Graduate School of Health Sciences / Microbiology Ph.D.

2024 - 2025 Academic Year

LABORATORY ROTATION II

Syllabus

Course Description					
Name	**Code**	**Semester**	**T+A Hour**	**Credit**	**ECTS**
LABORATORY ROTATION II	MKBD1122160	Fall Semester	0+0	0	6

Prerequisites Courses	
Recommended Elective Courses	
Language of Instruction	Turkish
Course Level	Third Cycle (Doctorate Degree)
Course Type	Elective
Course Coordinator	Res.Assist. Feyza BAYRAMOĞLU
Name of Lecturer(s)	Prof.Dr. Lütfü HANOĞLU, Prof.Dr. Esra ÇAĞAVİ, Assist.Prof. Derya CANSIZ
Assistant(s)	Course Supervisor: Prof. Dr Esra Çağavi, Course LaboAssistants: Laboratory supervisor from Research Institute for Health Sciences and Technologies (SABITA),
Aim	The aim of the "Laboratory Rotation-II" course is for Ph.D. level students to to explain the advanced technical approaches in laboratory application that is expected to incorporate in their thesis work understanding of the scope of different laboratory disciplines. By rotating in different labs every week, students are aimed to be exposed to the advanced molecular biology techniques, proteomics and genomics applications, FACS, primary and cell line culture applications, transgenic animal models, electrophysiology, neuroscience and cancer research applications, basic protein and gene expression analysis.
Course Content	This course contains; Electroencephalography (EEG) recording principles ,EEG application and signal analysis,Flourescence activated cell sorting (FACS) method and analysis ,Functional Neurology Applications,Flourescence activated cell sorting (FACS) method and analysis ,Experimental and transgenic animal models and applications, Evaluation of Laboratory Notebooks for the Midterm Exam,Cell survival tests analysis,Electrophysiology applications and analysis,Quantitative RTPCR analysis in Molecular Biology,Cancer Biology Lab and Applications,Immunohistochemistry and cryosectioning ,SDS-PAGE and Western blot analysis,Evaluation of Laboratory Notebooks for the Final Exam.

Course Learning Outcomes	**Teaching Methods**	**Assessment Methods**
Explain the advanced culture methods, advanced approaches in molecular biology, experimental transgenic animal models and their applications, applications in neuroscience research, EEG principles and electrophsiology, fundamental approaches in cancer biology, cell survival analysis and FACS analysis.	14, 17, 3, 9	A, E
Explains advanced research techniques.	14, 17, 3, 9	A, E
Explain and provide solutions to various different experimental techniques.	14, 17, 3, 9	A, E
Define the principles of basic research laboratory equipments and can operate these devices.	14, 17, 3, 9	A, E
Explains the advanced data analysis approaches of scientific data.	14, 17, 3, 9	A, E

Teaching Methods	14: Self Study Method, 17: Experimental Technique, 3: Problem Baded Learning Model, 9: Lecture Method
Assessment Methods	A: Traditional Written Exam, E: Homework

Lecture Schedule

Sequence	**Topics**	**Preliminary Preparation**
1	Electroencephalography (EEG) recording principles	Self-study
2	EEG application and signal analysis	
3	Flourescence activated cell sorting (FACS) method and analysis	Self-study
4	Functional Neurology Applications	Self-study
5	Flourescence activated cell sorting (FACS) method and analysis	Self-study
6	Experimental and transgenic animal models and applications	Self-study
7	Evaluation of Laboratory Notebooks for the Midterm Exam	Self-study
8	Cell survival tests analysis	
9	Electrophysiology applications and analysis	
10	Quantitative RTPCR analysis in Molecular Biology	
11	Cancer Biology Lab and Applications	
12	Immunohistochemistry and cryosectioning	
13	SDS-PAGE and Western blot analysis	
14	Evaluation of Laboratory Notebooks for the Final Exam	Self-study

Evaluation Methods	**Weight(%)**
Midterm Exam	50
General Exam	50

Resources
Laboratory Biosafety Manual (third edition) 1. Containment of biohazard - methods ISBN 92 4 154650 6 (LC/NLM classification: QY 25) WHO/ CDS/ CSR/ LYO/ 2004. 11Internet database