

國立中正大學 化學工程學系碩士班教學大綱
九十六學年度第一學期

編號：4255740

授課老師：李文乾

科目名稱：生物技術

英文譯名：Biotechnology

學分數：3

修別：選修

教學目標：

This course is designed for teaching students major topics and recent development in modern biotechnology via the lectures, class discussion and textbook reading. Students will be in training to have the background and capability for literature reading and doing research in biotechnological area.

授課大綱：

Part I Fundamentals of Molecular Biotechnology:

1. The molecular biotechnology revolution
2. Molecular Biotechnology Biological System
3. DNA, RNA, and protein synthesis
4. Recombinant DNA technology
5. Chemical synthesis, sequencing, and amplification of DNA
6. Manipulation of gene expression in prokaryotes
7. Heterologous protein production in eukaryotic cells
8. Directed mutagenesis and protein engineering

Part II Molecular Biotechnology of Microbial Systems:

9. Molecular diagnostics
10. Therapeutic agents
11. Vaccines
12. Synthesis of commercial products by recombinant microorganisms
13. Bioremediation and biomass utilization
15. Microbial insecticides

Part III Eukaryotic Systems:

17. Genetic engineering of plants: methodology
18. Genetic engineering of plants: applications
19. Transgenic animals
20. Human molecular genetics

教科書(textbook)：

B. R. Glick and J. J. Pasternak, "Molecular Biotechnology: Principles and Applications of Recombinant DNA", 3rd Edition, ASM Press, 2003.