2025 Spring

Geospatial Information Technology and Analysis 空間資訊技術與應用分析

Class hour: Wednesday 13:00-16:00

Classroom：B204, BRC Building, Academia Sinica

Lecturer & course organizer：Dr. Chung-Te Chang (張仲德)

Office: LS135 at Department of Life Science, Tunghai University

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Office Hours (討論時間及地點)：

Thursay 14:00 -15:00 at LS135 (Tunghai University)
Friday 10:00 – 11:00 at LS135 (Tunghai University)

Course objectives (教學目的)：

Geographical Information System is designed to work with complicated environmental and geospatial data and provides functions for data entry, management, thematic mapping, data analysis and map layout. With increasing concerns of environmental and ecological issues, the requirements of applying geospatial information and various data types across scales become more and more important. To deal with environmental issues such as pollution, natural hazards, natural resources management, habitat suitability analysis and tourism/recreational planning, we usually require datasets from various spatiotemporal scales to better delineate their features. In this course, we will practice ArcGIS Pro software and the diverse toolboxes with different data types and data conversions, and design, create and layout thematic maps.

Course schedule (主要內容與教學大綱)：

Week 01 [Feb. 19]: Introduction to GIS Pro
Week 02 [Feb. 26]: Mapping GIS data
Week 03 [Mar. 5]: Presenting GIS Data
Week 04 [Mar. 12]: Coordinate Systems
Week 05 [Mar. 19]: Managing Vector Data
Week 06 [Mar. 26]: Managing Raster Data
Week 07 [Apr. 2]: Attribute Data
Week 08 [Apr. 9]: **Mid-term Exam**
Week 09 [Apr. 16]: Editing
Week 10 [Apr. 23]: Queries
Week 11 [Apr. 30]: Joins and Overlay
Week 12 [May 7]: Raster Analysis
Week 13 [May 14]: Raster Analysis
Week 14 [May 21]: Watershed Analysis/Geostatistical Analysis

Week 15 [May 28]: **Final-term Reports (Application of open data and design Story Map)**
Week 16 [Jun. 4]: **Final-term Reports (Application of open data and design Story Map)**

Major Textbooks:
Prince MH (2019) Mastering ArcGIS Pro. 1st edition, McGrawHill Education.

Hardware requirements for ArcGIS Installation
Platform: **Windows**
Memory/RAM: minimum 4 GB (8 GB or higher will be recommended)
Disk space: minimum 4 GB (6 GB or higher will be recommended)
Video/Graphics adapter: 64 MB RAM minimum (256 MB RAM or higher recommended). NVIDIA, AMD, and Intel chipsets supported

Presentation of final-term major assignment and report (Weeks 15-16)
20-25 minutes presentation
Each student will lead a 20-25 minutes presentation and discussion of his/her story maps, including the data sources, object of the thematic maps and the major outcomes from the GIS analysis and mapping (including 3-5 maps at least).

Paperwork and slides
Finally, each student should hand the final term report (paperwork) to me by within one week after final-term report (before Sunday), including 2 pages of illustration of your briefing (objective, data sources, methods and results), at the following email (chungtechang@go.thu.edu.tw).

Grading policy (成績考核)
Class participation (15%)
Assignment (50%)
Final-term assignment and report (35%)
        *penalty of 5% loss of paper grade will be applied for each day past due

Bonus: will depend on students who raise questions, discuss and the performance of assignment in the class.