

國立臺灣大學工學院新開課程綱要

一、課程基本資訊

系所	土木系		授課教師	張陸滿 莊子壽			
課程名稱	(中文) 高科技廠務系統設計實驗 (英文) High Tech Facility System Design Laboratory						<input checked="" type="checkbox"/> 中文授課 <input type="checkbox"/> 英文授課
課程編號		班次	1	學分數	1	<input type="checkbox"/> 必修 <input checked="" type="checkbox"/> 選修	<input type="checkbox"/> 全年 <input type="checkbox"/> 半年
上課時間	每週 2 天 每天 4.5 小時 (共 6 週)	上課地點	台積電 (台中)	人數 上限	12 人	適修 年級	大三、大四、 碩士一般生
課程網址							

二、課程大綱內容(對應 CEIBA 欄位，以中英並列為原則)

課程概述	本課程教授高科技廠務系統之基礎知識，授課範圍包含電力儀控系統、機械空調系統、純水系統以及氣體化學系統之架構、流程、功能與原理，並輔以系統實務操作與工廠現地參觀來提升學習成效。	This course teaches the basics of a high-tech facility system. The teaching scope includes the architecture, process flow, functions, and theory for the Electric & Control systems, the Mechanical HVAC & Air Abatement systems, the Ultra Pure Water system, the Gas & Chemical systems, supplemented by practical operations with factory site check to enhance learning effectiveness.
課程目標	本課程設計的目的為提供高科技廠務系統所需的基本設計知識，加強學生對高科技廠務系統在實務上的理解。	The purpose of this course is to provide the basic design knowledge required for the design of High-tech facility system, and to practically enhance students' understanding.
關鍵字	高科技廠務系統	High-tech Facility System
課程要求 (先修科目或先備能力)	修過高科技廠房設施設計、高科技廠房設施營建管理或由授課教師認可。	Prerequisite course: High Tech Facility Design and/or High Tech Facility Construction Management.
指定閱讀 (教科書)	1. Whyte, W., Cleanroom Technology, John Wiley, New York 2001 2. Geng, H., Semiconductor Manufacturing Handbook, McGraw-Hill, 2005 3. ISO/DIS 14644-3 Test methods for measuring the performance of an installation, a cleanroom, or an associated controlled environment (2013).	

參考書目	1. Whyte, W., Cleanroom Design, John Wiley, 2nd ed., New York 1999 Chang, C.Y., and Sze, S.M., ULSI Technology, McGraw-Hill Company, Inc., International Edition, 1996, New York. 2. International Organization for Standards, ISO Standard 14644-4, part 4: Design, Construction, Start up, Geneva, Switzerland, 1999. 3. Nishi, Y., Doering, K., and Wooldridge, T., Handbook of Semiconductor Manufacturing Technology, Marcel Dekker, New York, 2000.	
評量方式	實作測驗與報告	Operation Testing and Lab. Report
課程進度		
週次	單元主題	Unit Subject
1-1	課程及安全規定說明及純水前處理	Course introduction and safety regulations Ultra Pure Water System (Pretreatment)
1-2	純水中及精煉處理	Ultra Pure Water System (Make-up Treatment and Polish Treatment)
2-1	純水處理系統實作測驗與報告	Ultra Pure Water System Laboratory Testing and Report
2-2	氣體與化學品供應系統	Chemical System and Supply
3-1	特殊氣體管路焊接與品質檢驗	Specialty Gas Welding Quality Check
3-2	氣體與化學品供應系統實作測驗與報告	Gas & Chemical System Laboratory Testing and Report
4-1	機械系統-空調水側及氣側系統	Mechanical System-HVAC Water and Air System
4-2	機械系統-空氣處理系統	Mechanical System-Air Abatement System
5-1	機械系統實作測驗與報告	Mechanical System Laboratory Testing and Report
5-2	電力與儀控系統-高/低壓系統	Electrical and Control System-High-Voltage and Low-Voltage System
6-1	電力與儀控系統-中央監控	Electrical and Control System-Facility Control and Management System
6-2	電力與儀控系統實作測驗與報告以及實驗總結	Electrical and Control System, Laboratory Testing and Report, and Summary