National Cheng Kung University
Modular Course 2023 Summer Program

腦與細胞之分子結構
Molecular structure of the brain and cells

Instructor	Affiliation	Graduation (Ph.d.)
Chih-Yen Wang	**National Cheng Kung University Department of Biotechnology and Bioindustry Sciences**	**National Cheng Kung University (國立成功大學)**

Course Type	Course Credit	Class Capacity (Maximum)
Lecture + Recitation	**1.5**	**12**

Student Background

Students from all college are welcome

Difficulty

☐ **Challenging** ■**Medium Well** ☐**Medium** ☐ **Entry Level (Basic)**

Format of The Course

Lecture 40%，Practice 30%，Discussion and Report 30%

Grading Policy

In class exam 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 20 分鐘以內完成，考後隨即解答以加深學生記憶。
Report 60%：每堂課中或課後會進行小組討論有關上課議題，各組學生需要共同合作寫出問題的成因與解決方式，老師會從旁協助給予所需提示。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。
Experimental operation 20%：老師會觀察學生的參與度，如親手實作，參與討論，並於實驗結果呈現時能完整回答實驗內容與原理。

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 gain practical experience by observing the structure of the mouse brain and cells under a microscope following biochemical assays.

~NEXT~

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Timetable and Syllabus

Peroid	Timetable	Syllabus
8/14(MON)	**9:00 - 15:30**	**9:00-12:00 [Lecture] Brain structure and functions** **13:00-15:30 [Lab work] Dissecting the mouse brain**
8/15(TUE)	**9:00 - 15:30**	**9:00-9:30 Quiz and recap** **9:30-12:00 [Lecture] Structure and function of neurons and glial cells** **13:00-15:30 [lab work] Brain tissue sectioning**
8/16(WED)	**9:00 - 15:30**	**9:00-9:30 Quiz and recap** **9:30-12:00 [Lecture] Neural circuits and the white matter** **13:00-15:30 [Lab work] Observing the brain using immunochemistry**
8/17(THU)	**9:00 - 15:30**	**9:00-9:30 Quiz and recap** **9:30-12:00 [Lecture] Neuroinflammation and common brain diseases** **13:00-15:30 [Lab work] Analyzing brain molecules I**
8/18(FRI)	**9:00 - 15:30**	**9:00-9:30 Quiz and recap** **9:30-12:00 [Lecture] Analyzing brain molecules II** **13:00-15:30 [Group discussion] Discussion and essay**

Goal of the Course

1. Students will recognize the brain structure, function, and circuit.

2. Students can examine the specimens from mouse brain.

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