

# Testi del Syllabus

Resp. Did. **LODOVICHİ CLAUDIA** Matricola: **020237**

Docente **LODOVICHİ CLAUDIA, 3 CFU**

Anno offerta: **2022/2023**

Insegnamento: **986SV - NEUROPHYSIOLOGY OF SENSORY SYSTEMS**

Corso di studio: **SM54 - NEUROSCIENZE**

Anno regolamento: **2022**

CFU: **3**

Settore: **BIO/09**

Tipo Attività: **D - A scelta dello studente**

Anno corso: **1**

Periodo: **Primo Semestre**

Sede: **TRIESTE**



## Testi in italiano

**Lingua insegnamento** English

**Contenuti (Dipl.Sup.)** The course analyses the neurophysiological mechanisms underlying sensory perception.

We will study the general principles instructing sensory systems and we will analyze in depth the neurophysiology of a few sensory modalities, such as vision, olfaction and auditory system.

1. Introduction to sensory neurophysiology: principles at the base of sensory coding
2. Anatomy and physiology of the eye and retina
3. From the retina to the thalamus: structure and functions
4. Visual cortex, anatomy and physiology
5. Development and plasticity of the visual system
6. Anatomy and physiology of the ear
7. The auditory central nervous system
8. Representation of sounds from the cochlea to higher brain areas
9. Odors and olfaction: a sensory modality and not only
10. Olfactory epithelium: anatomy and physiology
11. The olfactory bulb: the first center where olfactory information is processed
12. Development and function of olfactory maps
13. From the olfactory bulb to higher olfactory brain areas
14. The olfactory bulb as a hub
15. When sensory systems get involved in pathology

The topics will be integrated with recent papers related to the subjects treated.

**Testi di riferimento** Kandel et al. Principle of neural sciences  
Purves et al. Neurosciences  
Look for the latest editions.

<b>Obiettivi formativi</b>	Acquire knowledge in the mechanism underlying sensory neurophysiology as a way to understand how the brain works and exploit sensory information to make sense of the world and guide distinct behaviour.
<b>Prerequisiti</b>	Knowledge of anatomy and neurophysiology of the neurons.
<b>Metodi didattici</b>	The course foresees frontal lectures and class discussions
<b>Modalità di verifica dell'apprendimento</b>	Written exam with multiple choice questions and eventually open questions that require a brief answer.
<b>Programma esteso</b>	<p>The course analyses the neurophysiological mechanisms underlying sensory perception. We will study the general principles instructing sensory systems and we will analyze in depth the neurophysiology of a few sensory modalities, such as vision, olfaction and auditory system.</p> <ol style="list-style-type: none"> <li>1. Introduction to sensory neurophysiology: principles at the base of sensory coding</li> <li>2. Anatomy and physiology of the eye and retina</li> <li>3. From the retina to the thalamus: structure and functions</li> <li>4. Visual cortex, anatomy and physiology</li> <li>5. Development and plasticity of the visual system</li> <li>6. Anatomy and physiology of the ear</li> <li>7. The auditory central nervous system</li> <li>8. Representation of sounds from the cochlea to higher brain areas</li> <li>9. Odors and olfaction: a sensory modality and not only</li> <li>10. Olfactory epithelium: anatomy and physiology</li> <li>11. The olfactory bulb: the first center where olfactory information is processed</li> <li>12. Development and function of olfactory maps</li> <li>13. From the olfactory bulb to higher olfactory brain areas</li> <li>14. The olfactory bulb as a hub</li> <li>15. When sensory systems get involved in pathology</li> </ol> <p>The topics will be integrated with recent papers related to the subjects treated.</p>
<b>Obiettivi Agenda 2030 per lo sviluppo sostenibile</b>	Questo insegnamento approfondisce argomenti connessi con l'obiettivo numero 3 (salute e benessere) dell' Agenda 2030 per lo sviluppo sostenibile delle Nazioni Unite.

## Obiettivi per lo sviluppo sostenibile

Codice	Descrizione
--------	-------------



### Testi in inglese

	English
	<p>The course analyses the neurophysiological mechanisms underlying sensory perception. We will study the general principles instructing sensory systems and we will analyze in depth the neurophysiology of a few sensory modalities, such as vision, olfaction and auditory system.</p> <ol style="list-style-type: none"> <li>1. Introduction to sensory neurophysiology: principles at the base of</li> </ol>

- sensory coding
- 2. Anatomy and physiology of the eye and retina
- 3. From the retina to the thalamus: structure and functions
- 4. Visual cortex, anatomy and physiology
- 5. Development and plasticity of the visual system
- 6. Anatomy and physiology of the ear
- 7. The auditory central nervous system
- 8. Representation of sounds from the cochlea to higher brain areas
- 9. Odors and olfaction: a sensory modality and not only
- 10. Olfactory epithelium: anatomy and physiology
- 11. The olfactory bulb: the first center where olfactory information is processed
- 12. Development and function of olfactory maps
- 13. From the olfactory bulb to higher olfactory brain areas
- 14. The olfactory bulb as a hub
- 15. When sensory systems get involved in pathology

The topics will be integrated with recent papers related to the subjects treated.

Kandel et al. Principle of neural sciences  
 Purves et al. Neurosciences  
 Look for the latest editions.

Acquire knowledge in the mechanism underlying sensory neurophysiology as a way to understand how the brain works and exploit sensory information to make sense of the world and guide distinct behaviour.

Knowledge of anatomy and neurophysiology of the neurons.

The course foresees frontal lectures and class discussions

Written exam with multiple choice questions and eventually open questions that require a brief answer.

The course analyses the neurophysiological mechanisms underlying sensory perception.  
 We will study the general principles instructing sensory systems and we will analyze in depth the neurophysiology of a few sensory modalities, such as vision, olfaction and auditory system.

- 1. Introduction to sensory neurophysiology: principles at the base of sensory coding
- 2. Anatomy and physiology of the eye and retina
- 3. From the retina to the thalamus: structure and functions
- 4. Visual cortex, anatomy and physiology
- 5. Development and plasticity of the visual system
- 6. Anatomy and physiology of the ear
- 7. The auditory central nervous system
- 8. Representation of sounds from the cochlea to higher brain areas
- 9. Odors and olfaction: a sensory modality and not only
- 10. Olfactory epithelium: anatomy and physiology
- 11. The olfactory bulb: the first center where olfactory information is processed
- 12. Development and function of olfactory maps
- 13. From the olfactory bulb to higher olfactory brain areas
- 14. The olfactory bulb as a hub
- 15. When sensory systems get involved in pathology

The topics will be integrated with recent papers related to the subjects treated.

Questo insegnamento approfondisce argomenti connessi con l'obiettivo numero 3 (salute e benessere) dell' Agenda 2030 per lo sviluppo sostenibile delle Nazioni Unite.

## **Obiettivi per lo sviluppo sostenibile**

<b>Codice</b>	<b>Descrizione</b>
---------------	--------------------