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**國立高雄科技大學**  
**NATIONAL KAOHSIUNG**  
**UNIVERSITY OF SCIENCE**  
**AND TECHNOLOGY**  
**授課大綱 Syllabus**

部別：日間部博士

112學年度第2學期

列印日期：2024/03/01

中文課程名稱：厭氧生物程序	英文課程名稱：Anaerobic Bioprocessing	授課教師：PATEL ANIL K.
開課班級：水產科技博班二甲	學分：3.0	授課時數：3.0
合班班級：		實習時數：0.0

**1. 中文教學目標(Chinese Teaching objectives)**

To develop the basic concepts of anaerobic bioprocessing technologies and teach a suitable practice towards real scientific learning on the subject. Establish the platform for studying courses in biofuel, organic acid production as well as wastewater treatment, and related fields to grow knowledge for further development in technologies and approach relevant to have better and real-world application.

**2. 英文教學目標(English Teaching objectives)**

To develop the basic concepts of anaerobic bioprocessing technologies and teach a suitable practice towards real scientific learning on the subject. Establish the platform for studying courses in biofuel, organic acid production as well as wastewater treatment, and related fields to grow knowledge for further development in technologies and approach relevant to have better and real-world application.

**3. 中文教學綱要(Chinese CourseDescription)**

This course " anaerobic bioprocessing" will be conducted in full English. The course content includes the bioprocess design to produce biogas and organic acid, treating wastewater and their compositions and characteristics, and basic principles to develop anaerobic bioprocessing via physicochemical and biological factors optimization. The teaching materials are self-produced ppt slides, and the way of teaching is classroom instructions.

**4. 英文教學綱要(English CourseDescription)**

This course " anaerobic bioprocessing" will be conducted in full English. The course content includes the bioprocess design to produce biogas and organic acid, treating wastewater and their compositions and characteristics, and basic principles to develop anaerobic bioprocessing via physicochemical and biological factors optimization. The teaching materials are self-produced ppt slides, and the way of teaching is classroom instructions.

**5. 中文核心能力**

核心能力名稱	核心能力百分比
1 生物資源永續	25%
2 產銷管理能力	25%
3 整合與研究能力	25%
4 創新溝通能力	25%

**6. 英文核心能力**

核心能力名稱	核心能力百分比
1 Biological resource sustainability	25%
2 Production and sales management capabilities	25%

3	Integration and research skills	25%
4	Innovative communication skills	25%

**7. 教科書**

中文書名：自編教材 英文書名：Self-product handouts

中文作者： 英文作者：

1 中文出版社： 英文出版社：

出版日期：年 月 備註：

**8. 參考書**

中文書名： 英文書名：Anaerobes and anaerobic processes (2021), Edited by Om Prakash, Dilip R. Ranade; Handbook of Anaerobic fermentation, edited by Larry E. Erickson, Daniel Y.C. Fung

1 中文作者： 英文作者：

中文出版社： 英文出版社：

出版日期：年 月 備註：

**9. 教學進度表**

週次或項目 Week or Items	中文授課內容 Chinese Course Content	英文授課內容 English Course Content	分配節次 Assigned Classes	備註 Note
1	Introduction of Anaerobic bioprocess (AB)	Introduction of Anaerobic bioprocess (AB)	3	
2	Principal and Microbiology of AB	Principal and Microbiology of AB	3	
3	Dark fermentation and application	Dark fermentation and application	3	
4	Lab assignment I/exercise I	Lab assignment I/exercise I	3	
5	Anaerobic bioprocess for organic acid production	Anaerobic bioprocess for organic acid production	3	
6	Anaerobic bioprocess for biofuel production and biogas upgrading	Anaerobic bioprocess for biofuel production and biogas upgrading	3	
7	Anaerobic bioprocess for organic waste digestion	Anaerobic bioprocess for organic waste digestion	3	
8	Lab assignment II/exercise II	Lab assignment II/exercise II	3	
9	Factor affecting AB	Factor affecting AB	3	
10	Comparison of aerobic and anaerobic bioprocess	Comparison of aerobic and anaerobic bioprocess	3	

11	Midterm exam	Midterm exam	3
12	Reactors designs for anaerobic digestion	Reactors designs for anaerobic digestion	3
13	Lab assignment III/exercise III	Lab assignment III/exercise III	3
14	Molecular techniques, COD, BOD and BMP analysis	Molecular techniques, COD, BOD and BMP analysis	3
15	Anaerobic digestion of Carbohydrate	Anaerobic digestion of Carbohydrate	3
16	Anaerobic digestion of Protein	Anaerobic digestion of Protein	3
17	Anaerobic digestion of Lipid	Anaerobic digestion of Lipid	3
18	Final exam	Final exam	3

#### 10. 中文成績評定(Chinese Evaluation method)

Attendance, quiz, homework, and the mid-/final- exams

#### 11. 英文成績評定(English Evaluation method)

Attendance, quiz, homework, and the mid-/final- exams

#### 12. 中文課堂要求(Chinese Classroom requirements)

Projector/online teaching setup

#### 13. 英文課堂要求(English Classroom requirements)

Projector/online teaching setup

#### 14. 本課程與SDGs相關項目(This course is relevant to these of SDGs as following)

3. 良好健康和福祉(Good Health and Well Being);6. 潔淨水與衛生(Clean Water and Sanitation);7. 可負擔的潔淨能源(Affordable and Clean Energy);

**「遵守智慧財產權」；「不得非法影印」！**