UNIVERSITÀ DI PAVIA

Anno Accademico 2020/2021

CARDIOVASCULAR PHYSIOLOGY

Anno immatricolazione	2019/2020
Anno offerta	2020/2021
Normativa	DM270
SSD	BIO/09 (FISIOLOGIA)
Dipartimento	DIPARTIMENTO DI MEDICINA MOLECOLARE
Corso di studio	MEDICINA E CHIRURGIA (IN LINGUA INGLESE)
Curriculum	PERCORSO COMUNE
Anno di corso	2°
Periodo didattico	Primo Semestre (01/10/2020 - 15/01/2021)
Crediti	3
Ore	24 ore di attività frontale
Lingua insegnamento	English
Tipo esame	SCRITTO E ORALE CONGIUNTI
Docente	BOTTINELLI ROBERTO (titolare) - 3 CFU
Prerequisiti	-
Obiettivi formativi	The course will teach students the phenomena occurring at molecular, cellular, tissue and organ level which support vital functions. At the end of the course, students will know how the organs and systems of the human body work, how their cooperate, and how their function is controlled to keep homeostasis. What is taught at all level of organisation of the living matter will be put in the frame of the way the organism works. Students will learn the major correlations between the phenomena occurring in physiologic and pathologic conditions.
Programma e contenuti	System Overview Pressure, Flow, and Resistance The Heart Anatomy Cardiac Muscle

Heartbeat Coordination
Sequence of Excitation
Cardiac Action Potentials and Excitation of the SA Node
The Electrocardiogram
Excitation–Contraction Coupling
Refractory Period of the Heart
Mechanical Events of the Cardiac Cycle
Mid-Diastole to Late Diastole
Systole
Early Diastole
Pulmonary Circulation Pressures
Heart Sounds
The Cardiac Output
Control of Heart Rate
Control of Stroke Volume
Measurement of Cardiac Function
The Vascular System
Arteries
Arterial Blood Pressure
Measurement of Systemic Arterial Pressure
Arterioles
Local Controls
Extrinsic Controls
Endothelial Cells and Vascular Smooth Muscle
Arteriolar Control in Specific Organs
Capillaries
Anatomy of the Capillary Network
Velocity of Capillary Blood Flow
Diffusion Across the Capillary Wall: Exchanges of Nutrients and Metabolic End Products
Bulk Flow Across the Capillary Wall: Distribution of the Extracellular Fluid
Veins
Determinants of Venous Pressure
The Lymphatic System
Mechanism of Lymph Flow
Integration of Cardiovascular Function: Regulation of Systemic Arterial Pressure
Baroreceptor Reflexes
Arterial Baroreceptors
The Medullary Cardiovascular Center
Operation of the Arterial Baroreceptor Reflex
Other Baroreceptors
Blood Volume and Long-Term Regulation of Arterial Pressure
Other Cardiovascular Reflexes and Responses
Cardiovascular Patterns in Health and Disease
Hemorrhage and Other Causes of Hypotension
Shock
The Upright Posture
Exercise
Maximal Oxygen Consumption and Training
Hypertension
Heart Failure

	Hypertrophic Cardiomyopathy Coronary Artery Disease and Heart Attacks Blood and Hemostasis Plasma The Blood Cells Erythrocytes Leukocytes Platelets Regulation of Blood Cell Production Hemostasis: The Prevention of Blood Loss Formation of a Platelet Plug Blood Coagulation: Clot Formation Anticlotting Systems Anticlotting Drugs
Metodi didattici	Lectures, rehearsal and questions and answers to the class
Testi di riferimento	One of the following books: Vander's Human Physiology, 14th Edition - McGraw Hill Ganong's Review of Medical Physiology, 25th Edition - McGraw Hill Berne & Levy Physiology, 6th Edition - Elsevier
Modalità verifica apprendimento	written test (multiple choices) & oral exam
Altre informazioni	-
Obiettivi Agenda 2030 per lo sviluppo sostenibile	$lbl_legenda_sviluppo_sostenibile