Sri MANAKULA VINAYAGAR
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Department of Physiology

	COMPETENCY The student should be able to:	Objectives	Domain K/S/A/C	Level K/KH/ SH/P	Core (Y/N)	Suggested Teaching Learning method	Suggested Assessment method	Date/ Day/Time	Hrs	Vertical Integration Horizontal Integration
Topic: General Physiology										
PY1.1	Describe the structure and functions of a mammalian cell	A. Describe the structure and functions of a mammalian cell membrane B. List the cell organelles C. Describe the functions of the cell organelles D. Name the cytoskeleton of the cell. E. Describe the functions of cytoskeleton F. Name the molecular motors of the cell G. Describe the functions of molecular motors	K	KH	Y	Lecture, Small group discussion	Written/Viva voce	03.09.19/ Tue/ 09:30-10:30am	1hr	
PY1.2	Describe and discuss the principles of homeostasis	A. Define homeostasis B. Name the body systems that are involved in maintaining homeostasis C. Describe the components of feedback mechanisms D. Describe the positive feedback mechanisms with examples E. Describe the negative feedback mechanisms with examples	K	KH	Y	Lecture, Small group discussion	Written/Viva voce	04.09.19/ Wed/ 08:30-10:30am	1hr	
PY1.3	Describe intercellular communication	A. Enumerate the intercellular junctions B. Describe the intercellular junctions with examples C. Describe the importance of gap junction in health and disease D. Classify cell adhesion molecules with examples	K	KH	Y	Lecture, Small group discussion	Written/Viva voce	05.09.19/ Thu/ 09:30-10:30am	1hr	
PY1.4	Describe apoptosis – programmed cell death	A. Define apoptosis B. Describe the significance of apoptosis C. Describe the mechanism of activation of apoptosis	K	KH	Y	Lecture, Small group discussion	Written/Viva voce	06.09.19/ Fri/ 08:30-09:30am	1hr	Pathology
PY1.5	Describe and discuss transport mechanisms across cell membranes	A. Classify transport processes B. Define passive transport C. Describe the types of passive transport with examples	K	KH	Y	Lecture, Small group discussion	Written/Viva voce	06.09.19/ Fri/ 11:30-12:30pm	3hrs	

		D. Describe the factors determining diffusion across the cell membrane E. Difference between simple and facilitated diffusion with examples F. Describe the gating of ion channels G. Define osmosis H. Define osmole I. Define osmolarity and osmolality J. Name the isotonic solutions K. Apply the concepts of osmosis in clinical conditions L. Calculate the balance of hydrostatic and osmotic forces controlling fluid movement at the arterial and venular ends of a capillary bed. M. Define active transport N. Define primary active transport O. Describe the primary active transport with examples P. Draw a schematic diagram of sodium potassium pump Q. Explain sodium potassium pump R. Define secondary active transport S. Describe the secondary active transport with examples T. Name the vesicular transport processes U. Describe the vesicular transport mechanisms V. Describe the importance of vesicular transport mechanism						10.09.19/ Tue/ 09:30-10:30am		
PY1.6	Describe the fluid compartments of the body, its ionic composition & measurements	A. Classify the body fluid compartments B. Explain the percentage distribution of each compartment C. Compare the ionic composition of ECF and ICF D. Describe the principle used to measure the body fluid compartments E. Enumerate the characteristics of an ideal indicator used for measuring body fluid volumes	K	KH	Y	Lecture, Small group discussion	Written/Viva voce	11.09.19/ Wed/ 08:30-10:30am	1hr	Biochemistry

		F. Enlist the substances used to measure the various body fluid compartments G. Identify the physiological basis of edema from a given set of clinical features. H. Explain why dehydration is fatal in infants. I. Calculate the various body fluid compartments from the given set of values.								
PY1.7	Describe the concept of pH & Buffer systems in the body	A. Define acid B. Define base C. Explain the various buffer systems in the body	K	KH	Y	Lecture, Small group discussion	Written/Viva voce	12.09.19/ Thu/ 09:30-10:30am	1hr	Biochemistry
PY1.8	Describe and discuss the molecular basis of resting membrane potential and action potential in excitable tissue	A. Describe the molecular basis of genesis of resting membrane potential B. List the normal values of RMP in different excitable tissue C. Describe the genesis of action potential D. Draw a normal nerve Action potential E. Discuss the ionic basis of Action Potential	K	KH	Y	Lecture, Small group discussion	Written/Viva voce	13.09.19/ Fri/ 08:30-09:30am And 11:30-12:30pm	2hrs	
PY1.9	Demonstrate the ability to describe and discuss the methods used to demonstrate the functions of the cells and its products, its communications and their applications in Clinical care and research.	A. Enlist the methods used to demonstrate the functions of the cells	K	KH	Y	Lecture, Small group discussion	Written/Viva voce			
Topic: Haematology										
PY2.1	Describe the composition and functions of blood components	A. Define blood and give the normal volume of blood in adults and children B. Describe the composition and functions of blood C. Differentiate plasma and serum.	K	K H	Y	Lecture, Small group discussion	Written/Viva voce	17.09.19/ Tue/09:30 -10:30am	1hr	
PY2.2	Discuss the origin, forms, variations and functions of plasma proteins	A. List out major plasma proteins in the blood B. Describe the origin and normal values of each protein in the blood	K	K H	Y	Lecture, Small group discussion	Written/Viva voce			Biochemistry

		C. Describe Plasmaphresis D. Discuss the functions of plasma proteins								
PY2.3	Describe and discuss the synthesis and functions of Haemoglobin and explain its breakdown. Describe variants of haemoglobin	A. Give the structure of haemoglobin and the steps involved in synthesis of haemoglobin B. Give the normal values of haemoglobin in males, females and new born C. List the normal functions of haemoglobin D. List the common physiological and pathological alterations in haemoglobin concentration E. Name the various Hb complexes and common conditions in which they are formed F. Differentiate Hb A and Hb F	K	K H	Y	Lecture, Small group discussion	Written/Viva voce	18.09.19/ Wed/ 08:30-09:30am	1hr	Biochemistry
PY2.4	Describe RBC formation (erythropoiesis & its regulation) and its functions	A. Describe the structure of RBC B. Give the normal red cell count in males and females C. List the functions of red cells. D. Describe different steps of erythropoiesis with the help of schematic diagram of cells. E. Describe the details of regulation of erythropoiesis	K	K H	Y	Lecture, Small group discussion	Written/Viva voce	18.09.19/ Wed/ 09:30-10:30am	1hr	
PY2.5	Describe different types of anaemias & Jaundice	A. Define anemia B. List out the features of anemia C. Classify anemia and give the common causes of each category of anemia D. Give the salient blood picture of common types of anemia E. Name the various blood indices and give their normal range F. Correlate the blood indices in classification of anemia G. Define jaundice H. Classify the different types of jaundice and give the cause of each type I. Describe the urinary and blood picture of bilirubin in each type	K	K H	Y	Lecture, Small group discussion	Written/Viva voce	19.09.19/ Thu/ 09:30-10:30am	1hr	Pathology Biochemistry

		J. List out the biochemical tests done to investigate each type and describe how to interpret the results of the test								
PY2.6	Describe WBC formation (granulopoiesis) and its regulation	A. Classify leucocytes. B. Give the normal total count of leucocytes and differential count of each type C. Give the steps of leucopoiesis and its regulation	K	K H	Y	Lecture, Small group discussion	Written/Viva voce	20.09.19/ Fri/ 08:30-09:30am	1hrs	
PY2.7	Describe the formation of platelets, functions and variations.	A. List the stages of platelet formation B. Describe the structure of platelets and correlate the structure with platelet properties C. List out the functions of platelets D. Give the normal platelet count and its variations	K	K H	Y	Lecture, Small group discussion	Written/Viva voce	20.09.19/ Fri/ 11:30-12:30pm 24.09.19/ Tue/09:30 -10:30am	2hrs	
PY2.8	Describe the physiological basis of hemostasis and, anticoagulants. Describe bleeding & clotting disorders (Hemophilia, purpura)	A. Define hemostasis B. List the major steps of hemostasis C. Describe the physiological basis of each step D. Define clotting and enumerate clotting factors E. Describe the mechanism of coagulation F. List out the anticoagulants and give their mechanism of action G. List out the anti clotting mechanisms and describe fibrinolytic system H. List out the bleeding and clotting disorders and differentiate haemophilia and purpura. I. List the haemostatic tests and give their interpretation	K	K H	Y	Lecture, Small group discussion	Written/Viva voce	25.09.19/ Wed/ 08:30-10:30am 26.09.19/ Thu/ 09:30-10:30am	3hrs	Pathology
PY2.9	Describe different blood groups and discuss the clinical importance of blood grouping, blood banking and transfusion	A. List the systems of blood group classification B. Give the ABO system of classification and the physiological basis of grouping C. Define Landsteiner's law and correlate with ABO blood groups and Rh blood type D. Name the agglutinogens and agglutinins	K	K H	Y	Lecture, Small group discussion, ECE- Visit to blood bank	Written/Viva voce	27.09.19/ Fri/ 08:30-09:30am 11:30-12:30pm	3hrs	Pathology

		in ABO system. E. Give the percentage distribution of ABO blood groups and describe the mechanism of inheritance of ABO blood groups F. Describe Rh system and the haemolytic disease of newborn due to Rh incompatability. G. List the significance of blood groups H. Describe the physiological basis of blood transfusion including minor and major cross matching and list the hazards of blood transfusion I. Understand the concept of universal donor and universal recipient J. Describe the method of collection of blood, storage of blood and changes in stored blood						01.10.19/ Tue/09:30 -10:30am		
PY2.10	Define and classify different types of immunity. Describe the development of immunity and its regulation	A. Define immunity B. Classify immunity and give examples for each C. List the nonspecific defence mechanisms and functions of NK cells D. Describe the mechanism of humoral and acquired immunity E. Name the antibodies and give their functions F. Name the types of T cells and give their functions G. Describe the role of complement system in immunity H. Discuss the concepts of immunological tolerance, autoimmunity and hypersensitivity I. Give the physiological basis of rejection of organ transplants and the prevention of its rejection	K	K H	Y	Lecture, Small group discussion	Written/Viva voce	2.10.19/ Wed/ 08:30-10:30am 3.10.19/ Thu/ 09:30-10:30am 4.10.19/ Fri/ 08:30-09:30am	4hrs	
PY2.11	Estimate Hb, RBC, TLC, RBC indices, DLC, Blood groups, BT/CT	A. Describe the method of estimation of Hb concentration B. Describe the method of determination of	S	S H	Y	DOAP sessions	Practical/OSPE/Viva voce	02.09.19 to 30.10.19/	16	Pathology

		RBC count, total leucocyte count and DLC C. Describe the calculation of blood indices D. Describe the method of ABO & Rh blood typing E. Describe the method of determination of bleeding time and clotting time						02:30-04:30pm		
PY2.12	Describe test for ESR, Osmotic fragility, Hematocrit. Note the findings and interpret the test results etc	A. Describe the method of determination of ESR, give the normal values in males and females, interpret the results of the test and list the factors influencing the ESR and physiological and pathological variations in ESR B. Describe the method of determination of osmotic fragility of RBC, give the normal values , interpret the results of the test and list the factors influencing the osmotic fragility and physiological and pathological variations in osmotic fragility C. Describe the method of determination of hematocrit, give the normal values in males and females and common conditions of variations in Hematocrit	K	K H	Y	Demonstration	Written /Viva voce	04.11.19 05.11.19 06.11.19 07.11.19 11.11.19 12.11.19	3	Pathology
PY2.13	Describe steps for reticulocyte and platelet count	A. Describe the steps of the methods used in reticulocyte and platelet count B. Give the normal values of reticulocyte and platelet count and common conditions of variation in reticulocyte and platelet count	K	K H	Y	Demonstration sessions	Written /Viva voce	13.11.19 14.11.19 18.11.19 19.11.19 20.11.19 21.11.19 25.11.19 26.11.19	4	Pathology
Topic: Nerve and Muscle Physiology										
PY3.1	Describe the structure and functions of a neuron and neuroglia; Discuss Nerve Growth Factor & other growth factors/cytokines	A. Describe the structure of a neuron B. Draw a labelled diagram of a neuron C. Describe the functions of all the components of Neuron D. Differentiate between axons and dendrites	K	K H	Y	Lecture, Small group discussion	Written/Viva voce	4.10.19/ Fri/ 11:30-12:30pm	1hr	Human Anatomy

		E. Enlist the different types of Neuroglia F. Describe the functions of different types of Neuroglial cells G. Describe the role of Schwann cells in the process of myelinogenesis H. Differentiate the process of myelinogenesis in Central Nervous System and Peripheral Nervous System I. Explain the role of astrocytes in maintaining the neuronal internal environment J. Enlist the various growth factors K. Discuss the functions of Nerve Growthfactor L. Discuss the clinical importance of Nerve Growth factor M. Describe the functions of various Neuotrophins/ Cytokines N. Discuss the types of axoplasmic transport O. Classify the types of Neurons with respect to number of processes, functions, dendritic pattern and length of axons								
PY3.2	Describe the types, functions & properties of nerve fibers	A. Enumerate the different methods of classification of nerve fibers B. With the diameter and Conduction velocity, tabulate the different types of nerve fibers based on the Erlanger Gasser Classification C. Describe the functions of different nerve fibers tabulated with Erlanger Gasser Classification D. Classify the sensory nerve fibers based on Numerical Classification E. Classify the nerve fibers with respect to the susceptibility to Hypoxia, Pressure and Local anesthetics F. Enumerate all the properties of Nerve fibers	K	K H	Y	Lecture, Small group discussion	Written/Viva voce	08.10.19/ Tue/09:30 -10:30am	1hr	

		G. Define Excitability of a nerve fiber H. Discuss the factors affecting excitability of a Nerve fiber I. Draw a labelled diagram of action potential in a neuron J. Describe the ionic basis of action potential in a neuron K. Differentiate between local /graded in Discuss the advantages of saltatory conduction in a myelinated nerve fiber L. Define Rheobase, Chronaxie and Utilisation time M. Draw a labelled diagram of Strength – Duration Curve N. Explain the Strength – Duration Curve and its Clinical significance O. Interpret the strength duration curve in a nerve disorder and a muscle disorder P. Describe the process of accommodation in a nerve fiber Q. Define Refractory a nerve fiber R. Differentiate orthodromic and antidromic conduction S. Describe the mechanism of conduction (Propagation of action potential) in an unmyelinated Nerve fiber T. Describe the mechanism of conduction (Propagation of action potential) in a myelinated Nerve fiber U. Draw a labelled diagram of saltatory conduction in a myelinated nerve fiber potential and action potential V. Define all or none law W. Define conductivity Period X. Enlist the types of Refractory period Y. Describe the ionic basis of the two types of Refractory period								
PY3.3	Describe the degeneration and regeneration in peripheral nerves	A. Grade the nerve injuries based on Sunderland classification B. Draw a labelled diagram of degeneration	K	K H	Y	Lecture, Small group discussion	Written/Viva voce	09.10.19/ Wed/ 08:30-	1hr	General Medicine

		in a nerve **fiber** C. Discuss the degenerative changes in the distal segment of the axon (Wallerian Degeneration) degenerative changes in the soma and the proximal segment of the nerve fiber D. Describe the time E. Describe the frame and regenerative changes in the different segments of the nerve fiber Discuss the factors influencing regeneration in a nerve fiber F. Justify the causes for lack of regeneration of neurons in the central nervous system						09:30am		
PY3.4	Describe the structure of neuro-muscular junction and transmission of impulses	A. Define Neuromuscular Junction B. Draw a labelled diagram of Neuromuscular Junction in a skeletal muscle C. Describe the structure of Neuromuscular Junction D. List in sequence the steps involved in neuromuscular transmission E. Describe the mechanism ofneuromuscular transmission, in a given chart of Neuromuscular junction F. Define Miniature end plate potential and End plate potential in neuromuscular junction G. Compare and contrast the end plate potential and action potential at the neuromuscular junction	K	K H	Y	Lecture, Small group discussion	Written/Viva voce	09.10.19/ Wed/ 09:30-10:30am 10.10.19/ Thu/ 09:30-10:30am 11.10.19/ Fri/ 08:30-09:30am And 11:30-12:30pm	4hrs	Anaesthesiology
PY3.5	Discuss the action of neuro-muscular blocking agents	A. List the possible sites for blocking neuromuscular transmission in a skeletal muscle B. Classify the neuromuscular blocking agents C. Describe the mechanism and site of action of individual neuromuscular blocking agents with suitable examples D. Discuss the clinical uses of neuromuscular blocking agents	K	K H	Y	Lecture, Small group discussion	Written/Viva voce			Anaesthesiology, Pharmacology

PY3.6	Describe the pathophysiology of Myasthenia gravis	A. Describe the etiology of Myasthenia gravis B. Enlist the Clinical features of Myasthenia Gravis C. Correlate the clinical features with the pathophysiology of the disease D. In a projected picture, identify and interpret the morphological changes in the neuromuscular junction in a patient with Myasthenia gravis E. Enumerate the different treatment modalities for Myasthenia Gravis F. Describe the physiological basis of different treatment modalities for Myasthenia Gravis	K	K H	Y	Lecture, Small group discussion	Written/Viva voce			Pathology
PY3.7	Describe the different types of muscle fibres and their structure	A. Classify the Muscle fibers B. Discuss the functions of the different types of Muscle fibers C. Correlate the functions of the muscle fibers with their location D. Describe the organization of muscle fibers and fibrils in the skeletal muscle E. Draw and label a skeletal muscle at all levels of organization (whole muscle to molecular components of sarcomere) F. Draw a labelled diagram of a sarcomere G. Enlist the proteins in the skeletal muscle (Contractile, Regulatory, Structural proteins) H. Elaborate the functions of the proteins of skeletal muscle I. Describe the structure of sarcotubular system in a skeletal muscle fiber J. Describe the functions of sarcotubular system K. List the distinctive features of smooth muscle L. Classify smooth muscle fibers M. Tabulate the distinctive features of Single unit & Multi unit smooth muscle	K	K H	Y	Lecture, Small group discussion	Written/Viva voce	15.10.19/ Tue/09:30 -10:30am	1hr	Human Anatomy

		N. List the distinctive features of cardiac muscle O. Draw a labeled diagram of cardiac muscle P. Discuss the morphology of cardiac muscle Q. Indicate the structural similarities and differences in the contractile units of skeletal muscle, smooth muscle and cardiac muscle R. Tabulate the morphological differences between the skeletal muscle, smooth muscle and cardiac muscle								
PY3.8	Describe action potential and its properties in different muscle types (skeletal & smooth)	A. Describe the mechanism of development of action potential in a skeletal muscle fiber B. Draw a labelled diagram of action potential in a skeletal muscle fiber C. Distinguish between an end plate potential and an action potential in a skeletal muscle D. Compare the essential features of action potential in a skeletal muscle and nerve fiber E. Discuss the different types of action potential elicited from a smooth muscle F. Differentiate the ionic basis of action potential between a smooth muscle and skeletal muscle G. List the properties of skeletal muscle H. Discuss the contractile response of a skeletal muscle to a single stimulus I. Draw a labelled diagram of a simple muscle twitch J. Describe the contractile response of skeletal muscle to multiple stimuli K. Distinguish between a twitch and tetanus in a skeletal muscle L. Draw a force versus velocity relationships of skeletal muscle with progressively increasing load M. Interpret the length tension relationship	K	K H	Y	Lecture, Small group discussion	Written/Viva voce	16.10.19/ Wed/ 08:30-10:30am 17.10.19/ Thu/ 09:30-10:30am	3hrs	

		with reference to whole skeletal muscle and different lengths of sarcomere N. Describe the effect of temperature on the contractile response of a skeletal muscle O. List the properties of smooth muscle P. Explain the phenomenon of latch bridge mechanism in smooth muscle Q. Define plasticity in smooth muscle R. Interpret the differences in the length tension relationship between a skeletal muscle and a smooth muscle, in a projected picture								
PY3.9	Describe the molecular basis of muscle contraction in skeletal and in smooth muscles	A. List in sequence the steps involved in excitation-contraction coupling in skeletal muscle B. Mention the contribution of scientists to the discovery of cross bridge cycle C. Draw a labelled diagram of cross bridge cycle D. List in sequence the steps involved in cross bridge cycle E. Describe the role of calcium in initiation of muscle contraction F. Describe the role of ATP in skeletal muscle contraction and relaxation G. Illustrate the relationship between the timing of the action potential with the twitch of skeletal muscle H. Describe the physiological basis of Rigor Mortis I. List the clinical significance of Rigor Mortis J. Describe the molecular basis of smooth muscle contraction and relaxation with a suitable flow chart K. Distinguish electromechanical coupling and pharmacomechanical coupling	K	K H	Y	Lecture, Small group discussion	Written/Viva voce	18.10.19/ Fri/ 08:30-09:30am And 11:30-12:30pm 22.10.19/ Tue/09:30 -10:30am	3hrs	
PY3.10	Describe the mode of muscle contraction (isometric and isotonic)	A. Define Isometric and Isotonic contraction B. Give suitable examples for Isometric and Isotonic contraction	K	K H	Y	Lecture, Small group discussion	Written/Viva voce			

		C. Discriminate the work done during isometric and isotonic contraction D. Draw a labelled diagram of three component model of isometric and isotonic contraction E. Discuss the clinical significance of Isometric and Isotonic contraction								
PY3.11	Explain energy source and muscle metabolism	A. List the energy sources in skeletal muscle contraction B. Rank the energy sources with respect to their rate and capacity to supply ATP for muscle contraction C. Define Oxygen demand, Oxygen consumption and Oxygen debt D. Describe the steps accomplished by our body following a muscle contraction to repay the oxygen debt E. Illustrate the mechanism of oxygen demand and debt with a suitable diagram F. Define muscle fatigue G. List the sequence of onset of fatigue at different sites in the human body H. Enlist some factors that cause muscle fatigue I. Describe the thermal changes in the muscle during different phases of muscle contraction J. Define Fenn effect	K	K H	Y	Lecture, Small group discussion	Written/Viva voce	23.10.19/ Wed/ 08:30-09:30am	1hr	Biochemistry
PY3.12	Explain the gradation of muscular activity	A. Define motor unit B. Draw a labelled diagram of a motor unit C. Define Size principle D. Describe the order of recruitment of motor units during skeletal muscle contraction of varying strengths E. List the factors which determine the gradation of force of muscle contraction in the intact body F. Elaborate the differences in the nature of muscle contractions depending on the intensity of voluntary activity	K	K H	Y	Lecture, Small group discussion	Written/Viva voce	23.10.19/ Wed/ 09:30-10:30am	1hr	General Medicine

PY3.13	Describe muscular dystrophy: myopathies	A. List the disorders of Skeletal muscles B. Classify muscle dystrophies and myopathies C. Correlate the role of structural proteins in maintaining the integrity of the skeletal muscle contraction D. Correlate the different gene mutations in the structural proteins of the skeletal muscle to the etiology of muscular dystrophies E. Describe the clinical features of various muscular dystrophies F. Correlate the role of contractile/regulatory proteins of sarcomere in maintaining the integrity of the skeletal musclecontraction G. Correlate the different gene mutations in the contractile/regulatory proteins of the skeletal muscle to the etiology of myopathies H. Describe the clinical features of myopathies I. Identify and interpret the abnormal electromyographic recordings from given charts	K	K H	Y	Lecture, Small group discussion	Written/Viva voce	23.10.19/ Wed/ 09:30-10:30am		General Medicine Human Anatomy
PY3.14	Perform Ergography	A. Define Ergography B. List the factors that affect muscle performance C. List the causes for muscle fatigue D. List the sites and sequence of onset of fatigue at those sites in intact human body E. Describe the principle of Mosso's Ergography F. List the requirements and precautions to be taken for performing Mosso's ergography G. Perform Ergography independently in a given subject H. Calculate the work done form the recordings of Ergography I. Record the effect of venous occlusion,	S	S H	Y	DOAP sessions	Practical/OSPE/Viva voce	27.11.19 28.11.19 02.12.19 03.12.19	2	

		arterial occlusion and motivation on muscle performance using Mosso's ergography J. Describe the effect of venous occlusion, arterial occlusion and motivation on muscle performance								
PY3.15	Demonstrate effect of mild, moderate and severe exercise and record changes in cardiorespiratory parameters	A. Classify exercise based on degree, rate of oxygen consumption and work done B. Classify exercise based on nature of muscle contraction C. Describe the changes in the cardiorespiratory parameters during mild, moderate and severe exercise D. Describe the changes in the cardiorespiratory parameters during isometric and isotonic exercise E. Discuss the effects of acute exercise on cardiorespiratory parameters F. Discuss the effects of regular exercise(training) on cardiorespiratory parameters G. Mention the therapeutic uses of exercise in common diseasesRecord the changes in blood pressure, heart rate and respiratory rate in a healthy volunteer during mild, moderate and severe exercise H. Interpret, analyse and justify the changes observed in the cardiorespiratory parameters in different forms of exercise with their physiological basis	S	S H	Y	DOAP sessions	Practical/OSP E/Viva voce	04.12.19 05.12.19 09.12.19 10.12.19	2	
PY3.16	Demonstrate Harvard Step test and describe the impact on induced physiologic parameters in a simulated environment	A. List the clinical uses of Harvard step test B. Assemble the necessary requirements for Harvard step test in a simulated environment C. Demonstrate Harvard step test in the simulated environment D. Identify the essential parameters to be recorded during the procedure E. Interpret the changes in the induced physiologic parameters in simulated	S	S H	Y	DOAP sessions	Practical/OSP E/Viva voce	11.12.19 12.12.19 16.12.19 17.12.19	2	

		environment F. Correlate the changes in the parameters with appropriate physiological reasons								
PY3.17	Describe Strength-duration curve	A. Define Rheobase, Chronaxie and Utilisation time B. Draw a labelled diagram of Strength – Duration Curve C. Explain the Strength – Duration Curve and its Clinical significance D. Interpret the strength duration curve in a nerve disorder and a muscle disorder	K	K H	Y	Lecture, Small group discussion	Written/Viva voce	17.10.19/ Thu/ 09:30-10:30am		
PY3.18	Observe with Computer assisted learning (i) amphibian nerve - muscle experiments (ii) amphibian cardiac experiments	A. Explain the physiological importance of studying amphibian nerve-muscle and cardiac experiments B. Infer the recordings of amphibian nerve – muscle experiments on • Simple muscle twitch • Effect of temperature on simple muscle twitch • Effect of increasing stimuli/successive stimuli on muscle contraction • Genesis of fatigue • Effect of load on muscle contraction • Study of conduction velocity of nerves A. Infer the recordings of amphibian cardiac experiments • Normal Cardiogram • Effect of temperature • Effect of stannius ligature on frog's heart • Effect of stimulation of vagosympathetic trunk • Effect of drugs and ions on perfused frog's heart	S	K H	Y	Demonstration, Computer assisted learning methods	Practical / Viva voce	18.12.19 19.12.19 23.12.19 24.12.19	2	
Topic: Gastro-intestinal Physiology										

PY4.1	Describe the structure and functions of digestive system	A. Name the parts of digestive system B. List the functions of GIT C. Name the layers of wall of GIT D. Explain the functional importance of the layers of wall of GIT Differentiate the sympathetic and parasympathetic stimulation on GI functions E. Describe the nerve supply of GIT	K	K H	Y	Lecture, Small group discussion	Written/Viva voce	24.10.19/ Thu/ 09:30-10:30am	1hr	Human Anatomy
PY4.2	Describe the composition, mechanism of secretion, functions, and regulation of saliva, gastric, pancreatic, intestinal juices and bile secretion	<u>Salivary secretion</u> A. Name the salivary glands. B. Describe the functional anatomy of the salivary glands. C. Describe the innervations of salivary glands. D. Enumerate the components of saliva. E. Enlist the functions of saliva. F. Describe the phases and regulation of salivary secretion. G. Explain the physiological basis of salivary dysfunction <u>Gastric secretion</u> A. List the functions of stomach B. Describe the functional anatomy of stomach C. Describe the structure of gastric glands D. Describe the composition of gastric juice E. Discuss the mechanism of secretion of gastric secretion F. Discuss the regulation of gastric secretion G. Describe the gastric mucosal barrier H. Discuss the experimental evidences of gastric secretion <u>Pancreatic secretion</u> A. Describe the functional anatomy of exocrine pancreas B. List the composition of pancreatic juice C. List the functions of pancreatic juice D. Describe the mechanism of secretion of pancreatic juice	K	K H	Y	Lecture, Small group discussion	Written/Viva voce	25.10.19/ Fri/ 08:30-09:30am And 11:30-12:30pm 29.10.19/ Tue/09:30-10:30am, 30.10.19/ Wed/ 08:30-10:30am 31.10.19/ Thu/ 09:30-10:30am 5.11.19/ Tue/09:30-10:30am, 06.11.19/ Wed/ 08:30-09:30am	8hrs	Biochemistry

		E. Discuss the regulation of pancreatic juice secretion <u>Intestinal juice</u> A. Appreciate the importance of intestinal secretion in digestion and absorption of nutrients B. Discuss the mucosal modifications in intestinal epithelium to increase absorption C. Describe the functions of small intestine D. Describe the functions large intestine E. Describe the composition of succus entericus F. List the functions of Intestinal flora <u>Bile secretion</u> A. List the functions of Bile B. List the composition of Bile C. Discuss the mechansim of Biliary secretion D. Discuss the regulation of Biliary secretion E. List the differences between hepatic and gall bladder bile. F. Name the bile salts G. Name the bile acids H. Explain the importance of bile acids and bile salts I. Explain the importance of enterohepatic circulation J. Discuss the physiological abnormality in gall stone formation.								
PY4.3	Describe GIT movements, regulation and functions. Describe defecation reflex. Explain role of dietary fibre.	<u>GIT movements</u> A. Correlate the electrophysiology of smooth muscle with GI movements B. Draw a diagram showing slow wave of GI smooth muscle C. List the types of GI motility D. List the functions of various types of GI	K	K H	Y	Lecture, Small group discussion	Written/Viva voce	06.11.19/ Wed/ 09:30-10:30am 07.11.19/ Thu/	4hrs	

		motility E. Define persistalsis F. Explain the mechanism of peristalsis G. Define migrating motor complex H. Discuss the significance of MMC I. Describe the phases of swallowing J. Appreciate, why one should not speak while eating K. List the types of gastric motilities L. Discuss the mechanism of gastric emptying M. Describe the factors influencing gastric motility N. Describe the movements of small intestine O. Describe the movements of large intestine <u>Defecation reflex</u> A. Describe the Defecation reflex <u>Dietary fibers</u> A. Discuss the role of dietary fibers in health and disease.						09:30-10:30am 08. 11.19/ Fri/ 08:30-09:30am And 11:30-12:30pm		
PY4.4	Describe the physiology of digestion and absorption of nutrients	A. Describe the Digestion & absorption of carbohydrates B. Describe the Digestion & absorption of lipids C. Describe the Digestion & absorption of proteins	K	K H	Y	Lecture, Small group discussion	Written/Viva voce	12.11.19/ Tue/09:30-10:30am, 13.11.19/ Wed/ 08:30-09:30am	2hrs	Biochemistry
PY4.5	Describe the source of GIT hormones, their regulation and functions	A. List the GIT hormones B. Enlist the sources of various GIT hormones C. Describe the regulation of GIT hormones D. Describe the functions of GIT hormones	K	K H	Y	Lecture, Small group discussion	Written/Viva voce	13.11.19/ Wed/ 09:30-10:30am	1hr	
PY4.6	Describe the Gut-Brain Axis	A. Describe the intrinsic neural regulation of GIT B. Describe the extrinsic neural regulation of GIT	K	K H	Y	Lecture, Small group discussion	Written/Viva voce	24.10.19/ Thu/		

PY4.7	Describe & discuss the structure and functions of liver and gall bladder	A. List the functions of liver B. List the functions of gall bladder C. Draw a schematic diagram of hepatic lobule D. Describe the functional anatomy of Liver	K	K H	Y	Lecture, Small group discussion	Written/Viva voce	14.11.19/ Thu/ 09:30-10:30am 15.11.19/ Fri/ 08:30-09:30am	2hrs	Biochemistry
PY4.8	Describe & discuss gastric function tests, pancreatic exocrine function tests & liver function tests	A. Define basal acid output (BAO) B. Define maximum acid output (MAO) C. List the conditions in which BAO and MAO are elevated D. Describe the tests for gastric secretions E. Describe the tests for gastrin F. Establish the presence of hyperchlorhydria associated with peptic ulcer or achlorhydia associated with pernicious anemia based on gastric function tests <u>Pancreatic exocrine function tests</u> A. Evaluate the normal functioning of pancreas based on pancreatic function tests. B. Difference between Secretin and CCK stimulation tests <u>Liver function tests</u> A. List the liver function tests B. Describe the clinical significance of liver function tests. C. Define jaundice D. Draw a flowchart representing the metabolism of bilirubin. E. Difference between the types of jaundice F. Interpret the lab reports for liver function tests to distinguish the types of jaundice. G. Explain the physiological basis of Physiological Jaundice H. Describe the physiological basis of treatment for Physiological Jaundice	K	K H	Y	Lecture, Small group discussion, Demonstration Esophageal Manometry & endoscopy	Written/Viva voce	15.11.19/ Fri/ 11:30-12:30pm	1hr	Biochemistry

PY4.9	Discuss the physiology aspects of: peptic ulcer, gastro- oesophageal reflux disease, vomiting, diarrhoea, constipation, Adynamic ileus, Hirschsprung's disease	<u>Peptic ulcer</u> A. Discuss the patho physiology of peptic ulcer B. List the features of peptic ulcer C. Discuss the treatment strategies adopted for treatment of peptic ulcer <u>GERD</u> A. Discuss the pathophysiology of gastrooesophageal reflux disease B. Describe the treatment strategies followed for GERD <u>Vomitting</u> A. Explain the steps involved in vomiting B. Describe the centers involved in vomiting C. Discuss about antiemetics <u>Diarrhoea</u> A. Discuss the aetiology of diarrhea <u>Constipation</u> A. Describe the aetiopathogenesis of constipation B. Discuss the role of dietary fibers in prevention of constipation <u>Adynamic ileus</u> A. List the causes for adynamic ileus B. List the features of adynamic ileus <u>Hirschsprung's disease</u> A. Discuss the causes of Hirschsprung's disease B. List the features of Hirschsprung's disease	K	K H	Y	Lecture, Small group discussion	Written/Viva voce	19.11.19/ Tue/09:30 -10:30am 20.11.19/ Wed/ 08:30- 10:30am	3hrs	General Medicine Biochemistry
PY4.10	Demonstrate the correct clinical examination of the abdomen in a normal volunteer or simulated environment	A. Name the different quadrants of the abdomen B. Describe the importance of clinical examination of abdomen in Clinical Physiology C. Enumerate the steps of examination of GIT D. Demonstrate the procedures for palpation of liver in the given subject E. Demonstrate the procedures for palpation	S	S H	Y	DOAP session	Skill assessment/ Viva voce/OSCE	30.12.19 31.12.19 06.01.20 07.01.20	2hr	

		of spleen in the given subject F. Percuss the abdomen in the given subject G. Ascultate the bowel sounds in the given subject H. List the causes of hepatomegaly I. List the causes of spleenomegaly J. Explain the importance of fluid thrill K. Explain the importance of shifting dullness L. Correlate abnormal bowel sounds with intestinal dysfunction.								
Topic: Cardiovascular Physiology (CVS)										
PY5.1	Describe the functional anatomy of heart including chambers, sounds; and Pacemaker tissue and conducting system.	A. Describe the morphological features of heart B. Name the chambers of heart and partitions between the chambers C. Name the pacemaker tissue of the heart and its function D. List the components of conducting system of heart	K	K H	Y	Lecture, Small group discussion	Written/Viva voce	21.11.19/ Thu/ 09:30-10:30am	2hr	Human Anatomy
PY5.2	Describe the properties of cardiac muscle including its morphology, electrical, mechanical and metabolic functions	A. Describe the morphology of cardiac muscle B. List the phases of pacemaker potential and ventricular action potential and describe the ionic basis of each phase C. Describe the phases of refractory period and tell the significance of long refractory period D. Describe the mechanical properties of cardiac muscle E. Describe the cardiac muscle metabolism	K	K H	Y	Lecture, Small group discussion	Written/Viva voce	22.11.19/ Fri/ 08:30-09:30am And 11:30-12:30pm	2hr	
PY5.3	Discuss the events occurring during the cardiac cycle	A. Define cardiac cycle and give the normal duration B. List the various events of cardiac cycle and give the normal duration of each phase. C. Describe the mechanical changes during events of cardiac cycle	K	K H	Y	Lecture, Small group discussion	Written/Viva voce	26.11.19/ Tue/09:30-10:30am	2hr	

		D. Describe the electrical changes (ECG), volume and pressure changes and heart sounds occurring during cardiac cycle								
PY5.4	Describe generation, conduction of cardiac impulse	A. Describe the generation of cardiac impulse B. Describe how the cardiac impulse is conducted through the heart C. Give the duration, causes and significance of AV nodal delay	K	K H	Y	Lecture, Small group discussion	Written/Viva voce	27.11.19/ Wed/ 08:30-09:30am	1hr	
PY5.5	Describe the physiology	A. Define electrocardiogram B. State Einthoven's law. C. List the different types of leads and give the location of electrode s in each lead D. Name the waves recorded in ECG and describe its duration, amplitude and basis of each wave. E. Describe the important intervals and segments of ECG F. List the clinical applications of ECG. G. Define mean electrical axis of heart and describe its significance	K	K H	Y	Lecture, Small group discussion	Written/Viva voce	27.11.19/ Wed/ 09:30-10:30am 28.11.19/ Thu/ 09:30-10:30am	2hrs	General Medicine
PY5.6	Describe abnormal ECG, arrythmias, heart block and myocardial Infarction	A. Explain the abnormal ECG in hyper and hypo levels of sodium, potassium and calcium ions B. Describe the changes in ECG in cardiac arrhythmia, heart block, myocardial ischaemia and myocardial infarction	K	K H	Y	Lecture, Small group discussion	Written/Viva voce	29.11.19/ Fri/ 08:30-09:30am And 11:30-12:30pm	2hrs	General Medicine Human Anatomy
PY5.7	Describe and discuss haemodynamics of circulatory system	A. Describe the relation between blood flow, pressure difference and vascular resistance with the help of Poiseuille's law B. Differentiate between laminar and turbulent flow of blood C. Explain the concept of Reynold's number D. Name the different vascular segments and give the value of pressure existing in the vascular segments E. Explain the Windkessel effect	K	K H	Y	Lecture, Small group discussion	Written/Viva voce	03.12.19/ Tue/09:30-10:30am	1hr	

PY5.8	Describe and discuss local and systemic cardiovascular regulatory mechanisms	A. Describe the role of myogenic principle, local metabolites and local hormones in short term local auto regulatory mechanisms of heart and vascular function B. Describe the role of angiogenesis in long term local auto regulatory mechanisms of heart and vascular function C. Describe the role of vasoconstrictors and vasodilators in chemical systemic regulatory mechanisms of heart and vascular function D. Describe the role of sympathetic and parasympathetic nerves suppluing the heart in neural systemic regulatory mechanisms of heart and vascular function E. Describe the role of cardiovascular reflexes (Baroreceptor, Chemoreceptor, Cushing and Bainbridge) in cardiovascular regulation	K	K H	Y	Lecture, Small group discussion	Written/Viva voce	04.12.19/ Wed/ 08:30-10:30am	2hrs	
PY5.9	Describe the factors affecting heart rate, regulation of cardiac output & blood pressure	A. Define heart rate. Give the normal value of heart rate and list the physiological conditions which cause variation in heart rate B. Define tachycardia and bradycardia C. List the factors determining heart rate and describe the mechanisms involved in regulation of heart rate. D. Define blood pressure, systolic pressure, diastolic pressure, mean pressure and pulse pressure and give the normal range of each pressure. E. List the physiological conditions which cause variation in blood pressure F. List the factors determining blood pressure and describe the short term and long term regulation of blood pressure G. Define and give the causes, clinicalfeatures and management of	K	K H	Y	Lecture, Small group discussion	Written/Viva voce	05.12.19/ Thu/ 09:30-10:30am 06.12.19/ Fri/ 08:30-09:30am And 11:30-12:30pm	3hrs	

		hypertension H. Define cardiac output and stroke volume and give their normal values and name the methods used to determine cardiac output I. Describe the intrinsic and extrinsic mechanism of regulation of cardiac output								
PY5.10	Describe & discuss regional circulation including microcirculation, lymphatic circulation, coronary, cerebral, capillary, skin, foetal, pulmonary and splanchnic circulation	A. Describe the structure and functions of microcirculation B. Describe the structure of capillary wall and factors influencing the exchange of water and nutrients in the capillaries C. Describe the formation of lymph and its circulation through lymphatic system D. List the functions of lymphatic system E. Give the normal coronary blood flow and list the salient features of coronary circulation. F. Describe the regulation of coronary blood flow G. Give the normal flow, special features and regulation of cerebral and pulmonary circulation H. List the cause and features of cerebral stroke I. Describe the features of skin and splanchnic circulation. J. List the phases of triple response K. Describe the special features of foetal circulation and list the readjustments at birth	K	K H	Y	Lecture, Small group discussion	Written/Viva voce	10.12.19/ Tue/09:30 -10:30am 11.12.19/ Wed/ 08:30- 10:30am 12.12.19/ Thu/ 09:30- 10:30am	4hrs	General Medicine
PY5.11	Describe the patho-physiology of shock, syncope and heart failure	A. Define shock and describe the stages of shock. B. List the different types of shock. C. Describe the causes and features of each type of shock D. Explain the rapid and delayed physiological adjustments in response to shock E. Give the principles of treatment of shock F. List the different types of syncope and	K	K H	Y	Lecture, Small group discussion	Written/Viva voce	13.12.19/ Fri/ 08:30- 09:30am And 11:30- 12:30pm	2hrs	

		explain the physiological basis of each syncope G. Distinguish between right and left heart failure H. List the features of congestive cardiac filure I. Give the causes, features and management of myocardial infarction								
PY5.12	Record blood pressure & pulse at rest and in different grades of exercise and postures in a volunteer or simulated environment	A. Demonstrate the recording of blood pressure at rest in a volunteer B. Demonstrate the recording of blood pressure in mild, moderate and heavy exercise in a volunteer and interpret the results C. Demonstrate the recording of blood pressure in changing the posture from lying to standing posture in a volunteer and interpret the results	S	S H	Y	DOAP sessions	Practical/OSPE/ Viva voce	08.01.20 09.01.20 27.01.20 28.01.20	2hr	
PY5.13	Record and interpret normal ECG in a volunteer or simulated environment	A. Demonstrate the recording of ECG in a volunteer and interpret the results	S	S H	Y	DOAP sessions	Practical/OSPE/ Viva voce	29.01.20 30.01.20 03.02.20 04.02.20	2hr	General Medicine
PY5.14	Observe cardiovascular autonomic function tests in a volunteer or simulated environment	A. Interpret the results of cardiovascular autonomic function tests in a volunteer	S	S H	N	DOAP sessions	Skill assessment/ Viva voce	05.02.20 06.02.20 10.02.20 11.02.20	2hr	
PY5.15	Demonstrate the correct clinical examination of the cardiovascular system in a normal volunteer or simulated environment	A. Demonstrate the correct clinical examination of the cardiovascular system in a volunteer by the process of Inspection, Palpation, Percussion and auscultation	S	S H	Y	DOAP sessions	Practical/OSPE/ Viva voce	12.02.20 13.02.20 17.02.20 18.02.20 19.02.20 20.02.20 24.02.20 25.02.20	4hr	
PY5.16	Record Arterial pulse tracing using finger plethysmography in a volunteer or simulated environment	A. Record the arterial pulse tracing in a volunteer by using finger plethysmography and interpret the normal recording	S	S H	N	DOAP sessions, Computer assisted learning methods	Practical/OSPE/ Viva voce	26.02.20 27.02.20	1hr	General Medicine

Topic: Respiratory Physiology										
PY6.1	Describe the functional anatomy of respiratory tract	A. List the components of respiratory system B. Describe the anatomical organization of the airways and lugs using the Weibel's Lung Model C. Compare and contrast the different zones of the airways with respect to lining epithelium, cartilage, nerve supply and blood supply D. Describe the respiratory and non-respiratory functions of lungs	K	K H	Y	Lecture, Small group discussion	Written/Viva voce	17.12.19/ Tue/09:30 -10:30am	1hr	
PY6.2	Describe the mechanics of normal respiration, pressure changes during ventilation, lung volume and capacities, alveolar surface tension, compliance, airway resistance, ventilation, V/P ratio, diffusion capacity of lungs	A. Define Respiration B. Describe the different phases of respiration C. List the muscles of Inspiration and Expiration D. Describe the mechanism of action of Inspiratory muscles and expiratory muscles E. Correlate the changes in the diameters of the chest wall with actions of respiratory muscles during inspiration and expiration F. Identify the forces that generate the negative intrapleural pressure G. Describe the physiological significance of negative intrapleural pressure H. Describe the mechanism of movement of air into and out of the lungs with differences in pressure between the alveoli and atmosphere I. Define transmural pressure J. Draw a labelled diagram of pressure-volume changes during the respiratory cycle K. Define all lung volumes and capacities L. Draw a labelled diagram of spirogram depicting lung volumes and capacities M. List the volumes that comprise the capacities and give their normal values N. Identify the lung volumes that cannot be	K	K H	Y	Lecture, Small group discussion	Written/Viva voce	18.12.19/ Wed/ 08:30-10:30am 19.12.19/ Thu / 09:30-10:30am	3hrs	

		measured by spirometry O. Explain the significance of residual volume and functional residual capacity P. Describe the methods used to determine functional residual capacity, residual volume, total lung capacity Q. Define closing volume R. Define surface tension S. Discuss the impact of surface tension on alveolar size T. List the factors contributing to the stability of alveoli U. Describe the principal components of surfactant and explain the roles of each V. Describe the factors influencing surfactant production W. List the primary and secondary functions of surfactant X. Describe the role of surfactant in the pathophysiology of respiratory distress syndrome Y. Define atelectasis and role of surfactant in preventing atelectasis Z. Define Compliance of lungs AA. Enumerate factors affecting compliance of the lungs and chest wall BB. Draw a labelled diagram of compliance curve with Inflation and Deflation limbs CC. Explain the cause and significance of the hysteresis in the compliance curves DD. Identify the clinical conditions causing alteration in the compliance of the lungs EE. Explain the regional variation of compliance and the effect of gravity FF. List the determinants of airway resistance GG. Explain the effect of airway resistance on dynamic lung compliance HH. Explain the work of breathing of the lungs II. Define the terms anatomical dead space, physiological dead space, alveolar								

		ventilation and pulmonary ventilation JJ. Describe the techniques used in the measurement of dead space KK. Describe the relation of alveolar ventilation to partial pressures of oxygen and carbondioxide in blood LL. 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 pressure MM. Mention the normal V/P ratio NN. Justify the variation in the V/P ratio in different zones of the lungs OO. Identify the diseases causing alteration in the V/P ratio PP. Describe the concept of shunt and physiological dead space with relation to abnormal V/P ratio QQ. Define diffusion capacity RR. Describe the principle of measurement of diffusion capacity SS. List the factors affecting diffusion capacity								
PY6.3	Describe and discuss the transport of respiratory gases: Oxygen and Carbon dioxide	A. List the layers of alveolo-capillary membrane B. Define diffusion C. Enumerate the factors affecting diffusion of gases across the respiratory membrane D. Compare the composition of alveolar air, inspired air and expired air E. List the modes of transport of oxygen in the blood F. Draw a labelled diagram of the oxygen dissociation curve G. Explain Bohr effect with a suitable diagram H. List the factors that shift the oxygen dissociation curve too right and left I. Describe the influence of the shape of the	K	K H	Y	Lecture, Small group discussion	Written/Viva voce	20.12.19/ Fri/ 08:30-09:30am And 11:30-12:30pm 24.12.19/ Tue/09:30-10:30am 26.12.19/ Thu/ 09:30-10:30am	4hrs	

		oxygen dissociation curve on the uptake and delivery of oxygen J. List the modes of transport of carbondioxide in blood K. Explain Haldane effect with a suitable diagram L. Draw a labelled diagram of carbondioxide dissociation curve for oxyhemoglobin and deoxyhemoglobin								
PY6.4	Describe and discuss the physiology of high altitude and deep sea diving	A. List the critical altitudes B. Describe the barometric pressure and partial pressure of gases at different altitudes C. Describe the effects of pO_2 at different altitudes on the physiologic parameters D. Discuss the effects of expansion of gases at high altitude E. List the conditions associated with exposure to high atmospheric pressure F. Describe the physiological changes which occur at depth G. Describe the physiological changes which occur on ascent	K	K H	Y	Lecture, Small group discussion	Written/Viva voce	27.12.19/ Fri/ 08:30-09:30am And 11:30-12:30pm	2hrs	
PY6.5	Describe and discuss the principles of artificial respiration, oxygen therapy, acclimatization and decompression sickness.	A. List the indications of Artificial respiration B. Classify the methods of artificial respiration C. Describe the principle behind the different methods of artificial respiration D. List the advantages of mouth to mouth breathing over other methods of artificial respiration E. List the steps in cardiopulmonary resuscitation F. List the indications for 100% pure oxygen therapy G. Identify the conditions characterized by limited value of oxygen therapy H. List the advantages of Hyperbaric oxygen therapy over 100% oxygen therapy	K	K H	Y	Lecture, Small group discussion	Written/Viva voce	31.12.19/ Tue/09:30 -10:30am 02.01.20/ Thu/ 09:30-10:30am	2hrs	

		I. List the indications for Hyperbaric oxygen therapy J. Describe the process of acclimatization K. Describe the pathophysiology of acute mountain sickness and chronic mountain sickness L. Describe nitrogen narcosis M. Define decompression sickness N. List the clinical features of decompression sickness O. Correlate the clinical features with the physiological basis P. List the physiological principles of prevention and management of decompression sickness								
PY6.6	Describe and discuss the pathophysiology of dyspnoea, hypoxia, cyanosis asphyxia; drowning, periodic breathing	A. Define dyspnea B. List the predisposing factors for dyspnea C. Enumerate the causes for dyspnea D. Define dyspneic index E. Define Hypoxia F. Classify the types of Hypoxia G. Tabulate the distinctive features (Pathophysiology, causes, partial pressures, oxygen saturation, Cyanosis) of different types of Hypoxia H. Correlate the clinical features of Hypoxia with pathophysiology of the condition I. Identify the types of Hypoxia benefited by Oxygen therapy J. Define Cyanosis K. Classify cyanosis L. List the conditions characterized by cyanosis M. Define Apshyxia N. Describe the stages of Asphyxia O. Identify the conditions characterized with asphyxia P. Describe the effects of drowning Q. Define periodic breathing R. Classify periodic breathing	K	K H	Y	Lecture, Small group discussion	Written/Viva voce	03.01.20/ Fri/ 08:30-09:30am And 11:30-12:30pm	2hrs	

		S. List the conditions causing different types of periodic breathing T. Explain the physiological basis of periodic breathing in heart failure and brain damage								
PY6.7	Describe and discuss lung function tests & their clinical significance	A. Classify the pulmonary function tests B. List the clinical implications of lung function tests C. List the parameters that assess ventilation D. Identify static and dynamic lung function tests E. Mention the tests used to assess the mechanics of breathing F. Draw a spirogram resulting from maximal expiratory effort G. Label the FVC, FEV_1, FEF_{25-75} in the recorded spirogram H. Explain the differences between pattern of FEV_1 in obstructive and restrictive lung diseases I. Describe the principle behind the measurement of dead space, compliance, airway resistance J. Describe the methods used for estimation of dead space, compliance and airway resistance K. Describe the methods used for testing diffusion capacity	K	K H	Y	Lecture, Small group discussion	Written/Viva voce	07.01.20/ Tue/09:30 -10:30am	1hr	
PY6.8	Demonstrate the correct technique to perform & interpret Spirometry	A. List the components of a spirometer B. Describe the principle of spirometry C. Able to perform spirometry independently on a human volunteer, following necessary precautions D. Able to record time volume curve, satisfying acceptability and repeatability criteria of guidelines by American Thoracic Society E. Able to record flow volume loop, satisfying acceptability and repeatability criteria of guidelines by American	S	S H	Y	DOAP sessions	Skill assessment/ Viva voce	02.03.20 03.03.20 04.03.20 05.03.20	2hr	Respiratory Medicine

		Thoracic Society F. Calculate and interpret the FEV_1 values, MVV values and PEF values in the recorded tracings G. Interpret and identify the clinical disorders from a given set of flow volume loops								
PY6.9	Demonstrate the correct clinical examination of the respiratory system in a normal volunteer or simulated environment	A. Trace the different lines, prominences, lung fissures and borders of the surface of the chest in a healthy volunteer B. Obtain consent form the volunteer before the commencement of the examination C. Instruct the healthy volunteer regarding the nature of the procedure D. Perform clinical examination of respiratory system in a proper sequence (Inspection, Palpation, Percussion and Auscultation) E. List the abnormal shapes of the chest wall and their causes F. List the different types and causes of abnormal respiration G. List the causes for restricted chest wall expansion H. List the conditions causing alterations in Vocal fremitus and Vocal resonance I. List the rules of percussion J. List the differences between vesicular bronchial breath sounds K. Identify the clinical condition causing abnormal breath sounds	S	P	Y	DOAP sessions	Skill assessment/ Viva voce/OSCE	09.03.20 10.03.20 11.03.20 12.03.20 16.03.20 17.03.20 18.03.20 19.03.20	4hr	
PY6.10	Demonstrate the correct technique to perform measurement of peak expiratory flow rate in a normal volunteer or simulated environment	A. Obtain consent form the volunteer before the commencement of the procedure B. Instruct the healthy volunteer regarding the nature of the procedure C. Perform the measurement of peak expiratory flow rate in a healthy volunteer using mini peak flow meter D. Record the Peak expiratory flow rate E. Interpret the abnormal PEFR values from	S	S H	Y	DOAP sessions	Practical/OSPE/ Viva voce	23.03.20 24.03.20	1hr	

		a given set of values F. Define PEFR G. Mention the normal values of PEFR H. Identify the conditions causing alterations in PEFR								
Topic: Renal Physiology										
PY7.1	Describe structure and function of kidney	A. List the functions of kidney B. Name the parts of the nephron C. Correlate the histological modifications at different segments of nephrone with their specific functions. D. Describe the gross and microscopic anatomy of kidney E. Differentiate the cortical nephrons and juxtamedullary nephrons F. Explain the special features of Renal circulation	K	K H	Y	Lecture, Small group discussion	Written/Viva voce	08.01.20/ Wed/ 08:30-10:30am	2hrs	
PY7.2	Describe the structure and functions of juxta glomerular apparatus and role of renin-angiotensin system	A. Draw a schematic diagram representing JGA B. Name the cells involvd in formation of JGA C. Describe the structure of Juxtaglomerular Apparatus (JGA) D. Describe the functions of JGA E. Explain the role of JGA in renin angiotensin system	K	K H	Y	Lecture, Small group discussion	Written/Viva voce	09.01.20/ Thu/ 09:30-10:30am	1hr	
PY7.3	Describe the mechanism of urine formation involving processes of filtration, tubular reabsorption & secretion; concentration and diluting mechanism	Processes of filtration, tubular reabsorption & secretion A. Define GFR B. Mention the normal value of GFR. C. Describe the characteristics of Filtration membrane D. Discuss the factors affecting Glomerular filtration E. Describe the regulation of Glomerular Filtration F. Describe the measurement of Glomerular Filtration G. List the conditions of GFR	K	K H	Y	Lecture, Small group discussion	Written/Viva voce	10.01.20/ Fri/ 08:30-09:30am And 11:30-12:30pm 28.01.20/ Tue/09:30-10:30am 29.01.20/ Wed/	4hrs	

		H. Describe the general principles of renal tubular transport I. Describe the renal handling of sodium J. Describe the renal handling of water K. Differentiate between obligatory and facultative Reabsorption of water. L. Describe the renal handling of glucose M. Define transport maximum N. Define splay. O. Describe the renal handling of potassium P. Define diuretics Q. Tabulate the types of diuretics R. Difference between water and osmotic diuresis S. Discuss the mode of action of diuretics T. Describe the process of secretion of various substances <u>Countercurrent mechansim</u> A. Describe how concentrated urine is formed by kidney B. Describe the role of ADH in the formation of diluted urine C. Appreciate the importance of tubuloglomerular feedback and glomerulotumbular reflex.						08:30-09:30am		
PY7.4	Describe & discuss the significance & implication of Renal clearance	A. Define renal clearance B. Discuss the principles governing renal clearance C. Describe the implications of renal clearance tests used to measure GFR D. Describe the implications of renal clearance tests used to assess tubular secretory capacity E. Describe the implications of renal clearance tests used to assess renal plasma flow F. Describe the implications of renal clearance tests used to assess osmotic and free water clearance	K	K H	Y	Lecture, Small group discussion	Written/Viva voce	29.01.20/ Wed/ 09:30-10:30am	1hr	

PY7.5	Describe the renal regulation of fluid and electrolytes & acid-base balance	A. Describe the regulation of water balance B. Describe the mechanisms controlling body fluid osmolality C. Describe the regulation of ECF volume and composition D. Define the terminologies: Acid, Base, pH E. Describe the renal regulation of fluid and electrolytes. F. Describe the mechanism of Hydrogen ion secretion G. Discuss the process of Reabsorption and formation of bicarbonate	K	K H	Y	Lecture, Small group discussion	Written/Viva voce	30.01.20/ Thu/ 09:30-10:30am 31.01.20/ Fri/ 08:30-09:30am	2hr	
PY7.6	Describe the innervations of urinary bladder, physiology of micturition and its abnormalities	A. Describe the physiological anatomy of urinary bladder B. Discuss the innervations of Urinary bladder C. Describe the micturition reflex D. Discuss the physiological basis of abnormalities related to micturition reflex.	K	K H	Y	Lecture, Small group discussion	Written/Viva voce	31.01.20/ Fri/ 11:30-12:30pm	2hr	
PY7.7	Describe artificial kidney, dialysis and renal transplantation	A. Describe the pathophysiology of Renal failure B. Describe the principle in dialysis C. Describe the types of dialysis D. Enlist the composition of the dialyzing fluid as compared to that of a typical uremic patient. E. Discuss about renal transplantation	K	K H	Y	Lecture, Small group discussion	Written/Viva voce	04.01.20/ Tue/09:30-10:30am	1hr	General Medicine
PY7.8	Describe & discuss Renal Function Tests	A. Describe the Renal function Tests B. Discuss the Analysis of urine C. Discuss the Analysis of Blood D. Describe the tests to assess the Tubular functions E. Discuss the basic concepts involved in Renal Imaging and radiology	K	K H	Y	Lecture, Small group discussion	Written/Viva voce	29.01.20/ Wed/		Biochemistry
PY7.9	Describe cystometry and discuss the normal cystometrogram	A. Discuss method of recording cystometrogram B. Draw a normal cystometrogram C. Explain the physiological basis of the phases recorded in cystometrogram	K	K H	Y	Lecture, Small group discussion	Written/Viva voce	31.01.20/ Fri/		
Topic: Endocrine Physiology										

PY8.1	Describe the physiology of bone and calcium metabolism	A. List the physiological actions of calcium B. Outline the distribution of calcium in the body C. Describe the physiology of bone formation and bone resorption D. Give the normal plasma calcium level and discuss about calcium homeostasis List the clinical features of a) hypo and hypercalcemia b) Osteoporosis c) osteomalacia	K	K H	Y	Lecture, Small group discussion	Written/Viva voce	05.02.19/ Wed/ 08:30-10:30am	2hrs	
PY8.2	Describe the synthesis, secretion, transport, physiological actions, regulation and effect of altered (hypo and hyper) secretion of pituitary gland, thyroid gland, parathyroid gland, adrenal gland, pancreas and hypothalamus	A. List the hormones of anterior pituitary and their functions B. Describe the hypothalamo – hypophyseal connections C. Name the releasing and inhibitory hormones produced from hypothalamus D. Give the functions of growth hormone E. Discuss the functions of oxytocin F. List the functions and regulation of secretion of ADH G. List the cause, features, diagnosis and treatment of dwarfism, gigantism, acromegaly and diabetes insipidus H. Describe the synthesis, secretion, transport, mechanism of action, physiological actions and regulation of secretion of thyroid hormones I. List the cause, features and treatment of goitre, cretinism, myxoedema, hyperthyroidism and Grave's disease J. Name anti thyroid drugs and give their mechanism of action K. Describe the physiological actions and regulation of secretion of parathormone L. List the causes, features, diagnosis and treatment of TetanyName the various zones of adrenal cortex and the hormones secreted by each zone M. Describe the synthesis, secretion, transport, mechanism of action,	K	K H	Y	Lecture, Small group discussion	Written/Viva voce	06.02.20/ Thu/ 09:30-10:30am 07.02.20/ Fri/ 08:30-09:30am And 11:30-12:30pm 11.02.20/ Tue/09:30-10:30am 12.02.20/ Wed/ 08:30-10:30am 13.02.20/ Thu/ 09:30-10:30am 14.02.20/ Fri/ 08:30-	10hrs	

		physiological actions and regulation of secretion of aldosterone and cortisol N. List the causes, features, and treatment of Addison's disease, Cushing syndrome, Hyperaldosteronism and virilism O. Describe the synthesis, secretion, transport, mechanism of action, physiological actions and regulation of secretion of adrenal medullary hormones P. List the causes, features, and treatment of Phaeochromocytoma Q. Describe the synthesis, secretion, transport, mechanism of action, physiological actions and regulation of secretion of insulin and glucagon R. Give the normal plasma glucose value. Discuss about the glucose homeostasis S. List the causes, clinical features, complications and treatment of diabetes mellitus. Give the manifestations of hypoglycaemia						09:30am And 11:30-12:30pm 18.02.20/ Tue/09:30 -10:30am		
PY8.3	Describe the physiology of Thymus & Pineal Gland	A. Name the hormone secreted by thymus. Describe the physiological anatomy and functions of thymus. B. Name the hormone secreted by thymus. Describe the physiological anatomy and functions of pineal gland	K	K H	Y	Lecture, Small group discussion	Written/Viva voce	19.02.20/ Wed/ 08:30-10:30am	2hr	
PY8.4	Describe function tests: Thyroid gland; Adrenal cortex, Adrenal medulla and pancreas	A. List the thyroid function tests B. Describe the tests done to diagnose the conditions caused by hyper and hypo secretion of adrenal cortical and medullary hormones C. Describe the tests done to diagnose diabetes mellitus	K	K H	Y	Lecture, Small group discussion	Written/Viva voce	13.02.20/ Thu/ 09:30-10:30am 14.02.20/ Fri/ 08:30-09:30am And 11:30-12:30pm		Biochemistry

								18.02.20/ Tue/09:30 -10:30am		
PY8.5	Describe the metabolic and endocrine consequences of obesity & metabolic syndrome, Stress response. Outline the psychiatry component pertaining to metabolic syndrome.	A. Define metabolic syndrome B. List the components of metabolic syndrome C. Give the causes and consequences of obesity D. Define stress and describe the phases in response of the body to stress (General Adaptation Syndrome) **E.** Describe the psychiatric component pertaining to metabolic syndrome	K	K H	Y	Lecture, Small group discussion	Written/Viva voce	19.02.20/ Wed/ 08:30-10:30am	2hr	
PY8.6	Describe & differentiate the mechanism of action of steroid, protein and amine hormones	A. Classify hormones and give examples. B. Give the location of receptors for each type of hormone C. Describe and differentiate the mechanism of action of each type of hormone D. List the second messengers and give their significance	K	K H	Y	Lecture, Small group discussion	Written/Viva voce	20.02.20/ Thu/ 09:30-10:30am	1hr	
Topic: Reproductive Physiology										
PY9.1	Describe and discuss sex determination; sex differentiation and their abnormities and outline psychiatry and practical implication of sex determination.	A. Describe the physiology of Sex Determination B. Discuss Sex Differentiation on the basis of Gonadal, Genital & Psychological differentiation C. Discuss the Disorders of Sexual development D. Discuss the practical implications of sex determination	K	K H	Y	Lecture, Small group discussion	Written/Viva voce	21.02.20/ Fri/ 08:30-09:30am	1hr	Human Anatomy
PY9.2	Describe and discuss puberty: onset, progression, stages; early and delayed puberty and outline adolescent clinical and psychological association.	A. Define Puberty B. Describe the onset and progression of puberty C. Explain the stages of puberty D. Define early and delayed puberty E. Describe the adolescent clinical and psychological association of puberty	K	K H	Y	Lecture, Small group discussion	Written/Viva voce	25.02.20/ Tue/09:30 -10:30am	1hr	

PY9.3	Describe male reproductive system: functions of testis and control of spermatogenesis & factors modifying it and outline its association with psychiatric illness	A. Explain the Functional Anatomy of male reproductive system B. List the functions of Sertoli cells C. List the functions of testis D. Describe the stages of Spermatogenesis and the factors regulating it E. Discuss the association of spermatogenesis with psychiatric illness	K	K H	Y	Lecture, Small group discussion	Written/Viva voce	26.02.20/ Wed/ 08:30-10:30am	2hrs	
PY9.4	Describe female reproductive system: (a) functions of ovary and its control; (b) menstrual cycle - hormonal, uterine and ovarian changes	A. Describe the Physiological Anatomy of female reproductive system and list the functions of each part B. Define Oogenesis and explain the steps of oogenesis C. List the functions of ovary and mechanisms of control of ovarian functions D. Explain with the help of suitable diagrams the phases of Ovarian Cycle E. Describe with the help of a diagram, the uterine, ovarian and hormonal changes in menstrual cycle	K	K H	Y	Lecture, Small group discussion	Written/Viva voce	27.02.20/ Thu/ 09:30-10:30am 28.02.20/ Fri/ 08:30-09:30am And 11:30-12:30pm 03.03.20/ Tue/09:30-10:30am	4hrs	
PY9.5	Describe and discuss the physiological effects of sex hormones	A. List the Ovarian Hormones B. Explain the Functions of Ovarian Hormones C. Describe the functions of testosterone	K	K H	Y	Lecture, Small group discussion	Written/Viva voce	04.03.20/ Wed/ 08:30-09:30am	1hr	
PY9.6	Enumerate the contraceptive methods for male and female. Discuss their advantages & disadvantages	A. Discuss the Classification of Contraceptive methods for male and female B. Compare the advantages and disadvantages of the different types of contraceptive methods	K	K H	Y	Lecture, Small group discussion	Written/Viva voce	04.03.20/ Wed/ 09:30-10:30am	1hr	Obstetrics & Gynaecology, Community Medicine
PY9.7	Describe and discuss the effects of removal of gonads on physiological functions	A. Discuss the effects of removal of gonads on physiological functions	K	K H	Y	Lecture, Small group discussion	Written/Viva voce	05.03.20/ Thu/ 09:30-10:30am	1hr	

PY9.8	Describe and discuss the physiology of pregnancy, parturition & lactation and outline the psychology and psychiatry-disorders associated with it.	A. Discuss the importance of physiology of pregnancy B. Explain the mechanism and stages of parturition C. Discuss the physiological mechanism of lactation D. List out the psychological and psychiatric disorders associated with it	K	K H	Y	Lecture, Small group discussion	Written/Viva voce	06.03.20/ Fri/ 08:30-09:30am	1hr	Obstetrics & Gynaecology
PY9.9	Interpret a normal semen analysis report including (a) sperm count, (b) sperm morphology and (c) sperm motility, as per WHO guidelines and discuss the results	A. Discuss the normal semen analysis of a report on the basis of sperm count, sperm morphology B. and sperm motility in accordance with the WHO guidelines and interpretation of the results	K	K H	Y	Lecture, Small group discussion	OSPE/Viva voce	10.03.20/ Tue/09:30 -10:30am	1hr	
PY9.10	Discuss the physiological basis of various pregnancy tests	Discuss the physiological basis of Pregnancy diagnostic tests	K	K H	Y	Lecture, Small group discussion	Written/Viva voce	11.03.20/ Wed/ 08:30-09:30am	1hr	Obstetrics & Gynaecology
PY9.11	Discuss the hormonal changes and their effects during perimenopause and menopause	A. Describe the hormonal changes during perimenopause and explain the physiological changes B. Describe the mechanism of onset of menopause and explain the physiological changes	K	K H	Y	Lecture, Small group discussion	Written/Viva voce	11.03.20/ Wed/ 09:30-10:30am	1hr	Obstetrics & Gynaecology
PY9.12	Discuss the common causes of infertility in a couple and role of IVF in managing a case of infertility.	A. List the causes of infertility in a couple B. Discuss the role of Assisted methods of Reproduction like IVF in managing infertility	K	K H	Y	Lecture, Small group discussion	Written/Viva voce	12.03.20/ Thu/ 09:30-10:30am	1hr	Obstetrics & Gynaecology
Topic: Neurophysiology										
PY10.1	Describe and discuss the organization of nervous system	A. Describe the physiological role of Nervous system B. List the divisions of Central nervous system C. Enumerate the functions of different components of central nervous system	K	K H	Y	Lecture, Small group discussion	Written/Viva voce	13.03.20/ Fri/ 08:30-09:30am	1hr	Human Anatomy

		D. List the divisions of Peripheral nervous system E. Describe the cellular components of the CNS F. Tabulate the different glial cells and their functions G. Draw a neuron and label its parts								
PY10.2	Describe and discuss the functions and properties of synapse, reflex, receptors	A. Define synapse B. Draw a labeled diagram of synapse C. Classify synapse based on different criteria D. List the properties of synapse E. Contrast the generation and conduction of graded potentials (EPSP and IPSP) with those of action potentials. F. Describe the mechanism of transmission across the synapse G. Describe synaptic inhibition H. Describe synaptic facilitation I. Define Reflex J. List the components of reflex arc K. Draw a labelled diagram of reflex arc L. Classify reflexes bases on different criteria M. Explain the importance of withdrawal reflex N. Explain the role of gamma motor neurons on stretch reflexes and muscle tone O. Define receptors P. Classify the receptors Q. Explain the mechanism of development of receptor potential R. List the properties of receptors S. Describe the steps in sensory transduction and action potential generation at a mechanoreceptor and at a nociceptor. T. Determine the relationship between afferent neuronal firing frequency and perception of a stimulus using the Weber-Fechner Law.	K	K H	Y	Lecture, Small group discussion	Written/Viva voce	13.03.20/ Fri/ 08:30-09:30am And 11:30-12:30pm	2hrs	Human Anatomy

		U. Explain the law of projection V. Define the concept of dermatome W. Explain the dermatomal organization of the human body in a projected diagram X. Correlate the relation between receptive field and sensory discrimination								
PY10.3	Describe and discuss somatic sensations & sensory tracts	A. Classify sensations B. List the components of sensory system C. Describe the properties of different sensations and the receptors concerned with the appreciation of those sensations D. Elucidate the arrangement of neurons in ascending pathways E. Classify the ascending tracts F. Describe the submodalities of somatic sensibility subserved by the Dorsal Column Medial Lemniscus system and by the spino-thalamic system. G. Trace the Dorsal column pathway H. Trace the Antero-lateral pathway I. Trace the trigeminal pathway J. Trace the spinocerebellar pathway K. Tabulate the differences between medial lemniscal system and anterolateral pathway L. Define Pain M. Classify pain N. Trace the pain pathways O. Define Referred pain and cite suitable examples P. Elucidate the theories of referred pain Q. Describe the modulation of pain at the level of receptor, spinal cord and cerebral cortex R. Draw a labelled diagram of the nuclei of thalamus S. Discuss the role of thalamus as the relay center T. List the functions of thalamus U. List the clinical features of Thalamic	K	K H	Y	Lecture, Small group discussion	Written/Viva voce	17.03.20/ Tue/09:30 -10:30am 18.03.20/ Wed/ 08:30-10:30am	2hrs	Human Anatomy

		syndrome V. Explain the organization of body parts in sensory homunculus W. Describe the functions of somatosensory cortex and association areas X. Explain the physiological basis of trigeminal neuralgia Y. Define the terms anaesthesia, paraesthesia, dissociated anaesthesia								
PY10.4	Describe and discuss motor tracts, mechanism of maintenance of tone, control of body movements, posture and equilibrium & vestibular apparatus	A. Describe the functions of somatic motor system B. Describe the components of motor system C. Elucidate the organization of motor system D. Elucidate the hierarchical control of various components of central nervous system over the execution of a voluntary activity E. Draw a schematic diagram representing muscle spindle and its innervations F. Define muscle tone G. Explain the importance of muscle spindle and Golgi tendon organ in motor physiology H. Describe the role of gamma motor neuron in the control of muscle tone I. Discuss the role of higher centers in the regulation of muscle tone J. Differentiate between Upper motor neuron and lower motor neuron K. Explain the medial and lateral motor system L. Describe the origin, course and termination of the corticospinal tract M. List the functions of corticospinal tract N. List and correlate the effect of lesions at different levels of the corticospinal tract O. Classify the extrapyramidal pathways P. Describe the extrapyramidal system pathways and their functions	K	K H	Y	Lecture, Small group discussion	Written/Viva voce	18.03.20/ Wed/ 08:30-10:30am 19.03.20/ Thu/ 09:30-10:30am 20.03.20/ Fri/ 08:30-09:30am And 11:30-12:30pm 24.03.20/ Tue/09:30-10:30am	6hrs	Human Anatomy

		Q. List the differences between corticospinal and extrapyramidal pathways R. Elucidate the organization of body parts in motor homunculus S. Classify postural reflexes T. List the postural reflexes integrated at different levels of neuraxis U. Describe the features in spinal, decerebrate, midbrain and decorticate presentations V. Explain the mechanism of decerbrate rigidity W. Explain the mechanism of regulation of posture and movement X. Describe the three dimensional structure of membranous labyrinth Y. Differentiate semicircular canals and otolith organs Z. Explain the mechanism of activation hair cells in the semicircular canals and otolith organs AA. Trace the vestibular pathway BB. Describe the physiology of optokinetic reflexes CC. Describe the neural mechanism of vestibular nystagmus DD. Identify the tests for vestibular function								
PY10.5	Describe and discuss structure and functions of reticular activating system, autonomic nervous system (ANS)	A. Describe the functional organization of brainstem reticular formation B. Elucidate the importance of Reticular activating system in body physiology C. List the components ad functions of descending reticular formation D. List the functions of ascending reticular activating system E. Correlate the functions of reticular activating system with its clinical implications F. Describe the components of autonomic nervous system	K	K H	Y	Lecture, Small group discussion	Written/Viva voce	25.03.20/ Wed/ 08:30-10:30am	2hrs	Human Anatomy

		G. Define and contrast the pre ganglionic and post ganglionic autonomic neurons H. Describe the contribution of ANS to homeostasis I. List the neurotransmitters and receptors of the sympathetic and parasympathetic nervous system J. Compare and contrast the functions of sympathetic and parasympathetic nervous system K. Describe the signs and symptoms of autonomic dysfunction L. List the autonomic function tests and their clinical significance								
PY10.6	Describe and discuss Spinal cord, its functions, lesion & sensory disturbances	A. Describe the organization of the spinal cord B. Appreciate the arrangement of afferent and efferent neurons in the spinal cord C. List the spinal cord laminae. D. Draw a labelled diagram of cross section of spinal cord E. List the causes for spinal cord lesions F. Explain the sensory, motor and autonomic changes in complete transection of spinal cord. G. Explain the sensory, motor and autonomic changes in incomplete transection of spinal cord. H. Explain the sensory, motor and autonomic changes in hemisection of spinal cord. I. Differentiate UMN and LMN lesion J. Describe the clinical features of Tabes dorsalis K. Describe the clinical features of Syringomyelia L. Describe the clinical features of Subacute degeneration of spinal cord	K	K H	Y	Lecture, Small group discussion	Written/Viva voce	26.03.20/ Thu/ 09:30-10:30am 27.03.20/ Fri/ 08:30-09:30am	2hrs	Human Anatomy

PY10.7	Describe and discuss functions of cerebral cortex, basal ganglia, thalamus, hypothalamus, cerebellum and limbic system and their abnormalities	<u>Cerebral cortex</u> <u>Basal ganglia</u> A. List the nuclei of basal ganglia B. Describe the components of Basal ganglia C. Describe the connections of Basal ganglia D. Describe the functions of Basal ganglia E. Describe the causes of Parkinsons disease F. Describe the Physiological basis of clinical features of Parkinsons disease G. Discuss the treatment for Parkinsons disease H. Define chorea I. Define Athetosis J. Define ballism <u>Thalamus</u> A. Classify the thalamic nuclei B. Describe the functions of thalamus C. Correlate the functions of thalamus with thalamic syndrome <u>Hypothalamus</u> A. Classify the hypothalamic nuclei B. Describe the connections of hypothalamus C. Describe the functions of hypothalamus <u>Cerebellum</u> A. Draw a schematic diagram depicting the divisions of cerebellum B. Describe the divisions of cerebellum C. Describe the structure of cerebellum D. Describe the connections of cerebellum E. Describe the functions of cerebellum F. List the features of cerebellar disorder G. Describe the physiological basis of clinical features of cerebellar disorder H. Examine the cerebellar function in the given subject	K	K H	Y	Lecture, Small group discussion	Written/Viva voce	27.03.20/ Fri/ 11:30-12:30pm 31.03.20/ Tue/09:30-10:30am 01.04.20/ Wed/ 08:30-10:30am 02.04.20/ Thu/ 09:30-10:30am 03.04.20/ Fri/ 08:30-09:30am And 11:30-12:30pm 07.04.20/ Tue/09:30-10:30am 08.04.20/ Wed/ 08:30-10:30am	10hrs	Psychiatry Human Anatomy

		Limbic system A. Name the components of limbic system B. Name the components of papez circuit C. Describe the functions of limbic system D. Explain the Physiological basis of limbic dysfunction								
PY10.8	Describe and discuss behavioural and EEG characteristics during sleep and mechanism responsible for its production	A. Describe the normal EEG pattern B. Describe the clinical significance of EEG C. Describe the Physiological changes that occur in sleep D. Differentiate REM and NREM sleep E. Describe the mechanism of sleep F. Describe the sleep disorders	K	K H	Y	Lecture, Small group discussion	Written/Viva voce	09.04.20/ Thu/ 09:30-10:30am 14.04.20/ Tue/09:30 -10:30am	2hrs	Psychiatry
PY10.9	Describe and discuss the physiological basis of memory, learning and speech	Memory A. List the types of memory B. Name the brain areas involved in different types of memory C. Describe the mechanism of memory D. Explain the physiological basis of abnormalities of memory Learning A. Define learning B. Describe the Physiological basis of learning C. Name the brain areas involved in different types of learning D. Describe the mechanism of learning E. Explain the physiological basis of abnormalities of learning Speech A. Describe the development of speech B. Name the speech centers in the brain C. Describe the mechanism of expressive and written speech D. List the types of Aphasias E. Describe the different types of Aphasias	K	K H	Y	Lecture, Small group discussion	Written/Viva voce	15.04.20/ Wed/ 08:30-10:30am 16.04.20/ Thu/ 09:30-10:30am	3hrs	Psychiatry

PY10.10	Describe and discuss chemical transmission in the nervous system. (Outline the psychiatry element).	A. Define synapse B. Classify the different types of synapse C. Describe the mechanism of transmission across the synapse D. Describe synaptic inhibition E. Describe synaptic facilitation F. Describe synaptic plasticity G. Name the excitatory and inhibitory neurotransmitters	K	K H	Y	Lecture, Small group discussion	Written/Viva voce	17.04.20/ Fri/ 08:30-09:30am	1hr	
PY10.11	Demonstrate the correct clinical examination of the nervous system: Higher functions, sensory system, motor system, reflexes, cranial nerves in a normal volunteer or simulated environment	<u>Higher functions</u> A. Examine the coordination of movements in the upper limbs B. Examine the coordination of movements in the lower limbs C. Describe the different types of abnormal gaits D. Describe the different types of involuntary movements. <u>Sensory system</u> A. Describe the importance of sensory system examination in Clinical Physiology B. Classify different sensations and receptors C. Draw the sensory map of the body D. Elicit all sensory sensations E. Trace the dorsal column pathway F. Trace the Anterolateral system G. Correlate the clinical findings with abnormalities if present H. To perform the sensory system in the given subject <u>Motor system and Reflexes</u> A. Describe the importance of motor system examination in Clinical Physiology B. Measure the bulk of the muscles C. Grade the strength of various individual and groups of muscles D. Assess the tone of flexors and extensors at various joints. E. Elicit superficial and deep reflexes	S	P	Y	DOAP sessions	Skill assessment/ Viva voce/OSCE	25.03.20 26.03.20 30.03.20 31.03.20 01.04.20 02.04.20 06.04.20 07.04.20 08.04.20 09.04.20 13.04.20 14.04.20 15.04.20 16.04.20 20.04.20 21.04.20 22.04.20 23.04.20 27.04.20 28.04.20 29.04.20 30.04.20 04.04.20 05.04.20 06.04.20 07.04.20 11.04.20 12.04.20 13.04.20 14.04.20 18.04.20	16 hr	Human Anatomy

		F. Name the descending motor pathways G. Trace the pathway of corticospinal tract H. List the differences between UMN and LMN lesion I. Name the conditions associated with alteration in bulk, tone and strength of the muscles <u>Cranial nerves</u> A. List the cranial nerves B. List the functions of all cranial nerves C. Describe the importance of cranial nerve examination in Clinical Physiology D. Perform clinical examination of all the cranial nerves in the given subject E. Explain the abnormalities observed following lesions of the cranial nerves F. List the differences between supra- and infra-nuclear palsy of the 7^{th} and 12^{th} cranial nerves						19.04.20		
PY10.12	Identify normal EEG forms	A. Name the EEG waves B. Explain the mechanism of genesis of EEG waves C. Identify the normal EEG forms from the given charts.	S	S	Y	Small group teaching	OSPE/Viva voce	21.04.20/ Tue/09:30 -10:30am	1hr	Psychiatry
PY10.13	Describe and discuss perception of smell and taste sensation	<u>Smell</u> A. Describe the importance of examination of smell in Clinical Physiology B. Name the cranial nerve that carries smell sensation C. Examine the smell sensation in the given subject **D.** Define the terms: Anosmia, Hyposmia and parosmia **E.** Trace the smell pathway <u>Taste</u> A. Describe the importance of examination of taste in Clinical Physiology B. Name the primary tastes C. Draw the tongue representing the	K	K H	Y	Lecture, Small group discussion	Written/Viva voce	22.04.20/ Wed/ 08:30-09:30am	1hr	ENT

		distribution of various taste receptors D. Name the cranial nerve that carries taste sensation E. Examine the taste sensation in the given subject **F.** Trace the taste pathway G. Define the terma: Aguesia, Dysguesia								
PY10.14	Describe and discuss patho-physiology of altered smell and taste sensation	A. Trace the pathway of smell B. Trace the pathway of taste C. Describe the patho-physiology of altered smell sensation D. Describe the patho-physiology of altered taste sensation	K	K H	Y	Lecture, Small group discussion	Written/Viva voce	22.04.20/ Wed/ 09:30-10:30am	1hr	ENT
PY10.15	Describe and discuss functional anatomy of ear and auditory pathways & physiology of hearing	A. Describe the functional anatomy of ear B. Trace the auditory pathway C. Explain the conduction of sound waves D. Explain the mechanism of hearing and discuss the theories of hearing E. With the help of a neat diagram, explain the organ of Corti	K	K H	Y	Lecture, Small group discussion	Written/Viva voce	23.04.20/ Thu/ 09:30-10:30am 24.04.20/ Fri/ 08:30-09:30am And 11:30-12:30pm 28.04.20/ Tue/09:30-10:30am	4hr	ENT
PY10.16	Describe and discuss pathophysiology of deafness. Describe hearing tests	A. Discuss the patho-physiology of deafness B. Explain the tests for hearing C. Discuss the clinical implications of audiometry	K	K H	Y	Lecture, Small group discussion	Written/Viva voce	29.04.20 Wed/ 08:30-09:30am	1hr	ENT
PY10.17	Describe and discuss functional anatomy of eye, physiology of image formation, physiology of vision including colour vision, refractive errors,	A. Describe the functional anatomy of the eye B. Explain the image forming mechanism C. Discuss the physiology of vision D. Describe the colour vision and explain the theories of colour vision E. Discuss colour blindness	K	K H	Y	Lecture, Small group discussion	Written/Viva voce	29.04.20 / Wed/ 09:30-10:30am 30.04.20/ Thu/	6hr	Ophthalmology

	colour blindness, physiology of pupil and light reflex	F. Discuss the errors of refraction G. Describe the physiology of pupillary and light reflex H. Discuss about light and dark adaptation						09:30-10:30am 05.05.20/ Tue/09:30 -10:30am 06.05.20/ Wed/ 08:30-10:30am		
PY10.18	Describe and discuss the physiological basis of lesion in visual pathway	A. Trace the visual pathway B. Explain the physiological basis of lesion in visual pathway and its defects	K	K H	Y	Lecture, Small group discussion	Written/Viva voce	07.05.20/ Thu/ 09:30-10:30am	1hr	Ophthalmology
PY10.19	Describe and discuss auditory & visual evoke potentials	A. potential and explain the significance of waves in BERA B. Describe auditory C. Describe visual evoked potentials and its clinical implications	K	K H	Y	Lecture, Small group discussion	Written/Viva voce	08.05.20/ Fri/ 08:30-09:30am	1hr	Ophthalmology
PY10.20	Demonstrate (i) Testing of visual acuity, colour and field of vision and (ii) hearing (iii) Testing for smell and (iv) taste sensation in volunteer/ simulated environment	A. Demonstrate the testing for visual acuity using snellen's chart for distant vision B. Demonstrate the testing for visual acuity using jaegar's chart for near vision C. Demonstrate the assessment ofcolour vision using ishihara chart D. Demonstrate to assess the field of vision E. Perform and interpret the turning fork tests for hearing F. Demonstrate how to distinguish conductive and sensorineural deafness by turning fork tests G. Examine the sensations of smell using appropriate tests H. Examine the sensations of taste using appropriate tests	S	P	Y	DOAP sessions	Skill assessment/ Viva voce	20.04.20 21.04.20 25.04.20 26.04.20	2hr	ENT, Ophthalmology
Topic: Integrated Physiology										

PY11.1	Describe and discuss mechanism of temperature regulation	List the factors affecting body temperature and describe the mechanism of temperature regulation	K	K H	Y	Lecture, Small group discussion	Written/Viva voce	12.05.20/ Tue/09:30 -10:30am	2hrs	
PY11.2	Describe and discuss adaptation to altered temperature (heat and cold)	Explain the process of adaptation in hot and cold environment	K	K H	Y	Lecture, Small group discussion	Written/Viva voce	13.05.20/ Wed/ 08:30-09:30am		
PY11.3	Describe and discuss mechanism of fever, cold injuries and heat stroke	A. Describe the mechanism of heat loss from the body during fever B. Discuss the mechanism of heat preservation in the body during cold injuries C. Explain the cause of heat stroke and discuss the management of heat stroke	K	K H	Y	Lecture, Small group discussion	Written/Viva voce			
PY11.4	Describe and discuss cardio-respiratory and metabolic adjustments during exercise; physical training effects	A. Describe the cardio-respiratory changes during exercise B. Discuss the metabolic adjustments during exercise C. List the benefits of physical training	K	K H	Y	Lecture, Small group discussion	Written/Viva voce	13.05.20/ Wed/ 09:30-10:30am	2hrs	
PY11.5	Describe and discuss physiological consequences of sedentary lifestyle	A. Discuss the physiological consequences of sedentary Lifestyle	K	K H	Y	Lecture, Small group discussion	Written/Viva voce	14.05.20/ Thu/ 09:30-10:30am		
PY11.6	Describe physiology of Infancy	A. Describe physiology of Infancy	K	K H	N	Lecture, Small group discussion	Written/Viva voce	15.05.20/ Fri/ 08:30-09:30am And 11:30-12:30pm	2hrs	Pediatrics
PY11.7	Describe and discuss physiology of aging; free radicals and antioxidants	B. List the physiological changes during aging C. Define free radicals and explain their role in oxidative stress D. Discuss the beneficial effects of antioxidants	K	K H	N	Lecture, Small group discussion	Written/Viva voce	19.05.20/ Tue/09:30 -10:30am	1hr	
PY11.8	Discuss & compare cardio-respiratory changes in exercise (isometric and isotonic) with that in the	A. Compare the cardio-respiratory changes in isometric exercise and isotonic exercise during resting state B. Compare the cardio-respiratory changes	K	K H	Y	Lecture, Small group discussion	Written/Viva voce	13.05.20/ Wed/ 14.05.20/		

	resting state and under different environmental conditions (heat and cold)	under hot and cold environmental conditions						Thu/ 09:30-10:30am		
PY11.9	Interpret growth charts	Discuss the different growth charts and factors that regulate growth	K	K H	N	Small group teaching	Practical/OSPE/ Viva voce	15.05.20/ Fri/		Pediatrics
PY11.10	Interpret anthropometric assessment of infants	Discuss the importance of assessment of anthropometric parameters in infants	K	K H	N	Small group teaching	Practical/OSPE/ Viva voce			Pediatrics
PY11.11	Discuss the concept, criteria for diagnosis of Brain death and its implications	A. Define brain death B. List the criteria for diagnosis of brain death C. Discuss the implications of brain death	K	K H	Y	Lecture, Small group discussion	Written/Viva voce	20.05.20/ Wed/ 08:30-09:30am	1hr	
PY11.12	Discuss the physiological effects of meditation	Define meditation and list the physiological effects of meditation	K	K H	N	Lecture, Small group discussion	Written/Viva voce	20.05.20/ Wed/ 09:30-10:30am	1hr	
PY11.13	Obtain history and perform general examination in the volunteer / simulated environment	A. Compile the case history in the given volunteer B. Demonstrate the general examination in the given volunteer / simulated environment	S	S H	Y	DOAP sessions	Skill assessment/ Viva voce	21.05.20/ Thu/ 09:30-10:30am	2hr	
PY11.14	Demonstrate Basic Life Support in a simulated environment	C. Demonstrate basic life support measures in the given simulated environment D. Discuss the importance of CPR E. Discuss the importance of first aid measures in a hospital set up	S	S H	Y	DOAP sessions	OSCE	22.05.20/ Fri/ 08:30-09:30am And 11:30-12:30pm	2hr	General Medicine, Anaesthesiology