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| **111(2)/2023 Spring Semester TIGP-ESS課程資訊表**  **111(2)/2023 Spring Semester TIGP-ESS course information form** | | | |
| 科目名稱(中文) | | 人類圈與永續性 | |
| Course Title (English) | | Anthroposphere and Sustainability | |
| 授課時間  Time | | Mon 9:00-12:00 | |
| 授課地點  Location | | Room 4032, 4F, RCEC building, Academia Sinica | |
| 學分數  Course Credits | | 3 | |
| 主要授課老師 Main Instructors | | 陳于高、李時雨、陳奕穎、龍世俊、王玉純、溫在弘、袁美華、潘文涵、蕭代基、林宗弘、簡旭伸、周桂田、郭士筠、張靜貞等 | |
| 聯絡郵件  E-mail | | [sclung@rcec.sinica.edu.tw](mailto:sclung@rcec.sinica.edu.tw) ; [meihuayuan@gate.sinica.edu.tw](mailto:meihuayuan@gate.sinica.edu.tw) | |
| 辦公時間 Office Hours | | by appointment | |
| 課程目標 Course Objectives | | Upon completion of the course, students will be able to:   1. Compare and multiple perspectives on the sustainability of the anthroposphere, including the environment- human relationships, societal systems, environmental governance, and integrated methods. 2. Build knowledge about how humans impact environments. 3. Understand the risks and opportunities as the societal system requires a shift. 4. Discover the importance of environmental governance in moving beyond business as usual. 5. Explore diverse approaches to sustainability challenges that could help build sustainable human-environment systems. | |
| 授課內容 Course Description | | The course objectives are addressed through four core modules: (1) Module 1: Environment-Human interactions  * Critically analyze the past, present, and future of the anthroposphere and the implications for getting into sustainable development. * Demonstrate a comprehensive understanding of the role of humans as a cause of – but also solution to – environmental problems. * Develop enough understanding to navigate and critically analyze the key aspects and developments in health and environment deterioration.  (2) Module 2: Societal systems  * Engage critically with the resilient urban system through the lens of living-space management. * Consider the interlinkages between different environmental compartments such as water, food, and energy from a management perspective. * Develop a critical understanding of the trajectories of the sustainable system for consumption and production.  (3) Module 3: Environmental Governance  * Understand environmental ethics that are re-shaping social and environmental relationships. * Integrate transition possible in each of the socio-technical frontiers of governance into policy analysis. * Learn and apply methods for risk assessment and integrate relevant natural science knowledge. * Apply methods, concepts, and frameworks to case study material on multiple conflicting interests between government and stakeholders.  (4) Module 4: Integration and Methodology  * Compare and critique frameworks for contextualizing transdisciplinary approaches that might drive and accelerate change towards sustainable development. * Acquire the ability to go from real-world problems with these features to possible solutions. | |
| 教科書/參考書 Textbooks/References | | Tom Theis, Sustainability: A Comprehensive Foundation, 2015 | |
| 自編教材比例  Self-compiled Textbook/References Proportion(if any) | | (限數字 0~100) | |
| 授課方式 Course Requirements | | ■講授(Lecture)；  □研討(Seminar)；  □實習/實驗(Internship/Experiment)；  □個別指導(Individual Discussion)；  □其他(Other) | |
| 評量配分比重 Course Grade | | 期中考(Midterm exam) 30%  期末考(Final exam) 30%  作業(Assignments) 40% | |
| 課程領域Areas | | ■基礎學科(共同)(Basic subjects (common))  □固態地球科學(Solid earth sciences)  □水圈科學(Aquatic sciences)  □應用語言(Applied Languages)  □大氣科學(Atmospheric sciences) | |
| 產業領域Areas | | □地探科技(Geological monitoring technology)  □氣象科技(meteorological science and technology)  □太空科技(Space Technology)  ■環保科技(environmental protection science and technology)  □資訊科技(Informational Technology)  □教學研究(Teaching & research)  □地質科技(Geosciences and technology) | |
| 課程進度與內容  Lecture outline and content | | | |
| 週次  week | 主題  Topic | | 授課教師/指定閱讀或作業  Instructor/Readings or assignments |
| **1** | Introduction to Anthroposphere and Sustainability: Human vs. Environment | | 陳于高 李時雨 |
| **2** | Human Impacts on Environments | | 陳奕穎 |
| **3** | Health and Climate | | 王玉純 |
| **4** | Environmental and Spatial Epidemiology for Sustainability | | 溫在弘 |
| **5** | Resilient Urban System | | 簡旭伸 |
| **6** | Water-Food-Energy Nexus | | 袁美華 |
| **7** | Low Carbon Diet and Health | | 潘文涵 |
| **8** | Environmental valuation Techniques and Applications | | 袁美華 |
| **9** | Sustainable System for Consumption and Production | | 蕭代基 |
| **10** | Midterm exam | | --- |
| **11** | Social Science on the Crises of Sustainability | | 周桂田 |
| **12** | Governance toward Sustainability: Vulnerability and Resilience | | 林宗弘 |
| **13** | Risk Assessment and Urgent Crisis: Climate Risk and Disaster Risk | | 李時雨、郭士筠 |
| **14** | Partnership: World-wide Collaboration on the Sustainability | | 龍世俊 |
| **15** | An Introduction to Transdisciplinary Research (TDR) | | 郭士筠 |
| **16** | A Transdisciplinary Approach to the Food Security Challenge | | 張靜貞 |
| **17** | Summary: Human and Planetary Future | | 陳于高 |
| **18** | Final exam | | --- |
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| 課程所屬學制(Educational System): 博士班(Doctoral Program) | | | |
| 核心能力I: 請點選本課程培養學生具備核心能力之強度指數，並填寫對應之評量方式  Please select core abilities and its corresponding assessments of this course | | | |
| 請勾選學程所訂之核心能力(可複選)  ■獨立思考與研究能力Independent thinking and research capacity  ■進階數理及專業知識能力Advanced mathematical and professional knowledge and ability  □觀測模擬及分析推理能力Observation simulation and analysis of reasoning ability  □電腦及程式語言運用能力Computer and programming language proficiency  ■國際視野與語文溝通能力International perspective and language communication skills  □專業倫理及服務學習能力Professional ethics and service-learning ability | | | |
| 核心能力II: 請點選本課程培養學生具備核心能力之強度指數，並填寫對應之評量方式  Please select the core abilities and its corresponding assessments of this course | | | |
| |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | | 強度指數 Overall rating of Core Abilities | 1 非常低 Very Low | 2 低 Low | 3 普通 Medium | 4 高 High | 5 非常高 Very High | 評量方式 Corresponding Assessments | | 獨立思考與研究能力 Independent thinking and research capacity | □ | □ | □ | □ | ■ | ■紙筆測驗/會考(Test/Exam)  ■作業練習(Assignments)  ■口頭報告/口試(Presentation/Oral Exam)  ■專題研究報告(書面)  (Research Report(printed on paper))  □實作/實驗(Practices/Experiments)  □出席/課堂表現(Attendance/Performance)  □學習檔案評量(Portfolios Assessment)  □自我評量/同儕互評  (Self-Assessment/ Peer Assessment)  □作品/創作展演  (Products/Creative Performance)  □其他(Others) | | 進階數理及專業知識能力 Advanced mathematical and professional knowledge and ability | □ | □ | □ | □ | ■ | ■紙筆測驗/會考(Test/Exam)  ■作業練習(Assignments)  ■口頭報告/口試(Presentation/Oral Exam)  ■專題研究報告(書面)  (Research Report(printed on paper))  □實作/實驗(Practices/Experiments)  □出席/課堂表現(Attendance/Performance)  □學習檔案評量(Portfolios Assessment)  □自我評量/同儕互評  (Self-Assessment/ Peer Assessment)  □作品/創作展演(Products/Creative Performance)  □其他(Others) | | 觀測模擬及分析推理能力 Observation simulation and analysis of reasoning ability | □ | □ | □ | □ | □ | □紙筆測驗/會考(Test/Exam)  □作業練習(Assignments)  □口頭報告/口試(Presentation/Oral Exam)  □專題研究報告(書面)  (Research Report(printed on paper))  □實作/實驗(Practices/Experiments)  □出席/課堂表現(Attendance/Performance)  □學習檔案評量(Portfolios Assessment)  □自我評量/同儕互評  (Self-Assessment/ Peer Assessment)  □作品/創作展演(Products/Creative Performance)  □其他(Others) | | 電腦及程式語言運用能力Computer and programming language proficiency | □ | □ | □ | □ | □ | □紙筆測驗/會考(Test/Exam)  □作業練習(Assignments)  □口頭報告/口試(Presentation/Oral Exam)  □專題研究報告(書面)  (Research Report(printed on paper))  □實作/實驗(Practices/Experiments)  □出席/課堂表現(Attendance/Performance)  □學習檔案評量(Portfolios Assessment)  □自我評量/同儕互評  (Self-Assessment/ Peer Assessment)  □作品/創作展演(Products/Creative Performance)  □其他(Others) | | 國際視野與語文溝通能力 International perspective and language communication skills | □ | □ | □ | □ | ■ | ■紙筆測驗/會考(Test/Exam)  ■作業練習(Assignments)  ■口頭報告/口試(Presentation/Oral Exam)  ■專題研究報告(書面)  (Research Report(printed on paper))  □實作/實驗(Practices/Experiments)  □出席/課堂表現(Attendance/Performance)  □學習檔案評量(Portfolios Assessment)  □自我評量/同儕互評  (Self-Assessment/ Peer Assessment)  □作品/創作展演(Products/Creative Performance)  □其他(Others) | | 專業倫理及服務學習之能力 Professional ethics and service-learning ability | □ | □ | □ | □ | □ | □紙筆測驗/會考(Test/Exam)  □作業練習(Assignments)  □口頭報告/口試(Presentation/Oral Exam)  □專題研究報告(書面)  (Research Report(printed on paper))  □實作/實驗(Practices/Experiments)  □出席/課堂表現(Attendance/Performance)  □學習檔案評量(Portfolios Assessment)  □自我評量/同儕互評  (Self-Assessment/ Peer Assessment)  □作品/創作展演(Products/Creative Performance)  □其他(Others) | | | | |