

## Course Specifications (2011 - 2012)

### A. Basic Information

Course Title	Environmental Impacts of Electrical Energy			Course Code:	GEN 470	
Lecture:	3	Tutorial:	1	Practical	Total	
			4			
Programme (s) on which this course is given:				B.Sc. Electrical Engineering (Power)		
Major or minor element of program:				Minor		
Department offering the program:				Electrical Engineering		
Department offering the course:				Electrical Engineering		
Academic Year of program:		Fourth	Level of program:		Second Semester	
Date of specifications approval:			Saturday, December 10, 2011			

### B. Professional Information

#### 1. Overall aims of course

By the end of the course the students will be able to:

**Understand the global energy supply, green house effects, primary sources of energy**  
**Learn and recognize the environmental effects of energy and its use**  
**learn the conventional energy sources and the new and renewable energy sources**

#### 2. Intended Learning outcomes of Course (ILOs)

##### a. Knowledge and Understanding:

- a1. Recognize concepts and theories of mathematics and sciences, appropriate to the discipline.
- a3. Understand characteristics of engineering materials related to the discipline.
- a4. Understand principles of design including elements design, process and/or a system related to specific disciplines.
- a6. Define quality assurance systems, codes of practice and standards, health and safety requirements and
- a8. State current engineering technologies as related to disciplines.
- a9. State topics related to humanitarian interests and moral issues.

##### b. Intellectual Skills

- b1. Select appropriate mathematical and computer-based methods for modeling and analyzing problems.

<b>b2. Select appropriate solutions for engineering problems based on analytical thinking.</b>
<b>b3. Think in a creative and innovative way in problem solving and design.</b>
<b>b9. Judge engineering decision considering balanced cost, benefits, safety, quality, reliability, and environmental</b>
<b>b10. Incorporate economic, social, environmental dimensions and risk management in design.</b>

**c. Professional and Practical Skills**

<b>c1. Apply knowledge of mathematics, science, information technology, design, business context and engineering</b>
<b>c2. Professionally merge engineering knowledge and understanding to improve design, products and/or services.</b>
<b>c3. Create and/or re-design a process, component or system, and carry out specialized engineering designs.</b>

**d. General and Transferable Skills**

<b>d1. Collaborate effectively within multidisciplinary team.</b>
<b>d7. Search for information and engage in life-long self learning discipline.</b>

**3. Contents**

<b>Week #</b>	<b>Topics</b>	<b>No. of Hours</b>	<b>ILOS</b>	<b>Teaching / learning methods and</b>	<b>Assessment method</b>
1	Overview of the energy supply primary sources& global	5	a6,a8,a9	Lectures	Report
			b3,b9,b10	Lectures	Report
			c1,c2,c3	Lectures	Report

	<b>issues</b>		d1,d7	<b>Lectures</b>	<b>Report</b>
2	<b>Key problems &amp; concerns related to energy</b>	5	a1,a3,a4	<b>Lectures</b>	<b>Assignments</b>
			b1,b2,b3	<b>Lectures</b>	<b>Assignments</b>
			c1,c2	<b>Tutorial</b>	<b>Assignments</b>
			d1	<b>Tutorial</b>	<b>Assignments</b>
3	<b>Basics of Solar energy</b>	5	a6,a8,a9	<b>Lectures</b>	<b>Report</b>
			b3,b9,b10	<b>Lectures</b>	<b>Report</b>
			c1,c2,c3	<b>Lectures</b>	<b>Report</b>
			d1,d7	<b>Lectures</b>	<b>Report</b>
4	<b>Solar energy - applications- environmental issues</b>	5	a1,a3,a4	<b>Lectures</b>	<b>Assignments</b>
			b1,b2,b3	<b>Lectures</b>	<b>Assignments</b>
			c1,c2	<b>Tutorial</b>	<b>Assignments</b>
			d1	<b>Tutorial</b>	<b>Assignments</b>
5	<b>Basics of wind energy</b>	4	a6,a8,a9	<b>Lectures</b>	<b>Report</b>
			b3,b9,b10	<b>Lectures</b>	<b>Report</b>
			c1,c2,c3	<b>Lectures</b>	<b>Report</b>
			d1,d7	<b>Lectures</b>	<b>Report</b>
6	<b>wind energy - applications- environmental issues</b>	4	a1,a3,a4	<b>Lectures</b>	<b>Assignments</b>
			b1,b2,b3	<b>Lectures</b>	<b>Assignments</b>
			c1,c2	<b>Tutorial</b>	<b>Assignments</b>
			d1	<b>Tutorial</b>	<b>Assignments</b>
7	<b>basics of small hydro</b>	4	a6,a8,a9	<b>Lectures</b>	<b>Report</b>
			b3,b9,b10	<b>Lectures</b>	<b>Report</b>
			c1,c2,c3	<b>Tutorial</b>	<b>Report</b>
			d1,d7	<b>Tutorial</b>	<b>Report</b>
8	Midterm Exam	1	a1,a3,a4		<b>Mid-term exam</b>
			b1,b2,b3		<b>Mid-term exam</b>
			c1,c2		<b>Mid-term exam</b>
					<b>Mid-term exam</b>
9	<b>small hydro - applications- environmental issues</b>	4	a6,a8,a9	<b>Lectures</b>	<b>Report</b>
			b3,b9,b10	<b>Lectures</b>	<b>Report</b>
			c1,c2,c3	<b>Lectures</b>	<b>Report</b>
			d1,d7	<b>Lectures</b>	<b>Report</b>

10	Basics of fuel cells	4	a1,a3,a4	Lectures	Assignments
			b1,b2,b3	Lectures	Assignments
			c1,c2	Tutorial	Assignments
			d1	Tutorial	Assignments
11	fuel cells - applications- environmental issues	4	a6,a8,a9	Lectures	Report
			b3,b9,b10	Lectures	Report
			c1,c2,c3	Lectures	Report
			d1,d7	Lectures	Report
12	Geothermal energy basics- applications-environmental issues	4	a1,a3,a4	Lectures	Assignments
			b1,b2,b3	Lectures	Assignments
			c1,c2	Tutorial	Assignments
			d1	Tutorial	Assignments
13	Tida energy basics- applications-environmental issues	4	a6,a8,a9	Lectures	Report
			b3,b9,b10	Lectures	Report
			c1,c2,c3	Lectures	Report
			d1,d7	Lectures	Report
14	Biomass basics- applications- environmental issues	4	a1,a3,a4	Lectures	Assignments
			b1,b2,b3	Lectures	Assignments
			c1,c2	Tutorial	Assignments
			d1	Tutorial	Assignments
15	Final Exam	3	a1,a3,a4		Final exam
			b1,b2,b3		Final exam
			c1,c2,c3		Final exam
					Final exam
<b>Total</b>		<b>60</b>			

#### 4- Teaching and Learning Methods:

Check using the symbol

<input checked="" type="checkbox"/>	Lectures
<input type="checkbox"/>	Practical training / laboratory
<input type="checkbox"/>	Seminar / workshop
<input type="checkbox"/>	Class activity
<input type="checkbox"/>	Case study
<input type="checkbox"/>	Project work

√	Tutorial
	Computer based work
	Other :

**5- Student Assessment Methods:**

Check using the symbol √

√	Assignments	to assess
	Quiz	to assess
√	Mid-term exam	to assess
	Oral exam	to assess
√	Final exam	to assess
	Design Project	to assess
√	Report	to assess
	Experimental write up	to assess
	Informally assessment	to assess
	Other	to assess

a1,a3,a4	b1,b2,b3	c1,c2	d1
a1,a3,a4	b1,b2,b3	c1,c2,c3	
a1,a3,a4	b1,b2,b3	c1,c2,c3	
a6,a8,a9	b3,b9,b10	c1,c2,c3	d1,d7

**6. Assessment schedule**

- Assessment 1 Assignments on weeks
- Assessment 2 Quizzes on weeks
- Assessment 3 Mid-term exam on week
- Assessment 4 Oral Exam on week
- Assessment 5 Final exam on week
- Assessment 6 Design Project on weeks
- Assessment 7 Report on weeks
- Assessment 8 Experimental write up on weeks
- Assessment 9 Informally assessment

2,4,6,10,12,14
8
15
1,3,5,7,9,11,13

**7. Weighting of Assessments**

Assignments	10%
Quiz	
Mid-term exam	10%
Oral exam	
Final exam	70%
Design Project	
Report	10%
Experimental write up	
Informally assessment	

Other

Total

100%

**8. List of References**

8.1 Course Notes

course notes by Dr. Mohamed M. Abouelsaad

8.2 Essential Books (Text Books)


8.3 Recommended Books


8.4 Periodicals Web sites, etc


9. Facilities Required for Teaching and learning

Data show&screen, Computer, board

Course Coordinator:

Prof. Mohamed Mahmoud AbuAlSaad

Course instructor:

Prof. Mohamed Mahmoud AbuAlSaad

Dr. Mohamed Anwar AbuAlAta Tantawy

Head of department:

Prof. Mousa AwadAllah Abdullah

Signature:

Date:

D	M	Y
10	12	2011