

Course Description for Postgraduates, Department of Neurobiology

Course Title: Basic Neurobiology		Course Code: 510.508		
Course category: <input type="checkbox"/> High-level course <input type="checkbox"/> International course <input type="checkbox"/> Advanced international courses <input checked="" type="checkbox"/> Common course				
Course Type: <input type="checkbox"/> 1st-level discipline basic courses <input checked="" type="checkbox"/> 2nd-level discipline basic courses <input type="checkbox"/> Optional professional courses				
The Methods of Assessment: closed-book examination				
Teaching Method: Lectures		Applicable Educational Level: Master <input checked="" type="checkbox"/> Doctor <input type="checkbox"/>		
The Beginning of the Term: the second term	Total Hours/Teaching Hours: 32/32		Credits: 2	
Applicable Specialty: This course can be chosen for all majors.				
Name of the Teachers of the Course Group	Professional Title	Major	Age	Academic Direction
Man Li	Professor	Neuroscience	45	Neurobiology
Bo Tian	Professor	Neuroscience	44	Neurobiology
Yunyun Han	Professor	Neuroscience	37	Neurobiology
Xianfang Meng	Professor	Neuroscience	43	Neurobiology
Lei Pei	Associate Professor	Neuroscience	37	Neurobiology
Ning Sun	lecturer	Neuroscience	40	Neurobiology
Course Outline: I. Introduction: 1. Introduction to neuroscience research; 2. Neuronal structure and function characteristics; 3. Neuroglia cells classification; 4. The characteristics of neuroglia cells;				

II. Synaptic Transmission:

1. Electrical synapses and chemical synapses;
2. Structural and functional characteristics of chemical synapse;
3. Neurotransmitter release in the synapse;
4. Vesicle recycling;
5. Receptor and transmembrane signal transduction;

III. Neurotransmitter:

1. The concept of neurotransmitter;
2. Classification of neurotransmitters;
3. Criteria for neurotransmitters;
4. Metabolism and function of neurotransmitter;

IV. Amino acid transmitter:

1. The concept of amino acid transmitters;
2. Classification of amino acid transmitters;
3. Metabolism and function of glutamic acid;
4. Metabolism and function of γ - gamma aminobutyric acid;
5. Ecotoxicity;

V. Monoamine transmitter:

1. The concept of monoamine transmitters;
2. Classification of monoamine transmitters;
3. Metabolism and function of catecholamine;
4. Metabolism and function of 5-HT;

V. Transmembrane signal transmission:

1. The classification, metabolism and function of neurotransmitters;
2. Receptor and transmembrane signal transduction;
3. Discussion of hot topics in transmembrane signal transduction research;

VI. Vision:

1. Refraction system of eyes;
2. Photosensitive system of eyes;
3. Visual afferent pathway;
4. Function of visual cortex.

VII. Pain and Analgesia:

1. The concept and classification of pain;
2. Psychological factors that affect pain;
3. The peripheral mechanisms of pain;
4. The central mechanism of pain;
5. The mechanism of pain regulation;

VIII. Learning and Memory:

1. The concept of learning and memory;
2. The molecular mechanism of learning and memory;
3. The electrophysiological mechanism of learning and memory;
4. Discussion of hot topics in learning and memory research;

Guide Books:

1. *Outline of Medical Neurobiology*, Guan Xinmin, Shi Jing, 2003, Science Press.
2. Track the newest research and hot spots progress in related fields

Main Reference Books:

1. *Principles of Neural Science 5th*, Eric R. Kandel James H. Schwartz Thomas M. Jessell, McGraw-Hill Professional, 2012.
2. *Neuroscience (3rd)*, Han Jisheng, Peking University Medical Press, 2009.