The Hong Kong University of Science and Technology

Introduction to Energy and Environmental Engineering

ENEG1700

3 Credits

[Any pre-/co-requisites] *CENG 1000/ CHEM 1012*

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Course Description

This course provides a comprehensive overview of the fundamental concepts and principles underpinning energy and environmental engineering. It encompasses a wide range of topics, including energy resources, conversion technologies, environmental systems, and sustainable development. Particular emphasis is placed on analyzing the interrelationships among energy production, environmental impact, and sustainable practices.

The course is organized into two main parts. The first part focuses on environmental engineering, addressing various forms of pollution and their corresponding remediation technologies. The second part concentrates on energy engineering, examining global trends in energy consumption, the diversity of energy sources required to meet increasing demand, and recent advances in emerging energy technologies and innovations.

Intended Learning Outcomes (ILOs)

By the end of this course, students should be able to:

1. Explain fundamental principles of environmental and energy engineering.
2. Analyze the causes and impacts of air, water, and solid waste pollution.
3. Evaluate sustainable energy technologies and their environmental implications.
4. Apply mass balance and energy conversion concepts to real-world systems.
5. Communicate technical knowledge through teamwork and effective presentations.

Assessments:

Assessment Task	Contribution to Overall Course grade (%)	Due Date
Class participation	10	Regular in-class Canvas
Mid-Term presentation	25	30 Mar 2026
Quiz and Homework	15	Regular
Final examination	50	18 May 2026

Mapping of Course ILOs to Assessment Tasks

Assessed Task	Mapped ILOs	Explanation
Mid-Term Presentation	ILO1, ILO3, ILO5	Assesses students' ability to explain engineering principles, evaluate technologies, and communicate ideas.

Quiz and Homework	ILO1, ILO2, ILO4	Tests understanding of theoretical concepts, pollution analysis, and basic calculations.
Final Examination	ILO1–ILO4	Comprehensive assessment of knowledge, analytical thinking, and problem-solving skills.

*****All homework and reports should be submitted through Canvas*****

Graded homework submitted after the deadline will receive no credit. No exceptions.

Class participation will be graded on the basis of Canvas responses.

Grading Rubrics

Rubrics for each assignment will be provided on Canvas. These rubrics will outline performance criteria, including clarity, accuracy, analytical depth, and communication.

Course AI Policy

Use of generative AI tools (e.g., ChatGPT) is **not permitted** for exam and graded assessments unless explicitly stated. Students may use AI tools for brainstorming or ideation, but all work submitted must be original and appropriately cited.

Communication and Feedback

Assessment marks and feedback will be communicated via Canvas. Feedback will include strengths, areas for improvement, and suggestions for further learning. Students should consult the instructor within 5 working days after feedback is received if clarification is needed.

Resubmission Policy

Resubmission is generally not allowed unless under special circumstances approved by the instructor. Graded homework submitted after the deadline will receive no credit. No exceptions.

Suggested Texts and Materials

Energy and the Environment, 4th Edition by Robert A. Ristinen, Jack J. Kraushaar, Jeffrey T. Brack

Academic Integrity

Students are expected to adhere to the university's academic integrity policy. Students are expected to uphold HKUST's Academic Honor Code and to maintain the highest standards of academic integrity. The University has zero tolerance of academic misconduct. Please refer to Academic Integrity | HKUST – Academic Registry for the University's definition of plagiarism and ways to avoid cheating and plagiarism.