

Course title	System Neuroscience 1	
Term	後期 2nd Half	
Credit(s)	1	
The main day		The main period
Program/Department	48 Physiological Sciences	
Lecturers	Hiromasa Takemura, Keiichi Kitajo, and others	
成績評価区分 Grading Scale	A, B, C, Dの4段階評価 Four-grade evaluation	
レベル Level	Level 3	
力量 Competence	専門力 Academic expertise、独創性 Creativity	

Instructor	
Full name	* TAKEMURA HIROMASA
	HATANAKA NOBUHIKO
	KITAJO KEIICHI
	GODA NAOKAZU
	CHIKEN SATOMI
	NINOMIYA TAIHEI
	NORITAKE ATSUSHI
	OKAZAKI (HASHI) YUKA

Outline	In this lecture, anatomy and function of the central nervous system, focusing on the cerebral cortex, basal ganglia, and cerebellum, and methods for their analysis will be explained, aiming at a systematic understanding of brain functions. In the first and second lectures, physiological findings on the neural mechanisms of the visual system will be discussed, including the results of neuroimaging studies on humans. In the third and fourth lectures, the control mechanisms of voluntary movements in the cerebral cortex, basal ganglia, and cerebellum will be discussed from both physiological and pathological perspectives. In the 5th and 6th lectures, neural mechanisms related to social cognition will be explained in terms of both action information processing and reward information processing. In the 7th and 8th lectures, mathematical modeling, information theory, complex network analysis, and machine learning will be introduced to explore the operating principles of the integrated functions of the brain.
Learning objectives	(1) Understand neural basis of visual processing. (2) Understand neural basis of motor control. (3) Understand neural basis of social cognition. (4) Understand characteristics and significance of various advanced methods for investigating neural dynamics.
Grading policy	Attendance of at least half of the lectures is required. Students are required to select one of the lectures they attended and submit a report summarizing the content of the lecture in 750-1500 words (in English) based on the above learning objectives. Students who submit the report by the deadline will be given an absolute grade of A, B, C, or D according to their level of understanding.
Lecture Plan	Schedule: Oct 25 - Dec 13, 2024, 10:00-11:30 on Fridays (Following schedule is a subject to change. Please check the course website for the latest information. The URL is described below.) Contents: [1] Oct 25th: Hiromasa Takemura, "Anatomy, physiology and psychology of visual perception (I)" [2] Nov 1st: Naokazu Goda, "Anatomy, physiology and psychology of visual perception (1)" [3] Nov 8th: Nobuhiko Hatanaka, "Motor control by cerebral cortex, basal ganglia, and cerebellum (I)" [4] Nov 15th: Satomi Chiken, "Motor control by cerebral cortex, basal ganglia, and cerebellum (1)" [5] Nov 22th: Atsushi Noritake, "Social Cognition I (reward processing)" [6] Nov 29th: Taihei Ninomiya, "Social Cognition II (action processing)" [7] Dec 6th: Keiichi Kitajo, "The dynamics of neural oscillations I (computational approach)" [8] Dec 13th: Yuka Okazaki, "The dynamics of neural oscillations II (experimental approach)"
Location	Zoom online
Language	English
Textbooks and references	Not applicable
Notes for students of other programs	Not applicable
Related URL	https://www.nips.ac.jp/graduate/curriculum.html
Explanatory note on above URL	Please keep be updated on the latest schedule from " Schedule of the classes" on the program website.
Contact for Course Inquiries	Hiromasa Takemura (htakemur@nips.ac.jp)