淡江大學９９學年度第１學期課程教學計畫表

課程名稱	建築與永續技術研究 ARCHITECTURE AND SUSTAINABLE TECHNOLOGY STUDY	授課教師	周家鵬 Chou, Chia-peng
開課系級	土木二博士班Ａ TECXD2A	開課資料	必修 單學期 2學分

學 系(門) 教 育 目 標

一、培養學生土木工程專業知識，使其滿足就業與深造需求。

二、使學生具備資訊技術與工程專業整合應用能力，厚植其競爭力。

三、使學生瞭解國際現勢，並建立終身學習觀念。

學 生 基 本 能 力

A. 具備土木工程計算與分析理論之專業進階知識。

B. 具備跨領域知識整合與資訊應用之能力。

C. 具備獨立思考與執行專題研究並撰寫專業論文之能力。

D. 具備有效溝通、團隊整合與領導之能力。

E. 具備終身學習觀念與國際觀之永續發展理念。

課程簡介	課程主要期許博士班學生能充分掌握永續建築議題與趨勢。透過討論培養對永續相關技術具備專業整合應用能力。討論主題有永續與設計倫理、氣候變遷與永續建築環境、設計及自然與人造環境因子、全球再生能源發展、永續設計原則、零消耗能源建築、LEED 運用、永續發展趨勢、、、。
	This course contains a series discussion of the sustainable architecture with the students' open mind. These topics are design ethics and sustainability；climate change and the built environment；topics to address in a greening design characters；global renewable energy development； sustainable design principles；net-zero energy building；LEED applications；and Issues of current trends...。

本課程教學目標與目標層級、學生基本能力相關性

一、目標層級(選填)：
(一)「認知」(Cognitive 簡稱C)領域：C1 記憶、C2 瞭解、C3 應用、C4 分析、C5 評鑑、C6 創造
(二)「技能」(Psychomotor 簡稱P)領域：P1 模仿、P2 機械反應、P3 獨立操作、P4 聯結操作、P5 自動化、P6 創作
(三)「情意」(Affective 簡稱A)領域：A1 接受、A2 反應、A3 重視、A4 組織、A5 內化、A6 實踐

二、教學目標與「目標層級」、「學生基本能力」之相關性：
(一)請先將課程教學目標分別對應前述之「認知」、「技能」與「情意」的各目標層級，惟單項教學目標僅能對應C、P、A其中一項。
(二)若對應「目標層級」有1~6之多項時，僅填列最高層級即可(例如：認知「目標層級」對應為C3、C5、C6項時，只需填列C6即可，技能與情意目標層級亦同)。
(三)再依據所訂各項教學目標分別對應該系「學生基本能力」。單項教學目標若對應「學生基本能力」有多項時，則可填列多項「學生基本能力」(例如：「學生基本能力」可對應A、AD、BEF時，則均填列)。

序號	教學目標(中文)	教學目標(英文)	相關性	
			目標層級	學生基本能力
1	永續與設計倫理	Design Ethics and Sustainability A creative activity that is also the reflective one of choosing between different possibilities. The openness of the field of possibilities where designers are operating is one of the factors that characterises their actions. When there is no room for choice, because the solution is dictated by strong social conventions and/or technological constraints, there is no design.	C5	BCE
2	氣候變遷與永續建築環境	Climate Change and The Built Environment If climate change—natural or manmade—is taking place, how serious a threat is it to humanity, the environment, the world economy? And, assuming that climate change is a threat, what, if anything, can we do to mitigate it or, if possible, eliminate it altogether? And what role, in particular, should those responsible for designing, constructing, owning, and developing homes and buildings play in such an effort?	P6	BCDE

3	綠設計及自然與人造環境因子	Topics to Address in a Greening Design Characters Broad topics covered in the design characters will include the building's location and microclimate; orientation and envelope; interior spaces; fenestration, daylighting, and lighting; energy and water needs; heating, ventilating, and air-conditioning (HVAC) equipment; landscaping and exterior spaces; and monitoring equipment and controls.	A6	BCDE
4	全球再生能源發展	Global Renewable Energy Development Global renewable electricity installations have more than tripled from it the past decade. Nonrenewable, that is, they draw on finite resources that will eventually dwindle, becoming too expensive or too environmentally damaging to retrieve. In contrast, renewable energy resources—such as wind and solar energy—are constantly replenished and will never run out. Renewable energy are wind、solar、biomass、hydropower、geothermal、ocean...ets.	C5	BCDE
5	永續設計原則	Sustainable Design Principles The discussing of the sustainable design principles includes the building envelope, interior functions, and building design. For example, site or material selection can affect the building's overall environmental impact and should be considered in a broader sense. The design guide provided in this course covers the entire design and construction processes, from the early planning phases to the operation and maintenance phase.	P6	BCDE

6	零消耗能源建築	Net-Zero Energy Building The new technologies and practices arising from many R&D activities will transform how buildings are designed, engineered, constructed, operated and maintained, renovated and reused, and demolished. They will reduce the consumption of energy, potable water, and material resources and the associated emission and pollutant impacts on the building occupants and the environment.	P6	BCDE
7	LEED 運用	LEED applications The purpose of this LEED applications is to align the interests of the green buildings. Course introduce a new credit category that rewards LEED project teams for successfully achieving credits dealing with regional priorities. And give greater emphasis to those credits that stress energy conservation, renewable energy systems and the US Green Building Council's drive toward carbon neutral buildings.	P3	BCDE

教學目標之教學策略與評量方法

序號	教學目標	教學策略	評量方法
1	永續與設計倫理	分組討論	出席率、報告、討論
2	氣候變遷與永續建築環境	分組討論	出席率、報告、討論
3	綠設計及自然與人造環境因子	分組討論	出席率、報告、討論
4	全球再生能源發展	分組討論	出席率、報告、討論
5	永續設計原則	分組討論	出席率、報告、討論
6	零消耗能源建築	分組討論	出席率、報告、討論
7	LEED 運用	分組討論	出席率、報告、討論

授 課 進 度 表

週次	日期	內 容 (Subject/Topics)	備註
1	09/13	永續與設計倫理Design Ethics and Sustainability	
2	09/20	氣候變遷與永續建築環境Climate Change and The Built Environment (I)	

3	09/27	氣候變遷與永續建築環境Climate Change and The Built Environment (II)	
4	10/04	指定主題與議題討論(博士生報告) (I)	
5	10/11	綠設計及自然與人造環境因子Topics to Address in a Greening Design(I)	
6	10/18	綠設計及自然與人造環境因子Topics to Address in a Greening Design(II)	
7	10/25	全球再生能源發展Global Renewable Energy Development(I)	
8	11/01	全球再生能源發展Global Renewable Energy Development(II)	
9	11/08	指定主題與議題討論(博士生報告) (II)	
10	11/15	永續設計原則Sustainable Design Principles(I)	
11	11/22	永續設計原則Sustainable Design Principles(II)	
12	11/29	零消耗能源建築Net-Zero Energy Building	
13	12/06	指定主題與議題討論(博士生報告) (III)	
14	12/13	LEED 運用LEED applications	
15	12/20	指定主題與議題討論(博士生報告) (IV)	
16	12/27	期末報告討論主題一(博士生自訂)	
17	01/03	期末報告討論主題二(博士生自訂)	
18	01/10	期末報告討論主題三(博士生自訂)	

修課應注意事項	學生應提前充分閱讀每週參考資料,準時出席並熱烈討論.
教學設備	電腦、投影機
教材課本	1. Green Buildings + Climate Change; Sixth in a Series of Annual Reports on the Green Building Movement, Nov.2008
參考書籍	1. Net-Zero Energy, High-Performance Green Buildings, National Science and Technology Council, Committee on Technology 2. Design for sustainability : How to design sustainable solutions, Ezio Manzini, INDACO, Politecnico di Milano. 3. Sustainable Building Technical Manaual, Green Building Design, Construction, and Operations ; Produced by Public Technology Inc. : US Green Building Council 4. MEP Technologies for Eco-Effective Buildings; C.C. Sullivan and Barbara Horwitz-Bennett 5. Many.....

批改作業篇數	篇（本欄位僅適用於所授課程需批改作業之課程教師填寫）
學期成績計算方式	◆平時考成績：40.0 ％ ◆期中考成績： ％ ◆期末考成績： ％ ◆作業成績： ％ ◆其他〈期中報告(30%);期末報告(30%)〉：60.0 ％
備　考	「教學計畫表管理系統」網址：http://info.ais.tku.edu.tw/csp 或由教務處首頁〈網址：http://www.acad.tku.edu.tw/index.asp/〉教務資訊「教學計畫表管理系統」進入。 **※非法影印是違法的行為。請使用正版教科書，勿非法影印他人著作，以免觸法。**