Course Syllabus
MBNS 655 Pathogenesis of Neurological Diseases
Academic Year 2026

Course ID and Name: MBNS 655 Pathogenesis of Neurological Diseases

Course coordinator: Assoc. Prof. Vorasith Siripornpanich, M.D., Ph.D.
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Instructors:

1. Assoc. Prof. Vorasith Siripornpanich, M.D., Ph.D.
2. Assoc. Prof. Sujira Mukda, Ph.D.
3. Asst. Prof. Sukonthar Ngampramuan, Ph.D.
4. Assoc. Prof. Nopporn Apiwattanakul, M.D., Ph.D.
5. Asst. Prof. Jiraporn Panmanee, Ph.D.
6. Lect. Siraprapa Boobphahom, Ph.D.
7. Lect. Ekkaphot Khongkla, Ph.D.
8. Lect. Kittiphong Paiboonsukwong, M.D., Ph.D.
9. Guest lecturers

Supporting Staff:

1. Mr Prapan Premsawat

Credits: 2 (2-0-4)
Curriculum: Master of Science Program in Neuroscience (elective course)
Doctor of Philosophy Program in Neuroscience (elective course for B.Sc. Graduates)
Semester offering: First semester
Pre-requisites: None

Course learning outcomes (CLOs)

Upon completion of this course, students are able to:

1. Explain the fundamental concepts on the pathogenesis, clinical characteristics, and clinico-pathological correlation of various neurological diseases. [PLO2, PLO3]

2. Analyze the theoretical knowledge and experimental approaches in the understanding of the pathophysiology of neurological diseases from early life to elderly. [PLO1, PLO3]
3. Demonstrate information technology and interpersonal communication skills through discussion of interesting topics in the field of neuropathology. [PLO4, PLO5]

Alignment of teaching and assessment methods to course learning outcome:

Course learning outcome	Teaching method	Assessment method
1. Explain the fundamental concepts on the pathogenesis, clinical characteristics, and clinico-pathological correlation of various neurological diseases	(1) Lecture (2) Case-based approach (3) In-class discussion	(1) Written examination (2) Reports (3) Class participation
2. Analyze the theoretical knowledge and experimental approaches in the understanding of the pathophysiology of neurological diseases from early life to elderly	(1) Lecture (2) Case-based approach and Case discussion (3) In-class discussion	(1) Written examination (2) Class participation
3. Demonstrate information technology and interpersonal communication skills through discussion of interesting topics in the field of neuropathology.	(1) Individual assignment	(1) Presentation of assigned topic

Course description:

Mechanism of neurological diseases, inflammation, neural and glia response to injury, pathological investigation, brain edema and hydrocephalus, neurogenetic diseases, aging and neurodegenerative diseases, autoimmune diseases of the CNS, cerebrovascular disease, brain tumor, CNS infection, congenital CNS malformation and perinatal neuropathology, brain and spinal cord injuries, toxic and metabolic diseases of nervous system, neurocutaneous syndromes, clinico-pathological correlation

Course schedule:

Date: Monday, Wednesday, and Friday

Time: 9.30 am – 3.00 pm

Rooms: A112, Building A, Institute of Molecular Biosciences

TIME SCHEDULE FOR MBNS655 (2-0-4)
PATHOGENESIS OF NEUROLOGICAL DISEASES
1st SEMESTER OF ACADEMIC YEAR 2026

Course Coordinator: Dr.Vorasith Siripornpanich

Lecture room: A207-1, second floor, Building A, Institute of Molecular Biosciences

Date & Time	Topic	Class activity	Instructor
12 Oct 2026 9.30-10.00	Course orientation	Introductory lecture	Vorasith
12 Oct 2026 10.00-12.00	Inflammation, Immune system and Cytopathology	Lecture (pre-course) Class discussion	Vorasith
12 Oct 2026 13.00-15.00	Control of intracranial pressure and Hydrocephalus	Lecture (6) Class discussion	Vorasith
14 Oct 2026 9.30-11.30	Molecular pathogenesis of astrogliosis	Lecture (1) Class discussion	Sujira
14 Oct 2026 13.00-15.00	Basic knowledge on clinical medicine	Lecture (pre-course) Class discussion	Kittiphong
16 Oct 2026 9.30-11.30	Cerebrovascular diseases	Lecture (8) Class discussion	Sukonthar
16 Oct 2026 13.00-14.00	Inherited metabolic disorders	Lecture (7.1) Class discussion	Vorasith
16 Oct 2026 14.00-15.00	Traumatic brain injuries	Lecture (7.2) Class discussion	Vorasith
19 Oct 2026 9.30-11.30	Molecular diagnostics of neurological disorders	Lecture (2) Class discussion	Ekkaphot
19 Oct 2026 13.00-15.00	Diagnosis and research techniques in Neuropathology	Lecture (3) Class discussion	Ekkaphot
21 Oct 2026 9.30-11.30	Autoimmune diseases of CNS *Online teaching	Lecture (4) Class discussion	Metha
21 Oct 2026 13.00-15.00	Aging and Neurodegeneration	Lecture (5) Class discussion	Jiraporn
23 Oct 2026 Public Holiday	Self-study	-	-
26 Oct 2026 9.00-12.00	Midcourse examination	Written examination	Staff

13.00-16.00			
28 Oct 2026 9.00-11.00	Visiting an autopsy room *Thammasat University Hospital	Lecture (9.1) Demonstration Class discussion	Tippailin
28 Oct 2026 13.00-15.00	Introduction to Forensic Medicine *Thammasat University Hospital	Lecture (9.2) Demonstration Class discussion	Tippailin
30 Oct 2026 9.30-11.30	Pathology and molecular pathology of brain tumors	Lecture (13) Class discussion	Shanop
30 Oct 2026 13.00-15.00	Neurogenetic disorders	Lecture (10) Class discussion	Vorasith
2 Nov 2026 9.30-11.30	Exploring biomarker and molecular pathology in neurological and psychiatric disorders	Lecture (11) Class discussion	Siraprapa
2 Nov 2026 13.00-15.00	Congenital CNS malformation	Lecture (12) Case discussion	Vorasith
4 Nov 2026 9.30-11.30	CNS infection	Lecture (15) Class discussion	Nopporn (A.)
4 Nov 2026 13.00-15.00	Spinal cord injury	Lecture (14) Class discussion	Ekkaphot
6 Nov 2026 9.00-12.00	Final examination	Written examination	Staff
6 Nov 2026 13.00-14.30	Neurocutaneous syndromes	Lecture (16.1) Student presentation Case-based approach Class discussion	Suthida
6 Nov 2026 14.30-15.00	Skin manifestation of CNS diseases	Lecture (16.2) Case-based approach Class discussion	Suthida

Assessment criteria:

Assessment criteria	Assessment method	Scoring rubrics
Written examination / Work assignment (60%)	(1) Multiple choices questions (2) Short essay questions (3) Spot diagnosis of diseases	Scoring directly from true/false answer
Student Reports (20%)	(1) Reports	Scoring directly from quality of report
Presentation of assigned topic (10%)	(1) Short presentation	(1) Information quality and organization of topic presented (2) Verbal communication and English proficiency (3) Non-verbal communication (4) Visual tools
Class attendance and participation in in-class discussion (10%)	(1) Numbers of classes signed in (2) Direct observation	Scoring directly from times of signing in

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

Presentation performance evaluation rubric (10% of total score)					
Criteria	**Excellent (score = 5)**	**Very good (score = 4)**	**Adequate (score = 3)**	**Limited (score = 2)**	**Poor (score = 1)**
Information quality and organization of topic presented (including answering the questions) (2.5%)	Main points are explicitly presented with impressive detail and organization. Information is directly linked to the topic of presentation.	Main points are presented with good amount of detail. Information is well-organized and linked to the topic given.	Main points are somewhat clear but could add some more detail. Information is organized and linked to the topic given.	Main points are not clear and lack detail. Information is loosely organized and some are off-topic.	Main points are missed and have no detail. Information is disorganized and off-topic.
Verbal communication and English proficiency (2.5%)	Speaker's voice is very steady, clear and confident. Spoken language is very fluent and grammatically corrected.	Speaker's voice is steady and confident. Spoken language is fluent and mostly grammatically corrected.	Speaker's voice is moderately confident but could be developed. Spoken language is mediocre and has some grammatical errors.	Speaker's voice is unsteady and lacks confident. Use of spoken language needs to be improved, and many errors can be recognized.	Speaker fails to deliver proper presentation orally. Unable to deliver presentation via spoken English language.
Non-verbal communication (2.5%)	Speaker appears to be comfortable and confident. Effective uses of eye contacts and gestures are presented to support the presentation.	Speaker appears to be fairly confident. Eye contacts and gestures are generally used.	Speaker appears to be generally at ease. Moderate use of eye contact and gesture but not very effective.	Speaker appears uneasy, insecure or panicked. Eye contact and gesture are rarely used.	Speaker is obviously uncomfortable for presentation. No eye contact or gesture is presented.
Visual tools (2.5%)	Visual aids are very creative, easy to read and greatly enhance presentation.	Visual aids are typically clear and easy to follow.	Visual aids are good in terms of quality, but some points can be improved.	Limited visual aids are used or difficult to help audiences follow the topic.	No visual aids are used, and presentation is not interested by audiences.

Date revised: July 1st, 2026