

Course title	Basic physiological and anatomical brain science
Term	前期 1st Half
Credit(s)	1
The main day	The main period
Program/Department	48 Physiological Sciences
Lecturers	Hiromasa Takemura, Tomomi Nemoto, 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 2
力量 Competence	専門力 Academic expertise、独創性 Creativity

Instructor
Full name
* TAKEMURA HIROMASA
NEMOTO TOMOMI
KITAJO KEIICHI
TATEYAMA MICHIIRO
MURAKOSHI HIDEJI
ENOKI RYOSUKE
TOMATSU SAEKA
OTSUKA TAKESHI
SATAKE SHINICHIRO
LUO, Junxiang
ONODERA KOUN

Outline	Basic knowledge on physiology and anatomy of the brain, computer science and image processing can be learned through 10 lectures.
Learning objectives	<ul style="list-style-type: none"> After completing this course, students can discuss with others on basic neuroscience. After completing this course, students can write a summary of a research paper. After completing this course, students can acquire basic knowledge on computer science and imaging processing which is necessary for performing research on physiology.
Grading policy	<ul style="list-style-type: none"> Students must attend at least the half of the lectures to get credit. Write a summary report on the one of lectures. The report will be graded by the lecturer on the basis of a level of understandings on the lecture. (50% for each)
Lecture Plan	<p>Schedule : May 14 – July 16, 2025, 10:00–11:30 on Wednesdays (Following schedule is a subject to change. Please check the course website for the latest information. The URL is described below.)</p> <p>Contents:</p> <p>[1] Chapter 2, 3, 4 (May 14, Tateyama)</p> <p>2. Neurons and Glia</p> <p>3. The Neuronal Membrane at Rest</p> <p>4. The Action Potential</p> <p>[2] Chapter 5, 6, 7 (May 21, Satake)</p> <p>5. Synaptic Transmission</p> <p>6. Neurotransmitter Systems</p> <p>7. The Structure of the Nervous System</p> <p>[3] Chapter 8, 9, 10 (May 28, Onodera)</p> <p>8. The Chemical Senses</p> <p>9. The Eye</p> <p>10. The Central Visual System</p> <p>[4] Chapter 11, 12, 13 (June 4, Tomatsu)</p> <p>11. The Auditory and Vestibular Systems</p> <p>12. The Somatic Sensory System</p> <p>13. Spinal Control of Movement</p> <p>[5] Chapter 14, 15, 16 (June 11, Otsuka)</p> <p>14. Brain Control of Movement</p> <p>15. Chemical Control of the Brain and Behavior</p> <p>16. Motivation</p> <p>[6] Chapter 17, 18, 19 (June 18, Enoki)</p> <p>17. Sex and the Brain</p> <p>18. Brain Mechanisms of Emotion</p> <p>19. Brain Rhythms and Sleep</p> <p>[7] Chapter 20, 21, 22 (June 25, Luo)</p> <p>20. Language</p> <p>21. The Resting Brain, Attention, and Consciousness</p> <p>22. Mental Illness</p> <p>[8] Chapter 23, 24, 25 (July 2, Murakoshi)</p> <p>23. Wiring the Brain</p> <p>24. Memory Systems</p> <p>25. Molecular Mechanism of Learning and Memory</p> <p>[9] Basics of computer science. (July 9, Kitajo)</p> <p>[10] Fundamentals of image processing (July 16, Nemoto)</p>
Location	Zoom Online
Language	English
Textbooks and references	Neuroscience: Exploring the Brain (4th ed.) Bear, Connors, & Paradiso. However it is not mandatory to bring it to class. Students can request to borrow the textbook.
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.
Others	Assignment: 1. Read the textbook before coming to class.
Contact for Course Inquiries	Hiromasa Takemura (htakemur@nips.ac.jp)