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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 acomprehensive 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 |
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| 強度指數Overall ratingof 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)  |

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