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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 : 水產代謝體學專論	英文課程名稱 : Special topics on aquaculture metabolomics	授課教師 : 狄蘿莉
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)

The teaching objective of this course is to help students understand the importance of fish and aquaculture animals' metabolism and physiology in developing successful, economic and environmental friendly aquaculture operations, with reduced pollution and lower resource consumption.

2.英文教學目標(English Teaching objectives)

1. Understand the importance of marine fauna metabolism in aquaculture and ecosystem maintenance 2. The role of metabolomics in enhanced feed design and application of alternative feeds in aquaculture 3. Understanding the toxic effects of persistent pollutants on marine life which can help apply the same principles in human health

3.中文教學綱要(Chinese CourseDescription)

An introduction to genetic engineering technologies - Omics approaches - Genomics, transcriptomics, proteomics, metabolomics and the relation between genotype and phenotype. Importance of metabolomics in Aquaculture - Metabolomics in fish physiology and nutrition , Improvement of larval survival rate, Response of fish species to alternative feeds, Application of metabolomics in efficient feed design, Metabolomics in toxicology and marine pollutant assessment, Reproduction and development, Disease, immunology and stress response, Enhancement of cultivation conditions, Quality control in harvest and processing, Fillet composition and nutritional quality

4.英文教學綱要(English CourseDescription)

This is a single semester course covering the basics of aquaculture metabolomics. This course will help the students to understand the importance of fish nutrition and the necessity to develop alternative feeds supported by metabolomics approaches to limit "killing fish to raise fish".

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

1
中文書名： 英文書名：Metabolomics and fish nutrition: a review in the context of sustainable feed development
中文作者： 英文作者：Roques et al
中文出版社： 英文出版社：Wiley
出版日期：2018年 11月 備註：

8.參考書

1
中文書名： 英文書名：Metabolomic strategies for aquaculture: A primer
中文作者： 英文作者：Tim Young and Andrea C. Alfaro
中文出版社： 英文出版社：Wiley
出版日期：2016年 05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	An introduction to genetic engineering technologies, and the central dogma of the cell	An introduction to genetic engineering technologies, and the central dogma of the cell	3	
2	Omics approaches - Genomics, transcriptomics, proteomics, metabolomics and the relation between genotype and phenotype.	Omics approaches - Genomics, transcriptomics, proteomics, metabolomics and the relation between genotype and phenotype.	3	
3	Introduction to Importance of metabolomics in Aquaculture	Introduction to Importance of metabolomics in Aquaculture	3	
4	Metabolomics in fish physiology and nutrition	Metabolomics in fish physiology and nutrition	3	
5	Improvement of larval survival rate - finfish, crustaceans and bivalves	Improvement of larval survival rate - finfish, crustaceans and bivalves	3	
6	Hatchery operations - metabolomics approaches to enhance feeding response	Hatchery operations - metabolomics approaches to enhance feeding response	3	
7	Response of fish species to alternative	Response of fish species to alternative	3	

	feeds	feeds	
8	Application of metabolomics in efficient feed design and improved water quality	Application of metabolomics in efficient feed design and improved water quality	3
9	Mid term exam	Mid term exam	3
10	Metabolomics in toxicology and marine pollutant assessment	Metabolomics in toxicology and marine pollutant assessment	3
11	Environmental monitoring of persistent pollutants	Environmental monitoring of persistent pollutants	3
12	Metabolomics in reproduction and development	Metabolomics in reproduction and development	3
13	Metabolomics, diseases and immune response	Metabolomics, diseases and immune response	3
14	Metabolomics and stress response - crucial factor in aquaculture	Metabolomics and stress response - crucial factor in aquaculture	3
15	Metabolomics and cultivation condition enhancement	Metabolomics and cultivation condition enhancement	3
16	Metabolomics in reproduction and development	Metabolomics in reproduction and development	3
17	Quality control in harvest and processing, Fillet composition and nutritional quality	Quality control in harvest and processing, Fillet composition and nutritional quality	3
18	Final exam	Final exam	3

10.中文成績評定(Chinese Evaluation method)

Mid-term - 30% Seminar presentation - 20% Assignment submission - 10% Final exam - 50%

11.英文成績評定(English Evaluation method)

Mid-term - 30% Seminar presentation - 20% Assignment submission - 10% Final exam - 50%

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

N/A

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

N/A

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

2.消除飢餓(Zero Hunger);3.良好健康和福祉(Good Health and Well Being);14.水下生命(Life Below Water);