

DISCIPLINE SHEET**ACADEMIC YEAR****2022- 2023****1. DATA ABOUT THE STUDY PROGRAM**

1.1 Institution of higher education	UNIVERSITY OF MEDICINE AND PHARMACY OF CRAIOVA
1.2 Faculty	MEDICINE
1.3 Department	2
1.4 Study Domain	HEALTH
1.5 Study cycle	LICENCE
1.6 Study program/ Qualification	MEDICINE

2. DATA ABOUT THE DISCIPLINE

2.1 DISCIPLINE NAME	PHYSIOPATOLOGY		
2.2. Discipline code	MED31204		
2.3 The holder of course activities	Găman Amelia, Dănoiu Suzana, Neamțu Marius Cristian, Neșțianu Adrian, Tudorașcu Iulia		
2.4 The holder of seminar activities	Găman Amelia, Dănoiu Suzana, Neamțu Marius Cristian, Neșțianu Adrian, Tudorașcu Iulia, Negroiu Cristina		
2.5. Academic degree	Prof., Prof, Prof., Conf., Lecturer, PhD Student		
2.6. Employment (base norm/associate)	Base norm		
2.7. Year of study	III	2.8. Semester	I+II
2.9. Course type (content)		2.10. Regime of discipline (compulsoriness)	
			CFD

3. THE ESTIMATED TOTAL TIME (teaching hours per semester)

3.1 Number of hours per week	4	From which - course	2	seminary/laboratory	2
3.4 Total hours in curriculum	112	From which - course	56	seminary/laboratory	56
Time found distribution (hours)					
Study from manual, course support, bibliography, and notes					10
Additional documentation in the library, specialized electronic platforms and, on the field					10
Training seminars / labs, homework, reports, portfolios, and essays					6
Tutoring					4
Examinations					4
Other activities, counselling, student scientific programs					4
3.7 Total hours of individual study	38				
3.9 Total hours per semester					
Semester I	75				
Semester II	75				
3.10 Number of credits					
Semester I	3				
Semester II	3				

4. PREREQUISITES (where appropriate)

4.1 curriculum	Students must have a appropriate knowledge of physiology, anatomy, biochemistry, biophysics, cell biology
4.2 competency	

5. CONDITIONS (where appropriate)

5.1. of course deployment	Lecture Hall with projector / online
5.2. of seminary/ lab deployment	Pathophysiology lab/online Prior preparation through individual study of the corresponding theme of the week

6. SPECIFIC COMPETENCES ACCRUED	
PROFESSIONAL COMPETENCES	<p>C1 Identification of sickness and correct diagnosis of the disease (disease) .</p> <ul style="list-style-type: none"> - The application of methods, techniques and clinical knowledge acquired to be integrated with laboratory data in order to establish a positive diagnosis, differential, and determining prognosis - Description of concepts, theories and fundamental concepts regarding the production of disease, signs and symptoms of each disease useful for guiding clinical diagnosis - Developing and implementing new approaches to the process of establishing the diagnosis in relation to the knowledge and technical progress - Critical evaluation of hypotheses, the means and methods used to support the formulation of individualized diagnosis. - Formulation of hypotheses and interpret the signs, clinical symptoms and laboratory changes in order to develop presumptive diagnosis <p>C5 Initiation and development of scientific research and / or format field of competence</p> <p>Principles and methodologies specific to education and scientific research with the aim of obtaining new knowledge applicable to the benefit of patients</p> <ul style="list-style-type: none"> - Description of basic scientific research methodology - Initiating, structuring and implementation of research and its inclusion in a coherent and feasible project - Interpretation and constructively critical evaluation and research results - Use principles, specific methodology of scientific research for the correct interpretation of phenomena related to disease, diagnostic process, the evolution and prognosis, prevention and therapeutic medical and surgical diseases
TRANSVERSAL COMPETENCES	<p>CT1. Autonomy and accountability</p> <ul style="list-style-type: none"> • acquisition of moral guidelines, training of professional and civic attitudes that enable students to be fair, honest, non-confrontational, cooperative and understanding in the face of suffering, available to help people interested in the developer community; • to know, respect and contribute to the development of moral values and professional ethics; • learn to recognize when a problem arises and provide responsible solutions to solve them; <p>CT2. Social interaction;</p> <ul style="list-style-type: none"> • recognize and have respect for diversity and multiculturalism; • have or learn to develop teamwork skills; • communicate orally and in writing requirements, working methods, results, consult with the team; • get involved in volunteering, to know the essential problems of the community. <p>CT3. Personal and professional development</p> <ul style="list-style-type: none"> • be open to lifelong learning, • appreciate the need for individual study as the basis of personal autonomy and professional development; • to exploit their potential to the optimum and creative collective activities; • know how to use information and communication technology.

7. DISCIPLINE OBJECTIVES (based on the grid of specific competences acquired)

7.1 The general objective of the discipline	<p>Obtaining complex knowledge, stimulate integrative thinking and the ability of the synthesis of medical knowledge and transfer student to integrate theoretical knowledge of preclinical medical practice.</p> <p>Basic skills of critical thinking by linking functions of body systems abnormal pathological process.</p> <p>The main goal of discipline is to provide students Pathophysiology third year, informational and logistical support necessary to understand and to explain how the human body in disease conditions.</p> <p>Students must know and understand the normal functions of the body systems in order to understand the functions and abnormal manifestations of the disease process, therefore, subjects studied previously, especially anatomy, physiology and biochemistry are essential to completing the discipline of pathophysiology.</p>
7.2 The specific objectives of the discipline	<p>Upon completion of discipline student will be able:</p> <ul style="list-style-type: none"> - To identify the concepts, principles and answers related pathophysiological processes of the disease; - Describe basic pathophysiological concepts cellular / systemic injury and on defense mechanisms; - To understand and interpret the pathophysiological causes and mechanisms of systemic cellular and subcellular development of major diseases and the signs and symptoms; - To participate in discussions on the causes and dynamics of pathological processes in the context of recent scientific information knowledge; - To apply the principles of anatomy, physiology, biochemistry normal human body systems pathophysiological processes of the disease; - To understand the phases or algorithm by which physiological mechanisms must be active and participate in getting a proper adjustments and a good side of the body against injury or stress or aggression; - To identify when and how they may influence the evolution of Adaptive Mechanisms

	<p>and reactivity of the body in a favorable way of life or not, because of the changes produced reversible or irreversible;</p> <ul style="list-style-type: none"> - Be able to develop a prediction on the ability of the organism to regain health after a period of illness; - Can work with clinical parameters, functional and resulting humoral changes induced in the body, during postaggressive to support reasoned diagnostic certainty; - To be able to sketch scheme assumption, hypothetical, based on pathophysiological targets of therapy that can be administered in an appropriate medical management, functional restoration metabolico - sick body;
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8. CONTENTS

8.1 Course (content units)	hours
<p>Physiopathology as a science. Physiopathology concepts. The subject of physiopathology, the relationship with other biological sciences, with preclinical and clinical disciplines, current directions of development. Adaptive and compensatory mechanisms for maintaining the homeostasis of internal environment.</p> <p>General notions on normality and disease. The delimitation of the concept of disease. The etiology of the disease (the physical, chemical, biological, cause agents). The characteristics of the disease. The disease pathogenesis. The general adaptation syndrome. Forms of stress. The classification of diseases. Systemic pathogenetic mechanisms</p>	2
<p>Thermoregulatory patophysiology. The febrile reaction. Definition. The febrile reaction steps. The role and effects of fever on the organism. The thermostat disorder: imbalance thermogenesis / thermolysis. Hyperthermia: hyperthermia cramps. Heatstroke. Syncope and hyperthermia shock. Malignant hyperthermia. Drug fever. Neuroleptic malignant syndrome. Hypothermia</p>	2
<p>Inflammatory reaction. Biological significance. Etiology. The stages of inflammation. Chemical mediators of the inflammation. The consequences of the inflammatory reaction. Systemic reactions during the inflammation. Physiopathological points in inflammatory therapy.</p>	2
<p>Elements of physiopathology of pain. The sensorial device and ways of transmission. The neurophysiology of pain. Mental integration of pain. Humoral mechanism of nociception. Pain modulation. Physiopathological mechanisms of pain generation (superficial pain, deep pain, referred pain).</p>	2
<p>Physiopathology of red cell function. Normocyte normochromic anemia. Microcytic hypochromic anemia. Macrocytic normochromic anemia.</p>	2
<p>Physiopathology of red cell function. Aregenerative anemia. Hemolytic anemia. Polycythemia</p>	2
<p>Physiopathology of leukocyte function. Acute leukemia</p>	2
<p>Physiopathology of leukocyte function. Chronic leukemia. Multiple myeloma. Malignant lymphomas</p>	2
<p>Physiopathology of homeostasis, coagulation and fibrinolysis</p>	2
<p>Physiopathology of glucose metabolism. Disturbances of major glucose metabolism pathways. Mechanisms for regulating blood sugar disorders. Hyperglycemia (diabetes mellitus pathogenesis type 1 and type 2). Hypoglycaemia. Galactose, fructose metabolic disorders.</p>	2
<p>Physiopathology of lipid metabolism. Metabolism disorders of fatty acids, triglycerides, cholesterol. Plasma transport of lipids, lipoprotein metabolism, primary and secondary hyper-lipoprotein disorder (diabetes, alcohol consumption, pato-alimentation, endocrine diseases, kidney diseases, hyper-lipoprotein disorders and atherosclerosis)</p>	2
<p>Physiopathology of protein metabolism. Amino acid metabolism disorders. Dis-protein disorders physiopathology. Nitrogenous substances metabolism disorders.</p>	2
<p>Physiopathology of water and electrolytes. Fluid and sodium imbalance. Edema. Imbalances volume / osmolarity: hypo - hyper – volume expansions. Hypo-hyponatremia, hypo-hyperkalemia. Phosphocalcic metabolic imbalance. Imbalances of magnesium-zinc ions.</p>	2
<p>Physiopathology of acid-base balance. Acidosis physiopathology (respiratory, metabolic, mixed). Alkalosis physiopathology (respiratory, metabolic, mixed). Compensatory mechanisms.</p>	2
<p>Physiopathology of the respiratory system. Physiopathology of the alveolar ventilation, the alveolo-capillary diffusion and pulmonary perfusion. Physiopathology of obstructive lung diseases</p>	2
<p>Physiopathology of the respiratory system. Physiopathology of restrictive lung diseases</p>	2
<p>Physiopathology of the respiratory system. Physiopathology of respiratory failure</p>	2
<p>Physiopathology of the cardiovascular system. Physiopathology of hypertension</p>	2
<p>Physiopathology of the cardiovascular system. Physiopathology of coronarian failure</p>	2
<p>Physiopathology of the cardiovascular system. Physiopathology of rhythm and conduction disorders</p>	2
<p>Physiopathology of the cardiovascular system. Physiopathology of heart failure</p>	2

Physiopathology of shock. Shock: disturbance of microcirculation. Alteration of floors: functional and lesion (cell). Physiopathological criteria for the classification of shock (hypovolemic: traumatic, hemorrhagic). Distributive shock, neurogenic, anaphylactic.	2
Physiopathology of the digestive system. Physiopathology of digestive tract diseases. Dysphagia. Gastroesophageal reflux. Hiatal hernia. Gastric ulcer. Duodenal ulcer. Malabsorption	2
Physiopathology of the digestive system. Physiopathology of dysfunctions - liver failure. Acute, chronic hepatitis. Cirrhosis of the liver. Portal hypertension. Hepato-renal syndrome. Hepatic encephalopathy.	2
Physiopathology of the digestive system. Physiopathology of pancreatic disorders. Acute pancreatitis. Chronic pancreatitis. Pancreatic insufficiency. Bladder dysfunction: cholelithiasis. Acute cholecystitis.	2
Physiopathology of the renal system. Physiopathology of acute renal failure (ARF). Physiopathology of chronic renal failure	2
Pathophysiology of nervous integration. General aspects of nervous integration. The action of pathogenic factors on the development of nervous system activity. Pathophysiology of neuronal excitation and inhibition	
Physiopathology of age. Theories of aging. Physiological changes in the eugeric processes	2
BIBLIOGRAPHY 1. Medical physiology: a cellular and molecular approach / [edited by] Walter F. Boron, Emile L. Boulpaep. Elsevier, 2016 2. Stefan Silbernagl, Florian Lang. Color Atlas of Pathophysiology, Stuttgart New York, NY Thieme 2010 3. Braunwald, Fauci, Kasper, Hauser, Longo, Jameson, Harrison's Principles Of Internal Medicine, 15th Edition, MC GRAW HILL, 2001 4. Paul G. Schmitz, Renal: An Integrated Approach to Disease McGraw-Hill Medical; 1 edition (July 7, 2011)	
8.2 Practical work (topics / themes)	
1. Review of the physiology knowledge about normal biological values and their significance, reported to the health of the organism. Training in working safety in the physiopathology laboratory. Biological parameters normal and changed during the disease. Limitation of the adaptive capacity. Physiopathological interpretation	2
2. Febrile reaction phases. Interpretation of types of fever curves	2
3. Inflammatory reaction. Leukocyte and vascular dynamics changes. Mediators of inflammation. Experimental simulation	2
4. Physiopathology of pain. Algecic mechanism. Receptors. Routes of transmission. Evaluation.	2
5. Peripheral blood smear. Normal and pathological medulogram. Microcytic hypochromic anemia. Macrocytic normochromic anemia	2
6. Hemolytic anemia. Plan of investigation of anemia	2
7. Acute leukemia. Peripheral blood smear and bone marrow in acute leukemia (myeloblastic, lymphoblastic). Plan of investigation of acute leukemia	2
8. Chronic leukemias. Peripheral blood smear and marrow in chronic leukemia (granulocytic, lymphocytic). Plan of investigation of chronic leukemia	2
9. Exploration of primary and definitive haemostasis. Exploration of fibrinolysis, workshop summary	2
10. Exploration of carbohydrate metabolism	2
11. Exploration of lipid metabolism. Assessment of nutritional status	2
12. Exploration of protein metabolism	2
13. of hydro-electrolyte disturbances	2
14. Exploration of acid-base disturbances	2
15. Respiratory functional explorations I - spirometry	2
16. Functional respiratory exploration II. - Assessment of the ventilation dysfunctions and of the ventilation / perfusion report in clinical cases, such as: asthma, BPCO and emphysema	2
17. EKG. Review knowledge (seminar summary)	2
18. Rhythm disorders. Mechanisms. Practical exercise in interpretation	2
19. Conduction disturbances. Mechanisms. Practical exercise in interpretation	2
20. Coronary insufficiency. Mechanisms. Practical exercise in interpretation	2
21. Hypertension evaluation	2
22. Elements of shock physiopathology. Evaluation of shock. Interpretation. Clinical cases	2
23. Exploration of the digestive tract	2
24. Liver function tests	2
25. Exploration of the renal system	2
26. Interpretation of renal function tests (clinical cases)	2
27. Pathophysiology of neuronal excitation and inhibition. Review knowledge. (seminar summary)	2
28. Extreme ages. Differences of biological parameters. Physiopathology interpretation	2
BIBLIOGRAPHY 1. Stefan Silbernagl, Florian Lang. Color Atlas of Pathophysiology, Stuttgart New York, NY Thieme 2010 2. Braunwald, Fauci, Kasper, Hauser, Longo, Jameson, Harrison's Principles Of Internal Medicine, 15th Edition, MC GRAW HILL, 2001	

9. CORROBORATING THE DISCIPLINE CONTENT WITH THE EXPECTATIONS OF EPISTEMIC COMMUNITY REPRESENTATIVES, PROFESSIONAL ASSOCIATIONS AND EMPLOYEE REPRESENTATIVES RELATING TO THIS PROGRAM

<ul style="list-style-type: none"> Pathophysiology is an integrative discipline that provides to the future physician competencies mentioned

10. METHODOLOGICAL LANDMARKS

Types of activity	Teaching Techniques / learning materials and resources: lecture, interactive group work, learning problems / projects etc. In case of special situations (alert states, emergency states, other types of situations that limit the physical presence of students) the activity can be carried out online using computer platforms approved by the faculty / university. The online education process will be adapted accordingly to ensure the fulfilment of all the objectives provided in the discipline sheet
Course	lecture, interactive course, heuristic conversation, debate
Practical work	computer simulations, practical applications, problem solving, PBL, case study, group work
Individual study	Based on learning material resources, bibliography, course support and practical; internet

11. RECOVERY PROGRAM

Absences recoveries	No. absences that can recover	Location of deployment	Period	In charge	Scheduling of topics
	3	Patophysiology Laboratory/online	Last week of semester	Practical work holder	According to the internal schedule
Schedule consultations / Students' Scientific Program	2hours/week	Patophysiology Laboratory/online	Last Friday of each month from 09.00 to 12.00	Practical work holder	According to the internal schedule
Program for students poorly trained	4 hours/sem.	Patophysiology Laboratory/online	Every Thursday From 18.00 to 20.00	Practical work holder	According to the internal schedule

12. ASSESMENT

Activity	Types of assesment	Method of evaluation	Percentage from final grade
Lecture	Formative assesment during the semester Summative assesment during the exam	Written exam/ multichoice using online platform	65%
Practical work	Formative assesment during the semester Periodic assesment during the semester, Summative assesment in the last week of the semester	Oral examination in advance/ written with the help of the IT platform in the online version	25%
Periodic assesment			5%
Assesment of individual activities			5%
Minimum performance standard			at least 50% for each component of the evaluation

13. GUIDANCE AND COUNSELLING PROGRAMS

Professional guidance and counselling programs (2 hours/monthly)		
Scheduling the hours	Location	In charge
Last Friday of each month	Patophysiology Laboratory/online	Dănoiu Suzana

Endorsement date in the department: 27.09.2022

Department Director,
Prof. Eugen OSIAC

Coordinator of study program,
Prof. Marius Eugen CIUREA

Discipline holder,
Prof. Suzana DĂNOIU