國立台灣科技大學 114學年 第2學期　課程大綱

Spring 2026 NTUST Course Outline

授課教師：何嘉浚

Instructor:Chia-Chun Ho

課程名稱：智慧城市水管理

Course Title：Intelligent Urban Water Management

2026/11/3

課程代號： CT5007701 Course Code 學分數： 3 Credits	必選修：選修/半學年 Required/Electve:Elective/Half Yr. 先修課程： Prerequisites
節次教室： Time/Location	F2(IB-510-2) F3(IB-510-2) F4(IB-510-2)
專業核心能力： Core Professional Competencies	1.籌劃與執行專案研究之能力。 2.創新思考及獨立解決問題之能力。 3.國際視野及外語應用之能力。 1. an ability to plan and execute research projects; 2. an ability to innovative thinking and to solve problem independently; 3. an international vision and an ability to fluently use multi-languages.
課程網址： Course Website	無(Non)
課程宗旨： Course Objectives	由於全球氣候變遷與極端降雨對城市的水管理產生極大的威脅與挑戰，因此利用低衝擊開發(Low Impact Development, LID)和海綿城市的新興概念來對付愈來愈嚴峻的城市水管理在全世界被廣為推行。然而對於城市雨污排水設施的有效管理需要愈來愈複雜的計算技術以應付大量的現場監測數據並達到智慧化管理的目的。因此，本課程主要藉由基本理論的介紹、案例探討及實務應用操作等方法，培養學生對於全球氣候變遷議題的認知及城市防災韌性能力的技術，並與國際「海綿城市」課題接軌，提升學生國際視野。 This is intended as brief introduction to the subject of urban water infrastructure management in order to deal with global climate change and extreme rainfall. The topics of Low Impact Development (LID) and sponge city are new and popular concept in the field of civil engineering around the world. However, The effective management of urban drainage and sewerage infrastructure is likely to require increasingly sophisticated computational techniques to keep pace with the level of data that is collected from measurement instruments in the field and to achieve intelligent management. Therefore, including fundamental theories, cases study, and practical aspects of application will be taught in this course. The optimal goal is to develop students' knowledge of global climate change issues and technologies for urban disaster prevention, make connection with the international subject of sponge city to enhance the global vision for students.
課程大綱： Outline of Lectures	

	Unit 1：綠色基礎設施介紹(Green Infrastructure (GI) Introduction) Unit 2：城市水文學概念(Urban Hydrology Concept) Unit 3：低衝擊開發及海綿城市原理背景(The Principles of Low Impact Development(LID) and Spongy City) Unit 4：低衝擊開發設施介紹(The Facilities Introduction of Low Impact Development) Unit 5：暴雨逕流管理與設計理念(Storm Water Management and Design Issues) Unit 6：水文水質分析模式介紹(Introduction of Hydrologic and Water Quality Models) Unit 7：低衝擊開發成效監測與智慧管理(Performance Monitoring and Smart Management on LID) Unit 8：LID在城市碳匯的應用(The Application of LID on Urban Carbon Sink)
授課方式： Method of Instruction	講授 Lecture：50% 分組討論 Group discussion：10% 案例研討 Case study：20% 操做練習 Practical exercises：20% 講授 Lecture：%
教科書： Textbooks	無(Non)
參考書目： References	1.Mark A. Benedict & Edward T. McMahon, Green Infrastructure, Island Press, Washington, United States, 2006. 2.AISWCD. LOW IMPACT DEVELOPMENT. Retrieved January 17, 2019, from AISWCD 3.Waterbydesign. (2014, October). Bioretention Technical Design Guidelines, Version 1.1, from Healthy Land & Water: https://hlw.org.au/download/bioretention-technical-design-guidelines/ 4.Xiaoning Li, J. L. (2016, May). Case Studies of Sponge City Program in China. Retrieved January 20, 2019
修課須知： Notice	無(Non)
評量方式： Grading	1.平常出席及作業成績/ Attendance and Assignments (20%) 2.參訪報告/Report of the field trip (10%) 3.透水混凝土製作競賽/ Permeable concrete production competition (20%) 4.專案報告/ Project report and presentation (20%) 5.期末考/ Final exam. (30%)
備註說明： Notes	無(Non)