Утвърдил: …….

Декан

Дата .....

СОФИЙСКИ УНИВЕРСИТЕТ "СВ. КЛИМЕНТ ОХРИДСКИ"

Faculty: Philosophy

Specialty:

F	F	P	3	7	0	1	1	3

Master's Program General Psychology in English

SYLLABUS

Course:

Z	0	0	2

Biological Psychology

Lecturer: Assoc. Prof. Lubomira Nikolaeva-Glomb, Ph.D.

	Form	Hours
	Lectures	15
Overall class hours		
Out of class activities	Homework assignments	20
	Weekly quizzes	20
	Weekly independent work in Moodle	35
Overall out of class hours		**75**
Overall hours		**90**
ECTS credits from class hours		**0.5**
ECTS credits from out of class hours		**2.5**
Overall ECTS credits		**3**

№	How is the final grade earned	% from the grade
1.	Weekly quizzes	40%
2.	Final Test	60%

Information for the course:
If there's a Holy Grail in physiological psychology, it's the elusive answer to the "hard problem" - why consciousness exists and how it relates to brain activity. We may never discover the answer to the hard problem, and biological psychologists will never run out of fascinating, if baffling, questions. The course will introduce students to the importance of neuroscience, genetics, and evolution for psychology and not just biology. It is focused on the biological mechanisms of the basic psychological processes and most of all the mind–body relationship. By the end of the course students will clearly see what the study of the brain has to do with "real psychology" and hopefully they will be interested in learning more.

Prerequisites:
None

Aims of the course:
After finishing the course students will: • Describe the various methods used to study the biological basis of behavior. • Use scientific terminology appropriately in reference to biology and behavior. • Read and critically evaluate published biopsychological research. • Identify the divisions of the brain and nervous system and describe their functions. • Describe the structure of neurons and how neural impulses are generated. • Describe the structure and functioning of synapses. • Identify the major neurotransmitters and discuss the impact of each on behavior. • Discuss the role of the brain and nervous system in health and disease. • Apply the principles of biopsychology to better understand behavior. • Discuss how biopsychological knowledge can be used to address a wide range of behavioral and physiological problems.

Topics

№	Topic:	Lecture hours
1	**Nerve cells and nerve impulses** The Cells of the Nervous System. Anatomy of Neurons and Glia. The Blood-Brain Barrier. The Nourishment of Vertebrate Neurons. Neurons. The Nerve Impulse. The Resting Potential of the Neuron. The Action Potential. Propagation of the Action Potential. The Myelin Sheath and Saltatory Conduction. Local Neurons. Neural Messages.	2
2	**Synapses** The Concept of the Synapse. The Properties of Synapses. Relationship Among EPSP, IPSP, and Action Potentials. The Neuron as Decision Maker. Chemical Events at the Synapse. The Discovery of Chemical Transmission at Synapses. The Sequence of Chemical Events at a Synapse. Neurotransmitters and Behavior. Synapses, Drugs, and Addictions Types of Mechanisms. What Abused Drugs Have in Common. A Survey of Abused Drugs. Alcohol and Alcoholism. Addiction. Medications to Combat Substance Abuse. Drugs and Behavior.	1
3	**Anatomy of the nervous system** Structure of the Vertebrate Nervous System: Terminology to Describe the Nervous System. The Spinal Cord. The Autonomic Nervous System. The Hindbrain. The Midbrain. The Forebrain. The Ventricles. The Cerebral Cortex: Organization of the Cerebral Cortex. The Occipital Lobe. The Parietal Lobe. The Temporal Lobe. The Frontal Lobe. How Do the Parts Work Together? Functions of the Cerebral Cortex. Research Methods: Correlating Brain Anatomy With Behavior Recording Brain Activity. Effects of Brain Damage. Effects of Brain Stimulation. Differences in Brain Size and Structure. Research Methods and Their Limits.	2
4.	**Vision** Visual Coding: General Principles of Perception. The Eye and Its Connections to the Brain. Visual Receptors: Rods and Cones. Color Vision. Visual Receptors. Neural Basis of Visual Perception. An Overview of the Mammalian Visual System. Processing in the	2

	Retina. Pathways to the Lateral Geniculate and Beyond. Pattern Recognition in the Cerebral Cortex. Disorders of Object Recognition. The Color, Motion, and Depth Pathways. From Single Cells to Vision. Visual Development. Vision by Human Infants. Early Experience and Visual Development. The Nature and Nurture of Vision.	
5.	**The other sensory systems** Audition. Sound and the Ear. Pitch Perception. The Auditory Cortex. Hearing Loss. Sound Localization. Functions of Hearing. The Mechanical Senses. Vestibular Sensation. Somatosensation. Pain. Itch. The Mechanical Senses. The Chemical Senses. Chemical Coding. Taste. Olfaction. Pheromones. Synesthesia. Different Senses as Different Ways of Knowing the World.	2
6.	**Wakefulness and sleep** Rhythms of Waking and Sleeping. Endogenous Cycles. Setting and Resetting the Biological Clock Mechanisms of the Biological Clock. Sleep–Wake Cycles. Stages of Sleep and Brain Mechanisms. Sleep and Other Interruptions of Consciousness. The Stages of Sleep. Paradoxical or REM Sleep. Brain Mechanisms of Wakefulness and Arousal. Brain Function in REM Sleep. Sleep Disorders. Stages of Sleep.	1
7.	**Emotional behaviors** What Is Emotion? Emotions, Autonomic Arousal, and the James-Lange Theory. Brain Areas Associated With Emotion. The Functions of Emotions. Emotions and the Nervous System. Attack and Escape Behaviors. Attack Behaviors. Escape, Fear, and Anxiety. Doing Something About Emotions. Stress and Health. Concepts of Stress. Stress and the Hypothalamus-Pituitary-Adrenal Cortex Axis. Stress Control. Posttraumatic Stress Disorder. Emotions and Body Reactions.	1
8.	**Reproductive behaviors** Sex and Hormones. Organizing Effects of Sex Hormones. Activating Effects of Sex Hormones. Parental Behavior. Reproductive Behaviors and Motivations. Variations in Sexual Behavior. Evolutionary Interpretations of Mating Behavior. Gender Identity and Gender-Differentiated Behaviors. Sexual Orientation. We Are Not All the Same.	1
9.	**The biology of learning and memory** Learning, Memory, Amnesia, and Brain Functioning. Localized Representations of Memory. Types of Memory. The Hippocampus and Amnesia. Other Types of Amnesia. The Role of Other Brain Areas in Memory. Different Types of Memory. Storing Information in the Nervous System. Learning and the Hebbian Synapse. Single-Cell Mechanisms of Invertebrate Behavior Change. Long-Term Potentiation in Vertebrates. The Physiology of Memory.	1
10.	**Cognitive functions** Lateralization of Function. The Left and Right Hemispheres. Visual and Auditory Connections to the Hemispheres. Cutting the Corpus Callosum. Development of Lateralization and Handedness. Avoiding Overstatements. One Brain, Two Hemispheres. Evolution and Physiology of Language. Nonhuman Precursors of Language. How Did Humans Evolve Language? Brain Damage and Language. Music and Language. Dyslexia. Language and the Brain. Consciousness and Attention. Brain Activity Associated With Consciousness. The Timing of Consciousness. Neglect. Attending to Attention and Being Conscious of Consciousness.	2

Exam Syllabus

№	Topics:
1	Nerve cells and nerve impulses

2	Synapses
3	Anatomy of the nervous system
4.	Vision
5.	The other sensory systems
6.	Wakefulness and sleep
7.	Emotional behaviors
8.	Reproductive behaviors
9.	The biology of learning and memory
10.	Cognitive functions

Texts

Kalat, J. W. (2013). *Biological Psychology* (11th ed). Belmont, CA: Wadsworth.
Toates, F. M. (2011). *Biological psychology*. Harlow: Pearson Education.

March 16, 2023 **Lecturer:** Assoc. Prof. Lubomira Nikolaeva-Glomb