

**COURSE DATA****Data Subject**

Code	35272
Name	Anatomy of Language and Hearing Organs
Cycle	Grade
ECTS Credits	6.0
Academic year	2023 - 2024

Study (s)

Degree	Center	Acad. year	Period
1203 - Degree in Speech Therapy	Faculty of Psychology and Speech Therapy	1	First term

Subject-matter

Degree	Subject-matter	Character
1203 - Degree in Speech Therapy	1 - Human anatomy	Basic Training

Coordination

Name	Department
CERVERA FERRI, ANA PILAR	17 - Human Anatomy and Embryology

SUMMARY

The subject "Anatomy of the organs of language and hearing" is for basic training and is located therefore in the first course and semester of the teaching of the Degree. His character is descriptive and functional and at the same time teaches the fundamental and adequate terminology of the anatomical structures on which the professional will have to act when carrying out their activity.

Its length is 6 ECTS credits, 4.5 of which are theoretical and 1.5 practical and laboratory.

PREVIOUS KNOWLEDGE



Relationship to other subjects of the same degree

There are no specified enrollment restrictions with other subjects of the curriculum.

Other requirements

It is recommended that the student possesses basic knowledge of biology and sufficient knowledge of vocabulary to understand biological concepts and conceptual terminology of anatomical structures and the evolution of language from animals to humans.

This subject is closely related to Physiology, Neuroscience and Neuropsychology of the first course and clinical subjects related to otolaryngology and nervous system.

OUTCOMES

1203 - Degree in Speech Therapy

- Students must have acquired knowledge and understanding in a specific field of study, on the basis of general secondary education and at a level that includes mainly knowledge drawn from advanced textbooks, but also some cutting-edge knowledge in their field of study.
- Use the exploration techniques and instruments typical of the profession and record, synthesize and interpret the data provided by integrating them into the information set.
- Work in the school, healthcare and healthcare settings as part of the professional team. Advice on the development, implementation of care and education policies on topics related to speech therapy.
- Be able to develop skills such as regulating their own learning, solving problems, reasoning critically and adapting to new situations.
- Manage the technologies of communication and information.
- Know the anatomy of the organs of speech, hearing and voice.

LEARNING OUTCOMES

- To have an overview of the anatomical organization of the human body
- Understand the anatomy of the organs of hearing, as well as the basic organization of the nervous system and specifically those involved in the processing of vision, hearing and language. Understand the importance of vascularity.
- Be able to describe the basic anatomy of the skull and the specific anatomy of the oral and nasal cavities, the larynx and the muscles involved in the emission and nuance of the sounds of language and facial expression.
- Understand the organization of the systems involved in breathing and in the muscles of the trunk
- Know the anatomical and biomechanical structure of the upper limb
- Be able to identify the studied structures in models, anatomical preparations or anatomical and medical images.



DESCRIPTION OF CONTENTS

1. Introduction

Organization of the human body. Levels of organization. Anatomical position. Plans and sections of the body. Basic terminology.

2. General embriology

In this block, students will learn the basis of embryonic development, the endogenous and exogenous causes that can alter this development and at what stage and how the head, the nervous system and the senses related to language develop in order to understand why. of genetic and embryonic pathologies that produce functional deficiencies.

Topic 1- Overview of embryonic development

Topic 2- Development of the nervous system

Topic 3- Development of the face, the phonoarticulatory organs and the sense organs.

3. Cranial Skeleology

Here the students will know the morphology of the skull and its cavities, especially those that are related to speech and hearing.

Topic 4-Study of the cranial vault. Study of the base of the skull.

Topic 5-Study of the viscerocranium. Orbital, nasal and buccal cavities. paranasal sinuses

4. Phonoarticulatory organs.

In this block the students will know the structural and functional morphology of the larynx and pathways and muscles related to the emission and nuance of sounds and breathing.

Topic 6- Nose and nostrils. Oral cavity. Teeth. Tongue. Lingual muscles. Salivary glands. functional dynamics

Topic 7- Study of the pharynx. Pharyngeal mucosa. Pharyngeal regions. Pharyngeal muscles. Vascularization. Innervation. functional dynamics

Topic 8- Study of the laryngeal skeleton. cartilage. ligamentous membranes. SNM of the phonator.

Topic 9- Internal morphology of the larynx. anatomical spaces. Functional dynamics of the larynx. Innervation and Irrigation.

Topic 10- Study of the respiratory tract: Trachea. Bronchi. Study of the lungs. Vascularization. Innervation. Functional dynamics of breathing.



5. Peribucal Masticatory and anterior cervical musculature

In this block, the muscles related to facial expression, chewing and swallowing will be detailed.

Topic 11 Suprahyoid region. Infrahyoid region: Musculature. Irrigation and innervation. functional dynamics

Topic 12- SNM of the facial. vascularization. Functional dynamics. Temporo-mandibular joint. Mobilizing muscles of the jaw. vascularization. Innervation. functional dynamics

6. Upper limb

This block will be dedicated to the study of osteoarthrology and the basic muscles of the upper limb, necessary for the understanding of the processes of writing and sign language.

Topic 13- Osteoarthrology. brachial plexus. Neuromuscular systems of the upper limb. The writing gesture. Vascularization. Functional dynamics.

7. Thoraco-Abdominal walls.

In this block, the osteoarthrology and musculature of the body walls will be studied, with special attention to the musculature necessary for breathing and phonation.

Topic 14 Rib cage: osteostrology. Ligaments. intercostal muscles. Irrigation and Innervation. Functional dynamics. Diaphragm. Irrigation and innervation. Functional dynamics.

Topic 15- Abdominal muscles. Innervation and Irrigation. Functional dynamics of the abdominal press.

8. Cardio-Circulato

This block will analyze, in general terms, the circulatory system and the functioning of the heart, with the aim that the student body can later understand in this subject or in others, the alterations derived from the loss of blood supply.

Topic 16- Heart. Morphology Structure Vascularization. Innervation. Study of the great vessels.

9. Sense Organs

In this block the student will understand the structural and functional organization of the organs of hearing and vision.

Topic 17- Sense of sight. Retina. Uvea and Choroid. sclera. Cornea. Transparent and refringent media. Crystalline. Aqueous humor. vitreous humour.

Topic 18- Neuromuscular systems of the eyeball. Irrigation of the eyeball. Vegetative and sensitive innervation of the eyeball Study of the eyeball protection system.

Topic 19- Study of hearing and balance. Inner ear: vestibular and cochlear apparatus. Receptors. Organ



of Corti and Acoustic spots. vestibular nerve and acoustic nerve. Bone protection. Functional dynamics.

Topic 20- Middle ear. Barrel of the ear. Chain of ossicles. Intrinsic muscles. Eustachian tube. Functional dynamics of the middle ear.

Topic 21- External ear: tympanic membrane. External auditive conduct. Ear pavilion. Irrigation of the different parts of the ear.

10. Nervous System

The students will know, analyze, relate and apply the knowledge studying the structures of the central nervous system that make possible both the comprehension of language and the motor articulation of peripheral structures capable of communicating with others.

Topic 22- Levels of organization of the Central Nervous System. Peripheral nervous system.

Topic 23- The spinal cord. Structural organization. spinal nerves. spinal reflexes.

Topic 24- Study of the Brainstem. Origin and constitution of the cranial nerves. cores motor regulators. reticular substance.

Topic 25- Study of the cerebellum. Cerebellar cortex Deep nuclei of the cerebellum. Functional dynamics.

Topic 26- Diencephalon. External configuration. Functional meaning of each of its parts.

Topic 27- Telencephalon. Brain hemispheres. Basal nuclei. Limbic structures. Functional meaning.

Topic 28- Telencephalon. Organization of the cerebral cortex: Motor areas. Pyramidal and extrapyramidal pathways. Sensitive areas. Optical and acoustic pathways.

Topic 29- Functional areas of hearing and language. Aphasias.

Topic 30- Irrigation. Meningeal layers. ventricular system. Cerebrospinal fluid.

11. Learning by identification of structures in models and anatomical models

In this block, which is practical and carried out in the laboratory, students will know and analyze through anatomical models and preparations, the different structures that are known through the theoretical classes.

Practice (1.5 hours)

General embryology: Early stages of development; Models, sheets, reconstructions.

Practice 2 (1.5 hours)

Cranial skeleton: Vault and base of the skull. Nostrils. Oral cavity. Orbital fossa.

Practice 3 (1.5 hours)

Phonoarticulatory organs: Study of the larynx and pharynx. Models and reconstructions.

Practice 4: (1.5 hours)

Oral cavity, adnexa, jaws and teeth, pharynx tongue

Practice 5: (1.5 hours)

Facial and Masticatory Muscles. anterior cervical musculature. Superior member.

Thoracic and abdominal walls. Study of the diaphragm.

Practice 6: (1.5 hours)

Upper limbs and chest, osteoarthrology and SNM, the hand as a communication tool.

Practice 7: (1.5 hours)

Cardio-respiratory system: reconstructions, models and anatomical preparations.

**Practice 8: (1.5 hours)**

Sense organs: Study of the eyeball and its annexes. Study of the ear. Reconstructions, anatomical models and preparations.

Practice 9 (1.5 hours)

Nervous system: Spine, brainstem and cerebellum. Reconstructions, anatomical models and preparations

Practice 10: (1.5 hours)

Nervous system: Diencephalon, limbic system, motor and sensory cortex, Broca's areas, territories vascular. Reconstructions, anatomical models and preparations

WORKLOAD

ACTIVITY	Hours	% To be attended
Theory classes	45,00	100
Laboratory practices	15,00	100
Study and independent work	45,00	0
Preparation of evaluation activities	30,00	0
Preparing lectures	15,00	0
TOTAL	150,00	

TEACHING METHODOLOGY

Development of the theoretical program with the instructor-Board and supported by images.

Face-to-face practical classes with identification of structures in models and preparations and anatomical images.

Tasks with no face search and identification tasks sheet structures, preparation of papers and reports of practical classes.

In addition, students will spend time studying, preparing and carrying out the evaluation of the subject, since the completion of scheduled tutoring individual or group.

EVALUATION

To pass the subject, students will have to pass both the evaluation of the theoretical and practical content. It is an essential requirement to pass each of the parts separately to make the weighted average of the final grade.

Evaluation of the theoretical content: The value of the theoretical test corresponds to 60% of the final evaluation. This test will consist of an exam with 30 multiple choice questions with 4 possible answers and 10 short answer questions. It is necessary for the student to obtain a minimum score of 4 points out of 10 in each of the parts of the theoretical exam in order to average with the other parts. To pass this test, the student must obtain a minimum grade of 5 points between the two parts. This section is recoverable on second call.



Evaluation of the practical content: It has a value of 40% of the final evaluation. The evaluation of the practices will consist of two parts. On the one hand, an objective test of each practice will be carried out through a virtual platform during the practices. This part of the practical evaluation will account for 50% of the practice mark (20% of the course mark), and is NOT recoverable on the second call. On the other hand, there will be an exam of the practical content consisting of 10 questions of identification of structures through images, which will be evaluated simultaneously with the exam of Theory. This section is recoverable on second call. Each of these parts must reach a minimum of 5 points in order to be averaged.

Attendance at practices: Attendance at practices is mandatory. The unjustified absence to more than 20% of the practices will mean the impossibility of presenting the practical exam of the subject

In the event of fraudulent practices, the Action Protocol for fraudulent practices at the University of Valencia will be applied (ACGUV 123/2020): <https://www.uv.es/sgeneral/Protocols/C83.pdf>

The copying or manifest plagiarism of any task that is part of the evaluation will mean the impossibility of passing the subject, subjecting themselves to the appropriate disciplinary procedures. Keep in mind that, in accordance with article 13. d) of the University Student Statute (RD 1791/2010, of December 30), it is the duty of a student to refrain from the use or cooperation in fraudulent procedures in the evaluation tests, in the work carried out or in official documents of the university.

REFERENCES

Basic

- Gray (2020) Anatomía para estudiantes. Editorial Elsevier.
- Langman (2007) Embriología médica con orientación clínica. Edit. Panamericana.
- H. Lippert (2010) Anatomía con orientación clínica para estudiantes. Edit. Marbán.
- FH. Netter (2019). Atlas de Anatomía humana (4ª edición) Edit.Elsevier/Masson.
- S. Rodriguez; JM, Smith (1998) Anatomía de los órganos del lenguaje, visión y audición. Edit.Panamericana.
- Feneis (2021) Nomenclatura anatómica ilustrada. Editorial Masson.

Additional

- Young, PA; Young, PH (1998) Neuroanatomía clínica funcional.Masson/Williams