

Required Courses:**ENS501 Scientific Research Methods and Science Ethics (3+0+0) Credits:3 ECTS:6**

This course provides an introduction to basic clinical research methods. It emphasizes the development of skills that will enable the health science student to evaluate research articles and participate in clinical research activities. Quantitative research designs, sampling techniques, measurement, and interpretation of common statistical findings are also reviewed. Thus, the student will become acquainted with the concepts and learn how to complete a literature review, collect data, complete a statistical analysis and write a final paper on their research in accordance with their project.

ENS502 Statistics Applications (2+0+0) Credits:2 ECTS:6

Statistical analysis issues in health informatics are covered in the content of the course. In the course, basic and advanced statistical methods on clinical data will be examined, medical data will be interpreted with parametric and non-parametric tests, hypothesis tests, validity analysis, chi-square, t-test, analysis of variance, and regression analysis.

PER501 Cardiopulmonary Anatomy and Physiology (3+0+0) Credits:3 ECTS:6

Teaching the morphological structure, anatomical principles of the organs of the circulatory and respiratory system in the context of location and neighborhood relations, defining and examining the functions and components of blood, transferring the dynamics and physiological control mechanisms for circulation and respiration; examination of congenital developmental disorders is discussed.

PER503 Cardiovascular Perfusion Technology (3+4+0) Credits:5 ECTS:6

Perfusion Technology is the study of the physiology and pathology of the lungs and related respiratory organs of the human body. In addition, considerable light is shed on the associated equipment used to support or assume the function of the lungs and heart during surgical procedures. The aim of the course; perfusionists learn to use heart-lung machines and other mechanical support systems under the guidance of specialist physicians.

PER505 Instrumentation in Cardiovascular Perfusion (2+0+0) Credits:3 ECTS:6

This course introduces the student to the various types of electronic monitoring equipment required for open heart surgery and related procedures. Instructional design includes practical OR experience,

simulated scenarios and lab work, and an instructive presentation of operational theory. His topics of study include pressure transducers, thermistors, cardiac output devices, fluid dynamics and physiological monitoring devices.

Purpose: Basic concepts related to cardiopulmonary perfusion and techniques applied during cardiopulmonary perfusion, management of heart-lung machine and mechanical heart support devices used for cardiopulmonary bypass, artificial heart technologies, properties of perfusion during heart-lung transplantation, consumables and drugs, and basics of perfusion and perfusion techniques. To provide students with knowledge about In addition, it is aimed to learn the rules to be followed regarding patient-employee safety that should be taken before and after the surgery.

PER502 Acid-Base Physiology (2+0+0) Credits:3 ECTS:6

Acid-base balance is the most important indicator of tissue perfusion in open heart surgery. If perfusion is not achieved, acid-base balance disorders occur and acid-base balance disorders that occur during cardiopulmonary bypass need to be corrected quickly. For this reason, it is aimed to provide a complete and perfect understanding of acid-base balance and physiology in perfusion training.

This course provides the perfusion student with a comprehensive review of the structural, functional and integrative aspects of the kidney and urinary system. The course will focus on the theory, practice and interpretation of blood gas analysis and the associated clinical cardiopulmonary physiological mechanisms that support kidney function.

PER504 Pathophysiology and Perfusion Techniques (3+0+0) Credits:3 ECTS:6

This course is designed to provide the perfusion student with an opportunity to explore the relationship between anatomy, physiology and pathophysiology and the application of perfusion practice. The course will provide the detailed fundamental skills necessary to understand the interplay between the science of extracorporeal technology and pathophysiological considerations. The systematic and integrated identification and application of these principles is essential for evidence-based clinical practice.

PER506 Seminar (0+1+0) Credits:0 ECTS:1

This course is designed to provide students with a basic understanding of literature review, recent advances in the field, medical terminology, aseptic technique, patient safety issues, professionalism and medical ethics. Ethical principles frequently encountered in health professions will be introduced to students.

PER508 Cardiopulmonary Bypass Principles and Practices (4+0+5) Credits:5 ECTS:6

By learning the surgical methods applied in the treatment of heart, lung and great vessels, the importance of correct planning of cardiopulmonary perfusion, selection of materials and methods will be comprehended. In this way, it will be possible to determine and implement perfusion strategies suitable for the surgical method to be applied, to be informed about the complications that may arise, and to plan and implement the measures to ensure perfusion during these complications.

Elective Courses:

PER507 Principles of Pharmacology (2+0+0) Credits:2 ECTS:6

Students will learn the basic principles and concepts of pharmacology. Lesson; will focus on the principles of drug absorption, distribution, metabolism, and drug receptor activities, as well as the therapeutic uses and mechanisms of action of drugs in each major drug group;

PER509 Interprofessional Patient Centered Teams (2+0+0) Credits:2 ECTS:6

This program will introduce students to the principles of interprofessional educational and collaborative practice: Values/Ethics, Roles/Responsibilities, Teams/Teamwork and Communication. Students will use experiential team-based learning to apply their knowledge, skills and values to their competencies.

PER510 Mechanical Circulatory Supports (2+0+0) Credits:2 ECTS:6

This course introduces the student to advanced practice guidelines for the care of patients treated with cardiac assist devices. Device selection, implantation, operation, and monitoring of various devices based on patient issues will be discussed. It is aimed to make students understand these devices that they will encounter in the field, including cell protectors, ventricular support devices, extracorporeal membrane oxygenation, balloon pumps.

PER512 Adult and Pediatric Congenital Heart Diseases (2+0+0) Credits:2 ECTS:6

This course introduces the student to the cardiovascular physiology, pathophysiology and anatomical differences associated with pediatric and adult congenital heart patients. Through lectures and discussions, students will be prepared to understand these defects as well as how a Perfusionist will manage the heart-lung machine during these complex congenital procedures.

PER511 Organizational leadership (2+0+0) Credits:2 ECTS:6

Students will focus on the tools and strategies needed to be an effective leader in this course. While the focus is on how these strategies can be used within a large or small perfusion group, their origins lie in effective management and leadership in any organization of any size. With this course, the student will try to gain leadership skills that will prepare him/herself as the future leader of the profession.

Thesis courses:

PER550.1 Thesis Study I (0+0+0) Credit:0 ECTS:30

The aim of this course is to integrate qualitative methods with perfusion technology knowledge and skills to test a hypothesis that addresses a current issue important to the management of perfusion technology. It contains literature review and research work. The student receives the support of a literature study on the research topic from his/her academic advisor.

PER550.2 Thesis Study II (0+0+0) Credit:0 ECTS:30

Within the scope of this course, students work on the thesis under the supervision of an academic advisor in the field of perfusion and focus on the completion of the research project in order to meet the graduation requirement. The student is encouraged to further his research and present his findings.