

DOCTOR OF PHILOSOPHY IN NEUROSCIENCE

■ FACULTY OF MEDICAL SCIENCE

DOCTOR OF PHILOSOPHY IN NEUROSCIENCE

One of the rapidly expanding fields covering new territories of human brains and consequently, their behaviors, is neuroscience known as the “Science for the Future.” It is the indispensable foundation for the understanding of mental science through theories of the Mind-Brain-Body connection.

As a multidisciplinary approach, the program is honored by experts as supervisors in Neurosurgery, Neuromedicine, Psychiatry, Rehabilitation Medicine, Molecular Neuroscience, Neurophysiology, and Neuropharmacology.

Students may carry on the Ph.D. fulfillment without a leave of absence from work. Moreover, on the job research topics are encouraged for clinical research to complement other basic research endeavors by their peers.

Our program is vicariously guaranteed its quality since our faculty members have been awarded Royal Golden Jubilee Grants from the Thailand Research Fund.



Objectives

The desirable characteristics of the graduates from this program are as follows:

- Knowledgeable with an in-depth understanding of the content in Neuroscience.
- Able to combine various segments of knowledge together.
- Competent in applying knowledge of Neuroscience in systematic research.
- Capable of self-directed learning and keen at seeking new knowledge.
- Equipped with morality and professional ethics of a respectable researcher.

Admission

In accordance with the Graduate School Rules and Regulations. The program committee reserves the rights to require more qualifications as deemed appropriate.

Medium of Instruction

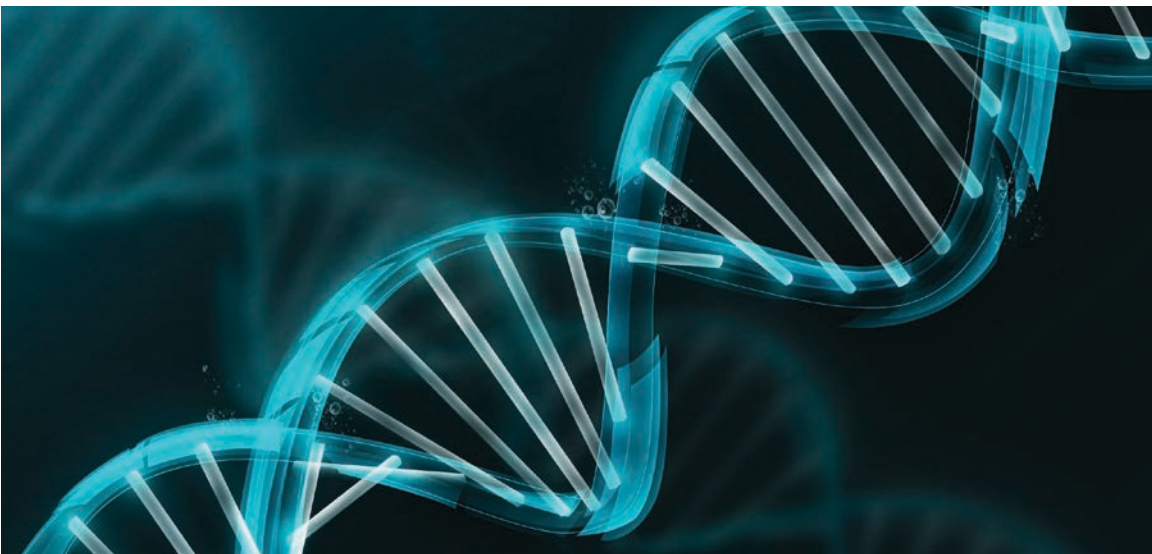
Thai and English

Research Focus

- Neurophysiology related to psychiatric diseases
- Nutritional medicine and herbal medicine related to brain functions (for prevention, treatment, and rehabilitation of Neurological diseases)
- Behavioral Neuroscience and Cognitive Neuroscience related to Aging and Dementia
- Drug addiction including mechanisms, treatments, and rehabilitation of addicted brains
- Neuronal stem cells and Neurogenesis

Requirement for Graduation

In accordance with the Graduate School's Rules and Regulations and commitments with applicable research grants.



Doctor of Philosophy in Neuroscience

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Structure of the Program

1. Credit Requirements. *

Requirements	Option 1.1	Option 1.2	Option 2.1	Option 2.2
Coursework	-	-	12	24
Core Courses	-	-	6	9
Electives	-	-	6	15
Required Non-credit Courses	4	7	4	7
Dissertation	48	72	36	48
Total	48	72	48	72

* Minimum credits required.

2. Core Courses

Requirements	Option 1.1		Option 1.2		Option 2.1		Option 2.2	
	Course No.	Cr.	Course No.	Cr.	Course No.	Cr.	Course No.	Cr.
*Cell Biology	-	-	-	-	-	-	422513	3
*Biochemistry, Cell and Molecular Biology	-	-	-	-	-	-	422514	3
Integrative Clinical Neuroscience	-	-	-	-	425610	3	425610	3
Advanced Neuroscience	-	-	-	-	425611	3	425611	3
Total	0	0	0	0	2	6	3	9

* Select either 422513 or 422514.

3. Electives

Requirements	Option 1.1		Option 1.2		Option 2.1		Option 2.2	
	Course No.	Cr.	Course No.	Cr.	Course No.	Cr.	Course No.	Cr.
Research Methods in Neuroscience	-	-	-	-	425620	3	425620	3
Neuroembryology	-	-	-	-	425621	3	425621	3
Neurohistology	-	-	-	-	425622	3	425622	3
Current Topics in Neuroscience	-	-	-	-	425623	3	425623	3
Neuroimmunology	-	-	-	-	425624	3	425624	3
Neurotoxicology	-	-	-	-	425625	3	425625	3
Neuroendocrinology	-	-	-	-	425626	3	425626	3
Clinical Neuroscience	-	-	-	-	425627	3	425627	3
Clinical Neuropsychopharmacology	-	-	-	-	425628	3	425628	3
Total	0	0	0	0	9	≥6	9	≥15

4. Required Non-credit Courses.

Requirements	Option 1.1		Option 1.2		Option 2.1		Option 2.2	
	Course No.	Cr.	Course No.	Cr.	Course No.	Cr.	Course No.	Cr.
Research Methodology in Health Science	-	-	422510	3	-	-	422510	3
Seminar 1	425696	1	425696	1	425696	1	425696	1
Seminar 2	425697	1	425697	1	425697	1	425697	1
Seminar 3	425698	1	425698	1	425698	1	425698	1
Seminar 4	425699	1	425699	1	425699	1	425699	1
Total	4	4	5	7	4	4	5	7

5. Dissertation Credit Requirements.

Requirements	Option 1.1		Option 1.2		Option 2.1		Option 2.2	
	Course No.	Cr.	Course No.	Cr.	Course No.	Cr.	Course No.	Cr.
Dissertation 1 Option 1.1	425651	8	-	-	-	-	-	-
Dissertation 2 Option 1.1	425652	8	-	-	-	-	-	-
Dissertation 3 Option 1.1	425653	8	-	-	-	-	-	-
Dissertation 4 Option 1.1	425654	8	-	-	-	-	-	-
Dissertation 5 Option 1.1	425655	8	-	-	-	-	-	-
Dissertation 6 Option 1.1	425656	8	-	-	-	-	-	-
Dissertation 1 Option 1.2	-	-	425661	9	-	-	-	-
Dissertation 2 Option 1.2	-	-	425662	9	-	-	-	-
Dissertation 3 Option 1.2	-	-	425663	9	-	-	-	-
Dissertation 4 Option 1.2	-	-	425664	9	-	-	-	-
Dissertation 5 Option 1.2	-	-	425665	9	-	-	-	-
Dissertation 6 Option 1.2	-	-	425666	9	-	-	-	-
Dissertation 7 Option 1.2	-	-	425667	9	-	-	-	-
Dissertation 8 Option 1.2	-	-	425668	9	-	-	-	-
Dissertation 1 Option 2.1	-	-	-	-	425671	9	-	-
Dissertation 2 Option 2.1	-	-	-	-	425672	9	-	-
Dissertation 3 Option 2.1	-	-	-	-	425673	9	-	-
Dissertation 4 Option 2.1	-	-	-	-	425674	9	-	-
Dissertation 1 Option 2.2	-	-	-	-	-	-	425681	8
Dissertation 2 Option 2.2	-	-	-	-	-	-	425682	8
Dissertation 3 Option 2.2	-	-	-	-	-	-	425683	8
Dissertation 4 Option 2.2	-	-	-	-	-	-	425684	8
Dissertation 5 Option 2.2	-	-	-	-	-	-	425685	8
Dissertation 6 Option 2.2	-	-	-	-	-	-	425686	8
Total	6	48	8	72	4	36	6	48

Course Descriptions

422510 Research Methodology in Health Sciences 3(3-0-6)

Definitions, characteristics and goals of research, research methodologies, types of research, determination of research questions, variables and hypothesis, data collection, data analysis, research proposal and research report writing, research evaluation, research applications, ethics in research, and advanced research techniques in health sciences.

422513 Cell Biology 3(3-0-6)

Introduction to cells, cell organization and functions, biomolecules, cytoskeleton, cell membranes, enzymes, cellular metabolism and bioenergetics, genetics information and regulations, cell communications, cell signaling, cell cycles, cell pathology and programmed cells death, and selected topics in cell biology.

422514 Biochemistry, Cell and Molecular Biology 3(3-0-6)

Cells and cell cycles, properties and structures of major biomolecules, protein structures and functions, enzymes and kinetics, bioenergetics and metabolism of biomolecules, genomes organization, replications, DNA damage and repair, transcription and translation processes, bioinformatics, molecular biology, biochemistry of endocrines, and significant perspectives in biochemistry.

425610 Integrative Clinical Neuroscience 3(3-0-6)

Organization of the nervous system including structures, functions and mechanisms, integrations of neurobiology, concepts, theories and modern research in etiology, pathology, and prevention and treatment of human neurological diseases.

425611 Advanced Neuroscience**3(2-3-5)**

The functional mechanisms of the nervous system at cellular and molecular levels, applied neuroscience for describing the neurological and psychiatric diseases, signs and symptoms, and analysis and synthesis of neuroscience research articles.

425620 Research Methods in Neuroscience**3(2-3-5)**

Research techniques used for the study of neuroanatomy, neurophysiology, neurochemistry, and other disciplines involving neuroscience.

425621 Neuroembryology**3(3-0-6)**

Developmental processes of the nervous system and special sense organs, such as the eyes and ears; mechanisms underlying the development of the central nervous system; peripheral nervous system; and special sense organs including congenital malformations and their postnatal symptoms.

425622 Neurohistology**3(3-0-6)**

Microscopic features of neurons, glial cells, nervous system tissues and connective tissues in the central nervous system, peripheral nervous system, automatic nervous system, and special sense organs including the study of functions and clinical correlations.

425623 Current Topics in Neuroscience**3(1-6-5)**

Emphasis on current trends and interesting topics in neuroscience.

425624 Neuroimmunology**3(3-0-6)**

Analysis of the interaction between the nervous and immune systems at molecular and cellular levels including the role of immune cells and immune mediators in the initiation of neurological diseases.

425625 Neurotoxicology**3(3-0-6)**

Comprehensive study of the general principles of neurotoxicology, neurotoxicants and mechanisms of neurotoxic effects, and the contribution of neurotoxic agents to neurological diseases.

425626 Neuroendocrinology**3(3-0-6)**

Study of the interaction between the nervous and endocrine systems at molecular and cellular levels including the role of neuroendocrine cells and neurohormones as well as neurosteroids leading to normal and abnormal functions of nervous system.

425627 Clinical Neuroscience**3(3-0-6)**

Extensive study of the basic mechanisms underlying disorders of the nervous system including central and peripheral nervous systems as well as approaches on diagnosis and treatments.

425628 Clinical Neuropsychopharmacology**3(3-0-6)**

Exploration of abnormalities of neurotransmitters in neurological diseases, psychiatric diseases, and psychotropic drugs including their mechanisms of actions and clinical approaches.

425651 Dissertation I, Option1.1**8 credits**

Identifying the research question, writing a research proposal describing the significance and purposes of the study, and research methodologies in brief including an extensive review of the literature.

425652 Dissertation II, Option1.1**8 credits**

Nominating the dissertation supervisory committee to the Graduate School and submitting the dissertation title to advisors.

425653 Dissertation III, Option 1.1**8 credits**

Conducting an extensive research, reporting progress of the research to the dissertation advisors, and taking the qualifying examination.

425654 Dissertation IV, Option 1.1**8 credits**

Conducting an extensive research, reporting progress of research to the dissertation advisors, and taking the dissertation proposal defense examination.

425655 Dissertation V, Option 1.1**8 credits**

Conducting an extensive research, reporting progress of the research to the dissertation advisors, and preparing a scientific manuscript for publication under a standard peer-review process.

425656 Dissertation VI, Option 1.1**8 credits**

Summarizing all research data, passing the dissertation defense, complying with dissertation corrections if any, and submitting the completed dissertation to the Graduate School.

425661 Dissertation I, Option 1.2**9 credits**

Identifying the research question, writing a research proposal describing the significance and purposes of the study, and studying research methodologies in brief including an extensive review of the literature.

425662 Dissertation II, Option 1.2**9 credits**

Nominating the dissertation supervisory committee to the Graduate School and submitting the dissertation title to advisors.

425663 Dissertation III, Option 1.2**9 credits**

Conducting an extensive research, reporting progress of the research to the dissertation advisors, and taking the qualifying examination.

425664 Dissertation IV, Option 1.2 **9 credits**

Conducting an extensive research, reporting progress of the research to the dissertation advisors, and taking the dissertation proposal defense examination.

425665 Dissertation V, Option 1.2 **9 credits**

Conducting an extensive research and reporting progress of the research to the dissertation advisors.

425666 Dissertation VI, Option 1.2 **9 credits**

Conducting an extensive research and reporting the progress of research to the dissertation advisors.

425667 Dissertation VII, Option 1.2 **9 credits**

Collecting research data and preparing a scientific manuscript for publication under a standard peer-review process.

425668 Dissertation VIII, Option 1.2 **9 credits**

Summarizing all research data, passing the dissertation defense, complying with dissertation corrections if any, and submitting the completed dissertation to the Graduate School.

425671 Dissertation I, Option 2.1 **9 credits**

Nominating the dissertation supervisory committee to the Graduate School and submitting the dissertation title to advisors.

425672 Dissertation II, Option 2.1 **9 credits**

Conducting an extensive research, reporting progress of the research to the dissertation advisors, and taking the qualifying examination.

425673 Dissertation III, Option 2.1**9 credits**

Conducting an extensive research, reporting progress of the research to the dissertation advisors, taking the dissertation proposal defense examination, and preparing a scientific manuscript for publication under a standard peer-review process.

425674 Dissertation IV, Option 2.1**9 credits**

Summarizing all research data, passing the dissertation defense, complying with dissertation corrections if any, and submitting the completed dissertation to the Graduate School.

425681 Dissertation I, Option 2.2**8 credits**

Identifying the research question, writing a research proposal describing the significance and purposes of the study, and studying research methodologies in brief including an extensive review of literature.

425682 Dissertation II, Option 2.2**8 credits**

Nominating the dissertation supervisory committee to the Graduate School and submitting the dissertation title to advisors.

425683 Dissertation III, Option 2.2**8 credits**

Conducting an extensive research and taking the qualifying examination.

425684 Dissertation IV, Option 2.2**8 credits**

Conducting an extensive research, reporting progress of the research to the dissertation advisors, and taking the dissertation proposal defense examination.

425685 Dissertation V, Option 2.2**8 credits**

Conducting an extensive research and preparing a scientific manuscript for publication under a standard peer-review process.

425686 Dissertation VI, Option 2.2**8 credits**

Summarizing all research data, passing the dissertation defense, complying with dissertation corrections if any, and submitting the completed dissertation to the Graduate School.

425696 Seminar I**1(0-2-1)**

Extensive practice in searching, reading, critical thinking, and organization of information from articles or published papers; and oral presentation practice on selected and current topics in neuroscience.

425697 Seminar II**1(0-2-1)**

Comprehensive seminar on selected and current trends in neuroscience.

425698 Seminar III**1(0-2-1)**

Seminar on selected and current trends in neuroscience.

425699 Seminar IV**1(0-2-1)**

Extensive seminar on advanced research in neuroscience.