

University of Al-Anbar

College of Pharmacy

Department of Pharmacology and Toxicology

Title of the course: *Physiology I* Course number: 214

Level: 2<sup>nd</sup> Class, 1<sup>st</sup> Semester

Credit hours: Theory 3 hours Laboratory 1 hour

Tutors:

Reference text: *Review of Medical Physiology; Ganong W.F (Ed.); Latest edition* and *Textbook of Medical Physiology by Guyton AC; latest edition.*

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**Objectives:** To enable students understanding the basic principles of physiological functions of different tissues and organs of the human being, and how to evaluate these functions and correlate them with the normal and abnormal conditions. It also emphasizes on the role of homeostatic and hemodynamic changes in the integration of physiological status.

No	Lecture title	hours
1.	The general and cellular basis of medical physiology.	5
2.	Physiology of nerves and muscles: Nerve cells; excitation and conduction; Properties of mixed nerves; glia; neurotrophins; Nerve fiber types and functions; Muscles: Skeletal muscle; smooth muscle; cardiac muscle. Synaptic transmission: Reflexes; cutaneous, deep and visceral sensations; alert behavior, sleep and electrical activity of the brain; control of posture and movement; higher function of the nervous system; central regulation of visceral function; the autonomic nervous system.	16
3.	Respiration: Respiratory zones; Mechanics of respiration; air volumes; respiratory muscles; compliance of the lungs and chest wall; surfactants; differences in ventilation and blood flow in deferent parts of the lung; Dead space and uneven ventilation; Pulmonary circulation: Pressure, volume and flow. Gas transport between the lungs and tissue; Regulation of respiration: Neural control of breathing; Respiratory centers; Regulation of respiratory activity: Chemical factors; non chemical factors; Respiratory adjustment in health and disease; Effect of exercise; Hypoxia; Emphysema; Asthma.	8
4.	Renal Physiology: Introduction; innervations of the renal vessels; renal clearance; renal blood flow; glomerular filtration rate (GFR): Measurements; factor affecting GFR; Filtration fraction; reabsorption of Na <sup>+</sup> , Cl <sup>-</sup> and glucose. Tubuloglomerular feedback and glomerulotubular balance; water excretion in: proximal tubules; loop of henle; distal tubules; collecting ducts; the counter current mechanism; role of urea; water diuresis and osmotic diuresis; acidification of the urine: H <sup>+</sup> secretion; reaction with buffers; ammonia secretion; factors affecting acid secretion; bicarbonate excretion; regulation of Na <sup>+</sup> , K <sup>+</sup> and Cl <sup>-</sup> excretion; uremia; acidosis; micturition.	8
5.	Cardiovascular system: origin and spread of cardiac excitation; the electrocardiogram; cardiac arrhythmias; electrographic findings in cardiac diseases; mechanical events of the cardiac cycle; cardiac output; cardiovascular regulatory mechanisms: Local regulatory mechanisms; systemic regulation by the nervous system; systemic regulation by hormones; Coronary circulation; Hypertension; Heart failure; Angina pectoris.	8