MAHATMA GANDHI UNIVERSITY, KERALA

Abstract

Human Physiology (Minor) - Fourth Semester - Substitution of a course and approval of the syllabus of the same - Approved - Orders Issued.

ACA 16

No. 11076/ACA 16/2025/MGU Priyadarsini Hills,Dated: 24.11.2025

Read:-1. U.O.No.5797/AC A16/2024/MGU, dated.27.06.2024.

2. Minutes of the meeting of the Expert Committee on Clinical Nutrition and Dietetics (UG).

3. Orders of the Professor in charge of the Vice Chancellor under Section 10 (17), Chapter III of the Mahatma Gandhi University Act 1985, dated. 22.11.2025.

ORDER

The syllabi of various Honours Under Graduate Programmes coming under The MGU-UGP (Honours) Regulations, 2024, have been approved vide paper read as (1) above and published on the website of the University.

The Expert Committee on Clinical Nutrition and Dietetics (UG), deliberated on substituting the course, **MG4DSCHPY200: Essentials of Physiology,** with **MG4DSCHPY200: Applied Physiology,** in the **Fourth Semester** syllabus of **Human Physiology (Minor)** and has submitted recommendations, vide paper read as (2) above.

(**Syllabus for the new course is attached as Annexure).**

Considering the urgency of the matter, sanction has been accorded by the Professor in charge of the Vice Chancellor, in exercise of the powers of the Academic Council vested upon him under Section 10(17), Chapter III of the Mahatma Gandhi University Act 1985, vide paper read as (3) above, to approve the aforementioned recommendations.

Orders are issued accordingly.

SUDHA MENON J

ASSISTANT REGISTRAR III

(ACADEMIC)

For REGISTRAR

Copy To

1. PS to VC
2. PA to Registrar/CE
3. Convenor, Expert Committee, Clinical Nutrition and Dietetics (UG)
4. JR 2 (Admin)/DR 2, AR 3 (Academic)
5. JR/DR/AR (Exam)
6. Tabulation/Academic Sections concerned
7. AC C1/AC C2 Sections
8. IT Cell 3/OQPM1Sections
9. PRO/IQAC/Records Sections
10. Stock File/File Copy

File No. 113282/AC A16-1/2025/AC A16

Forwarded / By Order

Section Officer

Mahatma Gandhi University
Kottayam

Programme						
Course Name	APPLIED PHYSIOLOGY					
Type of Course	DSC C					
Course Code	MG4DSCHPY200					
Course Level	200-299					
Course Summary	This course enables learners to analyze system adaptations, understand related disorders and demonstrate anatomical concepts through diagrammatic representation.					
Semester	4	Credits			4	Total Hours
Course Details	Learning Approach	Lecture	Tutorial	Practical	Others	
		3		1		75
Pre-requisites, if any	Basic knowledge in science					

COURSE OUTCOMES (CO)

CO NO	Expected Course Outcome	Learning Domains *	PO NO
CO1	Explain the heart anatomy, and understand mechanisms regulating blood volume and haemostasis.	U	1
CO2	Explain common respiratory disorders, and analyze physiological adaptations to exercise and environmental conditions.	An	1
CO3	Understand renal and digestive physiology, explain mechanisms of acid-base balance and renal regulation	U	1
CO4	Illustrate major organs of the excretory and digestive systems through diagrammatic representation.	A	2

Remember (K), Understand (U), Apply (A), Analyse (An), Evaluate (E), Create (C), Skill (S), Interest (I) and Appreciation (Ap)

COURSE CONTENT

Module	Units	Course Description	Hours	CO NO.
1		**Blood and Cardiovascular system**	**20**	CO1
	1.1	Erythropoiesis- site, process, factors necessary for erythropoiesis.	2	
	1.2	Haemoglobin and iron metabolism- structure, types- normal abnormal haemoglobin, functions, abnormal haemoglobin, Iron metabolism.	2	
	1.3	Anaemia- classification- morphological and etiological classification, signs and symptoms	2	
	1.4	Haemostasis- definition and stages of haemostasis- vasoconstriction, platelet plug formation, coagulation of blood.	2	
	1.5	Blood Volume- physiological and pathological variations	2	
	1.6	Heart- anatomy, layers of walls and valves of heart.	2	
	1.7	Heart block- sinoatrial and atrioventricular.	2	
	1.8	Heart failure- types- based on onset- acute, chronic and congestive, based on side of the heart affected- systolic, diastolic, right-sided, left-sided.	3	
	1.9	Effect of exercise on cardiovascular system- types of exercise- based on muscular contraction, based on metabolism, based on severity, effect of exercise on cardiovascular system.	3	
2		**Respiratory System**	**12**	CO2
	2.1	Respiratory system- anatomy of upper and lower respiratory system	2	
	2.2	Diseases of respiration- apnea, hyperventilation, hypoventilation hypoxia, hypercapnia, hypocapnia, dyspnea, cyanosis, carbon monoxide poisoning,	2	
	2.3	Disorders of respiration -pneumonia, pulmonary Tb, emphysema, bronchial asthma, pulmonary oedema .	2	
	2.4	High altitude- changes in the body at high altitude, mountain sickness, acclimatization.	2	
	2.5	Effects of exposure to cold and heat- effects of exposure to cold- heat production, prevention of heat loss, effects of exposure to heat- heat exhaustion, dehydration exhaustion, heat cramp and heat stroke.	2	
	2.6	Effects of exercise on respiration- effect on pulmonary ventilation, diffusing capacity for oxygen, consumption of oxygen, oxygen debt, VO_2 max, respiratory quotient.	2	

3		**Renal physiology and Digestive system**	**13**	**CO3**
	3.1	Excretory system- structure of kidney and nephron	2	
	3.2	Regulation of acid base balance- by acid base buffer system, respiratory mechanism, renal mechanism.	2	
	3.3	Disturbance of acid base balance- respiratory acidosis and alkalosis, metabolic acidosis and alkalosis.	2	
	3.4	Renal failure- types- acute and chronic failure.	2	
	3.5	Dialysis -types of dialysis- hemodialysis and peritoneal dialysis, complications.	3	
	3.6	Anatomy of digestive system- primary digestive organs and digestive glands	2	

PRACTICAL

Module	Units	Course Description	Hours	CO NO.
4		**Diagrammatic representations**	**30**	**CO4**
	4.1	Structure of human respiratory system	5	
	4.2	Structure of nephron	5	
	4.3	Section of stomach	5	
	4.4	Section of large intestine	5	
	4.5	Structure of liver	5	
	4.6	Structure of pancreas	5	
5		**Teacher specific content**		

Teaching and Learning Approach	**Classroom Procedure (Mode of transaction)** **Direct Instructions:** ● Lecture ● E-learning **Interactive Instructions:** ● Group Assignment ● Library Work and Group Discussion ● Practical

Assessment Types	**MODE OF ASSESSMENT** **A. Continuous Comprehensive Assessment (CCA)** **Theory-25 Marks** • Internal Test- Objective questions • Assignment/ Oral presentation • Quiz **Practical-15 Marks** • Internal Test • Record • Lab involvement
	B. End Semester Examination **Theory -50 Marks (Duration: 1.5 Hrs)** • Section A - MCQ - 6/6 (6x1=6 marks) • Section B - Short Answer - 2/4 (2x2=4 marks) • Section C - Short Essay - 4/6 (4x5=20 marks) • Section D – Essay – 2/4 (2x10=20 marks) **Practical -35 Marks** • Lab test – 20 marks • Record – 5 marks • Viva – 10 marks

REFERENCES

1. Sembulingam, K. and Sembulingam, P. (2012) Essential of Medical Physiology. 6th Edition, New Jaypee Brothers Medical Publishers, Delhi, India.
2. Gyton and Hall (2000), Textbook of Medical Physiology, 10th edition , Harcourt Asia LTD Singapore.
3. Hole, J.W (1989), Essentials of Human Anatomy and Physiology, 3rd edition, WCB publishers, Dubuque, Iowa.
   Publishers and Distributors, New Delhi.
4. RatanVidya, (2004), Handbook of Human Physiology, 7th Edition (Reprint), Jaypee Brothers Medical Publishers (P) Ltd, New Delhi
5. Wilson, K.J. and Waugh, A. (1999), Ross and Wilson Anatomy and Physiology in health and illness.
6. Chandra Sekar C.N, (2007), Manipal Manual of Physiology, 1st Edition, CBS

SUGGESTED READINGS

1. Chatterjee, C.C. (2005), Human Physiology , Volume I & II Medical Allied Agency, 82/1, Mahatma Gandhi Road , Kolkata – 700009.
2. Indu Khurana and Arushi (2009), TextBook of Anatomy and Physiology for Health Professionals, CBS Publishers and Distributors, New Delhi.
3. Subramanyam ,S ,Madavankutty , K and singh , H.D (2001) Textbook of Human Physiology, S. Chand and Co. Ltd ,Ramnagar , New Delhi – 110055.