

[回上一頁](#) [列印](#)

國立高雄科技大學
NATIONAL KAOHSIUNG
UNIVERSITY OF SCIENCE
AND TECHNOLOGY
授課大綱 Syllabus

部別：日間部碩士

112學年度第2學期

列印日期：2024/03/04

中文課程名稱：氣候變遷與能源供給特論	英文課程名稱：Special Topics in Climate Change and Energy Supply	授課教師：張朝欽
開課班級：環安碩士班一甲	學分：3.0	授課時數：3.0
合班班級：環安碩士班二甲, 環安碩士班三甲		實習時數：0.0

1. 中文教學目標(Chinese Teaching objectives)

從人類利用火源開始，能源一直是維持人類生活的重要基礎。然而，我們使用的能源方式與氣候變化密切相關。化石燃料供應了全球大部分的能源需求，但同時也帶來了空氣污染和全球暖化等負面環境影響。了解氣候變遷與能源供應之間的關係，將有助於我們開發可以減緩氣候變遷的能源來源，從而實現永續發展目標七(可負擔的清潔能源)。

2. 英文教學目標(English Teaching objectives)

Human activities depend on energy. Energy has sustained human living since humans learned how to use fire for cooking. However, the way energy supplied is closely related to climate change. Energy can be categorized as primary energy and secondary energy based on how energy is generated. Primary energy refers to types of energy that can be obtained and used directly in nature without processing and it can be further categorized as renewable energy and non-renewable energy, depending on its reusability. Non-renewable energy sources, on the other hand, are those whose storage capacity decreases and cannot be replenished in a short period of time, for instance, coal, fossil fuels, natural gas. Fossil fuels supply most of the global energy demand, but pose negative impact on the environment, such as air pollution and global warming. Understanding the relationship between climate change and energy supply will help us develop energy sources that can mitigate climate change, and hence affordable and clean energy (Sustainable Development Goal 7) can be developed.

3. 中文教學綱要(Chinese CourseDescription)

本門課程《氣候變遷與能源供給特論》探討了當代人類活動帶來的各種氣候和環境問題。課程內容涵蓋了與氣候變化相關的不同主題。修習這門課的學生將了解到：(1)理解氣候變遷的科學證據及其對全球的影響；(2)分析能源供應對氣候變遷的影響，且提出較佳之永續能源的來源；(3)評估並提出減緩氣候變遷的適當能源政策；(4)在實際案例研究中提出創新的解決方案。

4. 英文教學綱要(English CourseDescription)

This course "Special Topics in Climate Change and Energy Supply" explores various climate and environmental issues arising from contemporary human energy use. The course content covers different topics related to climate change and energy supply. Students will learn to (1) understand the scientific principles of climate change and its global impacts; (2) analyze the influence of energy supply on climate change and strategies for more sustainable energy sources; (3) evaluate and propose appropriate energy policies that aimed at mitigating climate change; (4) create innovative and sustainable solutions in real case studies.

5. 中文核心能力

核心能力名稱(中)	核心能力名稱(英)	核心能力百分比	備註
具備終生學習專業知識進修動力、培養專業技能、拓展國際視野。	Commitment to lifelong learning in professional development and expansion in international visions.		具備良好的國際觀及終身自我學習成長之能力。
具備明辨、構思與解決問題能力具備良好溝通協調、執	Ability to detect, define and resolve problems;		創新思考及獨立解決問題之能力。

行計畫與跨團隊合作能力。	able to communicate, carry out project, and cooperate with different groups.	
具備環安衛之專業知識	Competency in professional safety, health and environmental engineering.	運用數學、科學及工程知識的能力。
具備策劃及執行實務專題能力、執行實驗及分析、解析數據與歸納彙總撰寫專業論文能力。	Ability to plan and perform research project, carry out experiments, analyze data, summarize and report findings in professional format.	設計與執行實驗，以及分析與解釋數據的能力。執行工程實務所需技術、技巧及使用工具之能力。設計工程系統、元件或製程之能力。
具備進階專業外語能力	Proficiency in foreign language for professional applications.	認識時事議題，瞭解工程技術對環境、社會及全球的影響，並培養持續學習的習慣與能力。
瞭解當代環安衛議題，融入專業學習領域	Ability to understand current issues in safety, health and environmental engineering, and to integrate latest findings into knowledge base.	理解專業倫理及社會責任。

無英文核心能力資料。

無教科書資料。

無參考書資料。

9. 教學進度表

週次或項目 Week or Items	中文授課內容 Chinese Course Content	英文授課內容 English Course Content	分配節次 Assigned Classes	備註 Note
1	課程導覽	Course Introduction: requirement and topic guiding		
2	氣候系統的變化狀態	Changing State of the Climate System		
3	人類對於氣候系統的影響	Human Influence on the Climate System		
4	未來的全球氣候：情境討論與近期資訊	Future Global Climate: Scenario-based Projections and Near-term Information		
5	全球的碳與生地化循環	Global Carbon and Other Biogeochemical Cycles		

		and Feedbacks
6	地球的能源預算・氣候回饋與敏感度	The Earth's Energy Budget, Climate Feedbacks and Climate Sensitivity
7	影響・調適與脆弱度(I)	Impacts, Adaptation and Vulnerability (I)
8	影響・調適與脆弱度(II)	Impacts, Adaptation and Vulnerability (II)
9	期中考	Midterm
10	氣候變遷的減緩(I)	Mitigation of Climate Change (I)
11	氣候變遷的減緩(II)	Mitigation of Climate Change (II)
12	氣候變遷的減緩(III)	Mitigation of Climate Change (III)
13	氣候變遷對於能源系統的影響	Impacts of Climate Change on Energy Systems
14	能源來源與環境影響(I)	Energy Sources and Their Environmental Impact I
15	能源來源與環境影響(II)	Energy Sources and Their Environmental Impact II
16	轉型永續能源	Transitioning to Sustainable Energy
17	期末報告	Final Presentation
18	期末報告	Final Presentation

10. 中文成績評定(Chinese Evaluation method)

Midterm 25% (individual grades) Attendance score in class 15% (individual grades) Participation in group discussion 30% (group grades) Group video 30% (group grades)

11. 英文成績評定(English Evaluation method)

Midterm 25% (individual grades) Attendance score in class 15% (individual grades) Participation in group discussion 30% (group grades) Group video 30% (group grades)

12. 中文課堂要求(Chinese Classroom requirements).**13. 英文課堂要求(English Classroom requirements).**

1. Midterm (open book): Accounting for 25%, full score is 100 points. 3. Attendance score in class: Accounting for 15%. The score is based on your attendance. 4. Participation in group discussion: Accounting for 30%. 5. Group video: Accounting for 30%. Each group should submit a group video as a final report.

14. 本課程與SDGs相關項目(This course is relevant to these of SDGs as following_).

4. 優質教育(Quality Education); 6. 潔淨水與衛生(Clean Water and Sanitation); 7. 可負擔的潔淨能源(Affordable and Clean Energy); 12. 負責任的消費與生產(Responsible Consumption); 13. 氣候行動(Climate Action);

「遵守智慧財產權」；「不得非法影印」！