

<b>Number</b>	<b>COMPETENCY</b> <b>The student should be able to:</b>	<b>Domain</b> <b>K/S/A/C</b>	<b>Level</b> <b>K/KH/</b> <b>SH/P</b>	<b>Core</b> <b>(Y/N)</b>
PY1.1	Describe the structure and functions of a mammalian cell	K	KH	Y
PY1.2	Describe and discuss the principles of homeostasis	K	KH	Y
PY1.3	Describe intercellular communication	K	KH	Y
PY1.4	Describe apoptosis – programmed cell death	K	KH	Y
PY1.5	Describe and discuss transport mechanisms across cell membranes	K	KH	Y
PY1.6	Describe the fluid compartments of the body, its ionic composition & measurements	K	KH	Y
PY1.7	Describe the concept of pH & Buffer systems in the body	K	KH	Y
PY1.8	Describe and discuss the molecular basis of resting membrane potential and action potential in excitable tissue	K	KH	Y
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.	K	KH	Y
PY2.1	Describe the composition and functions of blood components	K	KH	Y
PY2.2	Discuss the origin, forms, variations and functions of plasma proteins	K	KH	Y
PY2.3	Describe and discuss the synthesis and functions of Haemoglobin and explain its breakdown. Describe variants of haemoglobin	K	KH	Y
PY2.4	Describe RBC formation (erythropoiesis & its regulation) and its functions	K	KH	Y
PY2.5	Describe different types of anaemias & Jaundice	K	KH	Y
PY2.6	Describe WBC formation (granulopoiesis) and its regulation	K	KH	Y
PY2.7	Describe the formation of platelets, functions and variations.	K	KH	Y
PY2.8	Describe the physiological basis of hemostasis and, anticoagulants. Describe bleeding & clotting disorders (Hemophilia, purpura)	K	KH	Y

PY2.9	Describe different blood groups and discuss the clinical importance of blood grouping, blood banking and transfusion	K	KH	Y
PY2.10	Define and classify different types of immunity. Describe the development of immunity and its regulation	K	KH	Y
PY2.11	Estimate Hb, RBC, TLC, RBC indices, DLC, Blood groups, BT/CT	S	SH	Y
PY2.12	Describe test for ESR, Osmotic fragility, Hematocrit. Note the findings and interpret the test results etc	K	KH	Y
PY2.13	Describe steps for reticulocyte and platelet count	K	KH	Y
PY3.1	Describe the structure and functions of a neuron and neuroglia; Discuss Nerve Growth Factor & other growth factors/cytokines	K	KH	Y
PY3.2	Describe the types, functions & properties of nerve fibers	K	KH	Y
PY3.3	Describe the degeneration and regeneration in peripheral nerves	K	KH	Y
PY3.4	Describe the structure of neuro-muscular junction and transmission of impulses	K	KH	Y
PY3.5	Discuss the action of neuro-muscular blocking agents	K	KH	Y
PY3.6	Describe the pathophysiology of Myasthenia gravis	K	KH	Y
PY3.7	Describe the different types of muscle fibres and their structure	K	KH	Y
PY3.8	Describe action potential and its properties in different muscle types (skeletal & smooth)	K	KH	Y
PY3.9	Describe the molecular basis of muscle contraction in skeletal and in smooth muscles	K	KH	Y
PY3.10	Describe the mode of muscle contraction (isometric and isotonic)	K	KH	Y
PY3.11	Explain energy source and muscle metabolism	K	KH	Y
PY3.12	Explain the gradation of muscular activity	K	KH	Y
PY3.13	Describe muscular dystrophy: myopathies	K	KH	Y
PY3.14	Perform Ergography	S	SH	Y
PY3.15	Demonstrate effect of mild, moderate and severe exercise and record changes in cardiorespiratory parameters	S	SH	Y

PY3.16	Demonstrate Harvard Step test and describe the impact on induced physiologic parameters in a simulated environment	S	SH	Y
PY3.17	Describe Strength-duration curve	K	KH	Y
PY3.18	Observe with Computer assisted learning (i) amphibian nerve - muscle experiments (ii) amphibian cardiac experiments	S	KH	Y
PY4.1	Describe the structure and functions of digestive system	K	KH	Y
PY4.2	Describe the composition, mechanism of secretion, functions, and regulation of saliva, gastric, pancreatic, intestinal juices and bile secretion	K	KH	Y
PY4.3	Describe GIT movements, regulation and functions. Describe defecation reflex. Explain role of dietary fibre.	K	KH	Y
PY4.4	Describe the physiology of digestion and absorption of nutrients	K	KH	Y
PY4.5	Describe the source of GIT hormones, their regulation and functions	K	KH	Y
PY4.6	Describe the Gut-Brain Axis	K	KH	Y
PY4.7	Describe & discuss the structure and functions of liver and gall bladder	K	KH	Y
PY4.8	Describe & discuss gastric function tests, pancreatic exocrine function tests & liver function tests	K	KH	Y
PY4.9	Discuss the physiology aspects of: peptic ulcer, gastro-oesophageal reflux disease, vomiting, diarrhoea, constipation, Adynamic ileus, Hirschsprung's disease	K	KH	Y
PY4.10	Demonstrate the correct clinical examination of the abdomen in a normal volunteer or simulated environment	S	SH	Y
PY5.1	Describe the functional anatomy of heart including chambers, sounds; and Pacemaker tissue and conducting system.	K	KH	Y
PY5.2	Describe the properties of cardiac muscle including its morphology, electrical, mechanical and metabolic functions	K	KH	Y
PY5.3	Discuss the events occurring during the cardiac cycle	K	KH	Y
PY5.4	Describe generation, conduction of cardiac impulse	K	KH	Y
PY5.5	Describe the physiology of electrocardiogram (E.C.G), its applications and the cardiac axis	K	KH	Y
PY5.6	Describe abnormal ECG, arrhythmias, heart block and myocardial Infarction	K	KH	Y

PY5.7	Describe and discuss haemodynamics of circulatory system	K	KH	Y
PY5.8	Describe and discuss local and systemic cardiovascular regulatory mechanisms	K	KH	Y
PY5.9	Describe the factors affecting heart rate, regulation of cardiac output & blood pressure	K	KH	Y
PY5.10	Describe & discuss regional circulation including microcirculation, lymphatic circulation, coronary, cerebral, capillary, skin, foetal, pulmonary and splanchnic circulation	K	KH	Y
PY5.11	Describe the patho-physiology of shock, syncope and heart failure	K	KH	Y
PY5.12	Record blood pressure & pulse at rest and in different grades of exercise and postures in a volunteer or simulated environment	S	SH	Y
PY5.13	Record and interpret normal ECG in a volunteer or simulated environment	S	SH	Y
PY5.14	Observe cardiovascular autonomic function tests in a volunteer or simulated environment	S	SH	N
PY5.15	Demonstrate the correct clinical examination of the cardiovascular system in a normal volunteer or simulated environment	S	SH	Y
PY5.16	Record Arterial pulse tracing using finger plethysmography in a volunteer or simulated environment	S	SH	N
PY6.1	Describe the functional anatomy of respiratory tract	K	KH	Y
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	K	KH	Y
PY6.3	Describe and discuss the transport of respiratory gases: Oxygen and Carbon dioxide	K	KH	Y
PY6.4	Describe and discuss the physiology of high altitude and deep sea diving	K	KH	Y
PY6.5	Describe and discuss the principles of artificial respiration, oxygen therapy, acclimatization and decompression sickness.	K	KH	Y
PY6.6	Describe and discuss the pathophysiology of dyspnoea, hypoxia, cyanosis asphyxia; drowning, periodic breathing	K	KH	Y
PY6.7	Describe and discuss lung function tests & their clinical significance	K	KH	Y
PY6.8	Demonstrate the correct technique to perform & interpret Spirometry	S	SH	Y
PY6.9	Demonstrate the correct clinical examination of the respiratory system in a normal volunteer or simulated environment	S	P	Y

PY6.10	Demonstrate the correct technique to perform measurement of peak expiratory flow rate in a normal volunteer or simulated environment	S	SH	Y
PY7.1	Describe structure and function of kidney	K	KH	Y
PY7.2	Describe the structure and functions of juxta glomerular apparatus and role of renin-angiotensin system	K	KH	Y
PY7.3	Describe the mechanism of urine formation involving processes of filtration, tubular reabsorption & secretion; concentration and diluting mechanism	K	KH	Y
PY7.4	Describe & discuss the significance & implication of Renal clearance	K	KH	Y
PY7.5	Describe the renal regulation of fluid and electrolytes & acid-base balance	K	KH	Y
PY7.6	Describe the innervations of urinary bladder, physiology of micturition and its abnormalities	K	KH	Y
PY7.7	Describe artificial kidney, dialysis and renal transplantation	K	KH	Y
PY7.8	Describe & discuss Renal Function Tests	K	KH	Y
PY7.9	Describe cystometry and discuss the normal cystometrogram	K	KH	Y
PY8.1	Describe the physiology of bone and calcium metabolism	K	KH	Y
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	K	KH	Y
PY8.3	Describe the physiology of Thymus & Pineal Gland	K	KH	Y
PY8.4	Describe function tests: Thyroid gland; Adrenal cortex, Adrenal medulla and pancreas	K	KH	Y
PY8.5	Describe the metabolic and endocrine consequences of obesity & metabolic syndrome, Stress response. Outline the psychiatry component pertaining to metabolic syndrome.	K	KH	Y
PY8.6	Describe & differentiate the mechanism of action of steroid, protein and amine hormones	K	KH	Y
PY9.1	Describe and discuss sex determination; sex differentiation and their abnormalities and outline psychiatry and practical implication of sex determination.	K	KH	Y
PY9.2	Describe and discuss puberty: onset, progression, stages; early and delayed puberty and outline adolescent clinical and psychological association.	K	KH	Y

PY9.3	Describe male reproductive system: functions of testis and control of spermatogenesis & factors modifying it and outline its association with psychiatric illness	K	KH	Y
PY9.4	Describe female reproductive system: (a) functions of ovary and its control; (b) menstrual cycle - hormonal, uterine and ovarian changes	K	KH	Y
PY9.5	Describe and discuss the physiological effects of sex hormones	K	KH	Y
PY9.6	Enumerate the contraceptive methods for male and female. Discuss their advantages & disadvantages	K	KH	Y
PY9.7	Describe and discuss the effects of removal of gonads on physiological functions	K	KH	Y
PY9.8	Describe and discuss the physiology of pregnancy, parturition & lactation and outline the psychology and psychiatry-disorders associated with it.	K	KH	Y
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	K	KH	Y
PY9.10	Discuss the physiological basis of various pregnancy tests	K	KH	Y
PY9.11	Discuss the hormonal changes and their effects during perimenopause and menopause	K	KH	Y
PY9.12	Discuss the common causes of infertility in a couple and role of IVF in managing a case of infertility.	K	KH	Y
PY10.1	Describe and discuss the organization of nervous system	K	KH	Y
PY10.2	Describe and discuss the functions and properties of synapse, reflex, receptors	K	KH	Y
PY10.3	Describe and discuss somatic sensations & sensory tracts	K	KH	Y
PY10.4	Describe and discuss motor tracts, mechanism of maintenance of tone, control of body movements, posture and equilibrium & vestibular apparatus	K	KH	Y
PY10.5	Describe and discuss structure and functions of reticular activating system, autonomic nervous system (ANS)	K	KH	Y
PY10.6	Describe and discuss Spinal cord, its functions, lesion & sensory disturbances	K	KH	Y
PY10.7	Describe and discuss functions of cerebral cortex, basal ganglia, thalamus, hypothalamus, cerebellum and limbic system and their abnormalities	K	KH	Y
PY10.8	Describe and discuss behavioural and EEG characteristics during sleep and mechanism responsible for its production	K	KH	Y

PY10.9	Describe and discuss the physiological basis of memory, learning and speech	K	KH	Y
PY10.10	Describe and discuss chemical transmission in the nervous system. (Outline the psychiatry element).	K	KH	Y
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	S	P	Y
PY10.12	Identify normal EEG forms	S	S	Y
PY10.13	Describe and discuss perception of smell and taste sensation	K	KH	Y
PY10.14	Describe and discuss patho-physiology of altered smell and taste sensation	K	KH	Y
PY10.15	Describe and discuss functional anatomy of ear and auditory pathways & physiology of hearing	K	KH	Y
PY10.16	Describe and discuss pathophysiology of deafness. Describe hearing tests	K	KH	Y
PY10.17	Describe and discuss functional anatomy of eye, physiology of image formation, physiology of vision including colour vision, refractive errors, colour blindness, physiology of pupil and light reflex	K	KH	Y
PY10.18	Describe and discuss the physiological basis of lesion in visual pathway	K	KH	Y
PY10.19	Describe and discuss auditory & visual evoke potentials	K	KH	Y
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	S	P	Y
PY11.1	Describe and discuss mechanism of temperature regulation	K	KH	Y
PY11.2	Describe and discuss adaptation to altered temperature (heat and cold)	K	KH	Y
PY11.3	Describe and discuss mechanism of fever, cold injuries and heat stroke	K	KH	Y
PY11.4	Describe and discuss cardio-respiratory and metabolic adjustments during exercise; physical training effects	K	KH	Y
PY11.5	Describe and discuss physiological consequences of sedentary lifestyle	K	KH	Y
PY11.6	Describe physiology of Infancy	K	KH	N
PY11.7	Describe and discuss physiology of aging; free radicals and antioxidants	K	KH	N

PY11.8	Discuss & compare cardio-respiratory changes in exercise (isometric and isotonic) with that in the resting state and under different environmental conditions (heat and cold)	K	KH	Y
PY11.9	Interpret growth charts	K	KH	N
PY11.10	Interpret anthropometric assessment of infants	K	KH	N
PY11.11	Discuss the concept, criteria for diagnosis of Brain death and its implications	K	KH	Y
PY11.12	Discuss the physiological effects of meditation	K	KH	N
PY11.13	Obtain history and perform general examination in the volunteer / simulated environment	S	SH	Y
PY11.14	Demonstrate Basic Life Support in a simulated environment	S	SH	Y

**Column C: K- Knowledge, S – Skill, A - Attitude / professionalism, C- Communication. Column F: DOAP session – Demonstrate, Observe, Assess, Perform**  
**Column H: If entry is P: indicate how many procedures must be done independently for certification**



<b>Suggested Teaching Learning method</b>	<b>Suggested Assessment method</b>	<b>Vertical Integration</b>	<b>Horizontal Integration</b>
Lecture, Small group discussion	Written/Viva voce		
Lecture, Small group discussion	Written/Viva voce		
Lecture, Small group discussion	Written/Viva voce		
Lecture, Small group discussion	Written/Viva voce	Pathology	
Lecture, Small group discussion	Written/Viva voce		
Lecture, Small group discussion	Written/Viva voce		Biochemistry
Lecture, Small group discussion	Written/Viva voce		Biochemistry
Lecture, Small group discussion	Written/Viva voce		
Lecture, Small group discussion	Written/Viva voce		
Lecture, Small group discussion	Written/Viva voce		
Lecture, Small group discussion	Written/Viva voce		Biochemistry
Lecture, Small group discussion	Written/Viva voce		Biochemistry
Lecture, Small group discussion	Written/Viva voce		
Lecture, Small group discussion	Written/Viva voce	Pathology	Biochemistry
Lecture, Small group discussion	Written/Viva voce		
Lecture, Small group discussion	Written/Viva voce		
Lecture, Small group discussion	Written/Viva voce	Pathology	

Lecture, Small group discussion, ECE- Visit to blood bank	Written/Viva voce	Pathology	
Lecture, Small group discussion	Written/Viva voce		
DOAP sessions	Practical/OSPE /Viva voce	Pathology	
Demonstration	Written /Viva voce	Pathology	
Demonstration sessions	Written /Viva voce	Pathology	
Lecture, Small group discussion	Written/Viva voce		Human Anatomy
Lecture, Small group discussion	Written/Viva voce		
Lecture, Small group discussion	Written/Viva voce	General Medicine	
Lecture, Small group discussion	Written/Viva voce	Anaesthesiology	
Lecture, Small group discussion	Written/Viva voce	Anaesthesiology, Pharmacology	
Lecture, Small group discussion	Written/Viva voce	Pathology	
Lecture, Small group discussion	Written/Viva voce		Human Anatomy
Lecture, Small group discussion	Written/Viva voce		
Lecture, Small group discussion	Written/Viva voce		
Lecture, Small group discussion	Written/Viva voce		Biochemistry
Lecture, Small group discussion	Written/Viva voce	General Medicine	
Lecture, Small group discussion	Written/Viva voce	General Medicine	Human Anatomy
DOAP sessions	Practical/OSPE /Viva voce		
DOAP sessions	Practical/OSPE /Viva voce		

DOAP sessions	Practical/OSPE /Viva voce		
Lecture, Small group discussion	Written/Viva voce		
Demonstration, Computer assisted learning methods	Practical / Viva voce		
Lecture, Small group discussion	Written/Viva voce		Human Anatomy
Lecture, Small group discussion	Written/Viva voce		Biochemistry
Lecture, Small group discussion	Written/Viva voce		
Lecture, Small group discussion	Written/Viva voce		Biochemistry
Lecture, Small group discussion	Written/Viva voce		
Lecture, Small group discussion	Written/Viva voce		
Lecture, Small group discussion	Written/Viva voce		Biochemistry
Lecture, Small group discussion, Demonstration Esophageal Manometry & endoscopy	Written/Viva voce		Biochemistry
Lecture, Small group discussion	Written/Viva voce	General Medicine	Biochemistry
DOAP session	Skill assessment/ Viva		
Lecture, Small group discussion	Written/Viva voce		Human Anatomy
Lecture, Small group discussion	Written/Viva voce		
Lecture, Small group discussion	Written/Viva voce		
Lecture, Small group discussion	Written/Viva voce		
Lecture, Small group discussion	Written/Viva voce	General Medicine	
Lecture, Small group discussion	Written/Viva voce	General Medicine	Human Anatomy

Lecture, Small group discussion	Written/Viva voce		
Lecture, Small group discussion	Written/Viva voce		
Lecture, Small group discussion	Written/Viva voce		
Lecture, Small group discussion	Written/Viva voce	General Medicine	
Lecture, Small group discussion	Written/Viva voce		
DOAP sessions	Practical/OSPE / Viva voce		
DOAP sessions	Practical/OSPE / Viva voce	General Medicine	
DOAP sessions	Skill assessment/ Viva voce		
DOAP sessions	Practical/OSPE / Viva voce		
DOAP sessions, Computer assisted learning methods	Practical/OSPE / Viva voce	General Medicine	
Lecture, Small group discussion	Written/Viva voce		
Lecture, Small group discussion	Written/Viva voce		
Lecture, Small group discussion	Written/Viva voce		
Lecture, Small group discussion	Written/Viva voce		
Lecture, Small group discussion	Written/Viva voce		
Lecture, Small group discussion	Written/Viva voce		
Lecture, Small group discussion	Written/Viva voce		
DOAP sessions	Skill assessment/ Viva voce	Respiratory Medicine	
DOAP sessions	Skill assessment/ Viva voce		

DOAP sessions	Practical/OSPE / Viva voce		
Lecture, Small group discussion	Written/Viva voce		
Lecture, Small group discussion	Written/Viva voce		
Lecture, Small group discussion	Written/Viva voce		
Lecture, Small group discussion	Written/Viva voce		
Lecture, Small group discussion	Written/Viva voce		
Lecture, Small group discussion	Written/Viva voce		
Lecture, Small group discussion	Written/Viva voce	General Medicine	
Lecture, Small group discussion	Written/Viva voce		Biochemistry
Lecture, Small group discussion	Written/Viva voce		
Lecture, Small group discussion	Written/Viva voce		
Lecture, Small group discussion	Written/Viva voce		
Lecture, Small group discussion	Written/Viva voce		
Lecture, Small group discussion	Written/Viva voce		Biochemistry
Lecture, Small group discussion	Written/Viva voce		
Lecture, Small group discussion	Written/Viva voce		
Lecture, Small group discussion	Written/Viva voce		Human Anatomy
Lecture, Small group discussion	Written/Viva voce		

Lecture, Small group discussion	Written/Viva voce		
Lecture, Small group discussion	Written/Viva voce		
Lecture, Small group discussion	Written/Viva voce		
Lecture, Small group discussion	Written/Viva voce	Obstetrics & Gynaecology, Community Medicine	
Lecture, Small group discussion	Written/Viva voce		
Lecture, Small group discussion	Written/Viva voce	Obstetrics & Gynaecology	
Lecture, Small group discussion	OSPE/Viva voce		
Lecture, Small group discussion	Written/Viva voce	Obstetrics & Gynaecology	
Lecture, Small group discussion	Written/Viva voce	Obstetrics & Gynaecology	
Lecture, Small group discussion	Written/Viva voce	Obstetrics & Gynaecology	
Lecture, Small group discussion	Written/Viva voce		Human Anatomy
Lecture, Small group discussion	Written/Viva voce		Human Anatomy
Lecture, Small group discussion	Written/Viva voce		Human Anatomy
Lecture, Small group discussion	Written/Viva voce		Human Anatomy
Lecture, Small group discussion	Written/Viva voce		Human Anatomy
Lecture, Small group discussion	Written/Viva voce		Human Anatomy
Lecture, Small group discussion	Written/Viva voce	Psychiatry	Human Anatomy
Lecture, Small group discussion	Written/Viva voce	Psychiatry	

Lecture, Small group discussion	Written/Viva voce	Psychiatry	
Lecture, Small group discussion	Written/Viva voce		
DOAP sessions	Skill assessment/Viva voce/OSCE		Human Anatomy
Small group teaching	OSPE/Viva voce	Psychiatry	
Lecture, Small group discussion	Written/Viva voce	ENT	
Lecture, Small group discussion	Written/Viva voce	ENT	
Lecture, Small group discussion	Written/Viva voce	ENT	
Lecture, Small group discussion	Written/Viva voce	ENT	
Lecture, Small group discussion	Written/Viva voce	Ophthalmology	
Lecture, Small group discussion	Written/Viva voce	Ophthalmology	
Lecture, Small group discussion	Written/Viva voce	Ophthalmology	
DOAP sessions	Skill assessment/Viva voce	ENT, Ophthalmology	
Lecture, Small group discussion	Written/Viva voce		
Lecture, Small group discussion	Written/Viva voce		
Lecture, Small group discussion	Written/Viva voce		
Lecture, Small group discussion	Written/Viva voce		
Lecture, Small group discussion	Written/Viva voce		
Lecture, Small group discussion	Written/Viva voce	Pediatrics	
Lecture, Small group discussion	Written/Viva voce		

Lecture, Small group discussion	Written/Viva voce		
Small group teaching	Practical/OSPE / Viva voce	Pediatrics	
Small group teaching	Practical/OSPE / Viva voce	Pediatrics	
Lecture, Small group discussion	Written/Viva voce		
Lecture, Small group discussion	Written/Viva voce		
DOAP sessions	Skill assessment/ Viva voce		
DOAP sessions	OSCE	General Medicine, Anaesthesiology	
<b>1 D: K – Knows, KH - Knows How, SH - Shows how, P-  . ication/ graduation</b>			