

**City University of Hong Kong  
Course Syllabus**

**offered by Department of Advanced Design and Systems Engineering  
with effect from Semester A 2022 / 23**

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**Part I Course Overview**

<b>Course Title:</b>	Energy Conservation and Management
<b>Course Code:</b>	ADSE6108
<b>Course Duration:</b>	One Semester
<b>Credit Units:</b>	3
<b>Level:</b>	P6
<b>Medium of Instruction:</b>	English
<b>Medium of Assessment:</b>	English
<b>Prerequisites:</b> <i>(Course Code and Title)</i>	Nil
<b>Precursors:</b> <i>(Course Code and Title)</i>	Nil
<b>Equivalent Courses:</b> <i>(Course Code and Title)</i>	Nil
<b>Exclusive Courses:</b> <i>(Course Code and Title)</i>	Nil

## Part II Course Details

### 1. Abstract

This course aims to: (1) understand the technological, social, economic and environmental factors related to the use of fossil fuels and renewable energy; (2) understand the major energy consumers in buildings, transportation and industrial processes; and (3) identify effective energy conservation and conduct energy audits and management systems.

Topics include: energy sources and environmental impact; energy in buildings; energy-efficient industrial processes; waste heat recovery; energy storage; energy auditing; energy strategies and management.

### 2. Course Intended Learning Outcomes (CILOs)

(CILOs state what the student is expected to be able to do at the end of the course according to a given standard of performance.)

No.	CILOs	Weighting (if applicable)	Discovery-enriched curriculum related learning outcomes (please tick where appropriate)		
			A1	A2	A3
1.	Energy source and its environmental impact	25%	✓	✓	
2.	Energy efficiency, generation, and storage	25%	✓	✓	
3.	Energy audits and management	25%	✓	✓	
4.	Energy strategies, policy, economics method and analysis	25%	✓	✓	
		100%			

A1: Attitude

Develop an attitude of discovery/innovation/creativity, as demonstrated by students possessing a strong sense of curiosity, asking questions actively, challenging assumptions or engaging in inquiry together with teachers.

A2: Ability

Develop the ability/skill needed to discover/innovate/create, as demonstrated by students possessing critical thinking skills to assess ideas, acquiring research skills, synthesizing knowledge across disciplines or applying academic knowledge to self-life problems.

A3: Accomplishments

Demonstrate accomplishment of discovery/innovation/creativity through producing /constructing creative works/new artefacts, effective solutions to real-life problems or new processes.

### 3. Teaching and Learning Activities (TLAs)

(TLAs designed to facilitate students' achievement of the CILOs.)

TLA	Brief Description	CILO No.				Hours/week (if applicable)
		1	2	3	4	
Lecture	Lectures on the topics of the keyword syllabus.	✓	✓	✓	✓	3 hours/week
Office Hour	Discussions of course materials	✓	✓	✓	✓	1 hour/week

#### 4. Assessment Tasks/Activities (ATs)

(ATs are designed to assess how well the students achieve the CILOs.)

Assessment Tasks/Activities	CILO No.				Weighting	Remarks
	1	2	3	4		
Continuous Assessment: <u>30</u> %						
Individual report	✓	✓	✓	✓	30%	
Examination: <u>70</u> % (duration: 2 hours, if applicable)						
					100%	

For a student to pass the course, at least 30% of the maximum mark for the examination should be obtained.

## 5. Assessment Rubrics

*(Grading of student achievements is based on student performance in assessment tasks/activities with the following rubrics.)*

Applicable to students admitted in Semester A 2022/23 and thereafter

Assessment Task	Criterion	Excellent (A+, A, A-)	Good (B+, B)	Marginal (B-, C+, C)	Failure (F)
1. Examination	Apply the knowledge of mathematics, science and engineering to economic energy audit and analysis.	High	Significant	Moderate/Basic	Not even reaching marginal levels
2. Individual report	Understand some of the techniques, skills, and modern trends for energy conservation and management.	High	Significant	Moderate/Basic	Not even reaching marginal levels

Applicable to students admitted before Semester A 2022/23

Assessment Task	Criterion	Excellent (A+, A, A-)	Good (B+, B, B-)	Fair (C+, C, C-)	Marginal (D)	Failure (F)
1. Examination	Apply the knowledge of mathematics, science and engineering to economic energy audit and analysis.	High	Significant	Moderate	Basic	Not even reaching marginal levels
2. Individual report	Understand some of the techniques, skills, and modern trends for energy conservation and management.	High	Significant	Moderate	Basic	Not even reaching marginal levels

### Part III Other Information (more details can be provided separately in the teaching plan)

#### 1. Keyword Syllabus

*(An indication of the key topics of the course.)*

- Energy sources and its consumption now and then
- Environmental impact: global warming and climate change
- Energy audits and management in buildings
- Heating, ventilating, air conditioning and lighting technologies
- Energy in major appliances, electric motor system and transportation
- Industrial energy efficiency and energy management
- Waste Heat Recovery and heat Pumps
- Energy generation by low-or zero-C technologies
- Energy storage technologies
- Economics method and analysis
- Energy strategies and management

#### 2. Reading List

##### 2.1 Compulsory Readings

*(Compulsory readings can include books, book chapters, or journal/magazine articles. There are also collections of e-books, e-journals available from the CityU Library.)*

1.	“Energy Management and Conservation Handbook,” CRC press, 2007.
2.	“Energy and the Environment,” Wiley, 1999.
3.	“Handbook of Energy Audits,” 5 <sup>th</sup> edition, Fairmont Press, 1998.

##### 2.2 Additional Readings

*(Additional references for students to learn to expand their knowledge about the subject.)*

*NIL*