

University of Rijeka, Faculty of Dental medicine

University Integrated Undergraduate and Graduate Study of Dental Medicine LEARNING

OUTCOMES

Year of study: 2nd

Physiology and Pathophysiology II

Expected learning outcomes

Basic outcomes:

- to classify the physiological functions of the cardiovascular, renal and respiratory systems
- to analyze the similarities and differences in the functioning of these systems
- to measure selected physiological parameters and to know how to interpret the obtained results
- to describe the major pathophysiological mechanisms of cardiovascular, renal and respiratory system disorders
- to connect disorders of physiological processes of the cardiovascular, renal and respiratory systems with the mechanisms of disease development
- to analyze graphical data and kinetic descriptions of etiopathogenetic relationships in clinical and experimental investigations

Specific outcomes:

- to understand the principles of electrocardiography and vector analysis in healthy and sick individuals
- to measure and interpret the values of arterial blood pressure and explain the etiopathogenetic factors responsible for the development of hypotension and hypertension
- to assess the relationship between mechanical and electrical activity of the heart and local blood flow
- to understand the significance of pathological findings in urine and the mechanisms of their development
- to measure blood pH and interpret the pathogenesis of acid-basic disbalance
- to distinguish basic disorders of the respiratory system through standard spirometry and specific functional tests

Medical Microbiology

Expected learning outcomes

Upon completion of the course, students will be able:

- to plan independent learning through study by critical and self-critical questioning of scientific truths, teamwork or in person
- distinguish microorganisms, list their characteristics and virulence factors, and relate them to the pathogenesis of individual infections
- list the classes of antibiotics and explain their mechanism of action on bacteria as well as the mechanisms of resistance
- list antifungal and specific antiviral drugs and discuss non-specific and specific prevention measures
- describe the evolution of the oral microbiota, and link oral microorganisms to the infections they cause.
- describe the developmental stages and clinical significance of biofilm in dental and / or medical practice
- present the skills of immersion microscopy, microbiological processing of the most common clinical samples with special emphasis on samples from the oral cavity

Immunology

Expected learning outcomes

In the end of the Immunology course it is expected that the student will be capable to:

- define antigen and identify the importance of immunological recognition, principle of antigen complementarity and distinguish forms of immune reactions
- describe lymphoid tissues and organs, including changes after immunization
- understand multigene organization and refolding up the genes for T cell receptor, B lymphocyte immunoglobulin receptor and histocompatibility molecules

- know the mechanisms and main characteristics of humoral immunity and complement system
- understand the kinetics and effector mechanisms of immune reaction to pathogens
- understand regulation of immune reaction and immunological tolerance
- understand pathogenesis of hypersensitivity reactions
- understand the mechanisms of development and consequences of autoimmunity and immune deficiencies

Pathology

Expected learning outcomes

At the end of the course Pathology, the student will be able to:

- classify macroscopic changes of organs and connect them with pathological entities
- classify microscopic changes of organs and tissues
- define the causes of morphological changes and connect them with the symptomatology and the overall clinical picture
- identify and compare changes that require pathohistological analysis
- understand the principles of taking biopsy material and material for molecular diagnostics

Tooth morphology and dental anthropology

Expected course learning outcomes

At the end of the course student will be able to:

- describe the morphological characteristics of permanent teeth
- distinguish between deciduous from the permanent teeth
- make the occlusal surfaces of posterior teeth
- make the labial surfaces of incisors
- define the function of the stomatognathic system
- describe the anatomical-morphological characteristics of teeth and jaws
- describe physiological function of the oral cavity
- compare transversal, sagittal and vertical planes
- describe the anatomical features of some parts of the tooth (crown, neck, root canal space and root)
- describe and compare common characteristics of teeth in jaws
- compare and distinguish between the nomenclature and systems of marking teeth in the jaw and oral cavity
- distinguish between topographic and anatomical characters in teeth
- describe the types of occlusion and occlusal position
- describe the phylogenetic development of teeth and jaws
- describe theories on the origin of tooth shapes and tooth
- describe the jaw in vertebrate phylogenesis

Physiology and pathophysiology III

Expected learning outcomes

Upon completion of the course the student will be able to:

- describe and explain the physiological construction and physiological mechanism of the gastrointestinal and hepatobiliary systems, metabolism and morphological and functional structure of the endocrine system and nervous system
- analyze the pathophysiological mechanisms of the gastrointestinal and hepatobiliary systems, metabolic disorders of basic and specific metabolic substances, and central nervous system functions
- synthesize knowledge about natural flows of physiological and etiopathogenetic processes
- understand the metabolism of carbohydrates, fats and proteins,
- describe the physiology and pathophysiology of the digestive system, learn the physiology and pathophysiology of the liver, understand the occurrence of jaundice, describe the production of bilirubin, understand the metabolism of insulin and glucagon, distinguish type I diabetes from type II diabetes, understand the pathogenesis of metabolic syndrome,

- explain the general principles of endocrine system function, pituitary hormone secretion, parathyroid hormone and calcitonin production and their role in bone and tooth formation, calcium and phosphate metabolism and related disorders, rickets, osteoblast and osteoclast function,
- describe the organization of the central nervous system, the role of synapses and neurotransmitters, the functioning and disorders of the motor and sensory axis, the role of the autonomic nervous system and its disorders,
- explain the mechanisms of pain and their disorders, brain metabolism and cerebral circulation, cerebrospinal fluid production and hydrocephalus

Pharmacology

Expected course learning outcomes

Upon completion of the course the student will be able to:

Cognitive domain – knowledge:

- to describe and explain the general principles of pharmacology as well as pharmacodynamics and pharmacokinetics
 - to distinguish and define dose-dependent and independent adverse drug reactions
 - to list and describe the factors that modify the action of drugs
 - to list the different types and explain the mechanisms of drug interactions in their simultaneous use
 - to classify drugs into individual groups/subgroups
 - to describe and explain the methods of application, mechanism of action at the molecular and cellular level, pharmacological effects on various organ systems, main indications, contraindications, side effects, and toxicity of individual drugs that are illustrative examples of pharmacotherapeutic groups and subgroups, with special emphasis on groups and subgroups of drugs which are more commonly used in dentistry
 - to analyze pharmacological effects, pharmacokinetic profile, adverse effects, indications, and contraindications among drugs from different subgroups within the same group of drugs, and compare them with each other
 - to describe the most clinically significant drug poisonings and treatment of poisoned patients
 - to list clinically significant drug interactions
 - to describe and explain the process of developing and researching new drugs
- Psychomotor domain – skills:
- to choose writing prescriptions for various forms of medicines
 - to use the Register of Medicinal Products
 - to demonstrate the searching skills domestic and international drug databases

Materials in dental medicine

Expected learning outcomes

Learning outcomes (knowledge):

- describe the concepts and basic procedures in a dental laboratory
- explain the ways of making prosthetic replacements
- compare and classify devices in the dental laboratory
- explain building and auxiliary materials
- connect indications, devices, and materials according to indications

Learning outcomes (skills):

- identify devices in the dental laboratory
- associate procedures with devices and materials
- perform device management procedures
- monitor the development of dental materials

Dental Caries

Expected course learning outcomes

During seminars and clinical exercises, students consolidate and connect their theoretical knowledge acquired during previous years Courses and the lectures in the Course of Dental caries. Students practice recognition, diagnosis and suggest non-operative or operative therapeutic interventions for the prevention of carious lesions.

Learning outcomes:

- list and describe the types of dental caries
- describe the etiological factors of dental caries
- categorize risk groups for dental caries
- list and explain the types of preventive measures in the prevention of dental caries
- classify the risk of developing new or progressing existing carious lesions
- planning therapy procedures depending on the calculated risk of developing a new or progressing of an existing carious lesion

Physics in Dental Medicine

Expected learning outcomes

At the end of the course student will be able to:

- apply the principles of statics to explain the biomechanics of the jaw and teeth
- explain the deformation curve of a rigid body. Define Hooke's law. distinguish between plastic and elastic deformations
- apply the principles of thermodynamics to describe the thermal properties of dental materials
- apply the principles of electricity to determine the electrical properties of dental materials
- explain the physical principles underlying the use of ultrasound in diagnostic and therapeutic procedures
- become familiar with the application of modern technologies in dentistry
- name and describe the diagnostic and therapeutic uses of ionizing radiation
- state and explain the mechanisms of interaction of ionizing radiation with matter
- apply knowledge of the principles of dosimetry for protection from ionizing radiation