

COURSE RECORD

Code	BENG544
Name	Neuroscience
Hour per week	3 (3 + 0)
Credit	
ECTS	7,5
Level/Year	Graduate
Semester	
Type	Elective
Location	
Prerequisites	
Special Conditions	
Coordinator(s)	
Webpage	
Content	The main aim of this course is to provide an insight into neuroscience at the molecular and cellular level. The course will introduce the mammalian nervous system to the students. Neurons are highly specialized cells that relay the information to other neurons through chemical and electrical signals. Chemical synaptic transmission and the neurotransmitters will be discussed in the lectures.
Objectives	Human Neuroanatomy, Neurons, Neuron structure, Neuron types and Glia, Chemicals and Ions, The action potential, axon and dendrite, Taste and Smell, The structure of Eye, the structure of the auditory system, The Hypothalamus, Memory, The Amygdala and Aggression, Sleep: Neural Mechanisms of Sleep, Biological Clocks, Mental Illness
Learning Outcomes	L01: learn how neuronal cells communicate with other cells; L02: learn how neuronal cells communicate with other cells; L03 : learn the molecular memory; L04 : learn neural plasticity; L05 : learn methods (optogenetics etc) to study neurons
Requirements	Expected requirements of the course.
Reading List	Barry W. Connors, Mark F. Bear, and Michael A. Paradiso, Neuroscience: Exploring the Brain (2015), 5th edition
Ethical Rules and Course Policy	

LEARNING ACTIVITIES *Please, use this one as a reference for your course*

Activities	Number	Weight (%)
Lecture	3	25%
Group Works	8	25%
Presentations	7	25%
Site Visits	1	25%
	Total	100

ASSESSMENT

Evaluation Criteria	Weight (%)
Quizzes	00%
Weekly Assignments	00%
Group Project Assignments & Presentations	10%
Attendance/Participation	10%
Midterm Exam	30%
Final Exam/Submission	50%
	Total 100%

For a detailed description of grading policy and scale, please refer to the website <https://goo.gl/HbPM2y> section 28.

**AGU Graduate School of Engineering and
Science
Program**



COURSE LOAD *Please, use this one as a reference for your course*

Activity	Duration (hour)	Quantity	Work Load (hour)
In class activities	2	14	28
Lab	1	7	7
Group work	2	12	24
Research (web, library)	2	12	24
Required Readings	2	10	20
Pre-work for Presentation	2	7	14
Lab reports	1	7	7
General Sum			124

ECTS: 7,5 (Work Load/25-30)

CONTRIBUTION TO PROGRAMME OUTCOMES*

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PO13	PO14
L01	5	5	5	5	5	5	5	5						
L02	5	4	4	4	4	4	5	5						
L03	5	4	4	4	4	4	4	4						
L04	5	4	4	4	4	4	4	4						

* Contribution Level: 0: None, 1: Very Low, 2: Low, 3: Medium, 4: High, 5: Very High

WEEKLY SCHEDULE

W	Topic	Outcomes
1	Human Neuroanatomy Lab/Activity:	L01
2	Neurons, Neuron structure, Neuron types and Glia Lab/Activity:	L02
3	Chemicals and Ions Activity:	L01, L02
4	The action potential, axon and dendrite Activity:	L02
5	Taste and Smell Activity:	L02
6	The structure of Eye Activity:	L01, L02
7	The structure of the auditory system Activity:	L01, L02
8	The Hypothalamus Activity:	L01, L02
9	Techniques (Optogeneticst and brain imaging) Activity:	L05
10	Memory Activity:	L03, L04
11	The Amygdala and Aggression Activity:	L01, L02, L04
12	Sleep: Neural Mechanisms of Sleep Activity:	L01, L02, L04
13	Biological Clocks Activity:	L02, L04
14	Mental Illness Activity:	L02, L04

Prepared by
 Date