



Philadelphia University

Faculty of Engineering - Department of Renewable Energy
Engineering
Second Semester 2016/2017

Course Information

- Title:** Introduction to renewable Energy. (0611341)
- Prerequisite:** Energy conversion and Efficiency (0611311)
- Credit Hours:** 3 credit hours (16 weeks per semester, approximately 44 contact hours)
- Textbook:** 1- Introduction to Renewable Energy, (Energy and the Environment) 2nd Edition, (2015), Vaughn C. Nelson and Kenneth L. Starcher.
- References:** 1- Handbook of Renewable Energy 1st ed. 2017 Edition by Walter Leal Filho (Editor).
2- Introduction to Renewable Energy for Engineers 1st Edition, (2015), by Kirk D. Hagen .
- Catalog Description:** Introduction to renewable Energy include Photovoltaic, Wind power, Micro hydropower, Biomass energy, Waste power, Solar thermal power, Geothermal power, Ocean energy (tidal, tide-flow and wave), Ocean energy (OTEC), , Comparison of characteristics and cost of renewables. How we can use the sun, wind, biomass, geothermal resources, and water to generate more sustainable energy. It explains the fundamentals of energy, including the transfer of energy, as well as the limitations of natural resources. Starting with solar power, the text illustrates how energy from the sun is transferred and stored; used for heating, cooling, and lighting; collected and concentrated; and converted into electricity
- Website:** <http://www.philadelphia.edu.jo/academics/wagahfm/> Dr Wagah Al-Azzawi
- Email:** wagah2000@yahoo.co.uk.
- Instructor:** **Office:** Engineering building, room 6728, ext: 2180.
Office hours: Sun, Tues, Thurs: 11:10-13:10 and Mon, Wed: 10:00 -12:00

Course Topics

Week	Topic
1&2	Introduction to renewable Energy
3,4	Photovoltaics
5	Wind power, Micro hydropower,
6, 7	Biomass energy, Waste power
8,9	Solar thermal power,
10,11	Geothermal power, Ocean energy (tidal, tide-flow and wave), Ocean energy (OTEC)
12,	Comparison of characteristics and cost of renewables

13, 14	How we can use the sun, wind, biomass, geothermal resources, and water to generate more sustainable energy.
15	illustrates how energy from the sun is transferred and stored; used for heating, cooling, and lighting; collected and concentrated; and converted into electricity
16	Review, and final exam

Course Learning Outcomes and Relation to ABET Student Outcomes:

Upon successful completion of this course, a student should:

1.	Study Photovoltaics, Wind power, Micro hydropower, Biomass energy, Waste power and Solar thermal power.	[a, h]
2.	Study other technologies, Geothermal power, Ocean energy (tidal, tide-flow and wave), Ocean energy (OTEC).	[a, h]
3.	Comparison of characteristics and cost of renewables	[c, h]
4.	use the sun, wind, biomass, geothermal resources, and water to generate more sustainable energy	[c, h]
5.	illustrates how energy from the sun is transferred	[e, h]
6.	Storage used for heating, cooling, and lighting; collected and concentrated; and converted into electricity	[a, c]
7.	Understand five energy storage categories: electrical, electromechanical, mechanical, direct thermal, and thermochemical	[a, e]

Assessment Instruments:

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

Exams: Two written exams will be given. Each will cover about 3-weeks of lectures

Quizzes: 10-minute quizzes will be given to the students during the semester. These quizzes will cover material discussed during the previous lecture(s).

Homework: Problem sets will be given to students. Homework should be solved individually and submitted before the due date.

Copying homework is forbidden, any student caught copying the homework or any part of the homework will receive zero mark for that homework

Participation: Questions will be asked during lecture and the student is assessed based on his/her response

Final Exam: The final exam will cover all the class material.

Grading policy:

First Exam	20%
Second Exam	20%
Homeworks	5%
Quizzes	15%
Final Exam	40%
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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.

February, 2017