Philadelphia University

Faculty of Engineering – Department of Electrical Engineering
Second Semester 2016/2017

Course Details:

Title:	Design of wind energy systems (0611532)
Prerequisite:	wind energy systems (0611531)
Credit Hours:	3 credit hours (16 weeks per semester, approximately 45 contact hours)
Textbook:	Wind Energy Explained: Theory, Design and Application, by J. F. Manwell, J. G. McGowan, A. L. Rogers.
References:	Wind Turbine Control Systems Principles, Modelling and Gain Scheduling Design, by Fernando D. Bianchi, Hernán De Battista and Ricardo J. Mantz.
Course Description:	The course is a requirement for level 5 renewable energy engineering students. It introduces design and analysis of wind energy systems.
Website:	http://www.philadelphia.edu.jo/academics/fobeidat
Instructor:	Dr. Firas Obeidat **Email**: fobeidat@philadelphia.edu.com **Office**: Engineering building, room 6714, ext: 2450 **Office hours**: Sun, Tues, Thurs: 10:00-11:00 and 12:00-02:00. Thu and Wed: 09:00-11:15 and12:45-02:00

Course Outlines:

Week	Topic
1	Electrical Power from wind energy
2	Electrical aspects of wind turbines
3	Wind turbine design
4	Wind turbine control
5, 6	Wind turbine installation, siting, system design, integration and operation
7	Offshore and onshore wind turbines
8, 9	Wind turbine costs
10, 11	Environmental impact
12, 13	Wind turbine economics
14, 15, 16	Using computer software for wind energy analysis

Course Learning Outcomes with reference to ABET Student Outcomes:

Upon successful completion of this course, student should:

1.	Understand the first attempts of electrical power generation from wind	[c, k]
2.	Be able to know the different electrical components in wind turbine	[c]
3.	Be able to know wind turbine design procedure, topologies, machine elements, and components	[a, e]
4.	Ba able to know wind turbine control systems	[e , k]
5.	Be able to know wind turbine installation, siting, and its integration into the grid	[e, j]
6.	Be able to know wind turbine costs and its environmental impact	[h, j]
7	Be able to know how to design wind energy system by software	[k]

Assessment Guidance:

Evaluation of the student performance during the semester (total final mark) will be conducted according to the following activities:

Sub-Exams: The students will be subjected to two scheduled written exams, first exam and second exam during the semester. Each exam will cover materials given in lectures in the previous 3-4 weeks.

Quizzes: (3-5) quizzes of (10-15) minutes will be conducted during the semester. The materials of the quizzes are set by the lecturer.

Homework and projects: Tutorials sheets will be handed out to the students and homework should be solved individually and submitted before or on a set agreed date. Student may be assigned to present project(s).

Cheating by copying homework from others is strictly forbidden and punishable by awarding the work with zero mark.

Final Exam: The students will undergo a scheduled final exam at the end of the semester covering the whole materials taught in the course.

Grading policy:

First Exam	20%
Second Exam	20%
Quizzes and Homework	20%
Final Exam	40%
Total:	100%

Attendance Regulation:

The semester has in total 45 credit hours. Total absence hours from classes and tutorials must not exceed 15% of the total credit hours. Exceeding this limit without a medical or emergency excuse approved by the deanship will prohibit the student from sitting the final exam and a zero mark will be recorded for the course. If the excuse is approved by the deanship the student will be considered withdrawn from the course.

April, 2017