<table>
<thead>
<tr>
<th>Course title</th>
<th>Basic physiological and anatomical brain science</th>
</tr>
</thead>
<tbody>
<tr>
<td>Term</td>
<td>前期 1st Half</td>
</tr>
<tr>
<td>Credit(s)</td>
<td>1</td>
</tr>
<tr>
<td>Program/Department</td>
<td>48 Physiological Sciences</td>
</tr>
<tr>
<td>Lecturers</td>
<td>Yoshihiro Kubo, Hiromasa Takemura, and others</td>
</tr>
<tr>
<td>Grading Scale</td>
<td>A, B, C, Dの4段階評価 Four-grade evaluation</td>
</tr>
<tr>
<td>Level</td>
<td>Level 2</td>
</tr>
<tr>
<td>Instructor</td>
<td></td>
</tr>
<tr>
<td>Full name</td>
<td>TAKEMURA HIROMASA</td>
</tr>
</tbody>
</table>

### Outline
Basic knowledge on physiology and anatomy of the brain, computer science and image processing can be learned through 10 lectures.

### Learning objectives
- 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
- 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
Schedule: May 10 - July 19, 2023, 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. Please note that the order of chapters do not fully correspond with the order of lectures.)

#### Contents:
1. Chapter 2, 3, 4 (May 10, Kubo)
2. Neurons and Glia
3. The Neuronal Membrane at Rest
4. The Action Potential
5. Synaptic Transmission
6. Neurotransmitter Systems
7. The Structure of the Nervous System
8. Brain Control of Movement
9. Chemical Control of the Brain and Behavior
10. Motivation
11. Chapter 11, 12, 13 (May 31, Tominaga)
12. The Auditory and Vestibular Systems
13. The Somatosensory System
14. Spinal Control of Movement
15. Chapter 8, 9, 10 (June 7, Yoshimura)
16. The Chemical Senses
17. The Eye
18. The Central Visual System
19. Brain Rhythms and Sleep
20. Chapter 20, 21, 22 (June 21, Takemura)
21. Language
22. The Resting Brain, Attention, and Consciousness
23. Mental Illness
24. Chapter 23, 24, 25 (June 28, Isoda)
25. Wiring the Brain
26. Memory Systems
27. Molecular Mechanisms of Learning and Memory
28. Basics of computer science (July 5, Kitajo)
29. Basics of image processing (July 19, Nemoto)

### Location
Zoom Online

### Language
English

### Textbooks and references
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.