# 朝陽科技大學 097學年度第2學期教學大綱
# Biological Fertilizers 生物肥料

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| 當期課號 | 7682 | Course Number | 7682 |
| 授課教師 | 簡宣裕 | Instructor | CHIEN,SHIUAN YUH |
| 中文課名 | 生物肥料 | Course Name | Biological Fertilizers |
| 開課單位 | 應用化學系碩士在職專班一A | Department | |
| 修習別 | 選修 | Required/Elective | Elective |
| 學分數 | 3 | Credits | 3 |
| 課程目標 | 生物肥料課程之授課內容包括 1.氮、磷及鉀等植物生長所需之養分於生態系統循環的途徑， 2.生物肥料與化學肥料之區別， 3.生物肥料種類， 4.固氮細菌特定培養基化學成份與配製及分離純化方法介紹， 5 固氮細菌固氮酵素活性測定及生物肥料菌劑製備， 6.固氮細菌生物肥料菌劑功效之評估， 7.溶磷菌特定培養基化學成份與配製及分離純化方法介紹， 8.溶磷菌溶磷能力測定， 9.溶磷菌生物肥料菌劑功效之評估， 10.菌根菌特定培養基化學成份與配製及分離純化方法介紹， 11.菌根菌產孢介紹， 12.菌根菌生物肥料菌劑功效之評估， 13.蛋白分解菌特定培養基化學成份與配製及分離純化方法介紹， 14.蛋白分解菌蛋白分解酵素活性測定及菌劑製備， 15.蛋白分解菌生物肥料菌劑功效之評估， 16.複合功能生物肥料菌株及菌劑之效益。希望經由課程內容之介紹，讓學生對生物肥料之種類、功效及應用能有輪廓性之瞭解。 | Objectives | The scope of the course contains nitrogen, phosphorus and potassium cycle in an ecosystem, differences between bio-fertilizer and chemical fertilizer, the variety of bio-fertilizers, cultural media and isolation methods of nitrogen-fixing bacteria, methods of determining nitrogenase activity and preparing nitrogen-fixing bacterium inoculants, assessing the beneficial effects of applying nitrogen-fixing bacterium inoculants on the growths of plants, cultural media and isolation methods of phosphorus-solubilizing bacteria,. methods of determining phosphorus-solubilizing ability and preparing phosphorus-solubilizing bacterium inoculants, assessing the beneficial effects of applying phosphorus-solubilizing bacterium inoculants on the growths of plants, cultural media and isolation methods of mycorrhiza, methods of determining spore numbers and preparing mycorrhiza inoculants, assessing the beneficial effects of applying mycorrhiza inoculants on the growths of plants, cultural media and isolation methods of proteolytic microorganisms, methods of determining protease activity and preparing proteolytic microorganism inoculants, assessing the beneficial effects of applying proteolytic microorganism inoculants on the growths of plants, multiple function bacteria and the beneficial effects of applying their inoculants on the growths of plants. The final objectives of the course are to let student get familiar with the outline of the kinds, functions and applications of bio-fertilizers. |
| 教材 | 1.Nitrogen fixation in tropical cropping system (2nd edition). 2001. edited by Ken E. Giller. Published by CABI.<br>2.Recent advances in biofertilizer technology. 2001. Edited by A. K. Yadav et al. Published by Society for<br>3.Promotion and Utilization of Resources and Technology. Karol Bagh, New Drlhi.<br>Biosertilizers for Sustainable Agriculture. 2002. Edited by Arun K. Sharma. Published by Agrobios (India).<br>4.Nitrogen fixation in tropical cropping system (2nd edition). 2001. | Teaching Materials | 1.Nitrogen fixation in tropical cropping system (2nd edition). 2001. edited by Ken E. Giller. Published by CABI.<br>2.Recent advances in biofertilizer technology. 2001. Edited by A. K. Yadav et al. Published by Society for<br>3.Promotion and Utilization of Resources and Technology. Karol Bagh, New Drlhi.<br>Biosertilizers for Sustainable Agriculture. 2002. Edited by Arun K. Sharma. Published by Agrobios (India).<br>4.Nitrogen fixation in tropical cropping system (2nd edition). 2001. |

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| **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** | http://163.17.1.28/blog/wjchien | | |
| **教學內容** | 生物肥料課程之授課內容包括 1.氮、磷及鉀等植物生長所需之養分於生態系統循環的途徑， 2.生物肥料與化學肥料之區別， 3.生物肥料種類， 4.固氮細菌特定培養基化學成份與配製及分離純化方法介紹， 5 固氮細菌固氮酵素活性測定及生物肥料菌劑製備， 6.固氮細菌生物肥料菌劑功效之評估， 7.溶磷菌特定培養基化學成份與配製及分離純化方法介紹， 8.溶磷菌溶磷能力測定， 9.溶磷菌生物肥料菌劑功效之評估， 10.菌根菌特定培養基化學成份與配製及分離純化方法介紹， 11.菌根菌產孢介紹， 12.菌根菌生物肥料菌劑功效之評估， 13.蛋白分解菌特定培養基化學成份與配製及分離純化方法介紹， 14.蛋白分解菌蛋白分解酵素活性測定及菌劑製備， 15.蛋白分解菌生物肥料菌劑功效之評估， 16.複合功能生物肥料菌株及菌劑之效益。 | **Syllabus** | The scope of the course contains nitrogen, phosphorus and potassium cycle in an ecosystem, differences between bio-fertilizer and chemical fertilizer, the variety of bio-fertilizers, cultural media and isolation methods of nitrogen-fixing bacteria, methods of determining nitrogenase activity and preparing nitrogen-fixing bacterium inoculants, assessing the beneficial effects of applying nitrogen-fixing bacterium inoculants on the growths of plants, cultural media and isolation methods of phosphorus-solubilizing bacteria,. methods of determining phosphorus-solubilizing ability and preparing phosphorus-solubilizing bacterium inoculants, assessing the beneficial effects of applying phosphorus-solubilizing bacterium inoculants on the growths of plants, cultural media and isolation methods of mycorrhiza, methods of determining spore numbers and preparing mycorrhiza inoculants, assessing the beneficial effects of applying mycorrhiza inoculants on the growths of plants, cultural media and isolation methods of proteolytic microorganisms, methods of determining protease activity and preparing proteolytic microorganism inoculants, assessing the beneficial effects of applying proteolytic microorganism inoculants on the growths of plants, multiple function bacteria and the beneficial effects of applying their inoculants on the growths of plants. |

尊重智慧財產權，請勿非法影印。