Course Coding(科目ナンバー)	Year/Semester/Term(年度・学期)	Faculty Offering Course(時間割所属・時間割コード)	Eligible Student Year(開講年次)	Credits(単位数)	Weekday and Period(曜日・時限)
RDM7-005-79-2	2025whole year	Graduate School of Medical Sciences (20060)	1, 2, 3, 4	2	others

Course Title(Theme)(科目名(講義題目))	Instructor(s)(担当教員)
Human Brain Functional Science (For students admitted in 2022 and before)(B5 Human brain function science)	SHIMAMURA Kenji, Boku Syuken, IWAMOTO Kazuya, BUNDO Miki, Sou Bunketsu, TAKEBAYASHI Minoru, FUJISE Noboru, ESUMI Shigeyuki, HASHIMOTO Mamoru

Goals with their ratio(学修成果とその割合)

1.Advanced expert knowledge, skill and research capability ‥‥80% 2.Profound inter-disciplinary knowledge ‥‥19% 3.Global perspective and ability to take initiative action ‥‥1%

Type of Class(授業の形態)	Lecture
Teaching Method(授業の方法)	PowerPoint and/or OHP will be used in the lectures, and active participation in the discussion is encouraged. Extra classes or video lectures are considered for those who are regularly absent for unavoidable reasons.
Course Goals(授業の目的)	A highly complex structure, human brain is developed from a simple central nervous system (CNS) that detects environmental information and uses the information directly for its body response. Human brain achieved memory, cognition, spirit and identity in its structure by increasing number of neurons and number of subtypes of neurons. In this lecture series, ‘Human brain functional Science’, students will be able to understand how mental activity appears from ‘gene expression’, neuron electrical activity, information convergence and divergence in the neuronal circuit. Students will understand the mechanisms underlying brain function as well as mental and psychiatric disorders.
Course Learning goals(学修目標)	【A level (A水準)】 Fully understand the contents and points that the lecturers set. 【C level (C水準)】 Understand about 60% of the contents and points that the lecturers set.
Course Outline(授業の概要)	We will describe and discuss following issues: cellular and molecular mechanisms of induction of neural plate and regionalization, neural differentiation and process of morphogenesis, histogenesis, circuit formation, and synaptogenesis. You will learn how environmental information is conveyed to human brain region and processed. You will also learn genetic and neuronal bases of mental activity and disorders.

Details for Individual Classes(各回の授業内容)

No.(回)	Date(月日)	Class Theme(授業テーマ)	Brief Outline of Class(内容概略)
1		SHIMAMURA 【eE-0,eJ-0】	Neural induction
2		SHIMAMURA 【eE-0,eJ-0】	Regionalization of embryonic brain
3		SHIMAMURA 【eE-0,eJ-0】	Regionally distinct histogenesis in brain
4		ESUMI 【eEJ-0】	Neuronal diversity and network formation
5		ESUMI 【eEJ-0】	Neuronal network in the neocortex
6		SONG 【eE-0,eJ-0】	Action potential
7		SONG 【eE-0,eJ-0】	Synapse and synaptic transmission
8		SONG 【eE-0,eJ-0】	Neurotransmitter
9		SONG 【eE-0,eJ-0】	Synaptic plasticity
10		FUJISE 【eE-0,eJ-0】	Neurotransmitter and mental symptom
11		IWAMOTO 【eE-0】	Genetics and epigenetics of psychiatric disorders
12		BUNDO 【eE-0】	Somatic mutations and psychiatric disorders
13		HASHIMOTO 【eEJ-0】	Neural basis of dementia
14		TAKEBAYASHI 【eJ-0】	Multiple approaches to mental disorder
15		BOKU 【eJ-0】	Neural basis of mental disorder

Estimated out-of-class study time	60 hours
Required Textbook(テキスト)	Not specified.
Reading List(参考文献)	Not specified
Enrollment Conditions(履修条件)	attending 60% of lectures and taking short tests in each lecture
Assessment Methods and Criteria(評価方法・基準)	Rate of finished e-Learning. Points earned by passing short examinations.
Language Used in Instruction(使用言語)	Japanese and English (e-learning contents are either in English, Japanese, or mixture of them.)
Textbook/Material Language(教科書・資料の言語)	Combination of Japanese and English (e-learning contents are either in English or Japanese)
Course Based on Practical Work Experience(実務経験を活かした授業)	Not applicable