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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 : 藻類生物技術	英文課程名稱 : Algal Biotechnology	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 algal biotechnology and teach a suitable practice towards real scientific learning on the subject. Establish the platform for studying courses in algal biorefinery for various high-value products, their strategic use for carbon mitigation and wastewater treatment and related fields to grow knowledge for further development in algal technologies and approach relevant to better world application.

2.英文教學目標(English Teaching objectives)

To develop the basic concepts of algal biotechnology and teach a suitable practice towards real scientific learning on the subject. Establish the platform for studying courses in algal biorefinery for various high-value products, their strategic use for carbon mitigation and wastewater treatment and related fields to grow knowledge for further development in algal technologies and approach relevant to better world application.

3.中文教學綱要(Chinese CourseDescription)

This course " Algal biotechnology" will be conducted in full English. The course content includes their classification, isolation, characterization, type of cultivation strategies, harvesting techniques, basic principles and mechanisms in extraction of biomolecules and application related processes especially in physicochemical and biological treatment technologies. The teaching materials are self-produced ppt slides, and way of teaching is classroom instructions.

4.英文教學綱要(English CourseDescription)

This course " Algal biotechnology" will be conducted in full English. The course content includes their classification, isolation, characterization, type of cultivation strategies, harvesting techniques, basic principles and mechanisms in extraction of biomolecules and application related processes especially in physicochemical and biological treatment technologies. The teaching materials are self-produced ppt slides, and 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：Applied algal biotechnology
中文作者 : 英文作者：Arumugam, Kathiresan, S., Subramani, N.
1 中文出版社 : 英文出版社：Eds
出版日期 : 年 月 備註：

中文書名 : 英文書名：Algae Biotechnology
中文作者 : 英文作者：Faizal B., Chisti, Y.
2 中文出版社 : 英文出版社：Eds
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 and recent advancement of Algal biotechnology	Introduction and recent advancement of Algal biotechnology	3	
2	Classification and characterization of algae	Classification and characterization of algae	3	
3	Isolation and purification techniques for algal strains	Isolation and purification techniques for algal strains	3	
4	Lab assignment I/exercise I	Lab assignment I/exercise I	3	
5	Cultivation strategies	Cultivation strategies	3	
6	Harvesting techniques	Harvesting techniques	3	
7	Product extraction methods under biorefinery concept	Product extraction methods under biorefinery concept	3	

8	Lab assignment II/exercise II	Lab assignment II/exercise II	3
9	Industrial application of various algal products	Industrial application of various algal products	3
10	Algal use in Organic pollutants removal	Algal use in Organic pollutants removal	3
11	Midterm exam	Midterm exam	3
12	Algal use in inorganic pollutant and/or heavy metal removal	Algal use in inorganic pollutant and/or heavy metal removal	3
13	Lab assignment III/exercise III	Lab assignment III/exercise III	3
14	Various algae-based bioremediation technologies in combination of other microbes such as bacteria, fungi	Various algae-based bioremediation technologies in combination of other microbes such as bacteria, fungi	3
15	Algae application as probiotics for various animal hosts	Algae application as probiotics for various animal hosts	3
16	Algal application as functional food, animal feed, fish farming	Algal application as functional food, animal feed, fish farming	3
17	Existing challenges, possible solution for scale up, Market potential of algal based bioprocessing	Existing challenges, possible solution for scale up, Market potential of algal based bioprocessing	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);