO5, 10SLO7]	30%	
? Learn problem-solving skills across many fields ? Simulate the various Renewable energy sources ? Work in teams to collaboratively solve problems, develop iterative question-building skills, and strengthen leadership qualities. ? Develop appreciation of the interdisciplinary nature of the scientific process and experimental solutions to problems. ? Master the quantitative aspects of experimental problems in energy. ? Quantitatively express findings and outcomes of projects. [30SLO1, 10SLO2, 10SLO6]	50%	
? Use and interpret primary data in formulating hypotheses related to experimental outcomes. ? Gain confidence in your ability to seek answers through direct observation, experimental results, and analytical reasoning. ? Discover new cross-disciplinary paths to finding energy solutions ? Recognize current and possible future role of Renewable energy sources [10SLO6, 10SLO7]	20%	

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
											30	10	10		10	20	20

Evaluation	
Assessment Tool	Weight
امتحانات قصيرة	10%
Final Exam	50%
تقارير	40%

Policy	
Evaluation	Evaluation: Report 40% MT Exam 10% Final Exam 50%

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