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| **110(2)/2021 Spring Semester TIGP-ESS課程資料表**  **110(2)/2022 Spring Semester TIGP-ESS course information form** | | | |
| 科目名稱(中文) | | 大氣科學 | |
| Course Title (English) | | Atmospheric Sciences | |
| 授課時間  Time | | Mon 02.-05 P.M. | |
| 授課地點  Location | | Room\_4032 RCEC | |
| 學分數  Course Credits | | 3 | |
| 主要授課老師 Main Instructors | | 羅敏輝、李威良、廖宇慶、鍾高陞、周崇光、林傳堯、劉千義、張起維 | |
| 聯絡郵件  E-mail | | TIGP office | |
| 辦公時間 Office Hours | | e.g. Mon 3-5p.m. in IES R323 or by appointment | |
| 課程目標 Course Objectives | | The main purpose of the text is to convey meteorological concepts in a visual and practical manner, while simultaneously providing students with a  comprehensive background in basic meteorology and up-to-date information on important topics, such as global warming, ozone depletion,  and El Niño. | |
| 授課內容 Course Description | | Climate, Mesoscale, extreme weather, Planet boundary layer and air pollution, Remote sensing, Stratosphere | |
| 教科書/參考書 Textbooks/References | | Meteorology Today， An Introduction to Dynamic Meteorology, Middle Atmosphere Dynamics | |
| 自編教材比例  Self-compiled Textbook/References Proportion(if any) | | 30% | |
| 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 | | Midterm examination 40%; Final examination 40%; Attendance rate/Class performance 20%. | |
| 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, Global system | | 羅敏輝 |
| **2** | The Earth’s Changing Climate | | 羅敏輝 |
| **3** | Middle-Latitude Cyclones | | 李威良 |
| **4** | Air masses and fronts | | 李威良 |
| **5** | Thunderstorms and Tornadoes | | 廖宇慶 |
| **6** | Thunderstorms and Tornadoes | | 廖宇慶 |
| **7** | Weather forecasting | | 鍾高陞 |
| **8** | Hurricanes | | 鍾高陞 |
| **9** | Mid exam | |  |
| **10** | PBL, Wind: Small scale and local systems | | 林傳堯 |
| **11** | PBL, air pollution & modeling | | 林傳堯 |
| **12** | Air pollution (measurement) | | 周崇光 |
| **13** | Air pollution (measurement) | | 周崇光 |
| **14** | Remote sensing | | 劉千義 |
| **15** | Remote sensing | | 劉千義 |
| **16** | Stratosphere: Middle atmospheric Dynamics | | 張起維 |
| **17** | Stratosphere: Middle atmospheric Dynamiic | | 張起維 |
| **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) | | | | |