Course Syllabus

MBNS659 Microtechniques in Neuroscience Research

Academic Year 2023

Course ID and Name: MBNS695 Microtechniques in neuroscience research

Course coordinator: Assoc. Prof. Dr. Sujira Mukda

Tel: 02-441-9003-7 ext. 1206/ 1437

Email: sujira.muk@mahidol.edu

Instructors:

1. Assoc. Prof. Dr. Sujira Mukda
2. TBA
3. TBA
4. TBA

Supporting Staff:

1. Ms. Kanda Putthaphongpheuk
2. Ms. Kornkanok Promthep
3. Ms. Somsong Phengsukdaeng
4. Ms. Sasithorn Prommet

Credits: 2 (1-2-3)

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

Semester offering: Second semester

Pre-requisites: None

Course learning outcomes (CLOs)

Upon completion of this course, students can:

1. Demonstrate learning and working integrity (including honesty, discipline, punctuality, and obedience) (Aligned with PLO1(P))
2. Explain the process in production of quality microscopic slides from brain specimens for research in histopathology and in molecular biology. (Aligned with PLO2(P))
3. Apply theoretical knowledge in establishing valid protocols and solving problems during production of microscopic slides. (Aligned with PLO3(P))
4. Demonstrate proper interpersonal skills and responsibility. (Aligned with PLO4 (P))
5. Produce and present qualified microscopic slides that can be analyzed for obtaining histological information. (Aligned with PLO5 (P))

Alignment of teaching and assessment methods to course learning outcome:

Course learning outcome	Teaching method	Assessment method
(1) Demonstrate learning and working integrity (including honesty, discipline, punctuality, and obedience)	(1) Pre-session overview	(1) Class Attendance (complete and punctual?) (2) Examination (cheating?) (3) Assignments (plagiarism?)
(2) Explain the process in production of quality microscopic slides from brain specimens for research in histopathology and in molecular biology.	(1) Lecture (2) Laboratory hands-on practical session (3) In-class discussion	(1) Written examination (2) Student presentation and evaluation of submitted microscopic slides
(3) Apply theoretical knowledge in establishing valid protocols and solving problems during production of microscopic slides.	(1) Laboratory hands-on practical session	(1) Student presentation and evaluation of submitted microscopic slides
(4) Demonstrate proper interpersonal skills and responsibility	(1) Assignments/ Exercises	(1) Performance in social skills (2) Assignments (submitted on time?)
(5) Produce qualified microscopic slides that can be analyzed for obtaining histological information.	(1) Laboratory hands-on practical session	(1) Student presentation and evaluation of submitted microscopic slides

Course description:

Practical sessions of the paraffin method, cryosectioning and immunohistochemical techniques; the analyses and discussions of results

การฝึกปฏิบัติการเตรียมชิ้นเนื้อโดยเทคนิคพาราฟิน การตัดชิ้นเนื้อแช่แข็งและเทคนิคทางอิมมูโนฮิสโตเคมี การวิเคราะห์และอภิปรายผลงาน

Course schedule:

Date: Monday-Friday

Time: 09.00-16.00

Venue: Lecture: On-site (To be announced)[1]

Lab: Rooms D401-04[2] Institute of Molecular Biosciences

Course schedule

MBNS659 Microtechniques in Neuroscience Research

30 October 2023 – 17 November 2023

Course Coordinator: Assoc. Prof. Sujira Mukda

Tel: 02-441-9003-7 ext. 1206, 1437

E-mail: sujira.muk@mahidol.edu

	Date	Time	Topic	Lecturer
0	30 Oct 2023	09.30-10.00	**L0:** Course orientation	Sujira[(1)]
1		10.00-12.00	**L1:** Theories and applications of microscopes	
2		13.00-14.00	**L2:** Specimen collection and fixation	
3		14.00-15.00	**L3**: Paraffin process of specimen	
4	1 Nov 2023	09.30-11.30	**L4:** Sectioning and affixing	
5		13.00-15.00	**L5:** Staining and mounting	
6		15.00-16.00	**L6:** Photomicrograph analysis	
7	3 Nov 2023	09.30-11.30	**L7:** Cryosectioning and immunohistochemical method	
	6 Nov 2023	09.00-12.00	*Lab*: Tissue processing by paraffin technique practice	
		13.00-16.00	*Lab*: Tissue processing by paraffin technique practice	
	7 Nov 2023	09.00-12.00	*Lab*: Tissue processing by paraffin technique practice	
		13.00-16.00	*Lab*: Tissue processing by paraffin technique practice	
	8 Nov 2023	09.00-12.00	*Lab:* Slide submission, analysis and discussion of results	
	9 Nov 2023	09.00-12.00	*Lab:* Immunohistochemical technique practice	
		13.00-16.00	*Lab:* Immunohistochemical technique practice	
	10 Nov 2023	09.00-12.00	*Lab:* Immunohistochemical technique practice	
		13.00-16.00	*Lab:* Immunohistochemical technique practice	
	13 Nov 2023	09.00-12.00	Lab: Slide submission, analysis and discussion of results	

	Date	Time	Topic	Lecturer
8		13.00-16.00	**L8:** Modern techniques in histological study	
Exam	15 Nov 2023	09.00-12.00	**Exam: L1-L8**	Sujira/Somsong
	17 Nov 2023	09.00-12.00	**Student Presentation**	Sujira & RCN Staff

Assessment criteria:

Assessment criteria	Assessment method	Scoring rubrics
Slide submission (50%)	(1) Evaluation of slide quality (2) Student presentation of submitted results	(1) Evaluation of laboratory result rubric focusing on quality of submitted works, laboratory protocol recording, student presentation of result analysis and problem-solving strategy.
Written examination (20%)	(1) Short essay type questions	(1) Scoring directly from true/false answers
Presentation of assigned topic (20%)	(1) Short presentation	(1) Information quality and organization of topic presented (2) Verbal and non-verbal communication and English proficiency (3) Critical thinking (4) Visual tools
Class attendance and participation in in-class discussion (10%)	(1) Numbers of classes signed in (2) Direct observation	(1) 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+

Percentage	Grade
40 – 44	D
< 40	F

ATTENTION

(1) According to the Faculty of Graduate Studies regulation, enrolled students are required to attend classed more than 80% of total class time. Students will be disqualified from examination if they failed to comply with this regulation.

Date revised: 11 April 2023