

國立嘉義大學101學年度第1學期教學大綱

課程代碼	10112530021	上課學制	研究所碩士班
課程名稱	藥物環境殘留 Chemical Residues in Environment	授課教師 (師資來源)	賴弘智(水生系)
學分(時數)	3.0 (3.0)	上課班級	水生系碩班1年甲班
先修科目		必選修別	選修
上課地點	水生生物科學館 A28-203	授課語言	國語
證照關係	no	晤談時間	星期2第1節~第4節, 地點:Lab 402 of Dept. Aquatic Biosciences
課程大綱網	https://web085004.adm.ncyu.edu.tw/Syllabus/Syllabus_Rpt.aspx?CrsCode=10112530021		

址	
備註	

◎系所教育目標：

本研究所為配合水產生物科技與水產養殖產業之發展脈動，在兼顧水族生態環境與保育之原則下，進行各項學術研究與實務技能之訓練。培訓學生成為水域生命科學及相關產業之全方位研發人才。整合專業研究團隊，結合鄰近水產試驗機關推動各項產學合作與推廣服務，促進彰、雲、嘉、南地區之水產科技升級。

◎核心能力	關聯性
1.具備水生科學專業知識	關聯性最強
2.具備實務應用能力	關聯性最強
3.具備團隊合作與研發能力	關聯性中等
4.具備跨領域知能與服務能力	關聯性最強

◎本學科內容概述：

This class will establish the basic knowledge for the pharmaceutical residues in environment.

◎本學科教學內容大綱：

1. Introduction of this class 2. A global perspective on the use, sales, exposure pathways, occurrence, fate and effects of veterinary antibiotics (VAs) in the environment. 3. Pharmaceutical antibiotic compounds in soils - a review. 4. Pharmaceutical antibiotic compounds in soils - a review.(I) 5. Pharmaceutical antibiotic compounds in soils - a review.(II) 6. Are pharmaceuticals potent environmental pollutants?: Part I: Environmental risk assessments of selected active pharmaceutical ingredients. 7. Are pharmaceuticals potent environmental pollutants?: Part II: Environmental risk assessments of selected pharmaceutical excipients. 8. Significance of antibiotics in the environment. 7. Occurrence, fate, and removal of pharmaceutical residues in the aquatic environment: a review of recent research data. 8. Environmental behavior and analysis of

veterinary and human drugs in soils, sediments and sludge. 9. Towards safe and effective use of chemicals in coastal aquaculture. 10. Towards safe and effective use of chemicals in coastal aquaculture 11. Photodegradation of pharmaceuticals in the aquatic environment: A review. 12. Dissipation of oxytetracycline in soils under different redox conditions 13. Fate of the antibiotic sulfamethoxazole and Its two major human metabolites in a water sediment test 14. Degradation and elimination of various sulfonamides during anaerobic fermentation: a promising step on the way to sustainable pharmacy?

◎本學科學習目標：

This class will establish the basic knowledge for the pharmaceutical residues in environment.

◎教學進度：

週次	主題	教學內容	教學方法
01	Introduction of this class	Introduction of this class	講授。
02	A global perspective on the use, sales, exposure pathways, occurrence, fate and effects of veterinary antibiotics (VAs) in the environment.	A global perspective on the use, sales, exposure pathways, occurrence, fate and effects of veterinary antibiotics (VAs) in the environment.	講授。
03	Pharmaceutical antibiotic compounds in soils - a review.	Pharmaceutical antibiotic compounds in soils - a review.	講授。
04	Pharmaceutical antibiotic compounds in soils - a review.(I)	Pharmaceutical antibiotic compounds in soils - a review. (I)	講授。
	Pharmaceutical	Pharmaceutical antibiotic	

05	antibiotic compounds in soils - a review.(II)	compounds in soils - a review. (II)	講授。
06	Are pharmaceuticals potent environmental pollutants?: Part I: Environmental risk assessments of selected active pharmaceutical ingredients.	Are pharmaceuticals potent environmental pollutants?: Part I: Environmental risk assessments of selected active pharmaceutical ingredients.	講授。
07	Are pharmaceuticals potent environmental pollutants?: Part II: Environmental risk assessments of selected pharmaceutical excipients.	Are pharmaceuticals potent environmental pollutants?: Part II: Environmental risk assessments of selected pharmaceutical excipients.	講授。
08	Significance of antibiotics in the environment.	Significance of antibiotics in the environment.	講授。
09	mid-term exam	mid-term exam	期中考。
10	Occurrence, fate, and removal of pharmaceutical residues in the aquatic environment: a review of recent research data.	Occurrence, fate, and removal of pharmaceutical residues in the aquatic environment: a review of recent research data.	講授。
11	Environmental behavior and analysis of veterinary and human drugs in soils, sediments and sludge.	Environmental behavior and analysis of veterinary and human drugs in soils, sediments and sludge.	講授。

12	Towards safe and effective use of chemicals in coastal aquaculture.	Towards safe and effective use of chemicals in coastal aquaculture.	講授。
13	Towards safe and effective use of chemicals in coastal aquaculture	Towards safe and effective use of chemicals in coastal aquaculture	講授。
14	Photodegradation of pharmaceuticals in the aquatic environment: A review.	Photodegradation of pharmaceuticals in the aquatic environment: A review.	講授。
15	Dissipation of oxytetracycline in soils under different redox conditions	Dissipation of oxytetracycline in soils under different redox conditions	講授。
16	Fate of the antibiotic sulfamethoxazole and Its two major human metabolites in a water sediment test	Fate of the antibiotic sulfamethoxazole and Its two major human metabolites in a water sediment test	講授。
17	Degradation and elimination of various sulfonamides during anaerobic fermentation: a promising step on the way to sustainable pharmacy?	Degradation and elimination of various sulfonamides during anaerobic fermentation: a promising step on the way to sustainable pharmacy?	講授。
18	final exam	final exam	期末考。

◎課程要求：
(space)

◎成績考核

課堂參與討論10%

期中考30%

期末考30%

書面報告15%

口頭報告15%

◎參考書目與學習資源

Keri L. Henderson and Joel R. Coats, 2009. Veterinary
Pharmaceuticals in the environment, USA,, 247 pp.

- 1.請尊重智慧財產權觀念及不得非法影印。
- 2.請重視性別平等教育之重要性，在各項學生集會場合、輔導及教學過程中，隨時向學生宣導正確的性別平等觀念，並關心班上學生感情及生活事項，隨時予以適當的輔導，建立學生正確的性別平等意識。