**Global Learning Initiatives Program Course Syllabus**

Please complete the following form in English. The information will be updated to the Global Learning Initiatives Program website for students’ reference. If you will be offering more than one course, please fill out one form per course offered. Examples in grey.

**Course Information**

|  |  |
| --- | --- |
| Course Name  \*provide the **English** course name of the course. | Analysis and Application of Climate Data article Cosmology |
| Lecturer(s)  \*provide the lecturers’ **English** name. If there are more than one lecturer, please indicate all lecturers in the column. | Prof. Yi-Huan HSIEH |
| Course Description  \*briefly describe the contents covered in the courses. | This course will introduce some common methods on climate/weather data processing via Python.  The purposes of this course are (1) to guide students on how to get the information from climate/weather datasets by data visualization, (2) to use this information to finalize their own narrative.  The course not only introduces the methods of data processing, some basic idea of atmospheric science and concepts on the origin of these data will also mention in this course.  Following these ideas, the classes of this course will divide into three-stage.  ● First-stage (Week 2-Week 4): Introduction and Basic Syntax of Python  ● Second-stage (Week 6-Week 14): Reproduce/Rewrite some exiting codes  ● third-stage(Week 16-Week 18): Course Review & Final report (individual)  We would adjust this schedule based on students' feedback during the semester. |
| Course Objectives  \*list out knowledge or skills students should acquire upon completion of course. | ● How to access/download climate and weather data via Python.  ● How to process different types of climate and weather data via Python. |
| Suggested Proficiencies  (if any)  \*list preferred knowledge or skills students should have before taking the course. |  |
| Reading List  (if any)  \*list out the textbooks, references, or other reading materials. | • IPCC AR6 Climate Change 2021: The Physical Science Basis  https://www.ipcc.ch/report/ar6/wg1/  • Principles for effective communication and public engagement on climate change  https://climateoutreach.org/reports/ipcc-communications-handbook/  • 盧孟明、卓盈旻、李思瑩等：臺灣氣候變化：1911～2009年資料分析。大氣科學2012; 40(3): 297-321。  • 臺灣氣候變遷科學報告2017 第一冊 物理現象與機制(完整版)  https://tccip.ncdr.nat.gov.tw/publish\_01\_one.aspx?bid=20171220135820  • 臺灣氣候變遷科學報告2017 第二冊 衝擊與調適面向(完整版)  https://tccip.ncdr.nat.gov.tw/publish\_01\_one.aspx?bid=20171220140117  • 怎樣談科學：將「複雜」說清楚、講明白的溝通課 (Houston, We Have a Narrative: Why Science Needs Story) |
| Grading Criteria  \*how would the students be assessed during the course. | |  |  |  |  | | --- | --- | --- | --- | | **NO** | **Item** | **Pc** | **Explanations for the conditions** | | 1 | Homework 1 | 10% | please screen-recording how you operate the coding, and upload the video's link to the COOL | | 2 | Homework 2 | 10% | please screen-recording how you operate the coding, and upload the video's link to the COOL | | 3 | Homework 3 | 10% | please screen-recording how you operate the coding, and upload the video's link to the COOL | | 4 | Project 1 | 15% | ● Reproduction (9 pts) please screen-recording how you operate the coding, and upload the video's link to the COOL ● Annotation (4 pts) upload your code and add annotations ●Bonus: Rewrite & Leadership (2-5 pts) → Rewrite - modify the form (2 pts), modify the method (3 pts), add stuff (4 pts), drastically modify (5 pts) → Leadership - Assist classmates in the course can be considered extra points | | 5 | Project 2 | 15% | ● Reproduction (9 pts) please screen-recording how you operate the coding, and upload the video's link to the COOL ● Annotation (4 pts) upload your code and add annotations ●Bonus: Rewrite & Leadership (2-5 pts) → Rewrite - modify the form (2 pts), modify the method (3 pts), add stuff (4 pts), drastically modify (5 pts) → Leadership - Assist classmates in the course can be considered extra points | | 6 | Project 3 | 15% | ● Reproduction (9 pts) please screen-recording how you operate the coding, and upload the video's link to the COOL ● Annotation (4 pts) upload your code and add annotations ●Bonus: Rewrite & Leadership (2-5 pts) → Rewrite - modify the form (2 pts), modify the method (3 pts), add stuff (4 pts), drastically modify (5 pts) → Leadership - Assist classmates in the course can be considered extra points | | 7 | Project 4 | 15% | ● Reproduction (9 pts) please screen-recording how you operate the coding, and upload the video's link to the COOL ● Annotation (4 pts) upload your code and add annotations ●Bonus: Rewrite & Leadership (2-5 pts) → Rewrite - modify the form (2 pts), modify the method (3 pts), add stuff (4 pts), drastically modify (5 pts) → Leadership - Assist classmates in the course can be considered extra points | | 8 | Final report | 10% | 200 words + 1 Figure (using P1-P4's data) | |

**Course Schedule**

Please complete the following table with the dates and expected course topics. If there are more than one lecturers instructing the course, please also indicate the lecturer for each class.

|  |  |  |  |
| --- | --- | --- | --- |
| Class | Date (YYYY/MM/DD) | Course Topic | Lecturer |
| Week 1 |  | Course introduction, Environment introduction |  |
| Week 2 |  | Basic Syntax of Python (I) [Homework 1] |  |
| Week 3 |  | Basic Syntax of Python (II) [Homework 2] |  |
| Week 4 |  | Basic Syntax of Python (III) [Homework 3] |  |
| Week 5 |  | -- Buffer time (No class) -- |  |
| Week 6 |  | Project 1: |  |
| Week 7 |  | Project 1: |  |
| Week 8 |  | Project 2: |  |
| Week 9 |  | Project 2: |  |
| Week 10 |  | Project 3: |  |
| Week 11 |  | -- NTU's sports day (No Class) -- |  |
| Week 12 |  | Project 3: |  |
| Week 13 |  | Project 4: |  |