City University of Hong Kong

Information on a Course
offered by the Department: School of Energy & Environment
with effect from Semester A in 2011 / 2012

Part I

Course Title: Carbon audit and management

Course Code: SEE8115

Course Duration: One Semester

Credit Units: 3

Level: R8

Medium of Instruction: English

Prerequisites: *(Course Code and Title)* None

Precursors: *(Course Code and Title)* None

Equivalent Courses: *(Course Code and Title)* SEE6115 Carbon audit and management

Exclusive Courses: *(Course Code and Title)* None

Part II

Course Aims

- To understand the impact of carbon emission to our environment;
- To appreciate the function of carbon audits as a means to help business sectors and corporations in estimating their carbon footprints thereby setting objectives to manage and reduce these carbon footprints;
- To learn the various methods/approaches of reducing energy consumption and carbon emissions;
- To understand the basic carbon audit processes and learn the necessary skills to undertake such audit.

Course Intended Learning Outcomes (CILOs)

Upon successful completion of this course, students should be able to:

No.	CILOs	Weighting (if applicable)
1.	Identify the effects of carbon emissions on the environment and the challenges faced	10%
2.	Apply techniques of energy efficiency and conservation to manage the energy consumption and carbon emissions	30%
3.	Conduct economic and life cycle analysis of carbon reduction measures; Understand the relevant regulations relevant to energy consumptions;	10%
4.	Develop the carbon footprint calculator for relevant processes	20%
5.	Perform basic carbon audit for building/factory/company	30%

Teaching and Learning Activities (TLAs)
(Indicative of likely activities and tasks designed to facilitate students' achievement of the CILOs. Final details will be provided to students in their first week of attendance in this course)

Students are guided to read the relevant reference materials before and/or after each lecture and tutorial sessions. Lectures are used to describe and illustrate the basic concepts and the working principles of the basic systems and equipments. Tutorials are used to explain their suitable applications through practical examples, numerical exercises, real cases, class assignments and discussions. Student will be divided into group to carry our real life case study.

	Lecture	Tutorial	Test	Assignment	Contact Hours
CILO 1	●	●	●		3.5
CILO 2	●	●	●	●	12
CILO 3	●	●	●		3.5
CILO 4	●	●	●	●	8
CILO 5	●	●	●	●	12
				Total	**39**

Note: 2-hour lecture & 1-hour tutorial per week

Assessment Tasks/Activities
(Indicative of likely activities and tasks designed to assess how well the students achieve the CILOs. Final details will be provided to students in their first week of attendance in this course)

CILO No.	Type of Assessment Tasks/Activities	Weighting (if applicable)	Remarks
CILO 1	Lectures/ interactive questioning and quiz/videos		
CILO 2	Lectures/ interactive questioning and quiz/videos		
CILO 3	Lectures/ interactive questioning and quiz/videos		
CILO 4	Lectures/ interactive questioning and quiz/videos		
CILO 5	Lectures/ interactive questioning and quiz/videos		

Grading of Student Achievement:

Coursework: 50%
Examination: 50% (Duration of examination: two hours)

To pass a course, a student must do ALL of the following:

1)   obtain at least 30% of the total marks allocated towards coursework (combination of assignments, pop quizzes, term paper, lab reports and/ or quiz, if applicable);

2)   obtain at least 30% of the total marks allocated towards final examination (if applicable); and,

3)   meet the criteria listed in the section on Grading of Student Achievement.

1. **Assignments** are in the form of procedural descriptions, assigned numerical analysis and discussions, and technical writing on project cases.
2. A **Test** may consist of short questions, multiple-choice questions, and numerical calculations.
3. An **Examination** may consist of essay type questions and case/calculation problems.

	Assignment	Test	Examination	Weighting*
CILO 1		●	●	1
CILO 2	●	●	●	3
CILO 3		●	●	1
CILO 4	●	●	●	2
CILO 5	●	●	●	3
Assessment Percentage	30	20	50	

*Weightings are assigned to the CILOs according to their **relative importance** to the course (3 = most important).

Part III

Keyword Syllabus

Climate change and potential challenges; Greenhouse gas emission and environmental impact; Energy management and auditing; Building energy consumption; Finance and life cycle assessments; Carbon management and auditing; Carbon audit guidelines in Hong Kong; International practice, trend and standard; Carbon footprint calculator.

Recommended Reading
Text(s)
Commercial energy auditing reference handbook. Steve Doty, Lilburn, GA : Fairmont Press 2008.
Energy Audit of Building Systems: An Engineering Approach (Mechanical Engineering Series). Moncef Krarti, CRC Press 2000.
Carbon Trust (2008), Product Carbon Footprinting: the New Business Opportunity, Experience from Leading Companies, Carbon Trust.
EMSD. Code of Practice for Energy Efficiency of Air Conditioning Installations. (latest revision)

EMSD. Code of Practice for Energy Efficiency of Electrical Installations. (latest revision)
EMSD. Code of Practice for Energy Efficiency of Escalator Installations. (latest revision)
EMSD. Code of Practice for Energy Efficiency of Lighting Installations. (latest revision)
EMSD. Hong Kong Energy End-use Data (latest version)
EMSD. Performance-based Building Energy Code. (latest revision)
EMSD. Voluntary Energy Efficiency Labelling Scheme (EELS) (latest revision)

Online Resources

1. Hong Kong Government Environmental Protection Department website:
   http://www.epd.gov.hk/
2. Hong Kong Government Electrical & Mechanical Services Department website:
   http://www.emsd.gov.hk/
3. Sustainable Development Unit website:
   http://www.susdev.gov.hk/html/en/index.htm