National Cheng Kung University
Modular Course 2024 Summer Program

Academic Year：114, Semester：1 Category：Life Sciences and Health

從離子移動到思考-大腦運作機制
From ion movement to thinking – the brain machinery

Instructor	Affiliation	Graduation (Ph.d.)
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Category	Course Credit	Student Size (Maximum)
Life Sciences and Health	**1**	**30**

Student Background

Students from all college are welcome

Difficulty

☐ **Challenging** ☐ **Moderately Difficult** ■ **Medium** ☐ **Entry Level (Basic)**

Format of The Course

Lecture 80%，Presentation 20%

Grading Policy

問題考試 20 %：

第 2-5 堂課一開始有線上簡易小考並同時計算出席（以提醒前次內容為主、單選題），答題會於 15 分鐘以內完成，考後隨即解答以加深學生記憶。

作業 50 %：

每次上課最後 20 分鐘會出題進行小組討論，當天需繳交討論作業，作業將上傳至線上平台如 Padlet。

報告 30 %：

針對題目撰寫小型論文，評分注重回答解決問題的邏輯性，並能符合課中所教導之神經生物學知識。報告將於課程結束一周內上傳至 Moodle。

Code of Conduct for The Course

None

Course Description

The brain is an incredibly complex and vital organ in the human body, responsible for controlling all bodily functions and behaviors. It is composed of billions of neurons and supportive glial cells, with specific regions governing critical functions such as decision-making and memory processing. Communication within the brain occurs through a sophisticated network of electrical and chemical signals. This course provides a foundational understanding of the brain, including its structure, function, and communication. Students will have the opportunity to realize the structure of the mouse brain and cells through experimental videos.

Keywords：Brain, neuron, molecular function, electrical signal

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Timetable and Syllabus

Period	Timetable	Syllabus
2025/8/11(MON)	9:00-12:20	Lecture-Brain tissue and cell structure
	12:20-12:40	Group discussion
2025/8/12(TUE)	9:00-9:15	Quiz
	9:15-12:20	Lecture-Region-specific function in the brain
	12:20-12:40	Group discussion
2025/8/13(WED)	9:00-9:15	Quiz
	9:15-12:20	Lecture-Neural circuits in the brain
	12:20-12:40	Group discussion
2025/8/14(THU)	9:00-9:15	Quiz
	9:15-12:20	Lecture-Neuroinflammation and common brain diseases
	12:20-12:40	Group discussion
2025/8/15(FRI)	9:00-9:15	Quiz
	9:15-12:20	Lecture-Neuroscience experiment display
	12:20-12:40	Group discussion

Goal of the Course

1. **Students will recognize the tissue and cellular structure in the brain.**
2. **Students can understand the primary brain circuit and functions.**
3. **Students can evaluate future technology for brain disorders.**

The Importance, Cross-Over Disciplinary and Contemporary of The Curriculum

In this course, students will engage in problem-solving activities and group discussions to develop a solid foundation in neuroscience concepts. The skills and knowledge gained in this course will be applicable to a wide range of fields, and students will be encouraged to integrate their newfound understanding of the brain into their majors. Through interdisciplinary training, students will be exposed to new ideas and cutting-edge research in neuroscience. This course will inspire students to explore the vast potential of the brain and the incredible impact it can have on our lives.

Remarks

None

本課程若因天災等不可抗力之因素或中央、地方政府公告停課，授課教師需依情況依建議補課方式調整課程進度與補課；若需使用假日、國定假日補課，則需與所有修課學生達成共識方能用例假日補課。

建議補課方式：

1. 線上授課方式補課；
2. 當預期可能會因天災(颱風、超大豪雨…等)宣佈停課時，建議老師先行調整加快課程進度或預先增加可能天氣預警之前幾次課程時數；
3. 停課後隔天起延後下課，補足停課延誤的進度；若停課超過 1 天，則在開始上課後延後下課補課，或當週星期六、日補課；

更改課程授課方式，例如：DEMO 改以考試、報告、作業取代。