開課班級: 博觀賞魚專班一A **授課老師: 劉俊廷** **學分數: 2**

課程大綱:

海洋生物技術學(含實習)為一門以水生動物養殖及其疾病的診斷預防相關的現場和實驗室知識技能為學習標的的課程。課程的切入點包含從養殖環境、養殖的水生動物及致病原3個主要面向帶入討論，引導學生建立完整相關水生動物健康知識體系，利用科學方法確認問題、分析判斷、尋找證據及提出解決方案。課程包含約一半的講授及另一半的實作練習，讓參與課程的學生廣泛掌握該領域的現況與發展，建立對水生動物健康領域的扎實知識庫存與技能自信。

outline:

The marine biotechnology (including practice) is a course that focuses on the knowledge of farmed aquatic animal managing, disease diagnosis and prevention as well as the related field and laboratory skills. It will be discussed majorly from 3 aspects including the aquatic environment, aquatic animals and pathogens to lead the students construct a complete knowledge system upon aquatic animal health issue. We will learn to scientifically identify an issue, analyze, find evidences and propose a solution to resolve each puzzle. This course will be conducted about half by lecture and half by practice to let students master the current and comprehensive development in this field and build their solid knowledge, skills and confidence to the world of aquatic animal health.

教學型態:

課堂教學

成績考核方式:

平時成績:5%
期中考:45%
期末考:45%
其它:5%%

本科目教學目標:

參考書目:

課程進度表：

週次	起訖月日	授課單元(內容)	備註
第1週	9.11~9.18		8日正式上課。8~12日課程加退選，轉學(系)生、復學生及延修生選課，雙主修、輔系申請，12日申辦抵免學分截止日
第2週	9.18~9.25	The chemicals for improve & modify water quality. Practice: water quality measurement and calculation.	
第3週	9.25~10.02	Practice course: test the efficacy of different oxygen enhancer (H2O2) and some other chemicals that potentially change the dissolved O2 concentration (formalin, ClO2 etc.).	28日(日)孔子誕辰紀念日/教師節(放假),29日(一)補假
第4週	10.02~10.09	Practice course: test the efficacy of different oxygen enhancer (H2O2) and some other chemicals that potentially change the dissolved O2 concentration (formalin, ClO2 etc.).	29日成績優異提前畢業者提出申請截止日
第5週	10.09~10.16	Practice course: Compare the efficacy of different disinfectants in water.	6日(一)中秋節(放假)，10日(五)國慶日(放假)
第6週	10.16~10.23	The viral and bacterial quantification. Practice: quantify the cell counts of a bacterial fluid.;	14日學生宿舍安全輔導暨複合式防災疏散演練。18日多益測驗
第7週	10.23~10.30	Practice course: NCBI blast web tool	24日(五)補假，25日(六)光復暨古寧頭大捷日(放假)。
第8週	10.30~11.06	Practice course: Use free web tool (BioEdit) to compare gene sequences and use MEGAX to produce phylogenetic tree.	30日校課程委員會
第9週	11.06~11.13	Midterm examination	3~9日期中考試
第10週	11.13~11.20	Different type of vaccines and compare their pros and cons in aquatic animals	13日教務會議,16日教師期中成績上網登錄截止日
第11週	11.20~11.27	Cell culture and their application in aquatic animal health & disease research. Aquatic animal breeding & gene modify animal (triploid) in aquaculture.	
第12週	11.27~12.04	Practice course: DNA copy number quantification and use QuantStudio system as an example to generate a standard curve.	24~28體育運動週。24日校園路跑。27日運動大會夜間開幕，28日運動大會活動，29日101週年校慶活動日，照常上班
第13週	12.04~12.11	The application of additives and herbal medicine additives in aquaculture for aquatic animal health. Practice: calculate & make a medical or herbal	

		powder mixed feed.	
第14週	12.11~12.18	Gene editing (siRNA & microRNA) and fluorescent fish technique. Transcriptome, RNA seq & eDNA (big data) in aquatic animal health.	12日申請停修課程截止日
第15週	12.18~12.25	Practice course: Experimental design for comparing and calculating the gene expression levels (absolute expression and $2-\Delta\Delta$Ct;method)	
第16週	12.25~1.01	Practice: comparing survival probability and survival rate.	22日校務會議。25日行憲紀念日(放假)
第17週	1.01~1.08	The top dilemma & mystery of aquaculture: the development of shrimp disease, eel reproduction and tuna culture research. (Holiday)	1日(四)開國紀念日(放假)
第18週	1.08~1.15	Final term examination	5~11日期末考試，10~11日學生退宿