朝陽科技大學 096學年度第1學期教學大綱
Microbial Metabolism 微生物代謝

當期課號	1623	Course Number	1623
授課教師	簡宣裕	Instructor	CHIEN,SHIUAN YUH
中文課名	微生物代謝	Course Name	Microbial Metabolism
開課單位	應用化學系(四日)三A	Department	
修習別	選修	Required/Elective	Elective
學分數	3	Credits	3
課程目標	本課程目標在教導學生瞭解有關微生物能量與生物性合成代謝的主要反應、微生物各種好氧性代謝途徑的差異、微生物酵素量與酵素活性之調節、微生物醱酵之特性、化學無機微生物之代謝與光營微生物之代謝，讓修此課程者對於微生物代謝途徑與酵素反應之關係及進行各種代謝時微生物之生理有輪廓性的認知。	Objectives	The purpose of the course is to help student to understand the principal reactions of the energy and bio-synthetic metabolisms of microorganisms, the difference of various aerobically microbial metabolisms, the regulation of the level and activity of microbial enzymes, the characteristic features of fermentative, chemolithotrophic and phototrophic metabolisms. From the course student can get the outlines about the relationship between metabolic pathways and enzyme reactions and the physiology of the microbes during executing the metabolic reactions.
教材	1. Bacterial metabolism (second edition). 1985. Edited by Gerhard Gottschalk. Published by Springer-Verlag New York Inc. 2. The Physiology and Biochemistry of Prokaryotes. 2006. Edited by David White. 3. The diversity of metabolism in prokaryotes. 2006. The online textbook of Kenneth Todar, department of bacteriology, university of Wisconsin-Madison. 4. Class notes.	Teaching Materials	1. Bacterial metabolism (second edition). 1985. Edited by Gerhard Gottschalk. Published by Springer-Verlag New York Inc. 2. The Physiology and Biochemistry of Prokaryotes. 2006. Edited by David White. 3. The diversity of metabolism in prokaryotes. 2006. The online textbook of Kenneth Todar, department of bacteriology, university of Wisconsin-Madison. 4. Class notes.
成績評量方式	期中考與期末考各佔 35 % ， 30 % 爲上課專心、上課出席及小考成績。	Grading	The grade of the course will be counted by the socres of mid-term and final examination (35 % for each test) and the performances of attending, preparing the course and quiz test (30 %).
教師網頁			
教學內容	本課程的內容主要在介紹微生物生長所需要的營養與能源、如何利用葡萄糖與其他簡單糖類合成 ATP 、單分子與高分子聚合物之合成、好氧異營微生物之分解代謝 (以胞外酵素降解高分子聚合物，如何利用氨基酸、有機酸、鏈狀烃及環狀芳香化合物生長） 、微生物代謝之調節、微生物之醱酵（酒精、乳酸、丁酸與丁醇-丙酮、丙酸與醋酸及含氮化合物之醱酵）以及微生物之化學異營性與光營性之代謝。	Syllabus	The course is designed to introduce The nutrients and energy needed for the growth of prokaryotes, how to synthesize ATP using glucose and other mono-saccharides as original substrates during aerobic growth, biosynthesis of monomers and polymers, catabolism of aerobically heterotrophic microorganisms (including the degradation of polymers by exoenzymes, growth with amino acids, organic acids, aliphatic hydrocarbons, aromatic compounds), regulation of bacterial metabolism, the fermentations of microorganisms (including alcohol, lactate, butyrate, butanol-acetone, propionate, succinate, acetate and nitrogenous compounds) and the metabolisms of chemolithotrophic and phototrophic microorganisms.

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