



**Code: BIO/09**

**Credits: 9**

**Matter: Physiology of Behavior**

**Main language of instruction: Italian**

**Other language of instruction: English**

## Teaching Staff

### Head instructor

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### Introduction

#### *1. Objective of the course:*

The behavioral physiology course aims to provide the student with a good knowledge of the ways in which our physiological and pathological actions are involved. We will reach an awareness of fundamental issues for the development of the organism, and will be treated the main disorders that affect our mind, the SNC and our body in general. Eventually the student will have a broader understanding of anatomy, drug interactions and how neurotransmitters are involved in human behavior. The E-tivity associated to the course are studied to deepen relevant topics and to stimulate the student to formulate hypotheses about the causes triggering some types of disorders

### Objectives

#### *2. Course Structure:*

the course program is structured in 9 chapters dealing with the most important topics of behavioral physiology. Starting from the development of the CNS, we will treat the most important sensory organs and we will understand how neurotransmitters are fundamental for this purpose. The study of drugs and how they can act on our body. The emotions and the alterations caused by malfunctions or pathologies up to the stress and panic disorders.

This will allow the student to understand and better understand the behavioral physiology, and all the mechanisms that alter its correct functioning.

## Competencies:

The behavioral physiology course has the following training objectives:

1. Review the anatomical bases of the SNC
2. Explain the main characteristics of the drugs
3. Explain the main sense organs involved in behavior
4. Illustrate the functioning of the main neurotransmitters
5. To illustrate the main pathologies inherent to this subject

## Syllabus

### *3. Programme of the course:*

Module 1 - Anatomy of the SNC (there are 7 videotaped theory lessons for a commitment of 17.5 hours - week 1) where the following topics are addressed: terminology and support structures of the CNS; development of the nervous system; the cerebral cortex, the limbic system, the basal ganglia, the SNP

Module 2 - Psychopharmacology (6 videotaped theory lessons for a commitment of 17.5 hours - 2 weeks) where the following topics are addressed: drug and method of administration; effectiveness and adverse effects; placebo effect; drugs and action sites; neurotransmitters

Activity 4 - Neurotransmitters (10 hours of study load - week 2).

Module 3 - Research Techniques (4 videotaped theory lessons and for a 15-week 3-week commitment) where we tackle: experimental ablation; tracing neural connections and in vivo brain studies; methods of recording and electrical stimulation; neurochemical and genetic methods.

Module 4 - Visual and Auditory System (5 lessons of videotaped theory for a commitment of 17.5 hours week 4 where we talk about: Visual system, auditory system, associative areas, motion control, physiology and neural bases of movement, motion control spinal ganglia and cerebellum.

Module 5 - Sleep (3 videotaped theory lessons for a commitment of 17.5 hours - week 5): sleep; functions and characteristics; sleep disorders; the vigil

Activity 2 - describe the main abnormalities of sleep (10h of study load)

Module 6 - Emotions (6 videotaped theory lessons for a commitment 17.5 hours - week 6) emotions; the amygdala; the prefrontal cortex; recognition of emotions; the expression of emotions; aggression; power

Etivity 1: discuss the main eating behavior disorders (10 hours of study load)

Module 7 - Learning (5 videotaped theory lessons for a commitment of 17.5 hours - week 7) types of learning: perceptive, stimulus-response, motor, relational; classic conditioning and operating conditioning; neural reinforcement systems

Module 8 - Language (4 videotaped theory lessons for a commitment of 17.5 hours week 8)

the language and its methods of study; language production deficit; Broca, Wernicke, Transcortical aphasia

Module 9 - Anxiety and Stress Disorders, Substance Abuse and Schizophrenia (4 videotaped theory lessons for a student commitment of 17.5 hours

Etivity 3 - discuss and argue a clinical case chosen by the student, making clinical diagnostic hypothesis according to the knowledge acquired during the study (30 hours of study load - weeks 10 and 11).

Each module (and related chapters) presents a multiple choice test able to know and understand the progress of the study.

### **Evaluation system and criteria**

The exam consists in the performance of written test aimed at ascertaining the skills of analysis and re-elaboration of the acquired concepts and of a series of activities (n.4 Etivity) carried out during the course in the virtual classes.

The evaluation of the Etivity from 0 to 2 points, is carried out during the course duration. The written assignment is made up of 15 multiple choice questions. Each correct answer is worth 2 points. Those wrong or left blank will be evaluated 0.

The study manual can be found in our library Unicusano. Alternatively you can download the PDF of the Behavioral Physiology Manual in the course in the "integrations and insights" folder.

It will be the student's responsibility to search for the study material by comparing it with the course program

### **Bibliography and resources**

4. *Materials to consult: PDF and Slides in [www.elearningnew.unicusano.it](http://www.elearningnew.unicusano.it)*

5. *Recommended bibliography: Physiology of Behavior Neil R. Carlson*

[www.pubmed.com](http://www.pubmed.com)

[www.science.com](http://www.science.com)

*google scholar*