



# Philadelphia University

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

## Course Information

**Title:** Solar thermal energy technology (611521)  
**Prerequisite:** Solar thermal energy (611531)  
**Credit Hours:** 3 credit hours (16 weeks per semester, approximately 44 contact hours)  
**Textbook:** Solar Engineering of Thermal Processes 4th Edition  
by John A. Duffie (Author), William A. Beckman (Author)

## **References:**

**Catalog Description:** Solar Energy Technology deals with all aspects of solar energy systems. Advance topics in solar cell energy, design high efficient solar cells, Reliability of solar thermal energy, Monitor the system efficiency, Maintenance and perfect of the system, The fundamentals of predicting availability; economic appraisal strategies; specific collector sub-systems, including a proven analytical procedure for predicting performance; and analyses of solar energy systems from dryers to greenhouses, passive solar buildings to water pumps, are covered in depth.

**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**

<b>Week</b>	<b>Topic</b>
1&2	Solar energy systems
3,4	Fundamentals of predicting availability
5	Economic appraisal strategies
6, 7	Specific collector sub-systems
8,9	Analyses of solar energy systems from dryers to greenhouses,
10,11	Solar buildings to water pumps
12,	Advance topics in solar cell energy
13, 14	Design high efficient solar cells,
15	Reliability of solar thermal energy
16	Monitor the system efficiency

## Course Learning Outcomes and Relation to ABET Student Outcomes:

Upon successful completion of this course, a student should:

1.	Understand solar energy systems	[a, h]
2.	Deals with specific collector sub-systems	[a, h]
3.	Comparison of characteristics and cost of solar systems	[c, h]
4.	Deals with advance topics in solar cell energy	[c, h]
5.	Illustrates the design high efficient solar cells,	[e, h]

### 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