文藻外語大學105學年度第1學期教學綱要
Wenzao Ursuline University of Languages
Syllabus for the 1st Semester of the 2016 Academic Year

壹、課程基本資料

課程名稱 Course Title	跨科技整合與應用 INTERDISCIPLINARY TECHNOLOGIES AND APPLICATIONS			
課程類別 （學制） School System	日間部四技 4-Year College of Day Division			
開課單位 Department	通識教育中心			
授課教師 Instructor	黃裕家		職稱 Position Title	助理教授
師生互動 Instructor's Contact Information	辦公室 Office	N/A	辦公室電話 Office Phone Number	0922-111887
	電子信箱 E-mail	kevin.starter@hotmail.com or 99966@mail.wzu.edu.tw		
	約談時間 Office Hours	By appointment		
學分 Credits	2.0學分	選課別 Category	【∨】必修Required Course 【　】選修Elective Course	
開課類別 Course Categories	【　】學年課 For Academic Year 【∨】學期課 For Academic Semester		開課年級Year Taught：3年級 授課班級Class Taught：日四技通識課程三	
課程概要 Course Description	本課程將結合物理、化學、生物等相關科學的基礎知識，深入淺出地介紹當前熱門的跨領域科學的研究。基於傳統研究方法無法有效解決現今在類型、規模和難度上都有巨大不同的問題，於是跨科學研究是二十一世紀一個必要且重要的發展趨勢。跨科學研究是指需要兩個或兩個以上專業(或學科)的基本知識和能力的研究領域，例如，奈米科技、生醫科學應用、尖端材料、尖端電子及光電科技、儲存與顯示技術、網際網路技術等。本課程欲藉由跨領域應用科學的研究介紹，幫助學生了解人類當今所面臨能源短缺、資源短缺、環境污染、疾病預防與治療等相關重大課題，與有效解決的方法。此外，在課堂內容中也將幫助學生了解台灣如何透過跨領域的整合研究以促進台灣科技產業現代化，以為學生未來進入就業職場做準備。 Nowadays, it requires researches or activities which combine two or more academic disciplines to solve the complex problems that we face today. In recent years, this type of work is called an interdisciplinary approach and one of the hottest scientific methods. The epidemiological diseases or global warming need to integrate and connect diverse disciplines, for instance, biology, chemistry, geography, and physics to investigate these extremely complex issues. Many modern technologies, such as nanotechnology, electro-optical science, biomaterials science, and green technology, are categorized as interdisciplinarity. In this course, many currently emerging technologies will be covered, including 3D printing, nanotechnology, display technology, medical therapies, technology of data storages, and biochips technology, etc. Moreover, a field trip to visit Pingtung Bio			

	technology Park will be arranged to help students gain more information and understanding for the development of the Taiwanese industry.
課程目標 Course Objectives	一、使同學認識跨科學研究的領域並瞭解其中的基本科學理論知識。 二、讓同學瞭解跨領域科技在日常生活中應用的情形。 三、讓同學瞭解跨領域科技如何解決現今所面臨的問題，與改變人類的生活方式。 四、激發同學思考跨領域科技可能造成的負面效應。 五、幫助學生在建立跨科學的基本知識與概念後，增進閱讀科技報導的興趣。 六、透過認識科技、善用科技幫助學生建立現代人必須具備之基本素養。 七、提升同學求職的競爭力。 一、Build up some basic knowledge of biology, chemistry, and physics. 二、Identify what interdisciplinary researches are and their applications. 三、Know how interdisciplinary technologies can solve the complex problems and affect our societies. 四、Discuss the pros and cons of the interdisciplinary technology. 五、Enhance students' abilities and raise their interests to read technology-related reports. 六、Develop fundamental science-knowledge to live in modern society. 七、Promote students' competencies for getting jobs.
評量方式與評分比例分配 Evaluation Criteria	Midterm exam:25%, Final exam:25%, Project report:25%, Attendance and in-class performance:25%
課堂要求 Course Requirements & Policies	No cellphone in the class! Interactive discussion is encouraged.
教科書 Textbooks	「請學生務必使用正版教科書」Please respect copyright and use original text books. 1、書名：Lecture notes (will be available on E-learning)　作者：　出版社： 出版年： ISBN： 是否自製教材：Y
指定參考書目或網址 References	1、書名：Optoelectronics and photonics, principles and practices　作者：S. O. Kasap　出版社：Prentice Hall
補充資料 Additional Remark	本科目無相關下載檔案。

貳、課程內容與進度（Course Content & Schedule）

週次 Week	上課日期 Date	單元名稱 Units	授課方式 Instructional Approaches	作業、報告、考試或其它 Assignments, Tests and Others	備註 Remarks
1	105/09/12 ～ 105/09/18	Light and electromagnetic waves	Lecture	N/A	
2	105/09/19 ～ 105/09/25	Light and electromagnetic waves	Lecture	N/A	
3	105/09/26 ～ 105/10/02	Fiber optic communication	Lecture	N/A	
4	105/10/03 ～ 105/10/09	Fiber optic communication	Lecture	N/A	
5	105/10/10 ～ 105/10/16	Semiconductor science and processes	Lecture	N/A	
6	105/10/17 ～ 105/10/23	Semiconductor science and processes	Lecture	N/A	
7	105/10/24 ～ 105/10/30	Project report	Group and individual presentation	N/A	
8	105/10/31 ～ 105/11/06	Project report	Group and individual presentation	N/A	
9	105/11/07 ～ 105/11/13	Midterm exam	Take-home midterm exam be handed in and discussed in this week.	N/A	Take-home midterm exam will be handed out prior to this week.
10	105/11/14 ～ 105/11/20	Light sources and photodetectors	Lecture	N/A	
11	105/11/21 ～ 105/11/27	Light sources and photodetectors	Lecture	N/A	
12	105/11/28 ～ 105/12/04	Display technologies	Lecture	N/A	
13	105/12/05 ～ 105/12/11	Display technologies	Lecture	N/A	
14	105/12/12 ～ 105/12/18	Solar power (photo-voltaic cells)	Lecture	N/A	
15	105/12/19 ～ 105/12/25	Solar power (photo-voltaic cells)	Lecture	N/A	
16	105/12/26 ～	Project report	Group and individual presentation	N/A	

	106/01/01				
17	106/01/02 ～ 106/01/08	Project report	Group and individual presentation	N/A	
18	106/01/09 ～ 106/01/15	Final exam	Take-home final exam be handed in and discussed in this week.	N/A	Take-home final exam will be handed out prior to this week.