Course Syllabus

MBNS 605 Neurochemistry

Academic Year 2019

Course ID and Name: MBNS 605 Neurochemistry

Course coordinator: Assoc. Prof. Wipawan Thangnipon, Ph.D.
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Instructors:

1. Prof. Piyarat Govitrapong, Ph.D.
2. Prof. Banthit Chetsawang, Ph.D.
2. Assoc. Prof. Wipawan Thangnipon, Ph.D.
3. Assoc.Prof. Nuanchan Chutabhakdikul, Ph.D
4. Assoc.Prof. Chartchai Krittanai, Ph.D.
5. Assoc.Prof. M.L. Saovaros Svasti, Ph.D.
6. Assist.Prof. Sujira Mukda, Ph.D.
7. Assist. Prof. Narisorn Kitiyanant, Ph.D
8. Lect. Dr. Chutikorn Nopparat, Ph.D

Supporting Staff:

1. Somsong Phengsukdaeng

Credits: 2 (2-0-4)

Curriculum: Master of Science Program in Neuroscience (core course)
Doctor of Philosophy Program in Neuroscience (core course for B.Sc. Graduates)

Semester offering: First semester

Pre-requisites: -

Course learning outcomes (CLOs)

Upon completion of this course, students should be able to:

1. Explain principles and concepts of chemical and functional organization of the nervous system at the cellular and molecular levels. (PLO1)
2. Understand about chemical neurotransmitters, presynaptic proteins and cell adhesion molecules, chemically mediated synaptic transmission, neurotransmitter receptors, receptor-activated phosphoinositide turnover, G-proteins, cyclic nucleotides, and phosphorylation in regulation of neuronal signaling functions. (PLO6)
3. Demonstrate an understanding essential knowledge acquired for further approaches relevant to neurochemical and advanced neuronal stem cell research. (PLO6)

Alignment of teaching and assessment methods to course learning outcome:

Course learning outcome	Teaching method	Assessment method
1. Explain principles and concepts of chemical and functional organization of the nervous system at the cellular and molecular levels.	(1) Lecture (2) In-class discussion	(1) Quiz (2) Written examination
2. Understand the neural correlates of behavioral development and discuss various factors that might affect brain and behavioral development.	(1) Lecture (2) In-class discussion	(1) Quiz (2) Written examination
3. Demonstrate an understanding essential knowledge acquired for further approaches	(1) Selected interested paper, formation of research questions and critically think	(1) Presentation of selected paper

relevant to neurochemical and advanced neuronal stem cell research.	how to create new approaches	

Course description:

The course emphasizes on principles of chemical transmission; second messenger; signaling transduction; neurotransmitters; neurotransmitter receptors; nuclear hormone receptor signaling; advances in neuronal stem cell research and molecular biology.

Course schedule:

Date: Monday to Friday

Time: 09.00 – 11.00 am

Rooms: A112, Institute of Molecular Biosciences

Periods	Date	Time	Topics	Instructors
1.	24 Sep 2019	09.00-11.00 13.00-15.00	Chemical neurotransmission and signal transduction Self-study	Wipawan
2.	25 Sep 2019	09.00-11.00 13.00-15.00	Synaptic, presynaptic proteins and cell adhesion molecules Self-study	Nuanchan
3.	27 Sep 2019	09.00-11.00 13.00-15.00	Acetylcholine Self-study	Nuanchan
4.	30 Sep 2019	09.00-11.00 13.00-15.00	Catecholamine Self-study	Piyarat
5.	1 Oct 2019	09.00-11.00 13.00-15.00	Serotonin, histamine and melatonin Self-study	Banthit
6	2 Oct 2019	09.00-11.00 13.00-15.00	Amino acid neurotransmitters Self-study	Banthit
7 & 8.	4 Oct 2019	9.00-11.00	Neuropeptides	Piyarat

		13.00-15.00	Atypical neurotransmitters	Sujira
Exam I	8 Oct 2019	09.00-16.00	Exam 1 (periods 1-7)	Somsong
9. .	9 Oct 2019	09.00-11.00 13.00-15.00	Neurochemistry of learning and memory Self-study	Wipawan
10.	11 Oct 2019	09.00-11.00 13.00-15.00	Nuclear hormone receptor signaling Self-study	Nuanchan
11.	15 Oct 2019	09.00-11.00 13.00-15.00	Self-study Neuronal stem cells	Wipawan
12.	16 Oct 2019	09.00-11.00 13.00-15.00	Proteomics Self-study	Chartchai
13.	18 Oct 2019	09.00-11.00 13.00-15.00	Up-and down-regulation of gene expression Self-study	Saovaros
14.	21 Oct 2019	09.00-11.00 13.00-15.00	Transgenic animal Self-study	Narisorn
15.	24 Oct 2019	09.00-11.00 13.00-15.00	Student presentation**:** Integrated neurochemistry research topic Self-study	Chutikorn
Exam II	29 Oct 2019	09.00-16.00	Examination II (periods 8-15)	Somsong

Assessment criteria:

Assessment criteria	Assessment method	Scoring rubrics
Written examination (80%)	(1) Short essay questions	Scoring directly from correct answers and keywords.
Student Presentation (10%)	(1) Short presentation	(1) Information quality and organization of topic presented (2) Verbal communication and English proficiency (3) Non-verbal communication

Class attendance and participation in in-class discussion (10%)	(1) Numbers of classes signed in (2) Direct observation	Scoring directly from signing in each class and observation of class participation (e.g., discussion, asking question)

Student's achievement will be graded using symbols: A, B+, B, C+, C, D+, D and F based on the criteria as follows:

Percentage	**Grade**
85 -100	A
80 – 84	B+
70 - 79	B
60 - 69	C+
50 - 59	C
45 - 49	D+
40 – 44	D
< 40	F

Notice: Since this course is a core requirement course, if students receive final grade below "B", they will need to re-enroll this course in the next academic year.

Date revised : June 18, 2019