University : National Chin-Yi University of Technology
Country : Taiwan
Web Address : www.ncut.edu.tw

[SDGs 17] Partnership for the Goals

[17.4.2] Does your university as a body have dedicated courses (full degrees, or electives) that address sustainability and the SDGs?

Yes. Based on the uploaded SDG17.4.1 document and NCUT's broader sustainability framework, NCUT as a body does provide dedicated courses and programs (both electives and specialized tracks) that address sustainability and the SDGs.

Dedicated Courses and Degrees at NCUT

1. **Full Programs and Degree Pathways**
   - NCUT positions itself as a "pragmatic, innovation-oriented industrial university", with development goals that directly tie into sustainable industrial talent cultivation.
   - Several departments and graduate programs integrate sustainability at their core—for example:
     - **Energy & Environmental Engineering** (renewable energy, HVAC efficiency, water resource recycling).
     - **Green Collar Talent Development** (in collaboration with government and industry).
     - **ESG & Carbon Neutrality training** (ISO 14064-1/14067 GHG inventory, carbon footprint calculation).
   - These programs prepare students for careers directly related to **sustainable development, clean energy, and climate action**
2. **Electives and Micro-credit Courses**
   - **Cross-field credit courses** are designed to integrate sustainability with other disciplines (engineering, management, design).
   - **Professional micro-credit courses** offer students targeted skills in **emerging green technologies, ESG reporting, and carbon reduction strategies**.
   - **Special topic courses** are mandated by departments, many of which focus on **innovation for sustainability, resource recycling, and SDG-linked problem-solving**
3. **Campus-wide Educational Practices**
   - NCUT incorporates sustainability into general education for all students—embedding environmental literacy, social responsibility, and humanistic values across the curriculum.

- Through **service learning (54 hours per student)**, students gain hands-on experience in **resource recycling, food waste composting, energy-saving campaigns, and green campus initiatives**.

4. University Social Responsibility (USR) Integration

- NCUT's **USR Promotion Office** (established 2022) coordinates sustainability-focused learning experiences across faculties.
- Students work in interdisciplinary teams with local communities and industries to solve **sustainability challenges in talent, technology, and community resilience**.
- These activities are recognized as part of both **formal coursework** and **practical learning modules**, directly tied to SDGs

Alignment with the SDGs

- **SDG 4 (Quality Education):** Broad integration of sustainability courses into general and specialized education.
- **SDG 7 (Affordable & Clean Energy):** Energy and environmental programs focus on renewable energy and efficiency.
- **SDG 12 (Responsible Consumption & Production):** Waste recycling and sustainable resource management courses.
- **SDG 13 (Climate Action):** Carbon inventory and carbon neutrality training.
- **SDG 17 (Partnerships for the Goals):** Collaborative teaching and research with government, NGOs, and industry.

NCUT as a body has both full programs and elective courses dedicated to sustainability and the SDGs. These are delivered through degree-granting departments (e.g., energy, environmental technology, ESG), micro-credit modules, and cross-field electives, ensuring all students have access to sustainability-focused education that is directly tied to the SDGs.

國立勤益科技大學 NCUT

國立勤益科技大學 114 學年度 冷凍空調與能源系碩士班學分計畫表

National Chin-Yi University of Technology

Curriculum Planning of 2025 Master's Degree in Department of Refrigeration, Air-Conditioning and Energy Engineering

113.10.16 系課程會議審議通過
113.10.23 系務會議審議通過
113.11.19 院課程會議審議通過
113.12.5 校課程委員會議及 113.12.24 臨時教務會議審議通過

科目	Subjects	上學期 First Semester		下學期 Second Semester	
		學分 Credits	學時 Hour	學分 Credits	學時 Hour
必修科目(10 學分) Required Courses (10credits hours)					
第一學年 First Year					
專題研討（一）	Seminar（Ⅰ）	1	2		
專題研討（二）	Seminar（Ⅱ）			1	2
第二學年Second Year					
專題研討（三）	Seminar（Ⅲ）	1	2		
論文	Thesis	3	3		
				3	3
專題研討（四）	Seminar（Ⅳ）			1	2
專業選修科目 Department Required Courses					
第一學年 First Year					
核心選修科目 Core Electives Courses					
冷凍空調系統工程	Refrigeration and Air-Conditioning System Engineering	3	3		
高等熱力學	Advanced Thermodynamics	3	3		
高等熱傳學	Advanced Heat Transfer			3	3
高等流體力學	Advanced Fluid Mechanics			3	3
共同選修科目 General Electives Courses					
冷凍空調控制工程	Control Engineering of Refrigeration and Air-Conditioning System	3	3		
冷凍空調嵌入式系統設計	Embedded System Design for Refrigeration and Air Conditioning	3	3		
恆溫恆濕系統設計	Constant Temperature and Humidity System Design	3	3		
計算流體力學	Computational Fluid Dynamics	3	3		
食品冷凍冷藏	Refrigeration and Freezing of Foods	3	3		
真空凍結乾燥	Vacuum Freezing and Drying Technology	3	3		
能源工程實務	Energy Engineering Practices	3	3		
無塵無菌室設計	Advanced Clean Room Design	3	3		
電腦輔助流場分析	Computer-Aided Fluid Analysis	3	3		
綠建築物理環境控制	Green Building Physical Environment Control	3	3		
燃料電池原理與應用	Fuel Cell Principle and Applications	3	3		
太陽能工程系統設計實務	Design Practices of Solar Energy Engineering Systems			3	3
空調節能技術	Energy Saving Technology of Air-Conditioning			3	3
室內植栽環境節能技術	Energy-Saving Technology of Indoor Planting Environment			3	3
風力發電	Wind Power			3	3
特殊空調設計	Special Air-Conditioning System Design			3	3
紊流及其分析模式	Turbulence and The Analysis Modeling			3	3
氫能技術與應用	Hydrogen Energy Technology and Applications			3	3
煙控系統設計與分析	Design and Analysis of Smoke Management Systems			3	3
電子熱傳	Electronic Heat Transfer			3	3
熱交換器設計與分析	Heat Exchanger Design and Analysis			3	3
應用於 HVAC 儀器系統之虛擬儀器設計	Virtual Instrumentation Design for HVAC Instrumentation System			3	3
第二學年 Second Year					
共同選修科目 General Electives Courses					
大數據分析	Big Data Analysis	3	3		
太陽能技術與應用	Solar Energy Technology and Applications	3	3		

冷凍空調測試標準與規範	Refrigeration and Air Conditioning Testing Standards and Specifications	3	3		
科技英文	English for Science and Technology	3	3		
特殊通風技術	Special Ventilation Technology	3	3		
人工智慧	Artificial Intelligence			3	3
低碳與廢能應用	Low-carbon and waste energies Applications			3	3
室內環境品質	Indoor Environment Quality			3	3
特殊冷凍應用技術	Special Refrigeration Application Technology			3	3
電腦輔助機構設計	Computer-Aided Mechanism Design			3	3
壓縮機設計	Compressor Design			3	3

備註 Note：

課程名稱：	碳管理趨勢及策略(初階+進階)
課程簡介：	1.地球暖化與氣候變遷對環境的衝擊 2.溫室氣體造成全球暖化之影響 3.全球淨零與永續發展之策略 4.碳盤查、碳足跡與碳權等相關注意事項與問題
教材連結：	https://pteecs.ncut.edu.tw/p/405-1006-83944,c7887.php?Lang=zh-tw

【 碳中和知識鏈 】

課程名稱：	溫室氣體排放源鑑別與量化
課程簡介：	隨著溫室氣體排放造成氣候變遷之議題，受到大家的高度重視，儼然已成為備受各界所關注及討論的重要和關鍵問題。針對七種溫室氣體作為盤查依據，如二氧化碳、甲烷、氧化亞氮、全氟碳化物、氫氟碳化物、六氟化硫與三氟化氮等，為了更有效了解溫室氣體之現況，各國均積極投入溫室氣體的盤查、管理及減量等工作，希望能有效抑制溫室氣體的排放量，降低氣候變遷對環境與生態的衝擊。
教材連結：	溫室氣體排放原鑑別與量化

課程名稱：	工業4.0原理與雷射應用暨智慧製造能源碳排數據管理應用
課程簡介：	針對工業4.0及智慧機械的影響、人工智慧的發展、雷射在工業的應用等方向與如何以中小企業角度切入智慧製造能源管理，快速評估企業與數位化的必要性，以全雲端管理作業方式建置如智慧電錶、全 無線設備、機聯網操作、全產線之適用、全能力系統化將複雜事務簡單化，結合以上兩種主題基礎介紹及應用並進行訓練，強化能源碳排之應用管理。
教材連結：	工業4.0原理與雷射應用 如何以中小企業角度切入智慧製造能源管理

課程名稱：	綠色科技與循環經濟暨產品碳足跡與生命週期評估實務
課程簡介：	1.因應SDGs 國家政策與「產品碳足跡與生命週期評估實務」課程完整內容學習，強調跨域學習，強化學生對永續發展產品碳足跡碳標籤學習力與實踐力、引導從個人碳足跡計算與推展至家庭碳足跡循環經濟永續發展深度認識。 2.從日常情境綠色生活碳足跡面向，綠色生活綠色消費較一般消費行為具有降低環境衝擊之效益，是一項值得鼓勵學生參與的活動，其中不但要瞭解企業生產及銷售環保商品涵意，也要靠消費者改變生活習慣及選購環保商品，方能獲致社會、環保與經濟兼顧的多贏局面。綠色生活及消費概念推廣，課程設計包括認識環保標章、綠色行動計畫實踐、認識產品碳足跡、綠色供應鏈個案討論、節能減碳之環保概念與企業社會責任等課堂中探討。從綠色採購選擇節能節水標章與碳標籤產品，鼓勵學生參與綠色生活(綠色行動、環保餐館、綠色婚禮)與體現綠色消費、環保標章、綠色採購碳足跡產品，直接行動力肯定產業善盡企業社會責任。 3.透過認識產品類別規則PCR 與系統邊界設定的重要性，試算功能單位產品碳足跡計算CO2e 與全生命週期評估SimaPro軟體基礎認識為本教學計畫的特色。課程由淺入深將以學生家庭生活日常碳足跡活動為主軸，讓學生實際計算個人與家庭碳足跡計算CO2e，加強所有修課學生實際試算能力，配合課程個案實務學習與理論結合，提升學習動機。

臺灣潛進永續教育協會辦理「2025寒假永續力教學工作坊」,敬邀本校教師踴躍參加

臺灣潛進永續教育協會辦理「2025寒假永續力教學工作坊」

一、永續發展已成全球共通語言,如何將永續的概念融入課堂教學,是當今教育者的關鍵使命。本次【2025寒假永續力教學工作坊】,我們藉由探索、認識各議題的內涵,討論如何發想創新的教學策略,啟發並培養學生成為推動永續進步的領導者。

二、參與對象:全國大專院校及中小學教師與師資培育生。

三、活動期間:2025年1月至2月間,各場次時間如下:

(一)課程名稱:【森林的呼喚:保護與永續利用的實踐】

課程日期:114 年 1 月 10 日(五)20:00-22:00

報名網址:https://reurl.cc/dyM0Vq

(二)課程名稱:【糧食保衛戰:應對氣候變遷的策略與行動】

課程日期:114 年 1 月 17 日(五)20:00-22:00

報名網址:https://reurl.cc/6d62yk