

課程綱要

開課系所：自然資源與環境管理研究所

授課教師：李堅明

課程中文名稱：永續發展：理論與實踐

課程英文名稱：**Sustainable Development: Theory and Practice**

應修系級：1-4 年級、碩士班

選修類別：必修 選修

全半學年：半學年

學分：3 學分

時數：3 小時

先修科目：無

教學目的：(英文)

The course objectives is as follows：

1. To introduce students to sustainable development concepts. This will include weak and strong sustainability, and environment and natural resource protection in the community.
2. To introduce students to various key issues relating to sustainable development, such as climate change, green economy and sustainable energy development.
3. To introduce students to the ability of measuring sustainable development.
4. To introduce students to the range of measuring methods, topics, and occupations that characterize the field.
5. To provide students with opportunities to develop basic skills in respect to measuring sustainable development, emissions trading practice, carbon footprint and carbon neutral calculation.

內容綱要：(含教學進度，英文)

The course will cover the following topics:

1. Concepts of weak and strong sustainability (two times 3 hours each)
2. Cause, Status and trend of global warming and climate change (one time 3 hours)
3. Green economy and green finance introduction (two times 3 hours each)
4. Energy sustainable development (two times 3 hours each)
5. Carbon footprint and carbon neutral (two times 3 hours each)
6. Emissions trading scheme (three times 3 hours each)
7. Sustainable development Indicator construction and evaluation (three times 3 hours each)

學生核心能力權重：

*校定核心能力：八項加總為 100，不需每項均填寫，惟至少需填一項

項 目	創意思考與問題 解決	綜合統整	溝通協調	團隊合作
權 重	20	10	10	10
項 目	誠信正直	尊重自省	多元關懷	跨界合作
權 重	5	15	20	10

*系定核心能力及權重：(請依照各系所訂定之核心能力及課程權重簡述如下)

未來職涯發展：(用英文簡述)

Sustainable development is a top-level international attainment priority. Concepts, ethics and paradigmatic issues relating to sustainable development have to be clearly understood to achieve sustainable development. In this course, both theoretical issues regarding sustainable development and practical measurement on how well sustainability is attained will be introduced. Using the case of sustainable energy as an example, the model will cover how to create a driving force in achieving GDP growth and decoupling with greenhouse gas (GHG) emissions. The practical measurement includes a matrix of indicators to assess the status of sustainable energy development.

However, this course also meets the needs of students with other interests, as a course in emissions trading, for upgrading carbon footprint calculation skills and for sustainable energy planning. This course provides students with a general "feel" for the subject of sustainable development issues.

其他〈如評分標準、參考書目等〉：

Coursework will be weighted as follows:

1. Homework: 30%
2. Tests: 20%
3. Final report (presentation): 40%
4. Attendance: 10%

Lecture 1: Concepts of weak and strong sustainability

1. Atkinson G. S. Dietz and E. Neumayer (2007), Handbook of Sustainable Development, Edward Elgar Publishing Limited, UK.
2. Neumayer E. (2010), Weak versus Strong Sustainability...Exploring the Limits of Two Opposing Paradigms, Edward Elgar Cheltenham, UK.

Lecture 2: Cause , Status and trend of global warming and climate change

3. IPCC (2007), Mitigation of Climate Change.
4. UNFCCC (2007), *Climate Change : Impacts, Vulnerabilities and Adaptation in Developing*

Countries. Bonn, Germany.

Lecture3: Green economy and green finance introduction

5. UNEP (2011), Towards a Green Economy...Pathways Sustainable Development and Poverty Eradication.
6. UNDP (2011), Catalyzing Climate Finance: A Guidebook on Policy and Financing Options to Support Green, Low-Emission and Climate-Resilient Development. New York.

Lecture 4: Energy sustainable development

7. The WEHAB Working Group, (2002), A Framework for Action on Energy.
8. WSSD,(2002), Extract from the future draft report of the Main Committee of the World Summit on Sustainable Development.
9. IEA (2010), World Energy Outlook 2010.
10. IEA (2011), World Energy Outlook 2011.
11. IEA (2012), World Energy Outlook 2012.

Lecture 5: Carbon footprint and carbon neutral

12. BSI (2008), PAS 2050.
13. Carbon Clear (2011), White Paper PAS2060...The First Standard for Carbon Neutrality.

Lecture 6: Emissions trading scheme

14. Tietenberg T. H. (1985), *Emission Trading*, Resource for the future.
15. The European Commission (2009), Amending Directive 2003/87/EC so as to Improve and Extend the Greenhouse Gas Emission Allowance Trading Scheme of the Community, Official Journal of the European Union.
16. World Bank (2010), State and Trends of the Carbon Market 2010.
17. World Bank (2011), State and Trends of the Carbon Market 2011.
18. World Bank (2012), State and Trends of the Carbon Market 2011.

Lecture 7: Sustainable development Indicator construction and evaluation

19. OECD (2000), *Frameworks to Measure Sustainable Development*.
20. OECD (2000), Towards Sustainable Development...Indicators to Measure Progress.
21. OECD (2008), Handbook on Constructing Composite Indicators...Methodology and User Guide.
22. OECD (2011), Towards Green Growth: Monitoring Progress...OECD Indicators.