



## 教學計劃表 Syllabus

|                                    |   |                             |                                 |                                    |
|------------------------------------|---|-----------------------------|---------------------------------|------------------------------------|
| 課程名稱(中文)<br>Course Name in Chinese | 環境微生物特論                                       |                             | 學年/學期<br>Academic Year/Semester | 114/1                              |
| 課程名稱(英文)<br>Course Name in English | Special Topics on Environmental Microorganism |                             |                                 |                                    |
| 科目代碼<br>Course Code                | MBT_53600                                     | 系級<br>Department & Year     | 碩士                              | 開課單位<br>Course-Offering Department |
| 修別<br>Type                         | 選修 Elective                                   | 學分數/時間<br>Credit(s)/Hour(s) | 2.0/2.0                         |                                    |
| 授課教師<br>Instructor                 | /郭傑民  |                             |                                 |                                    |
| 先修課程<br>Prerequisite               |   |                             |                                 |                                    |

### 課程描述 Course Description

微生物是我們所處環境中極重要的一份子，並具有在大自然中扮演分解者的角色，本課程希望同學得到有關環境的基本知識，瞭解不同環境下微生物的分布、功能與環境的交互作用，以便於未來的開發與應用。

### 課程目標 Course Objectives

微生物是我們所處環境中極重要的一份子，並具有在大自然中扮演分解者的角色，本課程希望同學得到有關環境微生物的基本知識，瞭解不同環境下微生物的分佈情形，以便將來應用微生物至環境污染處理的實務上。

#### 系專業能力

#### Basic Learning Outcomes

#### 課程目標與系專業能力相關性 Correlation between Course Objectives and Dept.'s Education Objectives

|   |   |   |
|---|---|---|
| A | 具備海洋生命科學的基礎知識Basic knowledge of marine life science is needed.  | ● |
| B | 具備獨立、創新及執行研究的能力Independent innovation and the research ability are needed.  | ● |
| C | 具備邏輯思考、問題分析與問題解決的能力Logical thinking, problem analysis and problem-solving abilities are needed.                       | ● |
| D | 具備領導、溝通協調與團隊合作的能力Good team communication, coordination and leadership skills are needed.                              | ● |
| E | 具備國際視野以及外語溝通的能力International vision and ability to communicate in foreign languages.                                  | ● |
| F | 善用資訊科技進行資訊蒐集、資料分析與統整Use of information technology for information collection, analysis and integration.               | ● |
| G | 對於學術倫理及專業倫理有正確的認知與堅持For professional ethics and academic responsibility have a correct understanding and persistence. | ● |

圖示說明 Illustration : ● 高度相關 Highly correlated ○ 中度相關 Moderately correlated

### 授課進度表 Teaching Schedule & Content

| 週次 Week | 內容 Subject/Topics                          | 備註 Remarks |
|---------|--|------------|
| 1       | Introduction to Environmental Microbiology |            |
| 2       | An overview of Microbial Life              |            |
| 3       | Microbial Growth                           |            |
| 4       | Earth Environments                         |            |

|    |   |  |
|----|---|--|
| 5  | Aeromicrobiology  |  |
| 6  | Aquatic Microbiology I  |  |
| 7  | Aquatic Microbiology II   |  |
| 8  | Extreme Environments  |  |
| 9  | 期中考試週 Midterm Exam  |  |
| 10 | Cultural Methods  |  |
| 11 | Indicator Microbiology  |  |
| 12 | Molecular Approaches for the Measurement of Microbial Diversity I |  |
| 13 | Molecular Approaches for the Measurement of Microbial Diversity I |  |
| 14 | Biogeochemical Cycling  |  |
| 15 | Microbial Diversity and Interactions in Natural Ecosystems        |  |
| 16 | Microorganisms and Pollutants                                     |  |
| 17 | Final Report  |  |
| 18 | 期末考試週 Final Exam  |  |

教學策略 Teaching Strategies

- 課堂講授 Lecture
  分組討論 Group Discussion
  參觀實習 Field Trip
  其他 Miscellaneous:

教學創新自評 Teaching Self-Evaluation

創新教學 (Innovative Teaching)

- 問題導向學習 (PBL)
  團體合作學習 (TBL)
  解決導向學習 (SBL)
  翻轉教室 Flipped Classroom
  磨課師 Moocs

社會責任 (Social Responsibility)

- 在地實踐 Community Practice
  產學合作 Industry-Academia Cooperation

跨域合作 (Transdisciplinary Projects)

- 跨界教學 Transdisciplinary Teaching
  跨院系教學 Inter-collegiate Teaching

- 業師合授 Courses Co-taught with Industry Practitioners

其它 other:

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學期成績計算及多元評量方式 Grading & Assessments

| 配分項目<br>Items  | 配分比例<br>Percentage | 多元評量方式 Assessments |          |          |          |          |          |          |    |
|--|--------------------|--------------------|----------|----------|----------|----------|----------|----------|----|
|  |                    | 測驗<br>會考           | 實作<br>觀察 | 口頭<br>發表 | 專題<br>研究 | 創作<br>展演 | 卷宗<br>評量 | 證照<br>檢定 | 其他 |
| 平時成績(含出缺席)<br>General Performance<br>(Attendance Record) | 30%                |                    | ✓        |          |          |          |          |          |    |
| 期中考成績 Midterm Exam                                       |                    |                    |          |          |          |          |          |          |    |
| 期末考成績 Final Exam   |                    |                    |          |          |          |          |          |          |    |
| 作業成績 Homework and/or<br>Assignments                      | 30%                |                    | ✓        |          |          |          |          |          |    |
| 其他 Miscellaneous<br>(Final Report)                       | 40%                |                    |          | ✓        |          |          |          |          |    |

評量方式補充說明

Grading & Assessments Supplemental instructions

教科書與參考書目 (書名、作者、書局、代理商、說明)

Textbook & Other References (Title, Author, Publisher, Agents, Remarks, etc.)

Environmental Microbiology, Ian L. Pepper, Charles P. Gerba, Terry J. Gentry, 3rd Edition.

課程教材網址(含線上教學資訊, 教師個人網址請列位於本校內之網址)

Teaching Aids & Teacher's Website(Including online teaching information.  
Personal website can be listed here.)

其他補充說明 (Supplemental instructions)