



Beni-Suef University
Faculty of Dentistry
Quality Assurance Unit
Course Specification



University: **Beni-Suef** Faculty: **Dentistry**
Course Title: **physiology** Course code: **MGP2**
Program on which the course is given: **Bachelor's degree in Dentistry, Graduate program**
Department offering the course: **Physiology department, Faculty of Medicine**
Academic year: **first year**
Date of specification approval: **September 2023**

A- Basic Information

Academic Year:	2023-2024
Course Code:	MGP2
Course Theoretical (contact hours):	3hrs/ week
Practical (contact hours)	2hrs/week
Total Hours: -	5 hrs. /week
Prerequisite if any:	No

B- Professional Information

1- Overall aims of course

- **define the basic concepts of physiology and the functions of different organs of the human body**
- **know and understand how and why these functions are performed**
- **Integrate physiological data & mechanisms with the ongoing basic sciences: anatomy, histology & biochemistry and clinical applications.**
- . **Acquire an appropriate functional background of cells, tissues, organs & systems.**
- . **Integrate physiological data & mechanisms with the ongoing basic sciences: anatomy, histology & biochemistry and clinical applications.**

. Know the physiological principles underlying disease states that aids in interpretation of symptoms.

2- Intended learning outcomes of course (ILOs)

a- Knowledge & understanding:

1. Provide fundamental concepts, principles, theories, terminology and practical techniques associated with physiology.
2. Describe the structure and function of the different systems of the body of humans.
3. Describe the structure and functions of different body organs and systems.
4. Identify mechanisms involved in different functions.
5. Define methods and procedures used to assess different functions.
6. Identify the abnormalities of different functions of the body.

b-Intellectual skills:

1. Explain and interpret phenomena and effects in terms of physiological principles and concepts, presenting arguments and ideas clearly and logically.
2. Correlate the structures with functions.
3. Interpret data presented in tables, diagrams, drawings and graphs
4. Elucidate mechanisms, phenomena and effects in terms of physiological principles and concepts, presenting arguments and ideas clearly and logically.
5. Correlate the structures with functions.
6. Interpret the most important physiological laboratory results to distinguish the physiological form from the pathological conditions.
7. Comment on some clinical indices (clotting time, bleeding time, arterial blood pressure, electrocardiogram (ECG), erythrocyte sedimentation rate (ESR), Blood fragility test, normal heart rate, factors affecting it, pulmonary function tests, renal function tests and electroencephalography results) in a normal and pathophysiological conditions.
8. Integrate physiology with other basic and clinical sciences.
9. Interpret data presented in tables, diagrams, drawings and graphs and translate from one form into another
10. Compare between different terms

c- Professional and practical skills:

1. Devise and plan experimental and investigative activities, selecting appropriate techniques.
2. Demonstrate safe and skillful practical techniques.
3. Make observations and measurements in the lab with appropriate precision and records these accurately.
4. Perform hematological tests: estimation of blood Hb, bleeding & clotting times, determination of the hematocrit and blood groups
5. Know how hemodialysis and peritoneal dialysis are performed.
6. Perform the measurement of the arterial blood pressure.
7. Manipulate a stethoscope for hearing heart and respiratory sounds.
8. Record and read an electrocardiogram.
9. Present physiological scientific data in a graphical form.
10. Interpret, explain, evaluate and communicate the results of their experimental and investigative activities clearly and logically using physiological knowledge and understanding.
12. Distinguish between the physiological and pathophysiological scientific data and results.

d- General and transferable skills:

1. Bring together principles and concepts from different branches of physiology and apply them in a particular context, expressing ideas clearly and logically and using appropriate specialist vocabulary.
2. Synthesize a group's research, bringing together material from the whole group, and showing particularly where there are gaps in current knowledge.
3. Read and use appropriate literature with a full critical understanding and great ability in determining content, aims, objectives, quality of information and its interpretation and application.
4. Employ a variety of methods of study in investigating, recording and analyzing material.
5. Think independently, set tasks and solve problems.
6. Enhance students' self-evaluation skills.

7. Bring together principles and concepts from different branches of physiology and apply them in a particular context, expressing ideas clearly and logically and using appropriate specialist vocabulary.
8. Synthesize a group, bringing together material from the whole group, and showing particularly where there are gaps in current knowledge.
9. Read and use appropriate literature with a full critical understanding and great ability in determining content, aims, objectives, quality of information and its interpretation and application.

3- Contents:

Week	Topics	No of hours	Lectures	Practical
W1	Review of general physiology	5	3	2
W2	Physiology of nerve and muscle (types of neurons, types of muscle, excitability, membrane potential and action potential; sodium transport, potassium transport across the membrane, Na-K pump, synaptic transmission, neuromuscular junctions, mechanism of muscle contraction and sliding filament theory)	5	3	2
W3	Physiology of the digestive system (Structure of digestive system - mechanical digestion and GIT movements) exam (year's work)	5	3	2
W4	Physiology of the digestive system (Chemical digestion)	5	3	2
W5	Haematology (plasma, cellular constituents of blood, erythropoiesis, haemoglobin, coagulation of blood and blood groups and blood transfusion). exam (year's work)	5	3	2
W6	Respiration (Structure of respiratory system, Mechanism of external respiration, gas exchange, oxygen and carbon dioxide transport in the blood, internal respiration).	5	3	2
W7	Excretion [different means of excretion, structure of urinary system, Mechanism of urine formation, artificial kidney (dialysis)].	5	3	2

W8	Revision and Students' oral presentations exam (year's work)	5	3	2
W9	Cardiovascular system and circulatory system (structure of heart, heart contractions, arteries and arterioles, veins and venules, blood capillaries, systemic circulation and pulmonary circulation, coronary circulation, hepatic portal circulation).	5	3	2
W10	Cardiovascular system (Conducting system of the heart and electrocardiogram). Revision and exam (year's work)	5	3	2
W11	Endocrinology (Mechanisms of hormonal action, the function of hormones of the hypothalamus and pituitary gland).	5	3	2
W12	Endocrinology (Hormones and functions of thyroid gland, adrenal gland, parathyroid and islets of Langerhans, ovaries and testes)	5	3	2
W13	Mid-term exam	-	-	-
2nd term				
W1	Physiology of central nervous system [structure of brain and spinal cord - functions of different regions of the brain and spinal cord - functional areas of cerebral cortex - electroencephalogram].	3	3	-
W2	Physiology of peripheral nervous system [cranial and spinal nerves – Somatic nervous system autonomic nervous system (sympathetic and parasympathetic nervous systems)]. Reflex arc and Reflexes (ankle-jerk, knee-jerk and withdrawal reflexes, eye pupil reflexes, baby reflexes).	3	3	-
W3	- Addiction, thermoregulation, osmoregulation, and regulation of feeding (appetite and satiety), drinking and sexual drives. - exam (year's work).	3	3	-

W4	-Synaptic and Synaptic transmission (Structure of chemical synapses, mechanism of synaptic transmission, neuromuscular synapses, neurotransmitters, characters of synaptic transmissions, factors affecting synaptic transmission, temporal and spatial summation, convergence and divergence in synapses). Visual audios to show mechanisms of synaptic transmission.	3	3	-
W5	- Sensory receptors and pain (types of sensory receptors, properties of receptors, adaptation, principles of sensory transduction, somatosensory system, pain, types of pain, CNS pathways in pain perception, pain control).	3	3	
W6	Food assimilation [digestion, absorption and metabolism] Physiology of the teeth exam (year's work)	3	3	-
W7	Cardiovascular system and Electrocardiogram (ECG)	3	3	-
W8	Haematology and Immune system [constituents of blood, plasma proteins - functions of erythrocytes - leucocytes and platelets - red blood cells count - leucocytes count - platelets count - hemostasis - ABO blood groups - Rh blood group - blood transfusion - ESR - PCV - blood coagulation and clotting factors - anemia - polycythemia lymph and lymphatic tissues – thymus – spleen - lymph nodes - immunity (innate and acquired immunity) – immune disorders - AIDS]	3	3	-
W9	- Physiology of respiratory system [External respiration - internal respiration - cellular respiration - mechanism of external respiration (inspiration and expiration) in resting state and during exercise, forms of oxygen and carbon dioxide in the blood - nervous control of external respiration - respiratory volumes and capacities (spirometry) - spirometer, spirogram – hypoxia – bronchitis – emphysema – asthma - pneumonia]	3	3	- -

W10	Physiology of urinary system [Anatomy of urinary system - structure of nephron - urine formation (glomerular filtration, tubular reabsorption and tubular secretion) – micturition – cystometrogram] and Urine analysis. - Kidney failure, nephritis, artificial kidney (haemodialysis and peritoneal dialysis) - kidney transplantation – kidney graft rejection.	3	3	-
W11	Physiology of sense organs (Taste and Smell) exam (year's work)	3	3	-
W12	Physiology of sense organs (Vision).	3	3	-
W13	Physiology of sense organs (Hearing and Balance).	3	3	-
W14	Endocrinology part 1 (Mechanisms of hormonal action – hormones of the hypothalamus – hormones of anterior pituitary – hormones of posterior pituitary – thyroid hormones – adrenocortical hormone – parathyroid hormones – hormones of islets of Langerhans - sex hormones and reproduction – hormones of testis – hormones of ovary – gonadotropic hormones – sex hormones secreted from adrenal cortex – menstrual cycle – changes of hormones during pregnancy - parturition – lactation)	3	3	-
W15	Endocrinology part 2: Disorders of the endocrine system [Diabetes mellitus – Diabetes insipidus – Gigantism – Dwarfism – Acromegaly - Hypoadrenalism (Addison's disease) – hyperadrenalism (Cushing's syndrome) – hyperthyroidism (toxic goiter, thyrotoxicosis and grave' disease and thyroid adenoma) – Exophthalmos – Hypothyroidism (Myxoedema, Cretinism) – Hypoparathyroidism – Hyperparathyroidism - Hypogonadism in male and female – Hypergonadism in male and female].	3	3	-
	Final Exam			

4- Teaching and learning methods

a – Small group discussion / Brain storming.	<u>Yes</u>
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b- Interactive lecture	<u>Yes</u>
c – Demonstrations.	<u>Yes</u>

5- Student assessment methods

a. Written and short answer question.	<u>Yes</u>
b. Written and long essay.	yes
c. Multiple choice questions (MCQ)	yes
d. True or false question with justifying answer.	yes
e. Practical / OSPE.	yes

Assessment schedule

Quizzes	During the year
Assignments	During the 1 st and the 2 nd semesters
Practical exam	April/May 2024
Final exam and oral exam	June 2024

Weighting of assessments

Written	Practical	Oral Exam	Attendance / continuous assessment	Total
40	20	20	20	100

- List of reference;

Course notes

Facilities required for teaching and learning

Course coordinator: **Prof. Dr. Ahmed abd el tawab**

Head of Department: **Prof. Dr. Ahmed abd el tawab**

Date: **September /2023**