朝陽科技大學 092學年度第1學期教學大綱
Fermentational Biotechnology 醱酵生物技術

當期課號	1701	Course Number	1701
授課教師	賴龍山	Instructor	LAI,LONG SHAN
中文課名	醱酵生物技術	Course Name	Fermentational Biotechnology
開課單位	應用化學系(四日)四A	Department	
修習別	選修	Required/Elective	Elective
學分數	3	Credits	3
課程目標	本課程首先要提及生物學所談過的DNA、RNA、蛋白質：細胞訊息的流程、調節與基因表現；並運用生物化學(Biochemistry)中微生物代謝之基本生化知識。簡言之，本課程的目的是一窺真菌醱酵生物科技的殿堂，並探討重組DNA微生物的醱酵技術。	Objectives	This course is designed at introductory level. Topics chosen will include: An introduction to fermentation, microbial growth kinetics, isolation, preservation, and improvement of industrially important microorganisms, media for fermentation, sterilization, fermentation biology, production of penicillin G/V, cephalosporin C, and clavulanic acid, fermentator and bioreactor design, intrusmentation and controls in fermentation, aeration and agitation, recovery and purification of fermentation products, and special topics on fungal biotechnology.
教材	上課講授與同學參與師生討論,如妥果時間與空間允許,本課程將進行實驗,透過觀察,進行結果討論	Teaching Materials	Teaching & Discussions at the class Carrying out experiments, if allowed, and Discussions
成績評量方式	成績評量主要分爲兩部份:(i)期中考與(ii)而將所選讀的文獻以分組方式(預計每組2人左右)作口頭報告當作爲期末考成績(此外,每組在口頭報告當天另需另外繳交一頁A4摘要報告),期中考與期末考兩者各占一半;上課期間,課堂上的點名爲加分依據BONUS 10%;最重要的一點是,本課程希望透過同學上課期間的問題發問,經由討論,經驗交流與醱酵實驗進行(含觀察,若時間允許),同學才能對醱酵生化學與技術有深刻的了解	Grading	The final evaluation of this course will be calculated based on the following two performances (50% for each): (1). Mid.term exam. (closed book) (2). Oral presentation on a assigned paper, including discussion with classmates and the instructor. Bonus credits (10%) will be given to those who eagerly joins the course and well conducts the experiments, including the reports they submmitted.
教師網頁			
教學內容	爲兼顧同學的背景，本課程首先說明生物四大高分子、細胞主要的能量代謝、微生物特徵與其應用以及細胞遺傳訊息的流程等知識。長久以來，微生物就被用來醱酵製造乳酪與酒類等，醱酵現象是生物體中以酵素催化爲主的複雜生化反應。事實上，醱酵是實用化或稱商業化生命科學之最傳統的生物技術之一，也由於近代的遺傳工程技術、細胞融合技術以及蛋白質工程技術的掘起與刺激，加上醱酵化學與技術本身不斷的進步，它遂形成生化工程(Biochemical Engineering)的關鍵技術之一。	Syllabus	Considering the student background, the first part of this course will cover biomoelcules, energy and cell metabolism, microorganisms and the application, and flow of genetic information in cells. Microorganisms have been used to produce cheese and alsohol beverage for a long time. Basiaclly, fermentation using a specific microorganism represents a combination of sophisticaed enzyme-ca talyzed-reactions in parallel or in series. Through metabolizing various nutrients, differnet metabolite or the desired product can be made through this most traditional technology. In fact, fermentation is the life science in practical uses. Coupled with recent developments in genetic enineering, fermentation biology & its technology thus become the key of biochemical engineering which domnate the applications of biotechnology in

			industry.

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