University of Rijeka, Faculty of Dental medicine
Integrated Undergraduate and Graduate University Study of Dental Medicine

LEARNING OUTCOMES
Year of study: **2nd**

Physiology and Pathophysiology II

Expected learning outcomes
By the end of the course, students will be able: - 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 - 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

Microbiology with Parasitology

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 - interpret mechanisms and main characteristics of humoral immunity and complement system

- explain the kinetics and effector mechanisms of immune reaction to pathogens
- describe and explain regulation of immune reaction and immunological tolerance
- describe and explain pathogenesis of hypersensitivity reactions
- describe and explain the mechanisms of development and consequences of autoimmunity and immune deficiencies
- describe and interpret immunological specificities and basis of mucosal immunity and mucosal diseased (including oral cavity)

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
- define the principles of taking biopsy material and material for molecular diagnostics

Medical informatics

Expected learning outcomes

Upon completion of the course the student will be able to:
- acquire knowledge and skills necessary for understanding, useful and responsible use of information processing methodology and information and communication technology in medicine and dentistry
- design and prepare unformatted and formatted medical documents
- present the search and use of medical literature
- critically analyze and use medical information online
- present knowledge of medical classifications and systems of medical terminology and coding

Tooth morphology with 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 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 the nomenclature and universal numbering system for teeth
- distinguish 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

Psychological medicine

Expected course learning outcomes

At the end of the course the students will be able to:
- describe and explain the psychological needs and behavioural patterns of patients
- communicate with the patient
- define anxiety, depression

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
- describe and explain the metabolism of carbohydrates, fats and proteins.
- describe and explain the physiology and pathophysiology of the digestive system, explain the physiology and pathophysiology of the liver, the occurrence of jaundice, describe the production of bilirubin, describe and explain metabolism of insulin and glucagon, distinguish type I diabetes from type II diabetes, define 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 and classify 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:
- describe and explain the general principles of pharmacology as well as pharmacodynamics and pharmacokinetics
- distinguish and define dose-dependent and independent adverse drug reactions
- list and describe the factors that modify the action of drugs
- list the different types and explain the mechanisms of drug interactions in their simultaneous use
- classify drugs into individual groups/subgroups
- 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
- 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
- describe the most clinically significant drug poisonings and treatment of poisoned patients
- list clinically significant drug interactions
- describe and explain the process of developing and researching new drugs

Psychomotor domain – skills:
- write prescriptions for various forms of medicines
- use the Register of Medicinal Products
- demonstrate the searching skills of the domestic and international drug databases

Statistics

Expected learning outcomes

At the end of course students will be able to:
- define and calculate basic parameters for the display of numerical series (mean values, measures of variability)
- explain the nature of a practical or research problem that can be solved by a statistical method
- explain to identify in which situations the use of certain statistical tests is appropriate
- plan and apply appropriate statistical procedures and methods and interpret the obtained results
- use the statistical computer software package Statistica as an aid in calculating and analyzing data

Structure and development of the teeth

Expected course learning outcomes

At the end of this course. students will be able to
- describe and explain the histological structure of teeth
- explain the embryological development of hard and soft parts of teeth
- compare the histological structure of healthy and pathological dental tissues

Physical and Health Culture

Expected learning outcomes

At the end of course students will be able to:
- positive influence on the anthropological characteristics of students (anthropometric characteristics. motor skills and functional abilities)
- apply knowledge and skills in everyday life and in urgent situations
- acquired knowledge continuously applies in the aim of development and maintaining of health.