

## Syllabus

### 1. Course Title, style, and credit

Voluntary motor controls, Lecture 1 credit

### 2. Appropriate grade level and Eligible Departments

All Departments.

For Department of Physiological Sciences, D1, 2 (obligatory), D3-5 (optional)

### 3. Lectures

Atsushi Nambu

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### 4. Time [Oral]

10:00 -- 12:00 on Friday (some lecture, 16:00 -- 18:00 on Friday)

### 5. Place

Main Conference room of the Staff Hall, 2nd floor (Myodaiji Area)

The lectures will be delivered by the remote lecture system.

### 6. Prerequisites and Styles

Basic knowledge on the central nervous system will help to understand the lecture but is not essential.

### 7. Contents and objectives

Living animals, including human beings, obtain many pieces of information from the external and internal environments, integrate them to make a decision for appropriate behavioral activity, and finally take action based on self-intension. The brain areas, such as the cerebral cortex, basal ganglia and cerebellum, play a major role in the voluntary movements. On the other hand, malfunctions of these structures result in movement disorders, such as Parkinson's disease. The aim of this course "behavioral neuroscience" is to understand of the mechanisms underlying higher motor functions and the pathophysiology of movement disorders.

## 8. Schedule

(1) January 11 (Fri) 10:00-12:00

Introduction. Atsushi Nambu (NIPS)

(2) January 18 (Fri) 10:00-12:00

Basal ganglia circuitry. Nobuhiko Hatanaka (NIPS)

(3) January 25 (Fri) 10:00-12:00

Higher functions of the basal ganglia. Yoshihisa Tachibana (NIPS)

(4) February 1 (Fri) 10:00-12:00

Functions of the cerebellum. Atsushi Nambu (NIPS)

(5) February 8 (Fri) 16:00-18:00

Cerebral motor cortices. Eiji Hoshi (Tokyo Metropolitan Institute of Medical Science)

(6) February 15 (Fri) 10:00-12:00

Thalamo-cortical projections. Yasuo Kawaguchi (NIPS)

(7) February 22 (Fri) 10:00-12:00

Cerebello-cerebral interactions. Toru Tsujimoto (NIPS)

(8) March 1 (Fri) 10:00-12:00

Basal ganglia disorders. Satomi Chiken (NIPS)

## 9. Lecture materials and readings

Kandel et al.: Principles of Neural Science 4<sup>th</sup> ed. McGraw-Hill, 2000

Squire et al.: Fundamental Neuroscience 3<sup>rd</sup> ed. Academic Press, 2008

(New editions of these books will be available soon)

## 10. Grades

Students must attend the classes at least half of total classes to take a credit.

Students are requested to file the short essay related to the Course Objectives. For evaluation, more than 60 in a 100-point scale is judged successful.

## 11. Notes

Nothing in particular