

# 國立中正大學課程大綱

## National Chung Cheng University Syllabus

課號 course code	2365013 2708033	全英文授課 EMI	<input type="checkbox"/> 是 <input checked="" type="checkbox"/> 否
課程名稱 ( 中文 ) course name	全球定位系統原理與應用		
課程名稱 ( 英文 ) course name	Global Positioning System-Principles and Applications		
學年 academic Year /semester	114/1	上課地點 classroom	地震館 301 Earth and Environ Sci 301
學系 ( 所 ) department	地球與環境科學系	必選修 required/selective	<input type="checkbox"/> 必修 <input checked="" type="checkbox"/> 選修
教師 instructor	鄭凱謙 K. Kevin Cheng	學分 credits	3
助教 teaching assistant	請看課程平台 See Ecourse	助教 email TA email	請看課程平台 See Ecourse
先修科目 prerequisites	None		
課程概述 course descriptions	The principles of Global Positioning System (GPS) is thoroughly discussed, including data acquisition, survey modes (static, kinematic and PPP) and geophysical applications. The extension to Global Navigation Satellite System (GNSS) is also included.		
學習目標 learning objectives	Be acquainted with GPS principle and operations of GPS equipment in the field and the data processing.		
教科書及參考書 textbooks and reference	Required textbook: handouts on Ecourse. References: Xu, Guochang. (Editor) 2010. <a href="#"><i>Sciences of Geodesy-I, Advances and Future Direction</i></a> , Berlin: Springer-Verlag Berlin Heidelberg. (e-book) Hofmann-Wellenhof, B.,H. Lichtenegger, and J.Collins. 2001. <a href="#"><i>GPS Theory and Practice</i></a> . 5 <sup>th</sup> edition New York: Springer-Verlag Wien New York. Teunissen, P.J. And A kleusberg. 1998. Editors. <a href="#"><i>GPS for Geodesy</i></a> . 2 <sup>nd</sup> edition. New York:Springer  ( 請尊重智慧財產權，不得非法影印教師指定之教科書籍 )		

## 教學要點概述

<b>教材編選</b> <b>teaching materials</b>	<input checked="" type="checkbox"/> 自編教材 <input type="checkbox"/> 教科書 <input type="checkbox"/> 其它	
<b>教學方法</b> <b>teaching method</b>	<input checked="" type="checkbox"/> 講述 lecture <input checked="" type="checkbox"/> 小組討論 student discussion <input type="checkbox"/> 演式法 <input type="checkbox"/> 問題導向學習 <input type="checkbox"/> 個案研究 <input type="checkbox"/> 網路教學 <input type="checkbox"/> 實驗法 <input type="checkbox"/> 其它	
<b>評量方法</b> <b>evaluation</b>	Midterm (35%), Final (35%), Presentation (10%), homework (20%)	
<b>教學資源</b> <b>teaching resources</b>	<input checked="" type="checkbox"/> 課程網站 <input type="checkbox"/> 教材電子檔供下載 <input type="checkbox"/> 實習網站	
<b>與 SDGs 目標的 關聯</b> <b>related to objectives of SDGs</b>	<input type="checkbox"/> <a href="#">SDG 1 終結貧窮</a> <input type="checkbox"/> <a href="#">SDG 3 健康與福祉</a> <input type="checkbox"/> <a href="#">SDG 5 性別平權</a> <input type="checkbox"/> <a href="#">SDG 7 可負擔的潔淨能源</a> <input type="checkbox"/> <a href="#">SDG 9 工業化、創新及基礎建設</a> <input type="checkbox"/> <a href="#">SDG 11 永續城鄉</a> <input type="checkbox"/> <a href="#">SDG 13 氣候行動</a> <input type="checkbox"/> <a href="#">SDG 15 保育陸域生態</a> <input type="checkbox"/> <a href="#">SDG 17 多元夥伴關係</a>	<input type="checkbox"/> <a href="#">SDG 2 消除飢餓</a> <input type="checkbox"/> <a href="#">SDG 4 優質教育</a> <input type="checkbox"/> <a href="#">SDG 6 淨水及衛生</a> <input checked="" type="checkbox"/> <a href="#">SDG 8 合適的工作及經濟成長</a> <input type="checkbox"/> <a href="#">SDG 10 減少不平等</a> <input type="checkbox"/> <a href="#">SDG 12 責任消費及生產</a> <input type="checkbox"/> <a href="#">SDG 14 保育海洋生態</a> <input type="checkbox"/> <a href="#">SDG 16 和平、正義及健全制度</a>
<b>教師 相關訊息</b> <b>instructor's information</b>	None	

**每週課程內容**  
**weekly scheduled contents**

started on 09/09/2025

Week	Thursday	Course
1	09/09	Introduction to GPS/GNSS
2	09/16	Hands-on: Survey with your cellphone
3	09/23	Time and coordinate systems
4	09/30	GPS principles
5	10/07	GPS observables
6	10/14	GPS observables
7	10/21	Error sources
8	10/28	<b>Midterm</b>
9	11/04	Differencing
10	11/11	survey methods
11	11/18	Hands-on: Static GPS survey
12	11/25	Hands-on: RTK eGNSS
13	12/02	Hands-on: Data Processing
14	12/09	GPS Application: student presentations
15	12/16	GPS Application: student presentations
16	12/23	<b>Final</b>

**核心能力**  
**core competencies**

地環系第四項：具備實作、分析與整合實驗數據的能力