

وزارة التعليم العالي والبحث العلمي  
جهاز الإشراف والتقويم العلمي  
دائرة ضمان الجودة والاعتماد الأكاديمي

## استمارة وصف البرنامج الأكاديمي للكليات والمعاهد

الجامعة: القادسية

الكلية/ المعهد: كلية الطب

القسم العلمي: الفلسفة والفيزياء الطبية

تاريخ ملء الملف: 15-10-2022

التوقيع:

اسم رئيس القسم: أ.د. عباس صبار داخل

التاريخ: 15-10-2022

التوقيع:

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التاريخ:

دقق الملف من قبل

شعبة ضمان الجودة والأداء الجامعي

اسم مدير شعبة ضمان الجودة والأداء الجامعي: أ.د. أنوار جاسب ثعبان

التاريخ

التوقيع

مصادقة السيد العميد

أ.د. ناهض رؤوف العمار

## وصف البرنامج الأكاديمي

يوفر وصف البرنامج الأكاديمي هذا إيجازاً مقتضباً لأهم خصائص البرنامج ومخرجات التعلم المتوقعة من الطالب تحقيقها مبرهنًا عما إذا كان قد حقق الاستفادة القصوى من الفرص المتاحة . ويصاحبه وصف لكل مقرر ضمن البرنامج

1. المؤسسة التعليمية	جامعة القادسية/ كلية الطب
2. القسم العلمي / المركز	الفسلجة والفيزياء الطبية
3. اسم البرنامج الأكاديمي او المهني	بكالوريوس طب وجراحة عامه
4. اسم الشهادة النهائية	بكالوريوس طب وجراحة عامه
5. النظام الدراسي : سنوي /مقررات /أخرى	كورسات
6. برنامج الاعتماد المعتمد	لا يوجد
7. المؤثرات الخارجية الأخرى	البحوث العلمية ذات الصلة بتخصص القسم المكتبات العادية والرقمية
8. تاريخ إعداد الوصف	2022\10\15
9. أهداف البرنامج الأكاديمي Objectives	
1. Determine the functions of all parts of body systems	
2. Description of the mechanism of action of body system and the physiological events associated with it	
3. Evaluation of references value of various vital organs under different biological conditions.	
4. Discriminations between normal and abnormal functions of the organs	
5. Brief description of pathophysiology of systems.	
6. Graduate an expert physician in the laboratory investigations	

10. مخرجات البرنامج المطلوبة وطرائق التعليم والتعلم والتقييم

أ- الأهداف المعرفية

1. Make the student oriented in link between clinical symptoms with lab diagnosis or lab investigation
2. Ability of the student to manage the cases depending on the lab diagnosis

ب – الأهداف المهاراتية الخاصة بالبرنامج

1. Make the students familiar with novel medical skulls
2. Make the students familiar with **continuous medical learning even post graduate to make the physician in touch with updates in medical practice.**

طرائق التعليم والتعلم

**Theory – lectures**

**Upload the lectures on the formal website of the college of medicine**

**Educational movies**

**Use data show and digital cam**

**Training courses**

**Small teaching groups.**

طرائق التقييم

**Theory exam**

**Oral exam**

**Practical examinations**

**Problem based learning**

**Reports and activities**

ج- الأهداف الوجدانية والقيمية .

1. estimate the ability of the student to think logically to solve the problem
2. ability of the arrange of the information and application
3. critical thinking: study the case problem to solve it using their knowledge

طرائق التعليم والتعلم

**-educational lectures and discussions for problem solving skills**

**-Monitoring of thinking capability of students and their expressions and their responses.**

**-Laboratories experiments**  
**-Self-education.**

طرائق التقييم

Theory examinations  
Practical examinations  
Activities and reports

د-المهارات العامة والتأهيلية المنقولة (المهارات الأخرى المتعلقة بقابلية التوظيف والتطور الشخصي).

1. Major skills for communications by (sport activities, educational directions, conferences, seminars)
2. Make the students familiar with advancements of skills associated with creative thinking in the field

طرائق التعليم والتعلم

1. attending the lectures and participating in the discussion groups  
Studies and reports
2. Scientific lectures both theory and practical

طرائق التقييم

D1: quiz and course examinations (theory and practical)  
D2: assessment of student advances  
D3: Final examination

4. بنية البرنامج

الساعات المعتمدة		اسم المقرر أو المساق	رمز المقرر أو المساق	المرحلة الدراسية
عملي	نظري			
60 h	120 h	علم وظائف الأعضاء	PHZ222	الثانية


#### 5. التخطيط للتطور الشخصي

1. Depending the last update of textbook version in medical physiology
2. Tracking the recent clinical research, the latest updated medical references.
3. Monitoring standard staff/ student ratio that that followed by accreditive college of medicine in the world.

#### 6. معيار القبول (وضع الأنظمة المتعلقة بالالتحاق بالكلية أو المعهد)

المعدل لخريجي الدراسة الإعدادية/ الفرع العلمي الاحيائي

7. أهم مصادر المعلومات عن البرنامج

- الكتب المنهجية العلمية في حقل الاختصاص
- الكتب العملية
- البرامج الحاسوبية العامة والتخصصية

مخطط مهارات المنهج

يرجى وضع اشارة في المربعات المقابلة لمخرجات التعلم الفردية من البرنامج الخاضعة للتقييم

مخرجات التعلم المطلوبة من البرنامج

المهارات العامة والتأهيلية المنقولة (المهارات الأخرى المتعلقة بقابلية التوظيف والتطور الشخصي)				الأهداف الوجدانية والقيمية				الأهداف المهاراتية الخاصة بالبرنامج				الأهداف المعرفية				أساسي أم اختياري	اسم المقرر	رمز المقرر	السنة / المستوى
د4	د3	د2	د1	ج4	ج3	ج2	ج1	ب4	ب3	ب2	ب1	أ4	أ3	أ2	أ1				
✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	أساسي	علم وظائف الأعضاء		لثانية / الأول





Course contents:

<i>Week</i>	<i>Lecture number</i>	<i>Topics Covered</i>	<i>Objectives</i>
1	1	Introduction to nervous tissue	<ul style="list-style-type: none"> <li>• Describe the organization of the nervous system.</li> <li>• Describe the three basic functions of the nervous system.</li> </ul>
1	2	Electrical signals in neurons ;resting membrane potential, generation of A.P,propagation of AP	<p>Describe the cellular properties that permit communication among neurons and effectors.</p> <ul style="list-style-type: none"> <li>• Compare the basic types of ion channels, and explain how they relate to graded potentials and action potentials.</li> <li>• Describe the factors that maintain a resting membrane potential.</li> <li>• List the events that generate an action potential.</li> </ul>
1	3	Signal transmission at synapses	<ul style="list-style-type: none"> <li>• Explain the events of signal transmission at electrical and chemical synapses.</li> <li>• Distinguish between spatial and temporal summation.</li> <li>• Give examples of excitatory and inhibitory neurotransmitters, and describe how they act.</li> </ul>
1	4	Neurotransmitters	Classes &function of Neurotransmitters
2	5	Spinal cord physiology: sensory & motor tracts	<ul style="list-style-type: none"> <li>• <b>Describe</b> the functions of the major sensory and motor tracts of the spinal cord.</li> </ul>
2	6	Reflexes& reflex arc	<ul style="list-style-type: none"> <li>• <b>Describe</b> the functional components of a reflex arc and the ways reflexes maintain homeostasis.</li> </ul>
2	7	Brain & cranial nerves	<ul style="list-style-type: none"> <li>• <b>Identify</b> the major parts of the brain.</li> <li>• <b>Describe</b> how the brain is protected.</li> <li>• <b>Describe</b> the blood supply of the brain.</li> </ul>
2	8	Blood brain barrier, CSF	<ul style="list-style-type: none"> <li>• <b>Explain</b> the formation and circulation of cerebrospinal fluid.</li> </ul>
3	9	Brain stem & reticular formation	<ul style="list-style-type: none"> <li>• <b>Describe</b> the structures and functions of the brain stem and reticular formation.</li> </ul>
3	10	Cerebellum ,thalamus ,hypothalamus	<p><b>Describe</b> the structure and functions of the cerebellum.</p> <p><b>Describe</b> the components and functions</p>

			of the diencephalon (thalamus, hypothalamus, and epithalamus)
3	11	Cerebral cortex , basal nuclei	<ul style="list-style-type: none"> <li>• <b>Describe</b> the cortex, gyri, fissures, and sulci of the cerebrum.</li> <li>• <b>Locate</b> each of the lobes of the cerebrum.</li> <li>• <b>Describe</b> the tracts that compose the cerebral white matter.</li> <li>• <b>Describe</b> the nuclei that compose the basal nuclei</li> </ul>
3	12	Limbic system	• <b>Describe</b> the structures and functions of the limbic system.
4	13	ANS : comparison of somatic & ANS	<b>Compare</b> the structural and functional differences between the somatic and autonomic parts of the nervous system.
4	14	Sympathetic & parasympathetic responses	<b>Describe</b> the major responses of the body to stimulation by the sympathetic and parasympathetic divisions of the ANS.
4	15	ANS Neurotransmitters & receptors	<p><b>Describe</b> the neurotransmitters and receptors involved in autonomic responses.</p> <p><b>Describe</b> the major responses of the body to stimulation by the sympathetic and parasympathetic divisions of the ANS</p>
4	16	Somatic sensation	<ul style="list-style-type: none"> <li>• <b>Describe</b> the location and function of the somatic sensory receptors for tactile, thermal, and pain sensations.</li> <li>• <b>Identify</b> the receptors for proprioception and <b>describe</b> their functions.</li> </ul>
5	17	Somatic sensory P.W	<b>Describe</b> the neuronal components and functions of the posterior column–medial lemniscus pathway, the anterolateral pathway, and the spinocerebellar pathway.
5	18	Somatic motor P.W	• <b>Identify</b> the locations and functions of the different types

			of neurons in the somatic motor pathways. <ul style="list-style-type: none"> <li>• <b>Compare</b> the locations and functions of the direct and indirect motor pathways.</li> <li>• <b>Explain</b> how the basal nuclei and cerebellum contribute to movements</li> </ul>
5	19	<b>Special sense physiology</b> anatomy of eye ball	<b>identify</b> each of the accessory structures of the eye and the structural components of the eyeball.
5	20	Physiology of vision	<ul style="list-style-type: none"> <li>• <b>Discuss</b> image formation by describing refraction, accommodation, and constriction of the pupil.</li> </ul>
6	21	Visual P.W.	<ul style="list-style-type: none"> <li>• <i>Describe the processing of visual signals in the retina and the neural pathway for vision</i></li> </ul>
6	22	Functions of retina: photoreception	Photoreceptors and Photopigments
6	23	Error of refraction	Describe myopia, hypermetropia, astigmatism
6	24	Functional anatomy of ear: impedance matching	<b>Describe</b> the anatomy of the structures in the three main regions of the ear.
7	25	Organ of Corti: peripheral auditory mechanism	<b>Explain</b> the function of each of the receptor organs for equilibrium.
7	26	Auditory pathway, physiology of hearing	<ul style="list-style-type: none"> <li>• <b>List</b> the major events in the physiology of hearing.</li> </ul>
7	27	Physiology of equilibrium	<ul style="list-style-type: none"> <li>• <b>Describe</b> the auditory and equilibrium pathways</li> </ul>
7	28	Physiology of taste & smell	<ul style="list-style-type: none"> <li>• <b>Describe</b> the structure of the olfactory receptors and other cells involved in olfaction.</li> <li>• <b>Outline</b> the neural pathway for olfaction.</li> <li><b>Describe</b> the structure of the gustatory receptors and the neural pathway for gustation.</li> </ul>
8	29	<b>Introduction to endocrinology</b>	<b>Compare</b> control of body functions by the nervous system and endocrine system.
8	30	Endocrine gland	<b>Distinguish</b> between exocrine and

			endocrine glands.
8	31	Hormone activity	<p><b>Describe</b> how hormones interact with target-cell receptors.</p> <ul style="list-style-type: none"> <li>• <b>Compare</b> the two chemical classes of hormones based on their solubility..</li> </ul>
8	32	Mechanism of action	<p><b>Describe</b> the two general mechanisms of hormone action.</p> <ul style="list-style-type: none"> <li>• <b>Describe</b> the mechanisms of control of hormone secretion.</li> </ul>
9	33	Hypothalamus And pituitary gland	<p><b>Describe</b> the locations of and relationships between the hypothalamus and pituitary gland.</p> <ul style="list-style-type: none"> <li>• <b>Describe</b> the location, histology, hormones, and functions of the anterior and posterior pituitary.</li> </ul>
9	34	Anterior pituitary gland	<ul style="list-style-type: none"> <li>• Control if secretion of ant. Pituitary</li> <li>• Solve problems concerning hypothalamic–anterior pituitary axis</li> <li>• Solve problems concerning disorders of the hypothalamic–anterior</li> <li>• pituitary axis</li> </ul>
	35	Posterior pituitary gland	<ul style="list-style-type: none"> <li>• Answer questions about hormones of the posterior pituitary</li> <li>• Explain information related to regulation of ECF volume and</li> <li>• osmolarity</li> <li>• Answer questions about pathophysiologic changes in ADH secretion</li> <li>• Use knowledge of hyponatremia</li> </ul>
	36	Thyroid gland	<ul style="list-style-type: none"> <li>• Solve problems concerning overview of the thyroid gland</li> <li>• Use knowledge of biosynthesis and transport of thyroid hormones</li> </ul> <p>Interpret scenarios on physiologic actions of thyroid hormones</p> <ul style="list-style-type: none"> <li>.. Answer questions about control of thyroid hormone secretion</li> <li>.. Answer questions about pathologic changes in thyroid hormone secretion</li> </ul>
10	37	Adrenal gland	<ul style="list-style-type: none"> <li>.. Use knowledge of functional regions of the adrenal gland</li> </ul>

			<ul style="list-style-type: none"> <li>.. Demonstrate understanding of biosynthetic pathways of steroid hormone synthesis</li> <li>.. Interpret scenarios on physiologic actions of glucocorticoids</li> <li>.. Solve problems concerning control of adrenocorticotropin and cortisol secretion</li> <li>.. Demonstrate understanding of physiologic actions of aldosterone</li> <li>.. Explain information related to control of aldosterone secretion</li> <li>.. Explain information related to glucocorticoid disorders</li> <li>.. Explain information related to mineralocorticoid disorders</li> <li>.. Explain information related to enzyme deficiencies</li> </ul> <p>Answer questions about hormones of the adrenal medulla</p> <ul style="list-style-type: none"> <li>.. Demonstrate understanding of major metabolic actions of epinephrine</li> <li>.. Interpret scenarios on pheochromocytomas</li> </ul>
	38	<p>Insulin and glucagon Diabetes mellitus</p>	<ul style="list-style-type: none"> <li>.. Use knowledge of hormones of the islets of Langerhans</li> <li>.. Use knowledge of actions of insulin</li> <li>.. Use knowledge of control of insulin secretion</li> <li>.. Explain information related to actions of glucagon</li> <li>.. Answer questions about control of glucagon secretion</li> <li>.. Use knowledge of diabetes mellitus</li> <li>.. Answer questions about pancreatic endocrine-secreting tumors</li> </ul>
	39	<p>Parathyroid gland Calcitonin hormone</p>	<ul style="list-style-type: none"> <li>.. Solve problems concerning parathyroid hormone</li> <li>.. Solve problems concerning calcitonin</li> </ul>
	40	<p>Calcium and phosphate homeostasis</p>	<p>Solve problems concerning overview of calcium and phosphate</p> <ul style="list-style-type: none"> <li>.. Solve problems concerning bone remodeling</li> <li>.. Demonstrate understanding of role of vitamin D (calcitriol) in calcium homeostasis</li> <li>.. Solve problems concerning disorders in calcium and phosphate</li> <li>.. Answer questions about metabolic bone disorder</li> </ul>

11	41	<p><b>CVS</b>          Physiology of heart : cardiac stracturs</p>	<p>CV 1. Contrast the duration of the action potential and the refractory period in a cardiac muscle, a skeletal muscle, and a nerve. Sketch the temporal relationship between an action potential in a cardiac muscle cell and the resulting contraction (twitch) of that cell. On the basis of that graph, explain why cardiac muscle cannot remain in a state of sustained (tetanic) contraction.</p> <p>CV 2. State the steps in excitation-contraction coupling in cardiac muscle. Outline the sequence of events that occurs between the initiation of an action potential in a cardiac muscle cell and the resulting contraction and then relaxation of that cell. Provide specific details about the special role of Ca<sup>2+</sup> in the control of contraction and relaxation of cardiac muscle.</p> <p>CV 3. Compare cardiac and skeletal muscle with respect to: cell size, electrical connections between cells, and arrangement of myofilaments. Based on ion permeability and electrical resistance describe role of gap junctions in creating a functional syncytium.</p> <p>CV 4. Identify the role of extracellular calcium in cardiac muscle contraction. Identify other sources of calcium that mediate excitation-contraction coupling, and describe how intracellular calcium concentration modulates the strength of cardiac muscle contraction.</p> <p>CV 5. Describe the role of Starling's Law of the Heart in keeping the output of the left and right ventricles equal.</p> <p>CV 6. Describe the difference in the way changes in preload and changes in contractility influence ventricular force development. Compare the energetic consequences of these two separate mechanisms of force modulation.</p>
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	42	Cardiac conduction & properties	
	43	Ventricular AP	
	44	Phases of excitation	
12	45	Mechanical properties	
	46		

	47	EKG	CV . Define the term dipole.
	48	EKG parts	Describe characteristics that define a vector. Describe how dipoles generated by the heart produce the waveforms of the ECG. CV. Describe the electrode conventions used by clinicians to standardize ECG measurements. Know the electrode placements and polarities for the 12 leads of a 12-lead electrocardiogram and the standard values for pen amplitude calibration and paper speed. CV . Name the parts of a typical bipolar (Lead II) ECG tracing and explain the relationship between each of the waves, intervals, and segments in relation to the electrical state of the heart. CV . Explain why the ECG tracing looks different in each of the 12 leads. CV 39. Define mean electrical vector (axis) of the heart and give the normal range. Determine the mean electrical axis from knowledge of the magnitude of the QRS complex in the standard limb leads. CV . Describe the alteration in conduction responsible for most common arrhythmias: i.e., tachycardia, bradycardia, A-V block, Wolff-Parkinson-White (WPW) syndrome, bundle branch block, flutter, fibrillation. CV. Describe electrocardiographic changes associated respectively with myocardial ischemia,

			injury, and death. Define injury current and describe how it is alters the S-T segment of the ECG.
13	49	Cardiac cycle	<ul style="list-style-type: none"> <li>.. Interpret scenarios on normal cardiac cycle</li> <li>.. Interpret scenarios on pressure-volume loops</li> <li>.. Interpret scenarios on valvular dysfunction</li> </ul>
	50	Cardiac output	Factors affecting cardiac out put Regulation of C.O.P venous return
	51	efficiency & failure	
	52	Neural regulation of cardiac activity Cardiovascular reflexes	.Nerve supply of the heart, nervous control of the C. V . Vagal tone, vasosenory areas and cardiovascular reflexe
14	53	Regulation of heart rate	Factors controlling the heart rate. .. Demonstrate understanding of overview of the cardiovascular system
	54	Nutrition & metabolism of heart	.. Demonstrate understanding of systemic arterial pressure regulation
	55	Revision	.. Demonstrate understanding of hemodynamics
	56	Peripheral circulation -General aspect of CVS	.. Demonstrate understanding of wall tension
15	57	Regulation of blood flow & blood pressure	<ul style="list-style-type: none"> <li>.. Use knowledge of vessel compliance</li> <li>.. Use knowledge of determinants of cardiac output</li> <li>.. Solve problems concerning the effect of gravity</li> <li>.. Answer questions about characteristics of systemic arteries</li> <li>.. Demonstrate understanding of Fick principle of blood flow</li> <li>.. Interpret scenarios on blood flow regulation</li> <li>.. Explain information related to blood flow to the various organs</li> <li>.. Demonstrate understanding of fetal circulation</li> <li>.. Explain information related to cardiovascular stress: exercise</li> </ul>
15	58	Neural control of circulation	. Contrast the local and neural control of cerebral blood flow.
	59	Special features of cerebral	Discuss the relative important of O <sub>2</sub> , CO <sub>2</sub> , and pH in



		circulation	regulating cerebral blood flow.
	60	Special features of circulation in skeletal m. & skin	<ul style="list-style-type: none"> <li>. Describe the structural components of the blood-brain barrier and how this barrier impedes the movement of gases, proteins, and lipids from the blood to neurons. Identify the differences in cerebrospinal fluid and plasma relative to protein concentration, and describe the function of cerebrospinal fluid.</li> <li>. Contrast the mechanisms of the two major types of stroke, hemorrhagic and occlusive stroke.</li> <li>. Contrast the local and neural control of the splanchnic circulation.</li> </ul> <p>Describe the role of the hepatic portal system and the hepatic artery in providing flow and oxygen to the liver.</p> <p>: Describe the blood pressure in the hepatic portal vein, hepatic sinusoids, and the vena cava. Given an increase in central venous pressure, predict how hepatic microcirculatory fluid exchange will be altered, including the development of ascites.</p> <p>Contrast local and neural control of cutaneous blood flow.</p> <p>Discuss the unique characteristics of skin blood flow that are adaptive for body temperature regulation.</p>

### 2<sup>nd</sup> term Lectures

Weeks	Lecture number	Topics Covered	Objectives
1	1	Introduction to respiratory system	<ul style="list-style-type: none"> <li>. Answer questions about overview of the respiratory system</li> <li>. Interpret scenarios on lung volumes and capacities</li> </ul>
1	2	Mechanics of respiration	
1	3	Composition of respired air: pulmonary ventilation	

			<ul style="list-style-type: none"> <li>. Solve problems concerning ventilation</li> <li>. Use knowledge of lung mechanics</li> <li>. Answer questions about cardiovascular changes with ventilation</li> <li>. Solve problems concerning positive-pressure ventilation</li> <li>. Answer questions about pneumothorax</li> <li>. Use knowledge of lung compliance</li> <li>. Interpret scenarios on airway resistance</li> <li>. Explain information related to pulmonary function testing</li> </ul>
1	4	Exchange of gases in the lungs	<ul style="list-style-type: none"> <li>. Answer questions about the normal lung</li> <li>. Solve problems concerning factors affecting alveolar PCO<sub>2</sub></li> <li>. Use knowledge of factors affecting alveolar PO<sub>2</sub></li> <li>. Interpret scenarios on alveolar-blood gas transfer: Fick law of diffusion</li> <li>. Use knowledge of diffusing capacity of the lung</li> </ul>
2	5	Ventilation – perfusion ratio	<ul style="list-style-type: none"> <li>. Demonstrate understanding of ventilation-perfusion differences in the lung</li> <li>. Demonstrate understanding of review of the normal lung</li> <li>. Answer questions about causes of hypoxemia</li> <li>. Use knowledge of left-to-right shunts</li> </ul>
2	6	Pulmonary circulation	<p>Contrast the systemic and pulmonary circulations with respect to pressures, resistance to blood flow, and response to hypoxia.</p> <p>. Describe the regional differences in pulmonary blood flow in an upright person. Define zones I, II, and III in the lung, with respect to pulmonary vascular pressure and alveolar</p>
2	7	Pulmonary circulation	

			<p>pressure.</p> <ul style="list-style-type: none"> <li>. Describe how pulmonary vascular resistance changes with alterations in cardiac output or pulmonary arterial pressure. Explain in terms of distention and recruitment of pulmonary vessels. Identify the zones in which these two mechanisms apply.</li> <li>. Describe how pulmonary vascular resistance changes with lung volume. Explain in terms of alterations in alveolar and extra-alveolar blood vessels.</li> <li>. Describe the consequence of hypoxic pulmonary vasoconstriction on the distribution of pulmonary blood flow.</li> <li>. Describe the effects of inspired nitric oxide on pulmonary vascular resistance and hypoxic vasoconstriction. Explain the development of pulmonary edema by a) increased hydrostatic pressure, b) increased permeability, c) impaired lymphatic outflow or increased central venous pressure, and d) hemodilution (e.g., with saline volume resuscitation).</li> <li>. Describe the major functions of the bronchial circulation.</li> </ul>
2	8	Pulmonary edema. Plural fluid	
3	9	Revision	
3	10	Regulation of Respiration	<ul style="list-style-type: none"> <li>. Identify the regions in the central nervous system that play important roles in the generation and control of cyclic breathing.</li> <li>. Give three examples of reflexes involving pulmonary receptors that influence breathing frequency and tidal volume.</li> </ul>
3	11	Respiratory Insufficiency Pathophysiology, Diagnosis, Oxygen Therapy	
3	12	Artificial respiration	

			<p>Describe the receptors and neural pathways involved.</p> <p>. List the anatomical locations of chemoreceptors sensitive to changes in arterial PO<sub>2</sub>, PCO<sub>2</sub>, and pH that participate in the control of ventilation.</p> <p>Identify the relative importance of each in sensing alterations in blood gases.</p> <p>. Describe how changes in arterial PO<sub>2</sub> and PCO<sub>2</sub> alter alveolar ventilation, including the synergistic effects when PO<sub>2</sub> and PCO<sub>2</sub> both change.</p> <p>. Describe the respiratory drive in a COPD patient, and predict the change in respiratory drive when oxygen is given to a COPD patient.</p> <p>. Describe the mechanisms for the shift in alveolar ventilation that occur immediately upon ascent to high altitude, after remaining at altitude for two weeks, and immediately upon return to sea level.</p>
4	13	<b>Physiology of blood :</b> introduction Functions of plasma proteins	<p><b>Explain</b> the functions of blood.</p> <ul style="list-style-type: none"> <li>• <b>Describe</b> the physical characteristics and principal 1-components of blood</li> <li>2- the structure, functions, life cycle, and production of red blood cells</li> <li>3- the structure, functions, life cycle, and production of white blood cells.</li> <li>4- the structure, function, and origin of platelets.</li> <li>5- the three mechanisms that contribute to hemostasis.</li> <li>- Explain the various factors that promote and inhibit blood clotting.</li> <li>6- Distinguish between the ABO and Rh blood groups.</li> <li>- Explain why it is so important to match donor and recipient blood types before administering a transfusion</li> </ul>
4	14	Principles of hemopoiesis	
4	15	Regulation of erythropoiesis	
4	16	.Destruction of red cells: Jaundice	
5	17	Anemia& polycythemia	
5	18	Regulation of WBC production	
5	19	Functions of WBC	
5	20	Functions of platelets	
6	21	Hemostasis	
6	22	.Blood groups	

6	23	regulation of GI function, functional types of movement of GIT	<ul style="list-style-type: none"> <li>. Answer questions about overview of the gastrointestinal tract</li> <li>. Explain information related to motility</li> <li>. Demonstrate understanding of secretions</li> <li>. Demonstrate understanding of digestion</li> <li>. Demonstrate understanding of absorption</li> </ul>
6	24	Digestion : types of digestion Salivary gland	
7	25	Composition of saliva Regulation of salivary secretion	
7	26	Swallowing, Esophagus	
7	27	Stomach regulation of gastric secretion stimulation of acid secretion	
7	28	Digestion of various food : hydrolysis Digestion of CHO	
8	29	Digestion of proteins Digestion of fat	
8	30	Absorption of water & ions Absorption of nutrients	
8	31	Absorption of fat	
8	32	Pancreatic secretion Secretin of HCO <sub>3</sub>	
9	33	Regulation of pancreatic secretion	
9	34	Small intestinal secretion Large intestinal secretion	
	35	Secretion of bile by liver Action & storage of bile , stone formation	
	36	Exam	
	37	Physiology of renal system Renal hemodynamics and glomerular filtration	<ul style="list-style-type: none"> <li>. Use knowledge of overview of the renal system</li> <li>. Demonstrate understanding of nephron hemodynamics</li> <li>. Demonstrate understanding of glomerular filtration</li> <li>. Interpret scenarios on solute transport</li> <li>. Interpret scenarios on quantifying renal processes (mass balance)</li> <li>. Demonstrate understanding of clearance</li> <li>. Answer questions about tm tubular reabsorption</li> <li>. Solve problems concerning tm tubular secretion</li> <li>. Use knowledge of the renal</li> </ul>
10	38	Renal tubular function	
	39	Regulation of renal function	
	40	Physiological basis of renal function tests	
	41	Mechanism of reabsorption and secretion	
	42	Micturition	
11	43	Acid base balance	

			<p>handling of some important solutes</p> <ul style="list-style-type: none"> <li>. Use knowledge of clearance as an estimator of GFR</li> <li>. Demonstrate understanding of clearance curves for some characteristic substances</li> <li>. Solve problems concerning free water clearance</li> <li>. Use knowledge of sodium and urea clearance</li> <li>. Interpret scenarios on buffering systems</li> <li>. Explain information related to formulating a diagnosis</li> <li>. Explain information related to 3-question method</li> <li>. Solve problems concerning the 4 primary disturbances</li> <li>. Use knowledge of compensation</li> <li>. Solve problems concerning plasma anion gap diagnosis</li> <li>. Use knowledge of graphical representation (Davenport plot)</li> <li>. Solve problems concerning supplemental information</li> </ul>
	44	Introduction to reproductive system	<ul style="list-style-type: none"> <li>. Solve problems concerning hypothalamic-pituitary-gonadal axis in males</li> <li>. Solve problems concerning age-related hormonal changes in males</li> <li>. Demonstrate understanding of erection, emission, and ejaculation</li> <li>. Use knowledge of gonadal dysfunction in the male</li> </ul>
	45	Male reproductive physiology	
	46	male reproductive physiology	
12	47	Female reproductive physiology	<p>Interpret scenarios on menstrual cycle</p> <ul style="list-style-type: none"> <li>. Explain information related to female sex steroid metabolism and excretion</li> <li>. Answer questions about menstrual irregularities</li> <li>. Explain information related to pregnancy</li> </ul>
	48	Female reproductive physiology	
	49	Hypothalamic – pituitary – gonadal axis	
	50	Puberty	
13	51	Pregnancy	
	52	Parturition and lactation	
	53	Reproductive ageing	

			. Solve problems concerning lactation
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### ***Small group & Practical physiology***

Time - Group	Subject	objectives
1 <sup>st</sup> week - B C D A	<b>Neurophysiology</b> Conduction of A.P Case M.S	<ol style="list-style-type: none"> <li>1.How is the action potential propagated in nerves (such as sensory nerves of the visual system)?</li> <li>2. What is a length constant, and what factors increase it?</li> <li>3. Why is it said that action potentials propagate “nondecrementally?”</li> <li>4. What is the effect of nerve diameter on conduction velocity, and why?</li> <li>5. What is the effect of myelination on conduction velocity, and why?</li> <li>6. In myelinated nerves, why must there be periodic breaks in the myelin sheath (nodes of Ranvier)?</li> </ol>
2 <sup>nd</sup> week - B C D A	Synaptic transmission of A.P Case M.G .	<ol style="list-style-type: none"> <li>1- What effect would an AChE inhibitor have at the neuromuscular junction?</li> <li>2- How would a large reduction in extracellular <math>[Ca^{2+}]</math> affect synaptic transmission at the neuromuscular junction?</li> <li>3- What is the ionic mechanism that underlies the endplate potential (EPP) produced by acetylcholine (ACh) release .</li> </ol>
3 <sup>rd</sup>	Sensory & motor P.W of spinal cord	<ol style="list-style-type: none"> <li>1--What are the two ascending sensory pathways, and what information does each convey?</li> <li>2--What are the two anatomic divisions of the dorsal columns, and from which anatomic structures do these respective divisions relay sensory information?</li> <li>3-At what neuroanatomic locations do projections in the corticospinal tract, dorsal columns, and anterolateral system (spinothalamic system) cross over?</li> </ol>
4 <sup>th</sup>	UMNL & LMNL( case of ALS)	How do upper motor neurons differ from lower motor neurons?
5 <sup>th</sup>	Parkinsonism	<ol style="list-style-type: none"> <li>1-Which nuclei compose basal ganglia</li> <li>2- where is lesion in Parkinson disease?</li> <li>3-differentiate between resting tremor, intentional &amp; positional tremor.</li> </ol>
6 <sup>th</sup>	ANS	<ol style="list-style-type: none"> <li>1- What is the relationship of the adrenal medulla to the autonomic nervous system?</li> <li>2. What hormones are secreted by a pheochromocytoma?</li> <li>3. Why does an elevated urinary level of VMA (a metabolite of epinephrine and norepinephrine) suggest the presence of a pheochromocytoma?</li> <li>4. In view of the pathophysiology of pheochromocytoma, explain the why blood pressure increase.</li> </ol>
7 <sup>th</sup> week	Examination of cerebellum	<b>DANISH</b>

3 <sup>rd</sup> week	referred pain	<ol style="list-style-type: none"> <li>1- Why is pain related to myocardial ischemia often presented in such regions of the body (neck , left shoulder , epigastric region ) .</li> <li>2- What is the name of such pain type?</li> <li>3- Read about pain : receptors . types of stimuli , type of nerve fiber , neurotransmitters , Analgesia system ??</li> <li>4- Tectile stimuli increase or inhibit pain ?? why??</li> </ol>
9 <sup>th</sup> week	Snellen chart ? Visual field examination  & pupillary reflex	Examination of Visual acuity , Defect in visual pathway
10 <sup>th</sup>	Hearing test	Interpretations results of Rinne's & wibber Tests
11 <sup>th</sup>	CVS	The arterial and venous pulsations and their abnormalit
12 <sup>th</sup>	CVS	heart sounds
13 <sup>th</sup>	CVS	Methods for recording E. C. G, electro cardiographic leads.
14 <sup>th</sup>	CVS	Normal E. C. G. (apparatus)- connections-leads
15 <sup>th</sup>	Cvs	Normal variations in different E. C. G. Leads
16 <sup>th</sup>	CVS	Some ECG abnormalities .
17 <sup>th</sup>	Hematology	How do you approach patient with anemia
18 <sup>th</sup>	RBC count	Manual calculation of RBC
19 <sup>th</sup>	WBC count	Manual calculation of WBC
20 <sup>th</sup>	Diff. WBCC	Manual calculation of differential WBC
21	Hb%	Measurement of Hb% by shale's method
22	Bleeding time & clotting time	Assessment of coagulopathies
23 <sup>rd</sup>	Blood group	Determination of blood groups
24 <sup>th</sup>	Renal system	<ol style="list-style-type: none"> <li>1- What is the response of the juxtaglomerular cells to decreased extracellular fluid and arterial pressure?</li> <li>2- What are two effects of angiotensin II?</li> <li>3- What are two mechanism by which autoregulation of renal blood flow occurs</li> </ol>
25 <sup>th</sup>	Renal physiology	<ol style="list-style-type: none"> <li>1- Where in the renal glomerulus-tubule structure is glucose reabsorbed actively (secondary active transport)?</li> <li>2- What other solutes are reabsorbed by a secondary active process?</li> <li>3- With what is glucose cotransported in the proximal tubule?</li> </ol>
26 <sup>th</sup>	Renal physiology	<ol style="list-style-type: none"> <li>1- How does a loop diuretic work?</li> <li>2- How do loop diuretics cause hypokalemia?</li> <li>3- What is the effect of aldosterone on sodium and potassium?</li> </ol>
27 <sup>th</sup>	Renal physiology	<ol style="list-style-type: none"> <li>1- What is the normal effect of decreased plasma volume on sodium balance?</li> <li>2- Why does this patient have significant edema and continued sodium reabsorption?</li> <li>3- In what part of the glomerulus-tubule complex of the kidney is the majority of sodium reabsorbed</li> </ol>
28	GIT.	1- The three major fuel sources used by the body are carbohydrates,



		<p>fats, and proteins. Where does digestion of these macromolecules primarily occur?</p> <p>2- What is the primarily function of the stomach?</p> <p>3- How are pancreatic enzymes stored and activated?</p> <p>4- What are the functions of the gastrointestinal hormones?</p>
29		<p>What is the definition of diarrhea? Discuss the major mechanisms for diarrhea: osmotic, secretory, inflammatory, and motor.</p>
30		

Time – GP.	PBL	Objectives
1 <sup>st</sup> week - B 2 <sup>nd</sup> week - C 3 <sup>rd</sup> week- D 4 <sup>th</sup> week- A	Brown squared syndrome	1-What are the two ascending sensory pathways, and what information does each convey? 2-What are the two anatomic divisions of the dorsal columns, and from which anatomic structures do these respective divisions relay sensory information? 3- At what neuroanatomic locations do projections in the corticospinal tract, dorsal columns, and anterolateral system (spinothalamic system) cross over? 4- Because you know where the major motor and sensory pathways cross over, identify and explain the neurologic deficits that occur in the Brown-Séquard syndrome
5 week - B 6 <sup>th</sup> week - C 7 <sup>th</sup> week- D 8 <sup>th</sup> week- A	-Visual P.W. lesions - Refraction error	Where is the cranial lesion that results in bitemporal hemianopia? - What type of lens is necessary to correct myopia? - Why does a deficiency of vitamin A result in night blindness?
9 <sup>th</sup> week - B 10 week -C 11 week- D 12 week- A	Thalassemia	-What is the function of hemoglobin? What are the three main types of hemoglobin found within normal adult red blood cells? -pathophysiologic mechanisms resulting in anemia?
13 week - B 14 week - C 15 week- D 16 <sup>th</sup> week- A	Bleeding disorder -Hemophilia -DIC	1- Differentiate between the processes of primary and secondary hemostasis. 2- What information can be provided by measuring the prothrombin time and activated partial thromboplastin time?

17 week - B 18week - C 19 <sup>th</sup> week- D 20 <sup>th</sup> week- A	Intrabdominal hemorrhage	1- What is the response of the juxtaglomerular cells to decreased extracellular fluid and arterial pressure? -2What are two effects of angiotensin II? 3- What are two mechanism by which autoregulation of renal blood flow occurs?
21 week - B 22 week - C 23 week- D 24 week- A	Glucose urea in pregnancy	1- Where in the renal glomerulus-tubule structure is glucose reabsorbed actively (secondary active transport)? 2- What other solutes are reabsorbed by a secondary active process? 3- With what is glucose cotransported in the proximal tubule?
25week - B 26 week - C 27 week- D 28 week- A	Gall stone      Achalasia	1- Why would fatty foods aggravate the patient's RUQ pain? 2- What effect does cholecystokinin (CCK) have on gastric emptying? 3-Why does CCK have some gastrin-like properties  -What part of the gastrointestinal (GI) tract is composed of striated muscle and smooth muscle? -What factors are responsible for the tonic contraction of the lower esophageal sphincter (LES) between swallows? -What are the major neurotransmitters responsible for regulating contraction and relaxation of the LES

10 . البنية التحتية	
1. Guyton and Hall textbook of medical physiology 2. Ganong's Review of Medical Physiology	1- الكتب المقررة المطلوبة

<p>1. Harrison's Endocrinology 2. Case file Physiology</p>	<p>2- المراجع الرئيسية (المصادر)</p>
<p><i>The Journal of Physiology</i>  <a href="https://physoc.onlinelibrary.wiley.com/journal/14697793">https://physoc.onlinelibrary.wiley.com/journal/14697793</a></p>	<p>ا- الكتب والمراجع التي يوصى بها (المجلات العلمية , التقارير , .... )</p>
<p><a href="https://onlinelearning.hms.harvard.edu/hmx/courses/?utm_source=HMX+Interest+List&amp;utm_campaign=608edd220b-2021_09_30_EBREM&amp;utm_medium=email&amp;utm_term=0_d0e0e2c62c-608edd220b-138629646">https://onlinelearning.hms.harvard.edu/hmx/courses/?utm_source=HMX+Interest+List&amp;utm_campaign=608edd220b-2021_09_30_EBREM&amp;utm_medium=email&amp;utm_term=0_d0e0e2c62c-608edd220b-138629646</a></p>	<p>ب - المراجع الالكترونية, مواقع الانترنت ....</p>

<p>11. خطة تطوير المقرر الدراسي</p>	<p>قيد التنفيذ</p>