



教學計劃表 Syllabus

課程名稱(中文) Course Name in Chinese	生物資訊分析			學年/學期 Academic Year/Semester	114/1
課程名稱(英文) Course Name in English	Bioinformatics analysis				
科目代碼 Course Code	BMM_33470	系級 Department & Year	學三	開課單位 Course-Offering Department	生化暨分子醫學科學系
修別 Type	學程 Program	學分數/時間 Credit(s)/Hour(s)		3.0/3.0	
授課教師 Instructor	/傅詩宸				
先修課程 Prerequisite					

課程描述 Course Description

Course description.

This comprehensive course is designed to equip students with a strong foundation in bioinformatics and genomic research. Through a combination of theoretical lectures, hands-on practical exercises, and discussions, students will delve into the core concepts of bioinformatics, the central dogma of molecular biology, Polymerase Chain Reaction (PCR), next-generation sequencing (NGS), basic Linux commands for data analysis, and key considerations in human genome and microbiome research. By the end of this course, students will have the knowledge and skills necessary to explore the vast potential of genomic data in various research applications.

Course Duration:
17 weeks

Course Objectives:

1. Define bioinformatics and its relevance in contemporary biological research.
2. Explain the central dogma of molecular biology and its role in genetic information flow.
3. Comprehend the principles and applications of PCR in molecular biology.
4. Understand the fundamentals of next-generation sequencing technologies and their applications.
5. Understand basic Linux commands for bioinformatics analysis.
6. Gain insights into human genome research, microbiome research, and associated challenges.

Teaching Method: Flipped classroom

A flipped classroom is a teaching method where students learn course material before class through videos or readings. Class time is then used for interactive activities, discussions, and problem-solving with the teacher as a guide. This approach encourages active learning, collaboration, and immediate feedback, ultimately enhancing understanding and critical thinking.

課程目標 Course Objectives

This course covers the computational analysis of several important forms of genomic data. Topics include reproducible research principles, genomics workflows, sequence alignment, genome annotation, parallel computing, and metagenomics. Participants will be familiar with the up-to-date analyses of data extracted from both human and bacteria at the end of the semester.

系專業能力 Basic Learning Outcomes		課程目標與系專業能力相關性 Correlation between Course Objectives and Dept.' s Education Objectives
A	具備生命科學相關學科之基礎知識。Having the basic knowledge of life science.	●
B	具備邏輯分析與解決問題的能力。Having the capabilities of logical analysis and problem solving.	●
C	具備資料整合、數據分析與書面及口頭報告之能力。Having the capabilities of data integration and analysis, and the skills of written and poster presentation.	●
D	具備終生學習的能力。Having the capability of lifelong learning.	○

圖示說明Illustration：● 高度相關 Highly correlated ○ 中度相關 Moderately correlated

授課進度表 Teaching Schedule & Content		
週次Week	內容 Subject/Topics	備註Remarks
1		
2		
3		
4		
5		
6		
7		
8		
9	期中考試週 Midterm Exam	
10		
11		
12		
13		
14		
15		
16		
17		
18	期末考試週 Final Exam	

教學策略 Teaching Strategies

- ☐ 課堂講授 Lecture ☐ 分組討論 Group Discussion ☐ 參觀實習 Field Trip
- ☐ 其他 Miscellaneous:

教學創新自評 Teaching Self-Evaluation

創新教學 (Innovative Teaching)

- ☐ 問題導向學習 (PBL) ☐ 團體合作學習 (TBL) ☐ 解決導向學習 (SBL)
- ☐ 翻轉教室 Flipped Classroom ☐ 磨課師 Moocs

社會責任 (Social Responsibility)

- ☐ 在地實踐 Community Practice ☐ 產學合作 Industry-Academia Cooperation

跨域合作 (Transdisciplinary Projects)

- ☐ 跨界教學 Transdisciplinary Teaching ☐ 跨院系教學 Inter-collegiate Teaching
- ☐ 業師合授 Courses Co-taught with Industry Practitioners

其它 other:

學期成績計算及多元評量方式 Grading & Assessments									
配分項目 Items	配分比例 Percentage	多元評量方式 Assessments							
		測驗 會考	實作 觀察	口頭 發表	專題 研究	創作 展演	卷宗 評量	證照 檢定	其他
平時成績 General Performance									
期中考成績 Midterm Exam									
期末考成績 Final Exam									
作業成績 Homework and/or Assignments									
其他 Miscellaneous (_____)									
評量方式補充說明 Grading & Assessments Supplemental instructions									
教科書與參考書目（書名、作者、書局、代理商、說明） Textbook & Other References (Title, Author, Publisher, Agents, Remarks, etc.)									
課程教材網址(含線上教學資訊,教師個人網址請列位於本校內之網址) Teaching Aids & Teacher's Website(Including online teaching information. Personal website can be listed here.)									
其他補充說明 (Supplemental instructions)									