Course Syllabus

MBNS 658 Animal Experimentation in Neuroscience

Academic year 2024

Course ID and Name: MBNS 658 Animal Experimentation in Neuroscience

Course coordinator: Asst. Prof. Sukonthar Ngampramuan

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Instructors:

1. Asst. Prof. Sukonthar Ngampramuan, Ph.D.
2. Assoc. Prof. M.L. Saovaros Svasti, Ph.D.
3. Dr. Kakanang Buranaamnuay, D.V.M., Ph.D.
4. Dr.Benjaporn Kiatpakdee, D.V.M., Ph.D.
5. Dr. Dungdol Narasirilrk, D.V.M.

Supporting Staff:

Mrs. Somsong Phengsukdaeng

Mrs. Kanda Puttapongpeuk

Credits: 1(1-2-3) (lecture–practice–self-study)

Curriculum: Master of Science Program in Neuroscience (elective course))

Semester offering: Second semester

Pre-requisites: MBNS 604 Research Methodology and Techniques in Neuroscience

Course learning outcomes (CLOs):

Upon completion of this course, students are able to:

1. Acquire knowledge in animal research techniques in Neuroscience **(PLO2) P**
2. Demonstrate ethical conduct following animal ethic rules **(PLO1) P**
3. Integrate and apply comprehensive knowledge in animal research techniques to solve scientific research questions **(PLO3) P**
4. Analyze and present lab data in animal research studies by using appropriate information and communication technologies **(PLO5) P**
5. Demonstrate teamwork, interpersonal skills and responsibilities for the work assignments **(PLO4) P**

Alignment of teaching and assessment methods to course learning outcome:

Course learning outcome	Teaching method	Assessment methods
1. Acquire new knowledge in animal research techniques in Neuroscience	(1) Lecture (2) Class discussion	(1) Examination, Quiz, Pretest-Posttest (2) Assignments, Reports (3) In-class discussion
2. Demonstrate ethical conduct following animal ethic rules	(1) Lecture (2) Hands-on practice (3) Assignment (4) Class discussion	(1) Assessment of assigned work (2) Direct observation (3) Class attendance (4) Lab performance
3. Integrate and apply comprehensive knowledge in animal research techniques to solve scientific research questions	(1) Lecture (2) Hands-on practice (3) Assignment (4) Class discussion	(1) Assessment of assigned work (2) Direct observation (3) Class attendance (4) Lab performance
4. Analyze and present lab data in animal research studies by using appropriate information and communication technologies	(1) Experimental data presentation and discussion	(1) Reports (2) Oral presentation (3) In-class discussion
5. Demonstrate teamwork, interpersonal skills and responsibilities for the work assignments	(1) Group/individual assignment	(1) Direct observation (2) Assessment of assigned work (3) Assessment of responsibility for assigned work

Course Description:

The principle and methods of animal research in Neuroscience; ethics on animal experimentation, standard animal care, basic techniques for animal experimentation, special techniques in animal experiments, laboratory rules and regulations, selection of animal

research in Neuroscience research; experimental design, data analysis and interpretation; presentation of the research results; to apply in the Neuroscience research.

Course schedule:

Date: Monday-Friday

Time: 9.00-12.00 and 13.00-16.00

Rooms A409 [(1)] and Animal Laboratory Unit [(2)], Institute of Molecular Biosciences

Date	Time	Topic/Details	Class Activity/Teaching	Lecturer
April 17, 2025	9.00-12.00	Lecture1: Introduction in Laboratory Animal Center Lab Orientation: Why are animals used in Neuroscience research?	Lecture, class discussion	Sukonthar[1]
	13.00-16.00	Lecture 2: Animal care and welfare -Occupational health and safety in the care and use of research animals.	Lecture, class discussion	Saovaros [1]
April 18, 2025	9.00-12.00	Lecture: 3. Animal research in Neuroscience	Lecture, class discussion	Sukonthar[1]
	13.00-16.00	Lecture4: 4.1-Drug administration techniques (IV, IM,IP,SC) and 4.2-Basic technique for anesthesia, sample collection, and dissection	Lecture, class discussion	Benjaporn [1]
April 21, 2025	9.00-12.00	Lab 1: Visiting Animal Laboratory Unit, Institute of Molecular Biosciences : Basic techniques for laboratory sessions: anesthesia, sample collection, and dissection	Demonstration Lab hands-on Class discussion	Sukonthar/ Dungdol / Kanda [2]

Date	Time	Topic/Details	Class Activity/Teaching	Lecturer
	13.00-16.00	Lab 2: Basic technique for animal handling	Demonstration Lab hands-on Class discussion	Dungdol/ Sukonthar/ Kanda[2]
April 22, 2025	9.00-12.00	Lab3: Behavioral studies on animals in Neuroscience	Demonstration Lab hands-on Class discussion	Benjaporn/ Dungdol / [2]
	13.00-16.00	Lab 4: Behavioral studies on animal in Neuroscience	Demonstration Lab hands-on Class discussion	Benjaporn/ Dungdol / [2]
April 28, 2025	9.00-12.00	Lab 5: Behavioral studies on animal in Neuroscience	Demonstration Lab hands-on Class discussion	Sukonthar/ Dungdol/Kanda [2]
	13.00-16.00	Lab 6: Behavioral studies on animal in Neuroscience	Demonstration Lab hands-on Class discussion	Sukonthar/ Dungdol/Kanda [2]
April 29, 2025	9.00-12.00	Lab 7: Behavioral studies on animal in Neuroscience	Demonstration Lab hands-on Class discussion	Sukonthar/ Dungdol/Kanda [2]
	13.00-16.00	Lab 8: Drug administration techniques (IV, IM ,IP,SC)	Demonstration Lab hands-on Class discussion	Benjaporn / Dungdol[2]
April 30, 2025	9.00-12.00	Lab 9: Behavioral studies on animal in Neuroscience	Demonstration Lab hands-on Class discussion	Sukonthar / Dungdol / Kanda[2]
May 6, 2025	9.00-12.00	Lecture: 5: Application of Ethics on Animal Experimentation	Lecture, class discussion	Kakanang[1]
To be Announced		Student Presentation	Problem-based learning/ In-class discussion	Sukonthar[1] And all staff

Assessment Criteria:

Assessment Criteria	Assessment Method	Scoring Rubric
Assignments/ Examination (50%)	(1) Report or assignment or,	(1) Comprehension

	(2) Examination examination or Quiz or pre post test (3) In-class discussion	
Laboratory performance (20%)	(1) Direct observation (2) Practical examination (3) In-class discussion	(1) Ability to follow procedure or to design a procedure for experiment (2) Use of equipment (3) Working area and safety (4) Group work
Problem-based learning presentation (20%)	(1) Presentation	(1) Ability to apply knowledge to solve research problems (2) Ability to answer questions
Class attendant (10%)	(1) Number of classes signed in (2) Direct observation	(1) Class participation

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	Description
85-100	A	Excellent
80-84	B+	Very good
70-79	B	Good
60-69	C+	Fairly good
50-59	C	Fair
45-49	D+	Poor
40-44	D	Very poor
< 40	F	Fall

Lab Performance Evaluation Rubric				
Criteria	**Exemplary (score = 4)**	**Proficient (score = 3)**	**Basic (score = 2)**	**Inadequate (score = 1)**
Active participation	Student enthusiastically involves in participation and discussion with friends and teachers, and shows evident leadership skills.	Student actively involves in participation in class with friends and teachers.	Student is present in class and shows moderate interest during study.	Student shows no interest in participation or fails to present in class.
Group communication		Student communicates well with other students and teachers, both verbally and non-verbally.	Student moderately communicates or discusses with other students, or when being asked.	Student fails to communicate with others and tends to leave discussion.
Theory knowledge		Student shows profound background knowledge on topics being discussed and evaluated.	Students has some degree of knowledge of topics being studied, but could be improved in certain points.	Student has very little or no knowledge about topics being studied and not prepared for this session.

Problem-based learning Presentation Rubric					
Criteria	**Excellent (score = 5)**	**Very good (score = 4)**	**Adequate (score = 3)**	**Limited (score = 2)**	**Poor (score = 1)**
Information quality and organization of topic presented	Main points are explicitly presented with	Main points are presented with good amount of	Main points are somewhat clear but	Main points are not clear and lack detail.	Main points are missed and have no detail.

Problem-based learning Presentation Rubric					
Criteria	**Excellent (score = 5)**	**Very good (score = 4)**	**Adequate (score = 3)**	**Limited (score = 2)**	**Poor (score = 1)**
(including answering the questions)	impressive detail and organization. Information is directly linked to the topic of presentation.	detail. Information is well-organized and linked to the topic given.	could add some more detail. Information is organized and linked to the topic given.	Information is loosely organized and some are off-topic.	Information is disorganized and off-topic.
Verbal communication and English language proficiency	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	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.

Problem-based learning Presentation Rubric					
Criteria	**Excellent (score = 5)**	**Very good (score = 4)**	**Adequate (score = 3)**	**Limited (score = 2)**	**Poor (score = 1)**
Visual tools	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: March 2025