**REPUBLIC OF TURKEY**

**USKUDAR UNIVERSITY**

**FACULTY OF HEALTH SCIENCES**

**PERFUSİON**

**COURSE CONTENTS**

**YEAR ONE (FALL)**

**FSH129 - HUMAN PHYSIOLOGY (3+0) 3 ECTS: 5**

 It will be examined how the processes that play a role in maintaining a living being's vital function, how it works, the relationships between the systems and the control mechanisms, and how the different cells, tissues and organs in the human body work together to survive.

**FSH143 - APPLIED BASIC ANATOMY (2+2) 3 ECTS: 5**

 Anatomy is the science of body structures. This derste is taught on the level that body structures, function and function will be sufficient for a healthcare professional. Students will have the opportunity to work in human body models in practice lessons. This derste Introduction to human anatomy, Anatomic terms, Anatomical planes, Skeletal system, Head skeleton, Axial bones, Lower extremity bones, Upper extremity bones, Muscle system, Axial muscles, Lower extremity muscles, Upper and upper extremity muscles, Nervous System, Central Nervous System, Peripheral Nervous System, Autonomic Nervous System, Nervous System, Nervous System, Nervous System, Nervous System, General Concepts, Joints and Bonds, Digestive System, Respiratory System, Heart and Circulatory System, Arteries, Venler and Lymphatics, Eye, Ear, Skin, Secretion System issues will be processed in detail.

**FSH134 – MICROBIOLOGY (2+0) 2 ECTS: 3**

This course includes basic concepts in microbiology, microbial morphology and physiology, structure of bacterial cell, genetics, classification of microorganisms and control in health care environment**.**

**FSH126 – BIOCHEMISTRY (2+0) 2 ECTS: 3**

This course covers the expression of cells, amino acids, peptides, proteins, enzymes, nucleic acids, carbohydrates, lipids and membranes, fats and vitamins.

**ATA101 – Atatürk's Principles and History of Turkish Revolution-I (2+0) 2 ECTS: 3**

This course, revolution and similar concepts. Ataturk 's understanding of revolution, pause - recession period in the Ottoman Empire made the reform movement and the state of the Ottoman Empire, Tripoli - Balkan wars, the First World War and the Armistice Agreement, The implementation of the Armistice Agreement, occupations, Mustafa Kemal in Samsun the congresses and organization, the National Pact and the opening of the Grand National Assembly of Turkey , national fronts, Mudanya and Lausanne Treaty include the subject .

**ENG101 – English-I (3+0) 3 ECTS: 3**

 This course is designed for students who are new to English and aims to develop basic language skills. It helps learners acquire listening, speaking, reading and writing skills through different teaching techniques and practice studies. Learners learn basic vocabulary patterns and words using dialogues and texts used in real life situations. At the end of this course, learners are prepared to progress from the beginning level of English to the beginner level.

**TURK101 – Turkish Language-I (2+0) 2 ECTS: 3**

 In this course, revolution and similar concepts are being studied. The status of the Ottoman State during the period of stagnation and decline and the reform movements made, Tripoli-Balkan Wars, World War I and Mondros Armistice Agreement, Mudros Armistice Agreement implementation, occupations, Mustafa Kemal's exit to Samsun, congresses and organization , Misak-ı Milli and the Grand National Assembly of Turkey, the national fronts, Mudanya and Lausanne Treaties and Atatürk's understanding of revolution.

**RPSI109 – Positive Psychology and Communication Skills (3+0) 3 ECTS: 5**

 It is this approach that makes it possible for an individual to realize his or her own resources and values in order to be happy, peaceful, successful, and life satisfaction high. Using these values and resources appropriately and creatively for the purpose of the individual allows the individual to use his personal and cultural potential by making conscious choice. These derste students will evaluate their research and conceptual studies on different subject and theoretical approaches (meaningful legislative, gratefulness, judgment, happiness, hope, optimism, positive emotions, personal development after trauma, endurance, self-esteem, strength, time perspective). Students learn how to use methods such as brain mapping, signature strengths, thanksgiving, and seven ways to increase happiness (learned positive, gratitude). The course also covers topics such as basic concepts that constitute the general framework of communication sciences, solutions and suggestions for strengthening communication skills, interpersonal communication, group communication, organization communication, mass communication, public communication, international communication and intercultural communication.

**RCUL102 – University Culture-II (0+2) 1 ECTS: 1**

 The aim of this course is to enable university students to have intellectual knowledge about social, cultural and political events, to be open to the multidisciplinary information process besides their general curriculum, to be able to think critically, questionably and analytically. At the same time, the student will be able to participate in the seminars of those who are experts in the fields of science, technology, social, political and cultural issues that are discussed publicly outside their fields. Students will have participated in approximately 48-50 seminars and programs throughout their university life.

**YEAR ONE (SPRING)**

**FSH130 – HUMAN PHYSIOLOGY II (3+0) 3 ECTS: 5**

Concepts related to human physiology, physiology of cell physiology, blood, muscle and skeletal system, nervous, cardiovascular, respiratory, excretion, endocrine system, gastrointestinal system, sensory organs will be examined**.**

**PER106 - SPECIAL ANATOMY FOR PERFUSION (2+2) 3 ECTS: 3**

 The basic anatomy terms are explained and the anatomical structure of whole body systems, including the anatomy of the heart, is examined.

**FSH138 - BASIC HEALTH INFORMATION AND MEDICAL TERMINOLOGY (3+0) 3 ECTS: 5**

Basic terms and terms related to the biological structure of human, medical terms reading rules, medical terms, appendices that bring to mind: prefixes, root structures, main characters, medical abbreviations, terms related to respiratory system, terms related to the endocrine system, The terms related to organs are emphasized.

**FSH202 – PHARMACOLOGY (2+0) 2 ECTS: 3**

 This course includes the basic concepts in pharmacology and toxicology, the pharmacological properties and side effects of drugs effective on tissue and organ systems.

**PER108 - PROFESSIONAL SKILLS (1+2) 2 ECTS: 3**

 It is aimed that students gain various skills to use in clinic. Surgical handwashing, sterile dressing, sterile pack and bundle opening, asepsis and antisepsis, vital signs, IV fluids and their application methods, drug dose calculation, fluid flow rate calculation.

**ATA102 – Atatürk's Principles and History of Turkish Revolution-II (2+0) 2 ECTS: 3**

 The revolutions in the political, social, legal, economical and educational fields, the counterinsures to the Republic of Turkey, the internal and external politics of the Atatürk period, the death of Atatürk and the echoes in Turkey and around the world, Atatürk's principles, World War II, The 1960 and 1982 constitutional issues.

**ENG102 – English-II (3+0) 3 ECTS: 3**

 This course tenses: present tense, present tense, past tense, future tense structures; modes: might, could, can, must, may, Envelopes: location, direction, purpose, state envelopes; Adjectives: Order of adjectives, comparisons are made superlative; passive: present, past and future tenses in the passive voice; conditionals; adjective clauses; transfer clauses; verb structures: to, -ing; noun clauses; adverb clauses; topics include comparative structures.

**TURK102 – Turkish Language-II (2+0) 2 ECTS: 3**

 This course is designed to provide students with an introduction to a general genre, a formal writing, a thought writing, summarizing and writing such writings, introducing a work place, putting forward an idea or opinion, expressing and criticizing the subject of a writing, Discussion, panel, symposium, forum), features and preparation, marking, punctuation, writing rules and their official writing features, types of sentences and sentences, structure, meaning, arrangement of items according to predicate, types of sentences.

**RCUL102 – University Culture-II (0+2) 1 ECTS: 1**

 The aim of this course is to enable university students to have intellectual knowledge about social, cultural and political events, to be open to the multidisciplinary information process besides their general curriculum, to be able to think critically, questionably and analytically. At the same time, the student will be able to participate in the seminars of those who are experts in the fields of science, technology, social, political and cultural issues that are discussed publicly outside their fields. Students will have participated in approximately 48-50 seminars and programs throughout their university life.

**YEAR TWO (FALL)**

**PER201- INTRODUCTION TO PERFUSION (3+0) 3 ECTS: 5**

 This course includes the history of cardiopulmonary bypass, heart diseases that do not require the use of cardiovascular bypass, definition of cardiopulmonary bypass, definition of heart-lung machine heating and cooling devices, working principles, names of materials used, anatomy of vascular structures used for cardiac surgical anatomy, cannulation and graft.

**PER213 – CARDIOPULMONARY BYPASS I (2+4) 4 ECTS: 5**

This derste cardiopulmonary bypass circuit, cannulation for bypass, initiation and maintenance of cardiopulmonary bypass, potential problems encountered during cardiopulmonary bypass, special types of extracorporeal circulation are explained.

**PER215 - CARDIAC ANESTHESIA I (2+0) 2 ECTS: 5**

 Preoperative evaluation, Premedication and medications, Intraoperative monitoring, Anesthetic approaches in different types of cardiac surgery, Anesthesia induction and management, Pre-bypass evaluation, Coagulation and complications for cardiopulmonary bypass.

**PER209 - HEART DISEASES (2+0) 2 ECTS: 3**

These include dersteine ​​anatomy and physiology, evaluation of cardiovascular system, diagnostic methods of heart diseases, rhythm disorders and pace-maker, systemic hypertension, heart failure, acute coronary syndromes, pharmacological treatment and care, interventional treatment methods and care, treatment methods in rheumatic heart diseases care, cardiac rehabilitation methods are explained.

**PER217 - RESPIRATORY AND CIRCULATION PHYSIOLOGY (2+0) 2 ECTS: 4**

This derste is described in detail in Physiology Concept and Cell Physiology, Cell Physiology, Respiratory Physiology, Circulatory System Physiology, Nervous System Physiology and Endocrine System Physiology.

**PER211 - PROFESSIONAL ENGLISH (3+0) 3 ECTS: 4**

To be able to speak clearly in a foreign language business life using correct words and expressions. Be able to understand the message from the speaker when speaking at normal speed. Ability to comply with language and writing rules. To be able to read and understand the foreign language, to improve the vocabulary.

**FSH127 - INFECTIOUS DISEASES (2+0) 2 ECTS: 3**

Disorders of infections, Intensive care unit infections, Disinfection and sterilization, Personal protection methods, Isolation methods, Infectious diseases, Infectious diseases, Infectious diseases, Fecal - oral transmission diseases, Blood - borne diseases, Hospital infections. , Hospital infection control committee.

**YEAR TWO (SPRING)**

**PER204 - BLOOD PRODUCTS TRANSFUSION AND BLOOD PROTECTION TECHNIQUES (2+0) 2 ECTS: 4**

These course Blood products, Preoperative hemostasis system of transfusion requirement, Coagulation factor deficiencies, Thrombocytopenia and thrombocyte functions, Methods that idealize heparin and protamine applications in cardiac surgery patients, Effects of heparin and protamine application methods on coagulant and anticoagulant systems in cardiac surgery patients, Antifibrinolytic agents , Use of recombinant FVII preparations (aprotinin, epsilon aminocaproic acid), Selection of non-pump coronary artery by-pass surgery method, Routine use of cell protective devices, Application of appropriate transfusion indications, Hemostasis in cardiovascular surgery, Hemorrhage problems in cardiovascular surgery, workshops, published guides and case reports.

**PER214 - CARDIOPULMONARY BYPASS II (2+4) 4 ECTS: 5**

These topics include extra corporeal circulation, cardio-pulmonary bypass techniques, perfusion, special topics in perfusion, monitoring, use of cardiac surgery in hemodiafiltration, myocardial protection, systemic hypothermia, blood conservation techniques, assisted venous drainage, selective cerebral perfusion and transplantation.

**PER216 - CARDIAC ANESTHESIA II (2+0) 2 ECTS: 5**

Anesthetic evaluations for the patients with pericardial disease are described in this derste pre-bypass evaluations, anticoagulation for cardiopulmonary bypass, approaches in cardiopulmonary bypass, restoration of bypass and restoration of anticoagulation, anesthesia approach during off-pump surgery, approach to blood transfusion during bypass, and pericardial disease.

**PER206 - EXTRACORPOREAL LIFE SUPPORT AND MONITORIZATION (2+0) 2 ECTS:4**

 This course describes the use of hemodynamic monitoring and measurements, blood gas analysis, air monitoring, heat monitoring, electrocardiography, fluid and electrolyte balance, coagulation monitor perfusion techniques, preoperative echocardiography, follow-up of cardiac catheterization, and transesophageal ECO.

**PER210 - STERILIZATION AND SURGICAL ASEPSY (3+0) 3 ECTS: 5**

General information about sterilization, Asepsis-antisepsis, Characteristics of sterilization unit, Disinfection, Sterilizers, Material washing and preparation units, Safety testing and documentation in sterilization, Coding and documentation of sets, Sterilization of sterile material, Sterilization of plastic material, storage and protection of the material**.**

**PER212 - PROFESSIONAL ENGLISH II (3+0) 3 ECTS: 4**

To be able to speak clearly in a foreign language business life using correct words and expressions. Be able to understand the message from the speaker when speaking at normal speed. Ability to comply with language and writing rules. To be able to read and understand the foreign language, to improve the vocabulary.

**RPRG104 – ENTREPRENEURSHİP and PROJECT CULTURE (2+0) 2 ECTS: 3**

This course provides students with comprehensive information on how to apply the graduation product rather than the graduation project. Student-centered, involves bringing together all the academics involved in setting real-life goals, discovering new things, problem solving, time management skills and community service.

**YEAR THREE (FALL)**

**PER309 - ADULT PERFUSION (3+0) 3 ECTS: 5**

 Cardiovascular embryology, Microcirculation, Surgical treatment of adult coronary heart diseases, Surgical treatment of adult valve diseases, Perfusion techniques in aortic surgery, Cyanotic congenital heart diseases, Obstructive congenital heart diseases, Adult congenital heart disease, Cardiovascular anatomy, Cardiovascular anatomy, Cardiac vein anatomy, Cardiovascular embryology, heart diseases, right and left shunt congenital heart diseases are described.

**PER305 - PERFUSION IN TRANSPLANTATION I (3+0) 3 ECTS: 5**

Transplantation physiology on this course, the immunology of transplantation, cardiac transplantation, cannulation in cardiac transplantation after cardiac transplant rejection, liver physiology, the anatomy of the liver, liver transplantation, liver transplantation perfusion, renal physiology, kidney anatomy, kidney transplant, the perfusion of the kidney transplant, the perfusion in the transplantation of other organs it is described.

**PER303 - PERFUSION IN PEDIATRIC DISEASES I (3+0) 3 ECTS: 5**

 Pediatric coronary heart diseases and surgical treatment, Pediatric valve diseases and surgical treatment, Perfusion Techniques in Pediatric Aortic Surgery, Congestive heart failure, Right-left ventricular anomalies, Cardiac anatomy, Anatomy of cardiac vessels and communication system, Anatomy of large vessels, Cardiovascular embryology, Pediatric coronary heart diseases and surgery shanty congenital heart diseases, cyanotic congenital heart diseases, obstructive congenital heart diseases, congenital heart diseases are explained.

**PER311 - EXTRACORPOREAL CIRCULATION TECHNIQUES I (2+4) 4 ECTS: 5**

 This course aims to teach the definition of extracorporeal circuits, definition and common features of heart-lung machine, comparison with other circuits, circuits and working principles of hemodialysis device, working principles of hemofiltration device, plasmpherez and ECMO device.

**PER307 – HEMATOLOGY (2+0) 2 ECTS:4**

 Blood plasma, Coagulation and fibrinolysis tests, Anticoagulants, Atherosclerosis formation, Hematological approach to thrombotic risks, Cardiac damage markers, Endothelial cell types and functions, Erythrocyte functions, Leukocyte functions, Platelet functions, Blood plasma and functions and clinical applications, cardiac injury markers and clinical applications.

**FSH125 – BİOSTATİSTİSTİCS (2+0) 2 ECTS: 3**

 Content of this course Frequency Distributions Central Tendency and Distribution Measures Probability and Probability Distributions, Discrete Probability Distributions, Normal Distribution and Normal Approximation of Binomial, Hypothesis Testing and Confidence Interval-Hypothesis Testing for Confidence Interference Significance Control of Difference Significance Control of Mass Percentage and Confidence Interval Chi-square Analysis - Independence Tests Dependency Coefficients Regression Analysis Hypothesis Testing in Simple Linear Regression and Confidence Interval Correlation Analysis.

**FSH131 - FIRST AID (1+2) 2 ECTS: 3**

 First aid in airway obstruction, First aid in external and internal hemorrhage, First aid in wound and wound types, First aid in external and internal hemorrhage, First aid in external and internal hemorrhage, First aid in external and internal hemorrhage, First aid in fractures of the head and spine in regional injuries, First aid in upper extremity fracture, dislocation and sprain, Hip and lower extremity fracture, First aid in dislocation and sprain, First aid in emergency care, Poisoning, Hot strikes, it is described.

**YEAR THREE (SPRING)**

**PER312 - EXTRACORPOREAL CIRCULATION TECHNIQUES II (2+4) 4 ECTS: 5**

Congestive heart failure, Hemodiafiltration, Cyanotic congenital heart diseases, Adult congenital heart diseases, Left-sided congenital heart disease, Cardiopulmonary bypass techniques, Perfusion, Myocardial protection, Systemic hypothermia, Conservative techniques, Selective cerebral perfusion, Combination with complications during perfusion heart diseases are explained.

**PER314 - LIQUID BALANCE AND DIALYSIS PRINCIPLES (2+0) 2 ECTS: 4**

 Hemodialysis, Hemophilia, Hemophilia, Plasmapherez, Peritoneal dialysis, Complications of peritoneal dialysis, Renal transplantation, Transplantation, Renal transplantation, Renal transplantation, Hemodialysis, Hemodialysis, Lipid electrolyte balance, Acid-base balance, Acute renal failure, Chronic renal failure, hemodialysis.

**PER308 – HEART SUPPORT SYSTEMS (2+0) 2 ECTS: 4**

This course includes: Right and left heart bypass, Mechanical circulation support systems; Long and short support devices, Intraaortic balloon pump; Ventricular support systems; EMCO, total and artificial heart, heart support systems, complications and advantages of mechanical features equipment, quality of life.

**PER304 - PERFUSION IN PEDIATRIC DISEASES II (3+0) 3 ECTS: 5**

 This course includes mediastinum and heart anatomy, vascular anatomy, Pediatric coronary heart diseases and surgical treatments, Pediatric valve diseases and surgical treatments, Pediatric aortic surgery perfusion techniques, Congenital heart diseases are discussed.

**PER310 – IMMUNOLOGY (3+0) 3 ECTS: 5**

Elements of natural and adaptive immunity and the molecular mechanism of diseases related to immun system disorders.

**FSH142 – BIOPHYSICS (2+0) ECTS: 3**

 The content of this course is the structure and framework of the cell membrane, membrane and action properties, current action potential in the heart, the basic principles of electrocardiography and ultrasonography, viscosity, smooth and vortex mixture design, hemodynamic principles, biological biophysics, muscle identity content, biophysical character identification panel.

 **FSH145 - RESEARCH METHODS IN HEALTH SCİENCE (3+0) 3 ECTS: 4**

 Basic concepts used in scientific research, scientific research process and stages, error sources in research, measurement, scale types, validity and reliability concepts in research, sampling research approaches, survey, interview and observation methods and types, Chi-square analysis, independence tests, dependency co-efficients, regression analysis, hypothesis testing in simple linear regression and confidence interval, correlation analysis, theoretical distributions.

**YEAR FOUR (FALL)**

**PER401 - CLINICAL APPLICATION I (0+32) 16 ECTS:22**

 It is aimed to gain basic application skills about perfusion techniques used in open heart operations in pediatric and adult group and operation mechanisms related to heart-lung pump equipment, setup and operation and its use in practical lessons.

**PER403 – GRADUATİON PROJECT I (2+0) 2 ECTS: 4**

 It is aimed to learn academic literature, create a study plan, suitability of the study plan, follow up the study plan and learn the terminating processes appropriately for the purpose of the study.

**PER405 - MEDICAL ETHICAL AND PATIENT RIGHTS (3+0) 3 ECTS: 4**

 Vocational ethics course introduces the basic concepts of ethics, ethical rules and values ​​system. The virtues, values ​​and codes of ethics that a health worker should possess are defined.

**YEAR FOUR (SPRING)**

**PER402 - CLINICAL APPLICATION I (0+32) 16 ECTS:22**

The aim of this course is to acquire basic application skills about perfusion techniques used in open heart operations in pediatric and adult group and operation mechanisms related to heart-lung pump equipment, setup and operation and its use in practical lessons.

**PER404 – GRADUATİON PROJECT I (2+0) 2 ECTS: 4**

The aim of this course is to acquire basic application skills about perfusion techniques used in open heart operations in pediatric and adult group and operation mechanisms related to heart-lung pump equipment, setup and operation and its use in practical lessons.

**PER416 - BIOMEDICAL TECHNOLOGY (3+0) 3 ECTS: 5**

 It will then be completed.