## Lesson Plan with Syllabus for PHYSIOLOGY (Hons.)- SEMESTER V (2022)

Tentative ,may subject to change:						
Months	Week	Paper	Chapter wise Syllabus Content (Theory &	No. of Lectures		
		-	Practical)	/Prof.		
August (From 16.08.22)	3 <sup>rd</sup> &	СС-11ТН	<b>Special Senses</b> Structure of eyeball. Histological details of retina, peripheral retina, fovea and blind spot. Retinal detachment.	2+2 (DD)		
	4 <sup>th</sup>		<b>Hearing:</b> Structure and functional significance of auditory apparatus. Organ of Corti. Auditory pathways and centers.	2+2 (AD)		
			Characteristics of special senses, Sensory Coding Weber- Fechner law, Steven's power law. <b>Olfaction and Gustation:</b> Structure and functions of the receptor organs.	2+2 ( UC)		
		CC-11P	Study and identification of stained sections of different mammalian tissues and organs:	(6+2) (TD+DD)		
		СС-12ТН	Endocrinology: Adrenal cortex and medulla Histological structure of the gland. Chemical	2+2 (DD)		
			nature, molecular mechanism of action Hypothalamus as a neuroendocrine organ.	2+2 (RM)		
		CC-12P	Study and identification of stained sections of different mammalian tissues and organs:	2+2 (TD+ AD) 2+2 (DD+ UC)		
		DSE A2TH	<b>Overview of innate and acquired immunity :</b> Elements of acquired immunity:Characteristics of immune response, cells and organs involved in immune esponse. <b>Immunogens and antigens :</b> Requirements of	2+2 (TD+RM) 2+2 (SC)		
		DSE B1TH	immunogenicity, epitopes recognized by B- & T- cells, haptens, adjuvants, cross-reactivity			
			Work, Exercise and Sports Physiology Definitions in work and exercise Physiology, Fundamental concepts of work; work characteristics, work cycle and work pauses. Different categories of work Different approaches to describe work and work load.	4+2 (TD)		

Tentative ,may subject to change:					
Months	Week	Paper	ChapterwiseSyllabusContent (Theory & Practical)	No. of	
				Lectures(Prof.)	
Sept., 2022	1st	СС-11ТН	Special Senses		
	100		Visual pathway and centers.	1 (DD)	
			<b>Hearing :</b> Mechanism of hearing – Excitation of Hair Cells <b>Olfaction and Gustation:</b> Structure and functions of the receptor organs, nerve pathways, Centers.	1+1 (AD) 1+1 (UC)	
		CC-11P	Study and identification of stained sections of different mammalian tissues and organs:	(2+2) (TD+ DD)	
			Endocrinology: Adrenal cortex and medulla –	1 (DD)	
		СС-12ТН	secretion of the hormones. Hypothalamus as a neuroendocrine organ.	1 (RM)	
		CC-12P	Study and identification of stained sections of different mammalian tissues and organs:	(2+2) (TD+ RM) (2+2) (RM+ UC)	
		DSE-A2TH	Microbiology & Immunology: Classification of microorganisms. Techniques employed for the identification of microorganisms microscopic and biochemical methods. Immunogens and antigens : Requirements of	1 (AD)	
			immunogenicity, epitopes recognized by B- & T- cells, haptens, adjuvants, cross-reactivity <b>Bacteriology :</b> Bacterial classification based on staining techniques (Gram stain and Acid-fast stain) and morphological aspect.	2 (SC) 1 (RM)	
		DSE-A2P	Gram staining of bacteria and identification of Gram positive and Gram negative bacteria.	2+2 (RM+AD)	
		DSE- B1TH	<b>Work, Exercise and Sports Physiology</b> <b>Physiological basis of work:</b> Physiology of muscle action Physical work load; Static and dynamic work	4 (TD)	
		DSE- B1P	Determination of BMI, BSA, PI, waist hip ratio.	(2+2) (TD+ UC)	

Tentative ,may subject to change:					
Months	Week	Paper	ChapterwiseSyllabusContent (Theory & Practical)	No. of	
				Lectures(Prof.)	
Sept., 2022	2 <sup>ND</sup>	CC-11TH	<b>Special Senses:</b> Effects of lesion in visual pathway. <b>Hearing :</b> Conversion of Sound Waves into Action	1 (DD)	
			Potentials in the Auditory Nerve	1(AD)	
			<b>Olfaction and Gustation:</b> Signal Transduction of olfactory and gustatory stimuli	1+1 (UC)	
		CC-11P	Study and identification of stained sections of different mammalian tissues and organs:	(2+2) (TD+ DD)	
		СС-12ТН	<b>Endocrinology:</b> Biosynthesis of catecholamines. Anterior and posterior pituitaryhistological structure of the gland.	1 (DD) 1 (RM)	
		CC-12P	Study and identification of stained sections of different mammalian tissues and organs:	(2+2) (TD+ RM) (2+2) (RM+ UC)	
		DSE- A2TH	<b>Control of microbial growth:</b> Physical and Chemical methods used in sterilization, disinfection and pasteurization	1 (AD)	
			Haptens, adjuvants, cross-reactivity. Antibody structure, classification and functions	2 (SC)	
			Bacterial structure :cell-wall, LPS layer, pili, flagella, chromosome, plasmid, spores and cysts.	1 (RM)	
		DSE A2P	Gram staining of bacteria and identification of Gram positive and Gram negative bacteria.	2+2 (RM+AD)	
		DSE B1TH	Work, Exercise and Sports Physiology: Physiological responses to static and dynamic work Relationship between oxygen consumption and heart rate Effect of heat stress on physiological responses to work load	4 (TD)	
		DSE-B1P	Determination of body fat percentage and body type	(2+2) (TD+ UC)	

Tentative ,may subject to change:						
Months	Week	Paper	ChapterwiseSyllabusContent (Theory & Practical)	No. of Lectures(Prof.)		
Sept., 2022	3 <sup>RD</sup>	CC-11TH	<b>Special Senses:</b> Mechanism of accommodation. Errors of refraction and their corrections.	1 (DD)		
			in the Auditory Nerve. Olfaction and Gustation: Signal Transduction of olfactory and gustatory stimuli	1(AD) 1+1 (UC)		
		CC-11P	Study and identification of stained sections of different mammalian tissues and organs: <b>Practical Exam will be taken.</b>	(2+2) (TD+ DD)		
		СС-12ТН	<b>Endocrinology: Adrenal cortex and medulla</b> Hypo- and hyperactive states of the gland	1 (DD)		
			Anterior and posterior pituitary Chemical nature, molecular mechanism of action, functions and regulation of secretion of their hormones.	1 (RM)		
		CC-12P	PAS staining of Liver	(2+2) (TD+ RM) (2+2) (RM+ UC)		
		DSE-A2TH	<b>Microbiology &amp; Immunology: Culture of bacteria :</b> Nutritional requirement – complex and synthetic media, preparation of media ; physical factors required for growth (temperature, pH and gaseous requirement)	1 (AD)		
			<b>Kinetics of antibody responses:</b> Primary & secondary. Antigen – antibody interactions - Primary interaction: association constant, affinity & avidity.	2 (SC)		
			<b>Bacterial metabolism:</b> Fermentation, Glyoxalate cycle and Entner-Doudoroff pathway.	1 (RM)		
		DSE-A2P	Determination of human blood group using immunological method	2+2 (RM+AD)		
		DSE- BITH	Work, Exercise and Sports Physiology: Work load assessment-Physiological assessment of work load, work load classification, cardiovascular and respiratory indices for evaluating work load. Acceptable work load.	4 (TD)		
		DSE- B1P	Determination of VO2max by Queen's College Test	(2+2) (TD+ UC)		

Tentative,	naysubje	ecttochange:		
Months	Week	Paper	ChapterwiseSyllabusContent (Theory & Practical)	No. of Lectures(Prof.)
Sept., 2022	4th	СС-11ТН	<b>Special Senses:</b> Mechanism of accommodation. Errors of refraction and their corrections. <b>Hearing:</b> Conversion of Sound Waves into Action Potentials in the Auditory Nerve. <b>Olfaction and Gustation:</b> Signal Transduction of olfactory and gustatory stimuli	1 (DD) 1(AD) 1+1 (UC)
		CC-11P	Study and identification of stained sections of different mammalian tissues and organs: <b>Practical Exam will be taken.</b>	(2+2) (TD+ DD)
		СС-12ТН	<b>Endocrinology: Adrenal cortex and medulla</b> Hypo- and hyperactive states of the gland	1 (DD)
			Anterior and posterior pituitary Chemical nature, molecular mechanism of action, functions and regulation of secretion of their hormones.	1 (RM)
		CC-12P	PAS staining of Liver	(2+2) (TD+ RM) (2+2) (RM+ UC)
		DSE-A2TH	<b>Microbiology &amp; Immunology: Culture of bacteria :</b> Nutritional requirement – complex and synthetic media, preparation of media ; physical factors required for growth (temperature, pH and gaseous requirement)	1 (AD)
			<b>Kinetics of antibody responses:</b> Primary & secondary. Antigen – antibody interactions - Primary interaction: association constant, affinity & avidity.	2 (SC)
			<b>Bacterial metabolism:</b> Fermentation, Glyoxalate cycle and Entner-Doudoroff pathway.	1 (RM)
		DSE-A2P	Determination of human blood group using immunological method	2+2 (RM+AD)
		DSE- B1TH	Work, Exercise and Sports Physiology: Work load assessment-Physiological assessment of work load, work load classification, cardiovascular and respiratory indices for evaluating work load. Acceptable work load.	4 (TD)
		DSE- B1P	Determination of VO2max by Queen's College Test	(2+2) (TD+ UC)

Tentative, may subject to change:						
Months	Week	Paper	ChapterwiseSyllabusContent (Theory & Practical)	No. of		
				Lectures(Prof.)		
Nov., 2022	1st	СС-11ТН	<b>Special Senses:</b> Formation and Circulation of Aqueous Humour. Cataract and Glaucoma. Photopic and scotopic vision.	1 (DD)		
			Hearing: Mechanism of discrimination of sound frequencies and intensities	1(AD)		
			Olfaction and Gustation: Olfactory and Gustatory Coding	1+1 (UC)		
		CC-11P	Study and identification of stained sections of different mammalian tissues and organs: <b>Practical Exam will be taken.</b>	(2+2) (TD+ DD)		
		СС-12ТН	<b>Endocrinology: Heart</b> as an endocrine organ. Anterior and posterior pituitary Hypo- and hyperactive states of the gland.	1 (DD)		
		CC 12B	<b>Pineal gland</b> – Histological structure. Chemical nature	1 (RM)		
		CC-12P	PAS staining of Liver	(2+2) (TD+ RM) (2+2) (RM+ UC)		
		DSE-A2TH	<b>Microbiology &amp; Immunology:</b> Bacterial growth curve different phases and their significance ; quantitative estimation of bacterial growth ; continuous growth culture and its utility.)	1 (AD)		
			Kinetics of antibody responses: Secondary interaction: precipitation & agglutination. B-cell receptor. MHC molecules :structure of class I and II molecules	2 (SC)		
			<b>Bacterial genetics:</b> Transformation, conjugation and transduction.	1 (RM)		
		DSE-A2P	Determination of human blood group using immunological method	2+2 (RM+AD)		
		DSE- B1TH	Work, Exercise and Sports Physiology: Fundamental concept of work organization. Principles of reducing stress from physical work load. Exercise, physical activity and physical fitness. Benefits of exercise Components of fitness and their evaluation	4 (TD)		
		DSE- B1P	Determination of physical fitness by modified Harvard step test	(2+2) (TD+ UC)		

Tentative,	Tentative, may subject to change:						
Months	Week	Paper	ChapterwiseSyllabusContent (Theory & Practical)	No. of			
				Lectures(Prof.)			
Nov., 2022	2nd	СС-11ТН	<b>Special Senses:</b> Chemical and electrical changes in retina on exposure to light. Visual processing in the retina. Positive and negative after- images. Contrast phenomenon.	1 (DD) 1(AD)			
			Hearing: Mechanism of discrimination of sound frequencies and intensities Olfaction and Gustation: Olfactory and Gustatory Coding Study and identification of stained sections of different mammalian tissues and organs:	1+1 (UC)			
		CC-11P	Study and identification of stained sections of different mammalian tissues and organs: <b>Practical Exam will be taken.</b>	(2+2) (TD+ DD)			
		СС-12ТН	<b>Endocrinology: Heart</b> as an endocrine organ. Anterior and posterior pituitary Hypo- and hyperactive states of the gland.	1 (DD)			
			<b>Pineal gland</b> – Histological structure. Chemical nature	1 (RM)			
		CC-12P	PAS staining of Liver	(2+2) (TD+ RM) (2+2) (RM+ UC)			
		DSE-A2TH	<b>Microbiology &amp; Immunology:</b> Bacterial growth curve different phases and their significance ; quantitative estimation of bacterial growth ; continuous growth culture and its utility.)	1 (AD)			
			<b>Kinetics of antibody responses:</b> Secondary interaction: precipitation & agglutination. B-cell receptor. <b>MHC</b> <b>molecules :</b> structure of class I and II molecules	2 (SC)			
			<b>Bacterial genetics:</b> Transformation, conjugation and transduction.	1 (RM)			
		DSE-A2P	Determination of human blood group using immunological method	2+2 (RM+AD)			
		DSE- B1TH	Work, Exercise and Sports Physiology: Fundamental concept of work organization. Principles of reducing stress from physical work load. Exercise, physical activity and physical fitness. Benefits of exercise Components of fitness and their evaluation	4 (TD)			
		DSE- B1P	Determination of physical fitness by modified Harvard step test	(2+2) (TD+ UC)			

Tentative,	Tentative, may subject to change:						
Months	Week	Paper	ChapterwiseSyllabusContent (Theory & Practical)	No. of			
				Lectures(Prof.)			
Nov., 2022	3rd	CC-11TH	Special Senses: Light and dark adaptation. Colour vision—	1 (DD)			
			Trichromatic, Single and Double Opponent mechanism. <b>Hearing:</b> Mechanism of discrimination of sound frequencies and intensities	1(AD)			
			<b>Olfaction and Gustation:</b> Olfactory and Gustatory Coding Study and identification of stained sections of different mammalian tissues and organs:	1+1 (UC)			
		CC-11P	Practical Exam will be taken.	(2+2) (TD+ DD)			
		СС-12ТН	<b>Endocrinology:</b> Thyroid and Parathyroid Histological structure of the glands. Chemical nature, molecular mechanism of action, functions and regulation of secretion of the hormones. Hypo- and hyperactive states of the glands	1 (RM)			
			Adrenal cortex and medulla Histological structure of the gland.	1 (DD)			
		CC12P	PAS staining of Liver	(2+2) (TD+ RM) (2+2) (RM+ UC)			
		DSE-A2TH	<b>Microbiology &amp; Immunology:</b> Bacterial growth curve different phases and their significance ; quantitative estimation of bacterial growth ; continuous growth culture and its utility.)	1 (AD)			
			Kinetics of antibody responses: Secondary interaction: precipitation & agglutination. B-cell receptor. MHC molecules :structure of class I and II molecules	2 (SC)			
			<b>Bacterial genetics:</b> Transformation, conjugation and transduction.	1 (RM)			
		DSE-A2P	Determination of human blood group using immunological method	2+2 (RM+AD)			
		DSE- B1TH	Work, Exercise and Sports Physiology: Physical Working Capacity Concept of maximal physical working capacity VO2 max, and its estimation by different methods. Factors affecting VO2max. Step test, bicycle ergometry and treadmill exercise for assessment of Physical working capacity	4 (TD)			
		DSE- B1P	Determination of physical fitness by modified Harvard step test	(2+2) (TD+ UC)			

Tentative,	Tentative, may subject to change:					
Months	Week	Paper	ChapterwiseSyllabusContent (Theory & Practical)	No. of		
				Lectures(Prof.)		
Nov., 2022	4th	CC-11TH	Special Senses: Light and dark adaptation. Colour vision—	1 (DD)		
			Trichromatic, Single and Double Opponent mechanism.	1(1)		
			<b>Hearing:</b> Mechanism of discrimination of sound frequencies	I(AD)		
			<b>Olfaction and Custation:</b> Olfactory and Gustatory Coding			
			Study and identification of stained sections of different	1+1 (UC)		
			mammalian tissues and organs:			
		CC-11P	Practical Exam will be taken.	(2+2) (TD+ DD)		
		СС-12ТН	<b>Endocrinology:</b> Thyroid and Parathyroid Histological structure of the glands. Chemical nature, molecular mechanism of action, functions and regulation of secretion of the hormones. Hypo- and hyperactive states of the glands.	1 (RM)		
			Adrenal cortex and medulla Chemical nature, molecular mechanism of action, functions and regulation of secretion of the hormones.	1 (DD)		
		CC12P	PAS staining of Liver	(2+2) (TD+ RM) (2+2) (RM+ UC)		
		DSE-A2TH	<b>Microbiology &amp; Immunology:</b> Food microbiology :Beneficial and harmful microorganisms in food, causative organisms of food-borne infections-	1 (AD)		
			<b>Bacterial metabolism</b> : Fermentation, Glyoxalate cycle and EntnerDoudoroff pathway. Antigen processing and presentation: T-cell receptor. T-	2 (SC)		
			cell maturation and differentiation - thymic selection in brief. B-cell activation & differentiation : thymus dependent and independent antibodies, T-B co-operation, the carrier effect	1 (RM)		
		DSE-A2P	Determination of human blood group using immunological method	2+2 (RM+AD)		
		DSE- B1TH	Work, Exercise and Sports Physiology: Physical Working Capacity Concept of maximal physical working capacity VO2 max, and its estimation by different methods. Factors affecting VO2max. Step test, bicycle ergometry and treadmill exercise for assessment of Physical working capacity	4 (TD)		
		DSE- B1P	Determination of physical fitness by modified Harvard step test	(2+2) (TD+ UC)		

Tentative,	Tentative, may subject to change:					
Months	Week	Paper	ChapterwiseSyllabusContent (Theory & Practical)	No. of		
				Lectures(Prof.)		
Dec., 2022	1st	СС-11ТН	<ul> <li>Special Senses: Light and dark adaptation. Colour vision— Trichromatic, Single and Double Opponent mechanism.</li> <li>Olfaction and Gustation: Olfactory and Gustatory Coding Study and identification of stained sections of different mammalian tissues and organs:</li> </ul>	1 (DD) 1+1 (UC)		
		CC-11P	Practical Exam will be taken.	(2+2) (TD+ DD)		
		СС-12ТН	<b>Endocrinology:</b> Biosynthesis of catecholamines. Hypo- and hyperactive states of the gland.	1 (DD)		
		CC12P	PAS staining of Liver	(2+2) (TD+ RM) (2+2) (RM+ UC)		
		DSE-A2TH	<b>Microbiology &amp; Immunology:</b> Food microbiology :Beneficial and harmful microorganisms in food, causative organisms of food-borne infections- mode of	1+1 (AD)		
			<b>Bacterial metabolism</b> : Fermentation, Glyoxalate cycle and EntnerDoudoroff pathway. Antigen processing and presentation: T-cell receptor, T-	2 (SC)		
			cell maturation and differentiation - thymic selection in brief. B-cell activation & differentiation : thymus dependent and independent antibodies, T-B co-operation, the carrier effect	1+1 (RM)		
		DSE-A2P	Determination of human blood group using immunological method	2+2 (RM+AD)		
		DSE- B1TH	Work, Exercise and Sports Physiology: Physical Working Capacity Concept of maximal physical working capacity VO2 max, and its estimation by different methods. Factors affecting VO2max. Step test, bicycle ergometry and treadmill exercise for assessment of Physical working capacity	4 (TD)		
		DSE- B1P	Determination of physical fitness by modified Harvard step test	(2+2) (TD+ UC)		

Tentative,	Tentative, may subject to change:					
Months	Week	Paper	ChapterwiseSyllabusContent (Theory & Practical)	No. of		
				Lectures(Prof.)		
Dec., 2022	2nd	СС-11ТН	<b>Special Senses:</b> Colour blindness. Visual field perimetry. Visual acuity – measurement, mechanism and factors affecting.	1 (DD)		
			<b>Hearing:</b> Localization of sound source. Deafness. <b>Olfaction and Gustation:</b> Olfactory and Gustatory Coding	1(AD)		
			Study and identification of stained sections of different mammalian tissues and organs:	1+1 (UC)		
		CC-11P	Practical Exam will be taken.	(2+2) (TD+ DD)		
		СС-12ТН	<b>Endocrinology:</b> Pancreatic islets Histological structure. Chemical nature, molecular mechanism of action, functions and regulation of secretion of the hormones. Hormonal control of blood sugar. Hyperinsulinism and diabetes mellitus	1 (DD)		
		CC12P	PAS staining of Liver	(2+2) (TD+ RM) (2+2) (RM+ UC)		
		DSE-A2TH	Microbiology & Immunology: Food microbiology :Beneficial and harmful microorganisms in food, causative organisms of food-borne infections- mode of transmission and methods of prevention. Bacterial metabolism: Fermentation, Glyoxalate cycle and	1 (AD)		
			EntnerDoudoroff pathway. Antigen processing and presentation: Cytokines :Produced by TH1 & TH2 cells, regulating specific immune response only.	2 (SC) 1+1 (RM)		
		DSE-A2P	Determination of human blood group using immunological method	2+2 (RM+AD)		
		DSE- B1TH	Work, Exercise and Sports Physiology: Bioenergetics Work power and energy, sources of energy. Aerobic and anaerobic capacity, EPOC, lactate threshold and lactate tolerance and their limitations. Determination of energy cost by direct and indirect methods Athletic performance based on aerobic capacity and O2 debt	4 (TD)		
		DSE- B1P	Determination of physical fitness by modified Harvard step test	(2+2) (TD+ UC)		

Tentative, may subject to change:						
Months	Week	Paper	ChapterwiseSyllabusContent (Theory & Practical)	No. of		
				Lectures(Prof.)		
Dec., 2022	3rd	СС-11ТН	<b>Special Senses:</b> Colour blindness. Visual field perimetry. Visual acuity – measurement, mechanism and factors affecting.	1 (DD)		
			Hearing: Localization of sound source. Deafness. Olfaction and Gustation: Olfactory and Gustatory Coding	1(AD)		
			Study and identification of stained sections of different mammalian tissues and organs:	1+1 (UC)		
		CC-11P	Study and identification of stained sections of different mammalian tissues and organs:	(2+2) (TD+ DD)		
		СС-12ТН	<b>Endocrinology:</b> Pancreatic islets Histological structure. Chemical nature, molecular mechanism of action, functions and regulation of secretion of the hormones. Hormonal control of blood sugar. Hyperinsulinism and diabetes mellitus	1 (DD)		
			PAS staining of Liver	(2+2) (TD+ RM) (2+2) (RM+ UC)		
		CC12P		(2+2) (((()+0)))		
		DSE-A2TH	<b>Microbiology &amp; Immunology: Food microbiology</b> mode of transmission and methods of prevention	1 (AD)		
			<b>Treatment of bacterial infection</b> : Chemotherapeutic agents. antibiotics- definition, bactericidal and bacteriostatic and their mechanism of action.	2 (SC)		
			Antigen processing and presentation: Complement :Activation components – classical, alternative and lectin. Biological consequence of complement activation. Cell-mediated effector responses : CTLS, NK cells, K cells.	1+1 (RM)		
		DSE-A2P	Determination of human blood group using immunological method	2 +2 (RM+AD)		
		DSE- B1TH	Work, Exercise and Sports Physiology: Training Principles Training principles, different training methods. Training principles for different sports activities. Over training and detraining and their physiological effects. Ergogenic aids	4 (TD)		
		DSE- B1P	Determination of physical fitness by modified Harvard step test	(2+2) (TD+ UC)		

Tentative,	Tentative, may subject to change:					
Months	Week	Paper	ChapterwiseSyllabusContent (Theory & Practical)	No. of		
				Lectures(Prof.)		
Jan., 2023	1st	СС-11ТН	Special Senses: Critical fusion frequencyFerry-Porter law.	1 (DD)		
			<b>Olfaction and Gustation:</b> Abnormalities of olfactory and taste sensation.	1+1 (UC)		
		CC-11P	Study and identification of stained sections of different mammalian tissues and organs: <b>REVISION</b>	(2+2)(10+00)		
		СС-12ТН	<b>Endocrinology:</b> Gastro-intestinal hormones Chemical nature, molecular mechanism olfaction, functions and regulation of secretion of the hormones.	1 (DD)		
		CC12P	PAS staining of Liver	(2+2) (TD+ RM) (2+2) (RM+ UC)		
		DSE-A2TH	<b>Microbiology &amp; Immunology: Food microbiology</b> mode of transmission and methods of prevention	1+1 (AD)		
			<b>Treatment of bacterial infection</b> : Chemotherapeutic agents. antibiotics- definition, bactericidal and bacteriostatic and their mechanism of action.	2 (SC)		
			Antigen processing and presentation: Brief idea of autoimmunity, cancer immunotherapy and AIDS. Hypersensitivity reactions and their types Vaccination :Passive and active immunization, types and uses of vaccine. Toxins and toxoids. Hybridoma technology	1+1 (RM)		
		DSE-A2P	Determination of human blood group using immunological method	2+2 (RM+AD)		
		DSE- B1TH	Work, Exercise and Sports Physiology: Body composition Determination of Physical growth status. Methodologies for body composition analysis.	4 (TD)		
		DSE- B1P	Determination of physical fitness by modified Harvard step test	(2+2) (TD+ UC)		

Tentative,	Tentative, may subject to change:					
Months	Week	Paper	ChapterwiseSyllabusContent (Theory & Practical)	No. of		
				Lectures(Prof.)		
Jan.,	2nd	CC-11TH	Special Senses: Critical fusion frequencyFerry-Porter law.	1 (DD)		
2023			<b>Olfaction and Gustation:</b> Abnormalities of olfactory and taste sensation.	1+1 (UC)		
		CC-11P	Study and identification of stained sections of different mammalian tissues and organs: <b>Practical Exam will be taken.</b>	(2+2)(1D+DD) 1 (DD)		
		СС-12ТН	<b>Endocrinology:</b> Gastro-intestinal hormones Chemical nature, molecular mechanism olfaction, functions and regulation of secretion of the hormones.	1 (DD)		
		CC12P	PAS staining of Liver	(2+2) (TD+ RM) (2+2) (RM+ UC)		
		DSE-A2TH	<b>Microbiology &amp; Immunology: Food microbiology</b> mode of transmission and methods of prevention. REVISION	1+1 (AD)		
			<b>Treatment of bacterial infection</b> : Chemotherapeutic agents. antibiotics- definition, bactericidal and bacteriostatic and their mechanism of action.	2 (SC)		
			Antigen processing and presentation: Brief idea of autoimmunity, cancer immunotherapy and AIDS. Hypersensitivity reactions and their types Vaccination :Passive and active immunization, types and uses of vaccine. Toxins and toxoids. Hybridoma technology	1+1 (RM)		
		DSE-A2P	Determination of human blood group using immunological method	2+2 (RM+AD)		
		DSE- B1TH	Work, Exercise and Sports Physiology: Body composition Determination of Physical growth status. Methodologies for body composition analysis.	4 (TD)		
		DSE- B1P	Determination of physical fitness by modified Harvard step test	(2+2) (TD+ UC)		

Tentative,	maysubje	cttochange:		
Months	Week			
			INTERNAL ASSESSMENT (notified 03-12-22)	
			08-12-2022 CC11 AND CC-12 10-12-2022 DSE A2 TH AND DSE B1TH	

## University of Calcutta Undergraduate Curriculum under Choice Based Credit System (CBCS) Lesson Plan with Syllabus for PHYSIOLOGY (General) - SEMESTER V (2022)

Tentative, m	Tentative, may subject to change:					
Months	Week	Paper	ChapterwiseSyllabusContent (Theory & Practical)	No. of Lectures(Prof.)		
August (From 16.08.22)	3 <sup>rd</sup> & 4th	DSEA2TH	Haematology Erythropoietin and thrombopoietin Blood groups - ABO and Rh	[2+2 (RA)] X 2 2 (SC) X 2		

Tentative, may subject to change:					
Months	Week	Paper	ChapterwiseSyllabusContent (Theory & Practical)	No. of Lectures(Prof.)	
September	1 <sup>st</sup> &	DSEA2T	Haematology		
2022		Н	Erythropoietin and thrombopoietin	[2+2 (RA)] X 2	
	2nd				
			Blood groups - ABO and Rh	2 (SC) X 2	

Tentative, may	Tentative, may subject to change:					
Months	Week	Paper	ChapterwiseSyllabusContent (Theory & Practical)	No. of Lectures(Prof.)		
September 2022	3 <sup>rd</sup> & 4 <sup>th</sup>	DSEA2T H	Haematology Foetal haemoglobin.Abnormal haemoglobins - thalassaemia and sickle-cell anaemia	2 +2 (RA)		
		DSEA2P	DC of WBC	4+4 (RA +SC)		

Tentative, may	subjecttoch	ange:		
Months	Week	Paper	ChapterwiseSyllabusContent (Theory & Practical)	No. of Lectures(Prof.)
November 2022	1 <sup>st</sup> & 2 <sup>nd</sup>	DSEA2T H	Haematology Foetal haemoglobin.Abnormal haemoglobins - thalassaemia and sickle-cell anaemia	2 +2 (RA)
		DSEA2P	Estimation of haemoglobin	4+4 (RA +SC)

Tentative, may	subjecttoch	ange:		
Months	Week	Paper	ChapterwiseSyllabusContent (Theory & Practical)	No. of Lectures(Prof.)
November 2022	3 <sup>rd</sup> & 4 <sup>th</sup>	DSEA2T H	Haematology Definition, determination and significance of TC, DC, ESR, Arneth count.	2 +2 (RA)
			Estimation of haemoglobin, Blood group determination	4+4 (RA +SC)
		DSEA2P		

Tentative, may	subjecttocl	nange:		
Months	Week	Paper	ChapterwiseSyllabusContent (Theory & Practical)	No. of Lectures(Prof.)
December 2022	1 <sup>st</sup> & 2 <sup>nd</sup>	DSEA2T H	Haematology Definition, determination and significance of TC, DC, ESR, Arneth count.	2 +2 (RA)
		DSEA2P	Bleeding time and Clotting time.	4+4 (RA +SC)

Tentative, may	Centative, may subject to change:					
Months	Week	Paper	ChapterwiseSyllabusContent (Theory & Practical)	No. of Lectures(Prof.)		
December 2022	3 <sup>rd</sup>	DSEA2T H	Haematology Definition, determination and significance of PCV, MCV, MHC, MCHC	2 (RA)		
		DSEA2P	Bleeding time and Clotting time.	2+2 (RA +SC)		

Tentative, may	entative, may subject to change:					
Months	Week	Paper	ChapterwiseSyllabusContent (Theory & Practical)	No. of Lectures(Prof.)		
January 2023	1 <sup>st</sup> &2 <sup>nd</sup>	DSEA2T H	Haematology Definition, determination and significance of PCV, MCV, MHC, MCHC	2 (RA)		
		DSEA2P	Bleeding time and Clotting time.	2+2 (RA +SC)		

Tentative,m	Pentative, may subject to change:				
Months	Week				
		INTERNAL ASSESSMENT (notified 03-12-22) 12-12-2022 DSE A2 TH AND DSE B1TH			

## University of Calcutta Undergraduate Curriculum under Choice Based Credit System (CBCS) Lesson Plan with Syllabus for PHYSIOLOGY (Hons.)- SEMESTER III (2022)

Months	Week	Paper	Chapter wise Syllabus Content (Theory & Practical)	No. of Lectures /Prof.
August (From 16.08.22)	3 <sup>rd</sup> & 4 <sup>th</sup>	СС-5ТН	Physiology of Blood and Body Fluids Bone marrow: Formed elements of blood–origin, formation, functions and fate. Plasma proteins Origin and functions. Erythropoiesis Role of erythropoietin and leucopoiesis	2+2 (SC)
			<b>Hemostasis</b> :Factors, mechanism, anticoagulants, procoagulants.	1+1 (DD)
		СС-6ТН	<b>Cardiovascular System</b> Anatomy of the heart. Properties of cardiac muscle. Origin and propagation of cardiac impulse. Heart Block.	2+2 (TD)
		СС7ТН	<b>Respiratory System</b> Anatomy and histology of the lung and airways. Compliance of lungs and chest wall, pressure-volume relationships, alveolar surface tension and surfactant, work of breathing.	2+2 (AD) 1+1 ( UC)
		SEC A1	Blood groups - ABO and Rh. Immunological basis of identification of ABO and Rh blood groups	1+1 (SC)
		SECAI	Glycemic index , Glycated haemoglobin, C peptide C- reactive protein	(עט)

Tentative	Tentative ,may subject to change:						
Months	Week	Paper	Chapter wise Syllabus Content (Theory &	No. of Lectures			
			Practical)	/Prof.			
Sep., 2022	1st	СС-5ТН	<b>Physiology of Blood and Body Fluids Bone marrow</b> : Plasma proteins Origin and functions. Erythropoiesis Role of erythropoietin and leucopoiesis	2 (SC)			
			<b>Hemostasis</b> :Factors, mechanism, anticoagulants, procoagulants.	1 (DD)			
		CC-5P	Preparation and staining of blood film with Leishman's stain. Identification of blood cells	(2+2) (AD+UC)			
		СС-6ТН	<b>Cardiovascular System</b> Anatomy of the heart. Properties of cardiac muscle. Origin and propagation of cardiac impulse. Heart Block.	2 (TD)			
		CC6P	Determination of Blood pressure by Auscultatory Method. Determination of mean pressure, pulse pressure and pulse rate.	(2+2) (RM+DD)			
		СС7ТН	<b>Respiratory System</b> Mechanics of breathing :Role of respiratory muscles, glottis	2 (AD)			
			Compliance of lungs and chest wall, pressure-volume relationships, alveolar surface tension and surfactant, work of breathing.	2 ( UC)			
		CC7P	Pneumographic recording of effects of hyperventilation,	(2+2)(TD+DD)			
		SEC A1	Blood groups - ABO and Rh. Immunological basis of identification of ABO and Rh blood groups	1 (SC)			
			Glycemic index , Glycated haemoglobin, C peptide C-reactive protein	1 (DD)			

Tentative	Tentative ,may subject to change:						
Months	Week	Paper	Chapter wise Syllabus Content (Theory & Practical)	No. of Lectures /Prof.			
Sep., 2022	2nd	СС-5ТН	<b>Physiology of Blood and Body Fluids Bone marrow</b> : Formed elements of blood–origin, formation, functions and fate. Plasma proteins Origin and functions. Erythropoiesis Role of erythropoietin and leucopoiesis	2 (SC)			
			<b>Hemostasis</b> :Factors, mechanism, anticoagulants, procoagulants.	1 (DD)			
		CC-5P	Preparation and staining of blood film with Leishman's stain. Identification of blood cells	(2+2) (AD+UC)			
		СС-6ТН	<b>Cardiovascular System</b> Anatomy of the heart. Properties of cardiac muscle. Origin and propagation of cardiac impulse. Heart Block.	2 (TD)			
		CC6P	Determination of Blood pressure by Auscultatory Method. Determination of mean pressure, pulse pressure and pulse rate.	(2+2) (RM+DD)			
		СС7ТН	<b>Respiratory System</b> Anatomy and histology of the lung and airways. Mechanics of breathing :Role of respiratory muscles, glottis	2 (AD)			
		CC7P	Compliance of lungs and chest wall, pressure-volume relationships, alveolar surface tension and surfactant, work of breathing.	2 ( UC)			
		cen	Pneumographic recording of effects of hyperventilation,	(2+2)(TD+DD)			
		SEC A1	Blood groups - ABO and Rh. Immunological basis of identification of ABO and Rh blood groups	1 (SC)			
			Glycemic index , Glycated haemoglobin, C peptide C-reactive protein	1 (DD)			

Tentative ,may subject to change:						
Months	Week	Paper	Chapter wise Syllabus Content (Theory & Practical)	No. of Lectures /Prof.		
Sep., 2022	3rd	СС-5ТН	<b>Physiology of Blood and Body Fluids Bone marrow</b> : Haemoglobin :Structure, reactions, biosynthesis and catabolism	2 (SC)		
			<b>Hemostasis</b> : . Disorders of hemostasis- Hemophilia, Thrombosis and Embolism.	1 (DD)		
		CC-5P	Preparation and staining of blood film with Leishman's stain. Identification of blood cells	(2+2) (AD+UC)		
		СС-6ТН	<b>Cardiovascular System</b> Cardiac cycle: Pressure and volume changes. Heart sounds. Murmurs.	2 (TD)		
		CC6P	Determination of Blood pressure by Auscultatory Method. Determination of mean pressure, pulse pressure and pulse rate.	(2+2) (RM+DD)		
		СС7ТН	<b>Respiratory System</b> Transport of gases in body :Partial pressure and composition of normal atmospheric gases.	2 (AD)		
			Compliance of lungs and chest wall, pressure-volume relationships, alveolar surface tension and surfactant, work of breathing.	2 ( UC)		
		СС7Р	Pneumographic recording of effects of hyperventilation, Biochemical basis of ABO system and Bombay phenotype	(2+2)(TD+DD)		
		SEC A1	Blood transfusion - precaution and hazards. Concept of Blood Bank.	1 (SC)		
			Ghrehlin and Leptin in health and diseases.	1 (DD)		

Tentative	Tentative ,may subject to change:						
Months	Week	Paper	Chapter wise Syllabus Content (Theory & Practical)	No. of Lectures /Prof.			
Sep., 2022	4th	СС-5ТН	<b>Physiology of Blood and Body Fluids Bone marrow</b> : Haemoglobin :Structure, reactions, biosynthesis and catabolism	2 (SC)			
			Hemostasis : . Disorders of hemostasis- Hemophilia, Thrombosis and Embolism.	1 (DD)			
		CC-5P	Total count of W.B.C and R.B.C .Differential count of W.B.C. Haemoglobin estimation by Sahli's hemoglobinometer.	(2+2) (AD+UC)			
		СС-6ТН	<b>Cardiovascular System</b> Cardiac output: Measurement by application of Fick's principle & factors affecting. Starling's law of heart	2 (TD)			
		CC6P	Preparation of Amphibian Ringer Solution. Interpretation of Kymographic recording of the movements of perfused heart of toad and the effects of acetylcholine and adrenaline on the contraction of heart.ECG.	(2+2) (RM+DD)			
		СС7ТН	<b>Transport of gases in body</b> : Partial pressure and composition of normal atmospheric gases in inspired, expired, alveolar airs and blood. Oxygen dissociation curve of hemoglobin and myoglobin – factors affecting. Compliance of lungs and chest wall, pressure-volume relationships, alveolar surface tension and surfactant, work of breathing.	2 (AD) 2 ( UC)			
		CC7P	Pneumographic recording of effects of hyperventilation,	(2+2)(TD+DD)			
		SEC A1	Biochemical basis of ABO system and Bombay phenotype .Blood transfusion - precaution and hazards. Concept of Blood Bank.	1 (SC)			
			Ghrehlin and Leptin in health and diseases.	1 (DD)			

Months	Week	Paper	Chapter wise Syllabus Content (Theory & Practical)	No. of Lectures /Prof.			
Nov., 2022	1st	СС-5ТН	<b>Physiology of Blood and Body Fluids Bone marrow</b> : Foetal haemoglobin. Abnormal haemoglobins- Sickle-cell anemia and Thalassemia.	2 (SC)			
			Hemostasis : . Blood group :ABO and Rh systems (Chemical nature of relevant biomolecules). Erythroblastosis foetalis. Blood transfusion and its hazards.	1 (DD)			
		CC-5P	Total count of W.B.C and R.B.C .Differential count of W.B.C. Haemoglobin estimation by Sahli's hemoglobinometer.	(2+2) (AD+UC)			
		СС-6ТН	<b>Cardiovascular System</b> Electrocardiography: The normal electrocardiogram, electrocardiographic leads, vectorial analysis, the vectorcardiogram and the mean electrical axis of heart. The His bundle electrogram. Principles of Echocardiography.	2 (TD)			
		CC6P	Preparation of Amphibian Ringer Solution. Interpretation of Kymographic recording of the movements of perfused heart of toad and the effects of acetylcholine and adrenaline on the contraction of heart.ECG.	2+2) (RM+DD)			
		СС7ТН	<b>Transport of gases in body</b> : Partial pressure and composition of normal atmospheric gases in inspired, expired, alveolar airs and blood.	2 (AD)			
		CC7P	Spirometry: Lung volumes and capacities. Dead space. Pneumographic recording of effects of hyperventilation,	2 (UC)			
						SEC A1	Biochemical basis of ABO system and Bombay phenotype .Blood transfusion - precaution and hazards. Concept of Blood Bank.
			Ghrehlin and Leptin in health and diseases.	1 (DD)			

Tentative ,may subject to change:					
Months	Week	Paper	Chapter wise Syllabus Content (Theory & Practical)	No. of Lectures /Prof.	
Nov., 2022	2nd	СС-5ТН	<b>Physiology of Blood and Body Fluids Bone marrow</b> : Foetal haemoglobin. Abnormal haemoglobins- Sickle-cell anemia and Thalassemia.	2 (SC)	
			<b>Hemostasis</b> : . Blood group :ABO and Rh systems (Chemical nature of relevant biomolecules). Erythroblastosis foetalis. Blood transfusion and its hazards.	1 (DD)	
		CC-5P	Total count of W.B.C and R.B.C .Differential count of W.B.C. Haemoglobin estimation by Sahli's hemoglobinometer.	(2+2) (AD+UC)	
		СС-6ТН	<b>Cardiovascular System</b> Electrocardiography: The normal electrocardiogram, electrocardiographic leads, vectorial analysis, the vectorcardiogram and the mean electrical axis of heart. The His bundle electrogram. Principles of Echocardiography.	2 (TD)	
		CC6P	Preparation of Amphibian Ringer Solution. Interpretation of Kymographic recording of the movements of perfused heart of toad and the effects of acetylcholine and adrenaline on the contraction of heart.ECG.	(2+2) (RM+DD)	
		СС7ТН	<b>Transport of gases in body</b> :. Oxygen dissociation curve of hemoglobin and myoglobin – factors affecting.	2 (AD)	
		СС7Р	Spirometry: Lung volumes and capacities. Dead space.	2 ( UC)	
			Pneumographic recording of effects of hyperventilation, Biochemical basis of ABO system and Bombay	(2+2)(TD+DD)	
		SEC A1	phenotype .Blood transfusion - precaution and hazards. Concept of Blood Bank.	1 (SC)	
			Definition, determination and significance of TC, DC, ESR.	1 (DD)	

Tentative ,may subject to change:						
Months	Week	Paper	Chapter wise Syllabus Content (Theory & Practical)	No. of Lectures /Prof.		
Nov., 2022	3rd	СС-5ТН	<b>Physiology of Blood and Body Fluids Bone marrow</b> : Foetal haemoglobin. Abnormal haemoglobins- Sickle-cell anemia and Thalassemia.	2 (SC)		
			Hemostasis : . Blood group :ABO and Rh systems (Chemical nature of relevant biomolecules). Erythroblastosis foetalis. Blood transfusion and its hazards.	1 (DD)		
		CC-5P	Total count of W.B.C and R.B.C .Differential count of W.B.C. Haemoglobin estimation by Sahli's hemoglobinometer.	(2+2) (AD+UC)		
		СС-6ТН	<b>Cardiovascular System</b> Electrocardiography: The normal electrocardiogram, electrocardiographic leads, vectorial analysis, the vectorcardiogram and the mean electrical axis of heart. The His bundle electrogram. Principles of Echocardiography.	2 (TD)		
		СС6Р	Preparation of Amphibian Ringer Solution. Interpretation of Kymographic recording of the movements of perfused heart of toad and the effects of acetylcholine and adrenaline on the contraction of heart.ECG.	(2+2) (RM+DD)		
		СС7ТН	Oxygen dissociation curve of hemoglobin and myoglobin – factors affecting.	2 (AD)		
			Compliance of lungs and chest wall, pressure-volume relationships, alveolar surface tension and surfactant, work of breathing.	2 ( UC)		
		CC7P	Pneumographic recording of effects of hyperventilation,	(2+2)(TD+DD)		
		SEC A1	Erythropoietin and thrombopoietin.	1 (SC)		
			Definition, determination and significance of TC, DC, ESR.	1 (DD)		

Tentative	Tentative ,may subject to change:						
Months	Week	Paper	Chapter wise Syllabus Content (Theory & Practical)	No. of Lectures /Prof.			
Nov., 2022	4th	СС-5ТН	<b>Physiology of Blood and Body Fluids Bone marrow</b> : Foetal hemoglobin. Abnormal hemoglobin- Sickle-cell anemia and Thalassemia.	2 (SC)			
			<b>Lymph and tissue fluids</b> :Formation, circulation, function and fate	s 1 (DD)			
		CC-5P	Total count of W.B.C and R.B.C .Differential count of W.B.C. Haemoglobin estimation by Sahli's hemoglobinometer.	(2+2) (AD+UC)			
		СС-6ТН	<b>Cardiovascular System</b> Cardiac Arrhythmias &. Myocardial Infarctions. The pulse: Arterial and venous. Hemodynamic of blood flow	2 (TD)			
		CC6P	Preparation of Amphibian Ringer Solution. Interpretation of Kymographic recording of the movements of perfused heart of toad and the effects of acetylcholine and adrenaline on the contraction of heart.ECG.	e (2+2) (RM+DD)			
		СС7ТН	Carbon dioxide dissociation curve. Regulation of respiration neural and chemical, respiratory centers, chemoreceptors, baroreceptors, pulmonary receptors.	2 (AD)			
		CC7P	Pulmonary Circulation: Ventilation- perfusion ratio.	2 ( UC)			
			Pneumographic recording of effects of breath-holding	(2+2)(TD+DD)			
		SEC A1	Erythropoietin and thrombopoietin. Arneth count, PCV, MCV,MHC, MCHC, bleeding time,clotting time and prothrombin time.	1 (SC) 1 (DD)			

Months	Week	Paper	Chapter wise Syllabus Content (Theory & Practical)	No. of Lectures /Prof.
Dec., 2022	1st	СС-5ТН	<b>Physiology of Blood and Body Fluids Bone marrow</b> : Foetal haemoglobin. Abnormal haemoglobins- Sickle-cell anemia and Thalassemia.	2 (SC)
			<b>Lymph and tissue fluids</b> :Formation, circulation, functions and fate	1 (DD)
		CC-5P	Preparation of haemin crystals	(2+2) (AD+UC)
		СС-6ТН	<b>Cardiovascular System</b> Cardiac Arrhythmias &. Myocardial Infarctions. The pulse: Arterial and venous. Hemodynamic of blood flow	2 (TD)
		CC6P	Preparation of Amphibian Ringer Solution. Interpretation of Kymographic recording of the movements of perfused heart of toad and the effects of acetylcholine and adrenaline on the contraction of heart.ECG.	(2+2) (RM+DD)
		СС7ТН	Carbon dioxide dissociation curve. Regulation of respiration neural and chemical, respiratory centers, chemoreceptors, baroreceptors, pulmonary receptors.	2 (AD)
			Pulmonary Circulation: Ventilation- perfusion ratio.	2 ( UC)
		CC7P	Pneumographic recording of effects of breath-holding	(2+2)(TD+DD)
		SEC A1	Erythropoietin and thrombopoietin.	1 (SC)
			Arneth count, PCV, MCV,MHC, MCHC, bleeding time, clotting time and prothrombin time.	1 (DD)

Tentative, may subject to change:						
Months	Week	Paper	Chapter wise Syllabus Content (Theory & Practical)	No. of Lectures /Prof.		
Dec., 2022	2nd	СС-5ТН	<b>Physiology of Blood and Body Fluids Bone marrow</b> : Foetal haemoglobin. Abnormal haemoglobins- Sickle-cell anemia and Thalassemia.	2 (SC)		
			<b>Lymphatic organs</b> : Histological structures and functions of lymph gland and spleen. Splenomegaly causes and effects.	1 (DD)		
		CC-5P	Preparation of haemin crystals	(2+2) (AD+UC)		
		СС-6ТН	<b>Cardiovascular System</b> Cardiac and vasomotor centers, baroreceptors and chemoreceptors, innervation of the heart and blood vessels, cardiac and vasomotor reflexes. Cardiovascular homeostasis – neural and chemical control of cardiac functions and blood vessels.	2 (TD)		
		CC6P	Preparation of Amphibian Ringer Solution. Interpretation of Kymographic recording of the movements of perfused heart of toad and the effects of acetylcholine and adrenaline on the contraction of heart.ECG.	(2+2) (RM+DD)		
			Disorders of Breathing :Hypoxia : Types& effects. Asphyxia, Voluntary hyperpnoea,	2 (AD)		
		СС7ТН	Pulmonary Circulation: Ventilation- perfusion ratio.	2 ( UC)		
		CC7P	Pneumographic recording of effects of breath-holding	(2+2)(TD+DD)		
		SEC A1	Erythropoietin and thrombopoietin.	1 (SC)		
			time, clotting time and prothrombin time.	1 (DD)		

Tentative	Tentative ,may subject to change:						
Months	Week	Paper	Chapter wise Syllabus Content (Theory & Practical)	No. of Lectures /Prof.			
Dec., 2022		СС-5ТН	<b>Physiology of Blood and Body Fluids Bone marrow</b> : Blood volume: Regulation and determination by dye and radioisotope methods	2 (SC)			
			<b>Lymphatic organs</b> : Histological structures and functions of lymph gland and spleen. Splenomegaly causes and effects.	1 (DD)			
		CC-5P	Preparation and staining of bone marrow. Measurement of diameter of megakaryocytes. Reticulocyte staining.	(2+2) (AD+UC)			
		СС-6ТН	<b>Cardiovascular System</b> Atherosclerosis.Coronary Circulation.	2 (TD)			
		CC6P	Preparation of Amphibian Ringer Solution. Interpretation of Kymographic recording of the movements of perfused heart of toad and the effects of acetylcholine and adrenaline on the contraction of heart.ECG.	(2+2) (RM+DD)			
		СС7ТН	Disorders of Breathing: Hypoxia : Types& effects. Asphyxia, Voluntary hyperpnoea,	2 (AD)			
			Pulmonary Circulation: Ventilation- perfusion ratio.				
		СС7Р	Pneumographic recording of effects of breath-holding	2 ( UC) (2+2)(TD+DD)			
		SEC A1	Platelet count, reticulocyte count and absolute count of	1 (SC)			
		SEC M	Anaemia - types (definition and causes).	1 (DD)			

Tentative	,may sub	ject to change	2	
Months	Week	Paper	Chapter wise Syllabus Content (Theory & Practical)	No. of Lectures /Prof.
Jan., 2022	1st	СС-5ТН	<b>Physiology of Blood and Body Fluids Bone marrow</b> : Blood volume: Regulation and determination by dye and radioisotope methods	2 (SC)
			Circulatory disorder : Oedema	1 (DD)
		CC-5P	Preparation and staining of bone marrow. Measurement of diameter of megakaryocytes. Reticulocyte staining.	(2+2) (AD+UC)
		СС-6ТН	<b>Cardiovascular System</b> Blood pressure: Its measurement and factors affecting. Cardiovascular adjustment after haemorrhage.	2 (TD)
		CC6P	Preparation of Amphibian Ringer Solution. Interpretation of Kymographic recording of the movements of perfused heart of toad and the effects of acetylcholine and adrenaline on the contraction of heart.ECG.	(2+2) (RM+DD)
		СС7ТН	Disorders of Breathing: Apnoea, Cyanosis, Periodic breathing, Asthma, Emphysema.	2 (AD)
			<b>Pulmonary Circulation</b> : Ventilation- perfusion ratio. Non-respiratory functions of lung.	·2 ( UC)
		СС7Р	Pneumographic recording of effects of breath-holding	(2+2)(TD+DD)
		SEC A1	Bone marrow suppression and transplantation.	1 (SC)
			Anaemia - types (definition and causes).	1 (DD)

Months       Week       Paper       Chapter wise Syllabus Content (Theory & No. of Lee Practical)         Jan.,       2nd       CC-5TH       Physiology of Blood and Body Fluids Bone marrow: Blood volume: Regulation and determination by dva and PA (SC)	etures
Jan.,     2nd     CC-5TH     Physiology of Blood and Body Fluids Bone marrow:       Blood volume:     Blood volume:     Regulation and determination by dva and block (SC)	
2022 radioisotope methods	
Circulatory disorder : Oedema 1 (DD)	
CC-5PPreparation and staining of bone marrow. Measurement of diameter of megakaryocytes. Reticulocyte staining.(2+2) (AD+1)	JC)
CC-6THCardiovascular System Blood pressure: Its measurement and factors affecting. Cardiovascular adjustment after haemorrhage.2 (TD)	
CC6PPreparation of Amphibian Ringer Solution. Interpretation of Kymographic recording of the movements of perfused heart of toad and the effects of acetylcholine and adrenaline on the contraction of heart.ECG.(2+2) (RM+1) (2+2) (RM+1)	DD)
Disorders of Breathing: Apnoea, Cyanosis, Periodic2 (AD)CC7THbreathing, Asthma, Emphysema.	
Pulmonary Circulation: Ventilation- perfusion ratio. Non-2 (UC) respiratory functions of lung	
CC7PPneumographic recording of effects of breath-holding. Non-respiratory functions of lung.(2+2)(TD+D	D)
SEC A1 Bone marrow suppression and transplantation. 1 (SC)	
Leucocytosis, leucopenia and leukaemia.Purpura. 1 (DD)	

Tentative,	Centative, may subject to change:					
Months	Week					
		INTERNAL ASSESSMENT				
		(notified 03-12-22)				
		08-12-22 : CC5 TH ;CC7 TH				
		10-12-22 : CC 6 TH ; SECA1 TH				

## University of Calcutta Undergraduate Curriculum under Choice Based Credit System (CBCS) Lesson Plan with Syllabus for PHYSIOLOGY (Genaral)- SEMESTER III (2022)

Tentative, ma	Tentative, may subject to change:					
Months	Week	Paper	Chapter wise Syllabus Content (Theory &	No. of Lectures(Prof.)		
		_	Practical)			
August	3 <sup>rd</sup>	CC3TH /	Nerve-muscle Physiology: Structure of neurons.			
(From		GEN 3TH	Origin and propagation of nerve impulse.	[2+2 (RA)] X 2		
16 08 22)	&	_				
10.00.22)			Special Senses: Vision: Structure of the eye. Histology	1+1 (DD)		
	4th		of retina.			
		(SECA1)	<b>Microbiology &amp; Immunology:</b> Viruses - DNA virus and RNA virus. Viroids and Prions. Bacteriophages.	2+2 (AD)		
			Elementary knowledge of innate and acquired immunity	1+1 (SC)		

Tentative ,may	'entative, may subject to change:					
Months	Week	Paper	Chapter wise Syllabus Content (Theory &	No. of Lectures(Prof.)		
			Practical)			
September	1 <sup>st</sup>	CC3TH /	Nerve-muscle Physiology: Velocity of impulse in			
2022)		GEN 3TH	different types of nerve fiber. Properties of nerve fibers	3+3 (RA)		
,	&					
	- 1		Silver Nitrate preparation of nodes of Ranvier.			
	2 <sup>nd</sup>	CC2D / CEN				
		CCSP/GEN	<b>Special Senses</b> : Vision: Visual pathway. Light reflex.	2+2 (RA +SC)		
		3P		1   1 (DD)		
				1+1 (DD)		
			where the structure and many has a structure and many has a structure and crown and cr			
			norphological classification. Grain positive and Grain	2+2 (AD)		
		(SECA1)		2+2 (AD)		
			Humoral and cell mediated immunity. Toxins and			
			toxoids.			
				1+1 (SC)		
				()		

Tentative ,may subject to change:				
Months	Week	Paper	Chapter wise Syllabus Content (Theory &	No. of Lectures(Prof.)

			Practical)	
September	3 <sup>RD</sup>	CC3TH /	Nerve-muscle Physiology: rheobase and chronaxie,	
2022)		GEN 3TH	refractory period. indefatiguability. Synapses: structure,	3+3 (RA)
====)	and	02110111	mechanism of synaptic transmission.	
			Examination and staining of skeletal and cardiac	
	$4^{\text{th}}$		muscles by Methylene Blue stain	
		CC3P / GEN		2+2 (RA +SC)
		3P	Special Senses: Chemical changes in retina on	
			exposure to light. Accommodation - mechanism. Errors	
			of refraction.	1+1 (DD)
			Microbiology & Immunology: Pathogenic and non-	
			pathogenic bacteria - definition with a few examples.	
			Physical and chemical methods used in	2+2 (AD)
		(SECA1)	disinfection, sterilization and pasteurization.	
			Vaccination – Passive and active immunisation, types	1+1 (SC)
			and uses of vaccine.	
1				

Tentative, ma	y subject	t to change:		
Months	Week	Paper	Chapter wise Syllabus Content (Theory & Practical)	No. of Lectures(Prof.)
November 2022)	1 <sup>st</sup> and	CC3TH / GEN 3TH	<b>Nerve-muscle Physiology</b> Isotonic and isometric contractions. Properties of muscle: all or none law, beneficial effect, summation, refractory period, tetanus, fatigue.	3+3 (RA)
	2	CC3P / GEN 3P	Demonstration : Use of kymograph, induction coil and mercury key. Recording of simple muscle curve with sciatic-gastrocnemius muscle preparation of toad.	2+2 (RA +SC)
		(SECA1)	<b>Special Senses</b> : Vision: Light and dark adaptation. Elementary idea of colour vision and colour blindness <b>Microbiology &amp; Immunology:</b> Bacteria-structure and morphological classification. Gram positive and Gram negative and acid-fast bacteria.	1+1 (DD)
			Humoral and cell mediated immunity. Toxins and toxoids.	2+2 (AD)
				1+1 (SC)

Months	Week	Paper	Chapter wise Syllabus Content (Theory & Practical)	No. of Lectures(Prof.)
November 2022)	3 <sup>rd</sup>	CC3TH / GEN 3TH	<b>Nerve-muscle</b> Different types of muscle and their structure. Red and white muscle. Muscular contraction:	3+3 (RA)

and		structural, mechanical and chemical changes in skeletal muscle during contraction and relaxation	
4 <sup>th</sup>		Silver nitrate preparation of corneal cell space	
	CC3P / GEN 3P	<b>Special Senses</b> : Olfaction and Gustation: Structure of sensory organ, neural pathway of olfactory and	2+2 (RA +SC)
		gustatory sensation. Mechanism of olfactory and gustatory sensation. Olfactory and gustatory adaptation. After-taste.	1+1 (DD)
		<b>Microbiology &amp; Immunology:</b> Nutritional requirement – complex and synthetic media, preparation of media ; physical factors required for	
	(SECA1)	growth (temperature, pH and gaseous requirement).	2+2 (AD)
		Humoral and cell mediated immunity. Toxins and toxoids	
			1+1 (SC)

Fentative, may subject to change:					
Months	Week	Paper	Chapter wise Syllabus Content (Theory & Practical)	No. of Lectures(Prof.)	
Deember 2022)	1 <sup>st</sup>	CC3TH / GEN 3TH	<b>Nerve-muscle</b> A brief idea of the structure, connections and functions of cerebellum. Different nuclei and functions of thalamus and hypothalamus. Cerebral cortex: histological structure and localization of functions.	3+3 (RA)	

	<b>Nervous System</b> : A brief outline of organization and basic functions (sensory, motor and association) of the	1+1 (DD)
	nervous system, central and peripheral nervous system.	
	Ascending tracts carrying touch,	
	kinaesthetic, temperature and pain sensations.	
	Special Senses: Audition: Structure of ear, auditory	2 + 2 (AD)
	pathway, mechanism of hearing.	2+2 (AD)
	Silver Nitrate preparation of nodes of Ranvier.	
		2+2 (RA +SC)
CC3P / GEN	Microbiology & Immunology : Humoral and cell	
3P	mediated immunity. Toxins and toxoids.	1+1 (SC)
(SECA1)		
(BECHI)		

Fentative, may subject to change:					
Months	Week	Paper	Chapter wise Syllabus Content (Theory &	No. of Lectures(Prof.)	
			Practical)		
Deember	2 <sup>nd</sup>	CC3TH /	Nerve-muscle Isotonic and isometric contractions.		
2022)		GEN 3TH	Properties of muscle: all or none law, beneficial effect,	3+3 (RA)	
,			summation, refractory period, tetanus, fatigue.		
			Nervous System: Descending tracts: pyramidal tract		
			and brief outline of the extra-pyramidal tracts. Reflex		
			action - definition, reflex arc, classification, properties.		
			Functions of the spinal cord. Outline of functions of	1+1 (DD)	
			brain stem.		
			Special Senses: Audition: Structure of ear, auditory		
			pathway, mechanism of hearing.		
			Silver Nitrate preparation of nodes of Ranvier.	2+2 (AD)	
		CC3P / GEN	Vicrobiology & Immunology : Vaccination – Passive	2+2 (RA +SC)	
		3P	and active immunisation, types and uses of vaccine.		
			Immunological basis of allergy and inflammation.		
		(SECA1)		1+1 (SC)	

Tentative, may subject to change:				
Months	Week	Paper	Chapter wise Syllabus Content (Theory &	No. of Lectures(Prof.)
			Practical)	× ,
January	3 <sup>rd</sup>	CC3TH/	Nerve-muscle Isotonic and isometric contractions.	
2023)		GEN 3TH	Properties of muscle: all or none law, beneficial effect,	3+3 (RA)
			summation, refractory period, tetanus, fatigue.	
			Nervous System: Descending tracts: pyramidal tract	
			and brief outline of the extra-pyramidal tracts. Reflex	
			action - definition, reflex arc, classification, properties.	
			Functions of the spinal cord. Outline of functions of	1+1 (DD)
			brain stem.	

		<b>Special Senses</b> : Audition: Structure of ear, auditory pathway, mechanism of hearing. Silver Nitrate preparation of nodes of Ranvier.	2+2 (AD)
	CC3P / GEN 3P (SECA1)	<b>Microbiology &amp; Immunology</b> : Bacterial growth curve. Elementary idea of bacteriostatic and bacteriocidal agents.	2+2 (RA +SC) 1+1 (SC)

Tentative ,may subject to change:						
Months	Week	Paper	Chapter wise Syllabus Content (Theory &	No. of Lectures(Prof.)		
			Practical)			
January	1 <sup>st</sup>	CC3TH/	Nerve-muscle Different types of muscle and their			
2023)		GEN 3TH	structure. Red and white muscle. Muscular contraction:	3+3 (RA)		
	and		structural, mechanical and chemical changes in skeletal			
			muscle during contraction and relaxation.			
	2 <sup>nd</sup>		Nervous System: A brief description of the			
			organization of the autonomic (sympathetic and			
			parasympathetic) nervous system. Functions of	1+1 (DD)		
			sympathetic and parasympathetic nervous system. A			

	1 2 2 2 2 1 1 1 1 1	brief idea of speech, aphasia, conditioning, learning and memory. Special Senses: Olfaction and Gustation: Structure of sensory organ, neural pathway of olfactory and gustatory sensation. Mechanism of olfactory and gustatory sensation. Olfactory and gustatory adaptation. After-taste. Examination and staining of skeletal and cardiac muscles by Methylene Blue stain	1+1 (DD)
CC3P 31	P/GEN P I	<b>Microbiology &amp; Immunology</b> : Beneficial and harmful microorganisms in food. Bacterial growth curve. Elementary idea of bacteriostatic and bacteriocidal agents	2+2 (RA +SC) 2+2 (AD)
(SE	ECA1)		1+1 (SC)

Tentative,			
Months	Week		
		INTERNAL ASSESSMENT	
		(notified 03-12-22)	
		<b>12-12-22 :</b> GE 3 TH	
		16-12-22 : SECA1 TH	

University of Calcutta Undergraduate Curriculum under Choice Based Credit System (CBCS) Lesson Plan with Syllabus for PHYSIOLOGY (Hons.)- SEMESTER I (2022)

Tentative, may subject to change:					
Week	Paper	Chapter wise Syllabus Content (Theory &	No. of Lectures(Prof.)		
		Practical)			
1 <sup>st</sup>	CC1TH	Cellular Basis of Physiology Structure and functions			
		of plasma membrane	2 (AD)		
,	v subject Week	v subject to change:       Week     Paper       1 <sup>st</sup> CC1TH	W subject to change:       Chapter wise Syllabus Content (Theory & Practical)         1st       CC1TH       Cellular Basis of Physiology Structure and functions of plasma membrane		
(01-11-22)		Genetics Chromosome Structure—Morphology Enzymes Classification-EC nomenclature, Concept of apoenzyme	1 (SC) 1 (DD)		
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	CC 1 P	Staining of adipose tissue using Sudan III or IV.	2+2 (TD +RM)		
		<b>Biophysical Principles</b> Diffusion :Its characteristics, factors influencing and physiological applications.			
	CC2 TH	<b>Carbohydrates</b> :Definition and classification. Monosaccharides– Classification, structure, stereoisomerism, optical isomerism, optical activity	2 (TD) 2(RM)		
		epimerism. Cyclic structures- Pyranose and furanose forms, anomerism, mutarotation and its mechanism. Instruments Principles of construction, uses and advantages and disadvantages : Compound microscope	2(KIVI)		
		Qualitative tests for the identification of physiologically important substances: Hydrochloric acid, Lactic Acid, Uric Acid	1 (UC)		
	CC2 P		2+2 (TD +RM)		

Months	Week	Paper	Chapter wise Syllabus Content (Theory & Practical)	No. of Lectures(Prof.)
November 2022)	2 <sup>nd</sup>	CC1TH	Cellular Basis of Physiology Structure and functions of plasma membrane Cenetics Chromosomal DNA packaging-nucleosomes	2 (AD)
			and higher level of organisation of chromatin Enzymes Mechanism of enzymes. Concept of initial rate, maximum velocity and steady-statekinetics	1 (SC)
				1 (DD)
			Staining of adipose tissue using Sudan III or IV.	

	CC 1 P CC2 TH	Biophysical Principles Osmosis: Osmotic pressure – laws, determination – freezing point depression method and physiological applications. Carbohydrates : Chemical reactions of monosaccharides (Glucose & Fructose) Reactions with concentrated mineral acids, alkali, phenylhydrazine and their biochemical importance. Derivatives of monosaccharides Amino sugars, deoxy sugars, sugar alcohols, sugar acids, sugar esters, their biochemical and physiological importance. Disaccharides – Maltose, Lactose and Sucrose : Structure, Occurrence and Physiological importance. Instruments Principles of construction, uses and advantages and disadvantages : Compound microscope Qualitative tests for the identification of physiologically important substances: Hydrochloric acid, Lactic Acid, Uric Acid	2+2 (TD +RM) 2 (TD) 2(RM) 1 (UC)
	CC2 P		2+2 (TD +RM)

Tentative, may subject to change:					
Months	Week	Paper	Chapter wise Syllabus Content (Theory & Practical)	No. of Lectures(Prof.)	
November 2022)	3 <sup>rd</sup>	ССІТН	Cellular Basis of Physiology -Electron microscopic structure and functions of Nucleus, endoplasmic reticulum, ribosomes Genetics .Human genome and its characteristics. Enzymes Mechanism of enzymes. Concept of initial rate, maximum velocity and steady-statekinetics	2 (AD) 1 (SC) 3 (DD)	
		CC 1 P	Study of various stages of meiosis from grasshopper testis	2+2 (TD +RM)	
		CC2 TH	<b>Biophysical Principles</b> Osmosis: Osmotic pressure – laws, determination – freezing point depression method and physiological applications.		

		Carbohydrates : Chemical reactions of	2 (TD)
		monosaccharides (Glucose & Fructose) Reactions	
		with concentrated mineral acids, alkali,	
		phenylhydrazine and their biochemical importance.	2(RM)
		Derivatives of monosaccharidesAmino sugars,	
		deoxy sugars, sugar alcohols, sugar acids, sugar esters,	
		their biochemical and physiological importance.	
		Disaccharides – Maltose, Lactose and Sucrose :	
		Structure, Occurrence and Physiological importance.	
		Instruments Principles of construction, uses and	
		advantages and disadvantages : Phase contrast	
		microscope, Fluorescence microscope.	
		Qualitative tests for the identification of	1 (UC)
		physiologically important substances: Hydrochloric	
		acid, Lactic Acid, Uric Acid, Gelatin, Peptone, Starch,	
		Dextrin	
			2+2 (TD +RM)
			2+2 (AD +UC)
	CC2 P		

Tentative, may subject to change:					
Months	Week	Paper	Chapter wise Syllabus Content (Theory &	No. of Lectures(Prof.)	
			Practical)		
November	4 <sup>th</sup>	CC1TH	Cellular Basis of Physiology -Electron microscopic		
2022)			structure and functions of Golgi bodies, mitochondria,	2 (AD)	
2022)			lysosomes		
			Genetics .Human genome and its characteristics.	1 (SC)	
			Euchromatin and heterochromatin.		
			Enzymes Mechanism of enzymes. Concept of initial		
			rate, maximum velocity and steady-statekinetics	3 (DD)	
			Study of various stages of meiosis from grasshopper testis	2+2 (TD +RM)	
		CC 1 P	<b>Biophysical Principles</b> Surface tension & viscosity: Physiological applications. pH¬& Buffer- Henderson		

	CC2 TH	Hasselbach- equation (quantitative problems).	2 (TD)
		Determination of pH.	
		<b>Carbohydrates</b> : Disaccharides – Maltose, Lactose and Sucrose : Structure, Occurrence and Physiological importance. Polysaccharides – Starch, Glycogen, Dextrin,Cellulose, Glycosaminoglycans, Glycoproteins, Sialic acids. <b>Lipids</b> :Definition and classification. Fatty acids - Classification, systemic nomenclature¬ and structure. Mono-, Di- and Triglycerides	2(RM)
	CC2 P	Instruments Principles of construction, uses and advantages and disadvantages : Phase contrast microscope, Fluorescence microscope. Qualitative tests for the identification of physiologically important substances: Hydrochloric acid, Lactic Acid, Uric Acid, Gelatin, Peptone, Starch, Dextrin	1 (UC) 2+2 (TD +RM) 2+2 (AD +UC)

Tentative, may subject to change:					
Months	Week	Paper	Chapter wise Syllabus Content (Theory & Practical)	No. of Lectures(Prof.)	
December 2022)	1 <sup>st</sup> and	CC1TH	<b>Cellular Basis of Physiology</b> - peroxisomes ,cytoskeletal elements, centrosomes and plasma membrane . Cellular transport—Passive and active transport. Ion channels, ionophores	2+2 (AD)	
	2 <sup>nd</sup>		<b>Genetics</b> . Mitochondrial DNA. Epistasis, Penetrance, Expressivity, Pleiotropism. Karyotyping. <b>Enzymes</b> Michaelis constant, Michaelis-Menten	1+1 (SC)	
			equation, Graphical representation of hyperbolic kinetics LineweaverBurk plot. Significance of Km and Vmax. Factors influencing enzyme-catalyzed reactions : substrate concentration, enzyme concentration, pH, temperature.	3+3 (DD)	
		CC 1 P	Cell viability study by Trypan blue staining. Osmotic fragility test of goat blood R.B.C	4+4 (TD +RM)	
			<b>Biophysical Principles</b> Colloids :Classification, properties – optical, electrical, electrokinetic.		

	CC2 TH	Physiological importance of colloids. Gibbs-Donnan membrane equilibrium	2 +2 (TD)
		Lipids : Definition and classification. Fatty acids - Classification, systemic nomenclature and structure. Mono-, Di- and Triglycerides. Properties of Fat and Fatty acids Hydrolysis, Saponification number, Iodine number, Acetyl number, Acid number, Reichert-Meissl number. Cis-trans isomerism. Eicosanoids, Phospholipids, Glycolipids, Sphingolipids, Cholesterol & its ester their structure and physiological importance. Lipoproteins - Structure and classification.	2 +2 (RM)
		Instruments Principles of construction, uses and advantages and disadvantages : Polarizing microscope, Confocal microscopy Qualitative tests for the identification of	1+1 (UC)
	CC2 P	physiologically important substances: Glucose, Fructose, Lactose, Sucrose, Urea, Acetone, Glycerol and Bile salts.	2+2 (TD +RM) 2+2 (AD +UC)

Tentative, ma	Tentative, may subject to change:					
Months	Week	Paper	Chapter wise Syllabus Content (Theory & Practical)	No. of Lectures(Prof.)		
December 2022)	3 <sup>rd</sup>	CC1TH	Cellular Basis of Physiology - Cellular transport— Passive and active transport. Ion channels, ionophores. Cell cycle – Events and regulatory role of cyclin. Cell	2 (AD)		
			division- Mitosis & Meiosisphases and significance.	1(SC)		
			Crossing-over, Linkage. Enzymes Michaelis constant, Michaelis-Menten equation, Graphical representation of hyperbolic kinetics LineweaverBurk plot. Significance of Km and Vmax. Factors influencing enzyme-catalyzed reactions : substrate concentration, enzyme concentration, pH, temperature.	3 (DD)		
		CC 1 P	Cell viability study by Trypan blue staining. Osmotic fragility test of goat blood R.B.C	2+2 (TD +RM)		
		CC2 TH	<b>Biophysical Principles</b> Colloids :Classification, properties – optical, electrical, electrokinetic. Physiological importance of colloids. Gibbs-Donnan membrane equilibrium	2+2 (TD)		

		Amino acids :Classification, Structure, Nomenclature and Optical properties. Protonicequilibria of amino acids – Zwitterions, Isoelectric point, titration curve of amino acids. Reactions with ninhydrin and formaldehyde.	2+2 (RM)
		Instruments Principles of construction, uses and advantages and disadvantages : Polarizing microscope, Confocal microscopy	1 (UC)
	CC2 P	Qualitative tests for the identification of physiologically important substances: Glucose, Fructose, Lactose, Sucrose, Urea, Acetone, Glycerol and Bile salts.	2+2 (TD +RM) 2+2 (AD +UC)

Tentative, ma	Centative, may subject to change:						
Months	Week	Paper	Chapter wise Syllabus Content (Theory & Practical)	No. of Lectures(Prof.)			
January 2023)	1 <sup>st</sup> and	CC1TH	Cellular Basis of Physiology - Intercellular communicationExtracellular matrix components. Enzymes Competitive, noncompetitive and	2+2 (AD)			
	2 <sup>nd</sup>		uncompetitive inhibitions. Regulation of enzyme activitiescovalent modifications, allosteric modifications: K- and M- series. Feed-back inhibition. Ratelimiting enzymes. Isozymes, Ribozymes and Abzymes.	3 +3 (DD)			
		CC 1 P	Study of various stages of meiosis from grasshopper testis. Osmotic fragility test of goat blood R.B.C	4+4 (TD +RM)			
		CC2 TH	<b>Biophysical Principles</b> Colloids :Classification, properties – optical, electrical, electrokinetic.				

	Physiological importance of colloids. Gibbs-Donnan membrane equilibrium . REVISION	2+2 (TD)
	<b>Thermodynamics</b> : Type of surroundings and systems.	
	First Law– Internal energy, enthalpy.	
		1+1(SC)
	Purine and Pyrimidine :Structure, nomenclature and tautomerism	
	Nucleic acids :Nucleosides and Nucleotides structure. Polynucleotides. DNA double¬ helix Primary, Secondary and Tertiary structure. A-DNA, B- DNA and Z-DNA. RNA - Structure and types. Denaturation and annealing of DNA. Hyperchromicity, melting temperature and half Cot value. Instruments Principles of construction, uses and advantages and disadvantages : ransmission and	2+2 (RM)
CC2 P	Scanning electron microscope. Photoelectric colorimeter, Spectrophotometer and pH meter. Qualitative tests for the identification of physiologically important substances: Glucose, Fructose, Lactose, Sucrose, Urea, Acetone, Glycerol and Bile salts.	1+1 (UC)
		2+2 (TD +RM)
	Preparation Of Buffer and pH measurement.	2+2 (AD +UC)

Tentative, may subject to change:						
Months	Week	Paper	Chapter wise Syllabus Content (Theory & Practical)	No. of Lectures(Prof.)		
January	3 <sup>RD</sup>	CC1TH	Cellular Basis of Physiology - Intercellular	2+2 (AD)		
2023)	and		REVISION	$2 \cdot 2 (AD)$		
	4 <sup>th</sup>		<b>Enzymes</b> Competitive, noncompetitive and uncompetitive inhibitions. Regulation of enzyme activitiescovalent modifications, allosteric modifications: K- and M- series. Feed-back inhibition. Ratelimiting enzymes. Isozymes, Ribozymes and Abzymes. REVISION	3 +3 (DD)		
		CC 1 P	Study of various stages of meiosis from grasshopper testis. Osmotic fragility test of goat blood R.B.C	4+4 (TD +RM)		
		CC2 TH	<b>Biophysical Principles</b> Colloids :Classification, properties – optical, electrical, electrokinetic. Physiological importance of colloids. Gibbs-Donnan membrane equilibrium . REVISION	2+2 (TD)		
				1+1(SC)		

		Thermodynamics : Second Law – Entropy, Free	
		energy change, Endergonic and Exergonic reactions,	
		Reversible and Irreversible processes, Equilibrium	
		constant. Physiological steady-state, Living body as a	
		thermodynamic system.	
		Purine and Pyrimidine :Structure, nomenclature and	2+2 (RM)
		tautomerism.	× ,
		Nucleic acids :Nucleosides and Nucleotides	
		structure. Polynucleotides. DNA double- helix	
		Primary, Secondary and Tertiary structure. A-DNA, B-	
		DNA and Z-DNA. RNA - Structure and types.	
		Denaturation and annealing of DNA. Hyperchromicity,	
		melting temperature and half Cot value.	
			1+1 (UC)
		Instruments Principles of construction, uses and	
		advantages and disadvantages : ransmission and	
		Scanning electron microscope. Photoelectric	
	CC2 P	colorimeter, Spectrophotometer and pH meter.	2+2 (TD +RM)
			, ,
		Qualitative tests for the identification of	
		physiologically important substances: Glucose,	
		Fructose, Lactose, Sucrose, Urea, Acetone, Glycerol	
		and Bile salts.	2+2 (AD +UC)
		Preparation Of Buffer and pH measurement.	

Months	Week			
		РНҮА	INTERNAL ASSESSMENT (notified 12-01-23) to be taken between 16-01-23 to 08-02-23	
			<b>08-02-2023 :</b> CC 1 TH : CC 2 TH	

### University of Calcutta Undergraduate Curriculum under Choice Based Credit System (CBCS) Lesson Plan with Syllabus for PHYSIOLOGY (General)- SEMESTER I (2022)

Tentative, may subject to change:					
Months	Week	Paper	ChapterwiseSyllabusContent (Theory & Practical)	No. of Lectures(Prof.)	
November 2022	1 <sup>st</sup>	CC 1 TH	<b>Cellular Basis of Physiology</b> Structure and functions of plasma membrane	2 (AD)	
(01-11-22)			<b>Biophysical Principles</b> , Enzymes and Chemistry of Bio-molecules	2(RA)	
			<b>Carbohydrates</b> : Definition and classification. Monosaccharides – Classification, structure, physiological importance.	2(UC)	
			<b>Digestion &amp; Metabolism:</b> Structure in relation to functions of alimentary canal and digestive glands.	1 (SC)	
		ССІ Р	Examination and staining of fresh tissues : Squamous, Ciliated and Columnar Epithelium by Methylene Blue stain	2+2 (RA+UC)	

Tentative, may subject to change:							
Months	Week	Paper	ChapterwiseSyllabusContent (Theory & Practical)	No. of Lectures(Prof.)			
November 2022	2 <sup>nd</sup>	CC 1 TH	Cellular Basis of Physiology nucleus and different cell organelles Biophysical Principles, Physiological importance of the following physical processes: Diffusion, Osmosis and Surface tension. pH and Buffers Carbohydrates : Polysaccharides – Starch, Glycogen, Destrin, Callulase	2 (AD) 2(RA)			
			<b>Digestion &amp; Metabolism:</b> Composition, functions and regulation of secretion of digestive juices including bile.	1 (SC)			
		CCI P	Examination and staining of fresh tissues : Squamous, Ciliated and Columnar Epithelium by Methylene Blue stain	2+2 (RA+UC)			

Tentative, m	Tentative, may subject to change:					
Months	Week	Paper	ChapterwiseSyllabusContent (Theory & Practical)	No. of Lectures(Prof.)		
November 2022	3 <sup>rd</sup>	CC 1 TH	<b>Cellular Basis of Physiology</b> Endoplasmic reticulum, Golgi bodies,Mitochondria, Lysosome and Peroxisome.	2 (AD)		
			<b>Digestion &amp; Metabolism</b> , Digestion and absorption of carbohydrate, protein and lipid. Movements of the stomach and small intestine	2(RA)		
			Lipids : Definition and classification. Fatty acids Classification — Definition and importance of	2(UC)		
			Saponification number and, Iodine number Phospholipids, Cholesterol & its ester physiological importance	1 (SC)		
			<b>Enzymes</b> : Classification, factors affecting enzyme action. Concept of coenzymes and isozymes			
		CCI P	Qualitative tests for identification of : Glucose, Fructose, Lactose, Sucrose	2+2 (RA+UC)		
Tentative, ma	Tentative, may subject to change:					
Months	Week	Paper	ChapterwiseSyllabusContent (Theory & Practical)	No. of Lectures(Prof.)		

November 2022	4 <sup>th</sup>	CC 1 TH	Amino acids, Peptides and Proteins: Classification and structure. Structure of peptide bonds. Nucleic acids:Structure of DNA and RNA Digestion & Metabolism Glycolysis, TCA cycle	2 (AD) 2(RA)
		ССІР	Lipids : Definition and importance of, Saponification number and, Iodine number Phospholipids, Cholesterol & its ester physiological importance. <b>Enzymes</b> : Classification, factors affecting enzyme action. Concept of coenzymes and isozymes Qualitative tests for identification of : Glucose, Fructose, Lactose, Sucrose	2(UC) 1 (SC) 2+2 (RA+UC)

Tentative, may subject to change:				
Months	Week	Paper	ChapterwiseSyllabusContent (Theory & Practical)	No. of Lectures(Prof.)
December 2022	1 <sup>st</sup> and	CC 1 TH	Amino acids, Peptides and Proteins: Classification and structure. Structure of peptide bonds. Nucleic acids: Structure of DNA and RNA	2 +2 (AD)
	2 <sup>nd</sup>		<b>Biophysical Principles:</b> pH and Buffers – Significance in human body and maintenance of pH in the blood. Colloids - Classification and physiological importance. <b>Digestion &amp; Metabolism</b> , Importance of	2+2 (RA)
			Lipids : Definition and classification. Fatty acids Classification. — Definition and importance of, Saponification number and, Iodine number Phospholipids, Cholesterol & its ester physiological importance	2+2 (UC)
			<b>Enzymes</b> : Classification, factors affecting enzyme action. Concept of coenzymes and isozymes	1+1 (SC)
		CCI P	Qualitative tests for identification of : Starch, Dextrin, Lactic acid, Hydrochloric acid <b>REVISION</b>	4+4 (RA+UC)

Tentative, ma	Tentative, may subject to change:							
Months	Week	Paper	ChapterwiseSyllabusContent (Theory & Practical)	No. of Lectures(Prof.)				
December 2022	3 <sup>rd</sup>	CC 1 TH	Amino acids, Peptides and Proteins: Classification and structure. Structure of peptide bonds. Nucleic acids:Structure of DNA and RNA Digestion & Metabolism Beta oxidation of saturated fatty acid.	2 (AD) 2(RA)				
			Lipids : Definition and importance of, Saponification number and, Iodine number Phospholipids, Cholesterol & its ester physiological importance. <b>Enzymes</b> : Classification, factors affecting enzyme action. Concept of coenzymes and isozymes	2(UC) 1 (SC)				
		CCI P	Quantitative estimation of amino nitrogen by Sorensen's formol titration method (percentage to be done)	2+2 (RA+UC)				

Tentative, m	Tentative, may subject to change:				
Months	Week	Paper	ChapterwiseSyllabusContent (Theory & Practical)	No. of Lectures(Prof.)	
January 2023	1 <sup>st</sup> and 2 <sup>nd</sup>	CC 1 TH	<b>Cellular Basis of Physiology</b> : REVISION <b>Amino acids, Peptides and Proteins</b> : Classification and structure. Structure of peptide bonds. Nucleic acids: Structure of DNA and RNA	2 +2 (AD)	
	2		<b>Biophysical Principles:</b> pH and Buffers – Significance in human body and maintenance of pH in the blood. Colloids - Classification and physiological importance. <b>REVISION</b> <b>Digestion &amp; Metabolism</b> , Beta oxidation of saturated fatty acid.	2+2 (RA)	
			Lipids : Definition and classification. Fatty acids Classification. — Definition and importance of, Saponification number and, Iodine number Phospholipids, Cholesterol & its ester physiological importance <b>REVISION</b>	2+2 (UC) 1+1 (SC)	
		CCI P	Acetone, Glycerol and Bile Salts <b>REVISION</b>	4+4 (RA+UC)	

Tentative, may	y subject	to change:		
Months	Week	Paper	ChapterwiseSyllabusContent (Theory & Practical)	No. of Lectures(Prof.)
January 2023	3 <sup>rd</sup>	CC 1 TH	Amino acids, Peptides and Proteins: Classification and structure. Structure of peptide bonds. Nucleic acids:Structure of DNA and RNA – <b>REVISION</b> <b>Digestion &amp; Metabolism</b> Importance of Glycogenesis, Glycogenolysis <b>REVISION</b> Lipids : Definition and importance of, Saponification number and, Iodine number Phospholipids, Cholesterol & its ester physiological importance. <b>Enzymes</b> : Classification, factors affecting enzyme action. Concept of coenzymes and isozymes <b>REVISION</b>	2 (AD) 2(RA) 2(UC) 1 (SC)
		CCI P	Quantitative estimation of amino nitrogen by Sorensen's formol titration method (percentage to be done) <b>REVISION</b>	2+2 (RA+UC)

Tentative,	may sub	ject to change	:	
Months	Week			
		PHYG	INTERNAL ASSESSMENT (notified 12-01-23) to be taken between 16-01-23 to 08-02-23 02-02-2023 : CC 1 TH	

# University of Calcutta UnderGraduate Curriculum under Choice Based Credit System (CBCS) Lesson Plan with Syllabus for PHYSIOLOGY (Hons.)- SEMESTER VI (2023) (Feb- June, 2023)

Tentative, may subject to change:					
Months	Week	Paper	Chapterwise Syllabus Content (Theory &	No. of Lectures	
			Practical)	/Prof.	
February	3 <sup>rd</sup>	CC-13TH	Reproductive Physiology		
(From			Primary and accessory sex organs and secondary sex	1+1 (DD)	
16.02.23)	&		characters. Histology of testis		
			Developmental Pielogy	2+2 (AD)	
	4 <sup>th</sup>		Stem cell: Characteristics and applications.	3+3 (RM)	
		CC-13P	Study and identification of stained sections of different mammalian tissues and organs:	4+4 (TD+RM)	
		CC-14TH	<b>Excretory System, Environmental Pollutants and Human Health Kidney :</b> Anatomy of kidney. Histology of nephron.	3+3 (TD)	

	<b>Skin and Body Temperature Regulation:</b> Structure and functions of skin. Cutaneous Circulation. Sweat Glands- structure and composition of sweat.	1+1 (UC) 1+1 (AD)
CC-14P DSE	<b>Environmental Pollutants and Human Health</b> Sources and effects of Chlorinated hydrocarbons Identification of normal constituents of urine.	1+1 (RA) 4+4 (RM+TD)
B3TH DSE B3P	<b>Chronobiology and Stress Physiology</b> Different types of Physiological rhythms Hormonal biorhythms and their significance	2+2 (SC) 2+2 (RM) 4+4 (TD+RM)

Tentative	Tentative ,may subject to change:					
Months	Week	Paper	ChapterwiseSyllabusContent (Theory & Practical)	No. of Lectures(Prof.)		
March	1st	CC-13TH	<b>Reproductive Physiology</b> Endocrine functions of testis . Spermatogenesis Oogenesis and ovulation Formation and function of	1+ 1 (DD) 1+1 (AD)		
		CC-13P	Developmental Biology Stem cell: Totipotency, Differentiation.	3 (RM)		
			Study and identification of stained sections of different mammalian tissues and organs:	4 (TD+AD)		
		CC-14TH	<b>Excretory System, Environmental Pollutants</b> <b>and Human Health Kidney :</b> Formation of urine – glomerular function and tubular functions.	3(TD)		
			Skin and Body Temperature Regulation: Structure and functions of skin.	1(UC)		
		CC-14P	Identification of normal constituents of urine.	4 (RM+AD)		
			Identification of abnormal constituents of urine.	4 (RM+TD)		
		DSE A4TH	Basic idea about community,public health issues. Malnutrition in a community, over nutrition and possible remedial measures.	2 (RA)		
		DSE A4P	Anthropometric measurements on human	4 (TD+AD)		
		DSE B3TH	<b>Chronobiology and Stress Physiology</b> Different zeitgebers and their relation with circadian clock Neural basis of biological clock	2 (SC) 1 (RM)		
		DSE B3P	Assessment of Environmental Heat load	4 (TD +RM)		

Tentative	Tentative ,may subject to change:					
Months	Week	Paper	ChapterwiseSyllabusContent (Theory &	No. of		
			Practical)	Lectures(Prof.)		
March	2 <sup>ND</sup>	CC-13TH	Reproductive Physiology	2(DD)		
			Endocrine functions of testis. Spermatogenesis			
			Physiology of puberty	1(AD)		
			Developmental Biology: Fertilization	3(RM)		
		CC-13P	Study and identification of stained sections of different mammalian tissues and organs: <b>Practical Exam taken.</b>	4 (TD+RM)		
		CC-14TH	Skin and Body Temperature Regulation:	1(UC)		
			Structure of Sweat Glands. Mechanism of sweat formation, secretion and its regulation	1+1 (AD)		
		CC-14P	Identification of abnormal constituents of urine.	4 (RM+AD) 4 (RM+TD)		
		DSE	Identification of abnormal constituents of urine.	2 (AD)		
		A4TH	Diet management of obese, diabetic & hypertensive individuals	2 (AD)		
			PCM Marasmus, Kwashiorkor, Marasmic Kwashiorkor	3 (TD)		
		DSE A4P	Anthropometric measurements on human			
		DSE B3TH		4 (TD+AD)		
			<b>Chronobiology and Stress Physiology</b> Different zeitgebers and their relation with circadian clock Neural basis of biological clock	2 (SC) 1(RM)		

Tentative,	Tentative, may subject to change:					
Months	Week	Paper	ChapterwiseSyllabusContent (Theory &	No. of		
			Practical)	Lectures(Prof.)		
March	3 <sup>RD</sup>	CC-13TH	Reproductive Physiology Spermatogenesis.	2(DD)		
			Hypothalamic Control Of Ovarian Functions <b>Developmental Biology:</b> Fertilization	2 (AD) 2(RM)		
		CC-13P	Study and identification of stained sections of different mammalian tissues and organs: <b>Practical Exam will be taken.</b>	4 (TD+AD)		
		CC-14TH	<b>Skin and Body Temperature Regulation:</b> Regulation of Body Temperature. <b>Environmental Pollutants and Human Health</b> Organophosphorus	1(UC) 1 (RA)		
		CC-14P	Identification of abnormal constituents of urine.	4 (RM+AD)		
			Identification of abnormal constituents of urine.	4 (RM+TD)		
		DSE A4TH	Endemic goitre, Nutritional Anaemia.	3 (TD)		
		DSE A4P	Physiological parameters of human	4 (TD+AD)		
		DSE B3TH	Chronobiology and Stress Physiology			
			Different zeitgebers and their relation with circadian clock Body tempareture rhythm	2 (SC) 1 (RM)		

Tentative ,may subject to change:					
Months	Week	Paper	ChapterwiseSyllabusContent (Theory & Practical)	No. of Lectures(Prof.)	
March	4 <sup>Th</sup>	CC-13TH	<b>Reproductive Physiology</b> Menstrual cycle and its regulation. <b>Developmental Biology:</b> Fertilization	1(AD) 3(RM)	
		CC-13P	Study and identification of stained sections of different mammalian tissues and organs: <b>Practical Exam will be taken.</b>	4 (TD+DD)	
		СС-14ТН	<b>Skin and Body Temperature Regulation:</b> Regulation of Body Temperature. Mechanism of sweat formation, secretion and its regulation	1(UC) 1 (AD)	
		CC-14P	<b>Environmental Pollutants and Human Health</b> Organocarbamates Staining & Identification of Histological sections Staining & Identification of Histological sections	1 (RA) 4 (RM+AD) 4 (RM+TD)	
		DSE A4TH	Rickets, Osteomalacia, Xerophthalmia Diet management of athletes; iron & iodine deficiency	3 (TD) 1 (AD)	
		DSE A4P	Field Work –Educational Excursion, March 24 <sup>th</sup> -29 <sup>th</sup> 2023	4 (TD+RM)	
		DSE B3TH	<b>Chronobiology and Stress Physiology</b> Different Zeitgebers and their relation with circadian clock Body tempareture rhythm	2 (SC) 1(RM)	

Tentative	Tentative ,may subject to change:					
Months	Week	Paper	ChapterwiseSyllabusContent (Theory &	No. of		
April	1st	CC-13TH	Practical)   Reproductive Physiology   Histology of testis. Endocrine functions of testis.	2(DD)		
			Menstrual cycle and its regulation <b>Developmental Biology:</b> Capacitation, Acrosomal reaction	2 (AD) 2(RM)		
		CC-14TH	<b>Skin and Body Temperature Regulation:</b> Regulation of Body Temperature. Insensible Perspiration <b>Environmental Pollutants and Human Health</b> Sources and effects of lead poisoning	1(UC) 1 (AD) 1 (RA)		
		DSE A4TH	Beriberi; Principles and Methods of Family Planning Principles & social importance of cholera &malaria	3 (TD) 1 (AD)		
		DSE A4P	Preparation of Field Report on Educational Tour	(TD + RM)		
		DSE B3TH DSE B3P	<b>Chronobiology and Stress Physiology</b> Stress- physical and emotional stressors Time keeping Genes, Jet lag and shift work <b>Assessment of Noise level</b>	2 (SC) 2(RM) 4 (TD +AD)		

Tentative,	Tentative, may subject to change:				
Months	Week	Paper	ChapterwiseSyllabusContent (Theory &	No. of	
			Practical)	Lectures(Prof.)	
April	2nd	CC-13TH	Reproductive Physiology	2(DD)	
			Hypothalamic control of testicular functions.		
			Developmental Biology: Implantation, Blastulation,	3(RM)	
			Gastrulation, Development of Heart		
			Skin and Body Temperature Regulation:	1(11C)	
		CC-141H	Mechanism of sweat formation		
			Physiology of body tempareture regulation	2 (AD)	
			Environmental Pollutants and Human Health	1 (RA)	
			Sources and effects of arsenic and futorine poisoning		
				4 (TD + AD)	
		CC14P	Identification of abnormal constituents of urine.		
			Identification of abnormal constituents of urine.		
		DSE		2 (TD)	
		A4TH	Deinsieles and Matheda of Ferrily Dispuis	5 (1D)	
			Finciples and Methods of Fanniy Flamming		
		DSE A4P	Field Work –Educational Excursion- Data analysis	4 (TD + AD)	
			r feld work - Educational Excursion- Data analysis		
		DSE B3TH	Chronobiology and Stress Physiology		
			Stress- physical and emotional stressors	2 (SC)	
				1000	
			General Adaptation Syndrome Of Stress	1(KM)	
		DSE B3P	Assessment of Noise level	4 (TD +RM)	

Tentative	Tentative ,may subject to change:					
Months	Week	Paper	ChapterwiseSyllabusContent (Theory & Practical)	No. of		
April	3rd	CC-13TH	Reproductive Physiology	1(AD)		
			<b>Developmental Biology:</b> Development of Urinary system; Genital system; Foetal circulation.	2(RM)		
		СС-14ТН	Skin and Body Temperature Regulation: Mechanism of sweat secretion	1(UC)		
			Environmental Pollutants and Human Health Sources and effects of aluminium poisoning	I (KA)		
		CC14P	Staining and identification of histological sections			
				4 (TD+ RM)		
		DSE A4TH	Problems of Infertility; Assisted Reproductive Technologies Principles & social importance of swine flu & Japanese	3 (TD)		
			encephalitis	2 (AD)		
		DSE A4P	Field Work –Educational Excursion- Data analysis	4 (TD)		
		DSE B3TH	Chronobiology and Stress Physiology			
			Coping stress	2(SC)		
			Neural basis of biological clock Heat disorders and prevention	2 (RM) 1(DD)		

Tentative,	Tentative, may subject to change:				
Months	Week	Paper	ChapterwiseSyllabusContent (Theory &	No. of	
			Practical)	Lectures(Prof.)	
April	4th	CC-13TH	<b>Reproductive Physiology</b> Development of mammary glands; Lactation and its hormonal control	2(AD)	
		CC-14TH	<b>Skin and Body Temperature Regulation:</b> Regulation of sweat secretion <b>Excretory System:</b> Counter-current multiplier and exchanger. Renal regulation of osmolarity and volume of blood fluids. Diabetes insipidus.Formation of hypertonic urine.	1(UC) 3 (TD)	
		CC14P	Staining and identification of histological sections	4 (TD+ RM)	
		DSE A4TH	Principles & social importance of rabies, dengue & AIDS	2 (AD)	
		DSE A4P	Field Work –Educational Excursion- Report Preparation	4 (TD)	
			Chronobiology and Stress Physiology		
		DSE B3TH	Coping stress	1 (SC)	
			Neural basis of biological clock	2(RM)	
			Heat disorders and prevention	1 (DD)	
		DSE B3P	Determination of Diurnal or circadian rhythm	4 (RM+ TD)	

Tentative, may subject to change:				
Months	Week	Paper	ChapterwiseSyllabusContent (Theory &	No. of
			Practical)	Lectures(Prof.)

May	1st	CC-13TH	Reproductive Physiology	1 (DD)
			Hypothalamic control of testicular functions. Structure and functions of placenta	2(AD)
		CC-13 P	Study and identification of stained sections of different mammalian tissues and organs ( <b>Practice</b> ).	4 (TD + AD)
		CC-14TH	Skin and Body Temperature Regulation: Insensible perspiration; Pyrexia Environmental Pollutants and Human Health Sources and effects of ionizing radiation	1(UC) 1 (RA)
			Excretory System:Renal acid-base balance	2 (TD)
		CC14P	Staining and identification of histological sections	
				4 (TD+ RM)
		DSE A4TH	Problems of Infertility; Assisted Reproductive Technologies Principles & social importance of hepatitis	1 (TD)
				2 (AD)
		DSE A4P	Field Work –Educational Excursion- Report Preparation	4 (TD +AD)
			Chronobiology and Stress Physiology	
		DSE B3TH	Effects of chronic stress Role of Hypothalamic-Pituitary-Adrenal Axis in coping stress Effects of Hypobaric and hyperbaric environment	2 (SC) 2(RM) 1(DD)
		DSE B3P	Determination of Diurnal or circadian rhythm	
				4 (RM+ TD)

Tentative, may subject to change:					
Months	Week	Paper	ChapterwiseSyllabusContent (Theory &	No. of	
			Practical)	Lectures(Prof.)	
May	2 <sup>nd</sup>	CC-13TH	Reproductive Physiology	1+1 (AD)	
	AND		Pregnancy test; Onset of menopause and postmenopausal		
	3 <sup>RD</sup>		changes.Parturition. Development of mammary glands,		
			lactation, control.		

CC-13 P	Study and identification of stained sections of different mammalian tissues and organs (TEST).	4 (TD+AD)
CC-14TH CC14P	Skin and Body Temperature Regulation: Neural and physiologic roles of body tempareture regulation Pyrexia, hyperthermia, hypothermia Environmental Pollutants and Human Health Sources and effects of non-ionizing radiation- Excretory System:Physiology of urinary bladder & micturition; Renal clearance tests	2(AD) 1(UC) 1 (RA) 3 (TD)
DSE A4TH	Staining and identification of histological sections Non-communicable diseases- hypertension & obesity	4 (TD+ RM) 2 (AD)
DSE B3TH	<b>Chronobiology and Stress Physiology</b> Effects of chronic stress Oxidative sress- Caisson disease- prevention	2 (SC) 2(RM) 1(DD)
DSE B3P	PROJECT WORK	4 (RM+ TD) 4 (TD + AD)

Tentative, may subject to change:					
Months	Week				
May		INTERNAL ASSESSMENT			
	4th	(notified 08-05-23) by 03-06-2023			
		<b>24-05-2023</b> CC13 AND CC-14			
		<b>26-05-2023</b> DSE A4 TH AND DSE B3TH			

#### University o fCalcutta Under Graduate Curriculum under Choice Based Credit System(CBCS)

# Lesson Plan with Syllabus for PHYSIOLOGY (Genl.) –SEMESTER VI (2023)

Tentative,m	Tentative, may subject to change:					
Months	Week	Paper	ChapterwiseSyllabusContent (Theory &	No. of		
			Practical)	Lectures(Prof.)		
February (From	3 <sup>RD</sup>	DSEB2TH	Human Nutrition & Dietetics: Basic constituents of food & their nutritional significance	2 +2 (AD)		
16.02.23)	&		Vitamins- classification & functions	3 +3 (RA)		
	4 <sup>TH</sup>	DSEB2P	Introduction to Diet Survey	3 +3 (AD + RA)		

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#### (Feb- June, 2023)

Tentative,	Tentative, may subject to change:					
Months	Week	Paper	ChapterwiseSyllabusContent (Theory & Practical)	No. of Lectures(Prof.)		
March	1 <sup>st</sup>	DSEB2TH	Human Nutrition & Dietetics: Body calorie requirements- adult consumption unit	2 +2 (AD)		
	&		Vitamins- deficiency symptoms, daily requirements, hypervitaminosis	3 +3 (RA)		
	2 <sup>nd</sup>	DSEB2P	Principles of Diet Survey	3 +3 (AD + RA)		

Tentative,	Tentative, may subject to change:					
Months	Week	Paper	ChapterwiseSyllabusContent (Theory &	No. of		
			Practical)	Lectures(Prof.)		
March	3 <sup>rd</sup>	DSEB2TH	Human Nutrition & Dietetics: Dietary requirements of carbohydrate, protein, lipid & other	2 +2 (AD)		
	&		nutrients Mineral metabolism- Ca, P, Fe; BMR-definition &	3 +3 (RA)		
	4 <sup>th</sup>		factors affecting			
		DSEB2P	Instructions regarding preparation of Diet Survey Report of a family	3+3(AD+RA)		

Tentative,	Tentative, may subject to change:					
Months	Week	Paper	ChapterwiseSyllabusContent (Theory &	No. of		
			Practical)	Lectures(Prof.)		
April	1 <sup>st</sup>	DSEB2TH	Human Nutrition & Dietetics: Dietary fibres;	2 +2 (AD)		
			SDA- definition and importance			
	&		RQ- definition, factors affecting & significance; BV of			
			proteins	3 +3 (RA)		
	2 <sup>nd</sup>					
		DSEB2P	Diet Survey Report of a family- analysis of collected			
		_	data	3 + 3 (AD + RA)		

Tentative,	Tentative, may subject to change:					
Months	Week	Paper	ChapterwiseSyllabusContent (Theory &	No. of		
			Practical)	Lectures(Prof.)		
April	3 <sup>rd</sup>	DSEB2TH	Human Nutrition & Dietetics: Principles of diet survey; composition and nutritional value of	2 +2 (AD)		
	&		common foodstuffs Essential & non-essential amino acids; Nitrogen	3 +3 (RA)		
	4 <sup>th</sup>		balance			
		DSEB2P	Diet Survey Report of a family- analysis of collected data& their interpretation	3 +3 (AD + RA)		

Tentative, may subject to change:					
Months	Week	Paper	ChapterwiseSyllabusContent (Theory &	No. of	
			Practical)	Lectures(Prof.)	

May	1 <sup>st</sup>	DSEB2TH	Human Nutrition & Dietetics: Composition	2 +2 (AD)
	&		Nitrogen balance & revision of other topics	3 +3 (RA)
	2 <sup>nd</sup>	DSEB2P	Diet Survey Report of a family- final preparation	3 +3 (AD + RA)
	3 <sup>rd</sup> &		INTERNAL ASSESSMENT (notified 08-05-23) by 03-06-2023	
	4 <sup>th</sup>		IA - 29-05-2023 - DSE B2 TH	

# University of Calcutta UnderGraduate Curriculum under Choice Based Credit System (CBCS) Lesson Plan with Syllabus for PHYSIOLOGY (Hons.) –SEMESTER IV (2023) (Feb- June, 2023)

Tentative,	Tentative, may subject to change:					
Months	Week	Paper	ChapterwiseSyllabusContent (Theory &	No. of		
			Practical)	Lectures(Prof.)		
February	3 <sup>RD</sup>	CC-8TH	Digestion: Anatomy and histology of alimentary canal	2+2(AD)		
(From			Metabolism: Redox potential. Mitochondrial Electron			
20.03.23)	AN		Transport Chain.	4+4(RM)		
	D 4 <sup>th</sup>	CC-8P	<b>Biochemical estimations:</b> Quantitative (percentage) estimation of amino nitrogen by Sorensen's formol titration method	3+3 (RM+TD)		
		СС-9ТН	Molecular Biology: DNA replication—Meselson and Stahl Experiment; DNA Polymerases, Ligases and other regulatory proteins. Methodologies :Chromatography: Principles and uses of : TLC	2+ 2(SC) 2+ 2(UC)		

	СС10ТН	Nutrition and dietetics: Minerals: Sources, biological functions of sodium, potassium, calcium, phosphorus	3 + 3 (TD)
	CC10P	Nutrition and Dietetics :Composition and nutritional value of common foodstuff.	6 + 6 (AD+ TD)
	SECB1	<b>Detection of Food Additives /Adulterants and Xenobiotics:</b> Definition & examples of food additives/adulterants.	1 + 1 (AD)

	Maale	Daman	Chambon in Cullaburg Combon to /Theorem 0	No. of
wonths	vveek	Paper	ChapterwiseSyllabusContent (Theory &	NO. OT
			Practical)	Lectures(Prof.)
March	1 <sup>st</sup>	CC-8TH	Digestion: Histological structures of salivary glands	2(AD)
			Metabolism: Oxidativephosphorylation- inhibitors and	
			uncouplers.	4(RM)
		CC-8P	<b>Biochemical estimations:</b> Quantitative (percentage) estimation of amino nitrogen by Sorensen's formol titration method	3 (RM+TD)

	СС-9ТН	<b>Molecular Biology:</b> Transcription RNA Polymerase and other regulatory mechanism in prokaryotes <b>Methodologies :</b> TLC andGel filtration	2(SC) 2(UC)
	CC10TH	Nutrition and dietetics: Minerals: Sources, biological functions of calcium and iron	3 (TD)
	CC10P	<b>Nutrition and Dietetics :</b> Composition and nutritional value of common foodstuff.	6 (AD+ TD)
	SECB1	<b>Detection of Food Additives /Adulterants and</b> <b>Xenobiotics:</b> Health hazards of food additives/adulterants	1 (AD)

Months Week Paper ChapterwiseSyllabusContent (Theory & No. of Practical) No. of Lectures(Prof.)	Tentative, may subject to change:					
	Months	Week	Paper	ChapterwiseSyllabusContent (Theory & Practical)	No. of Lectures(Prof.)	

March	2 <sup>nd</sup>	CC-8TH	Digestion: Histological structures of pancreas &liver	2(AD)
			Deglutition	
			Metabolism: Glycolysis, R-L cycle. TCA cycle	4(RM)
		CC-8P	Biochemical estimations: Quantitative (total) estimation of	f
			amino nitrogen by Sorensen's formol titration method	3 (RM+TD)
				3 (RM+ SC)
		СС-9ТН	<b>Molecular Biology:</b> Transcription RNA Polymerase and other regulatory mechanism in prokaryotes	2(SC)
			Methodologies : Affinitychromatography, ion-exchange	2(11C)
			chromatography	2(00)
		CC10TH	<b>Nutrition and dietetics: Minerals:</b> Sources, biological functions of zinc, iodine and fluorine	3 (TD)
		CC10P	Nutrition and Dietetics : Composition and nutritional	
			value of common foodstuff.	3 (TD + UC)
			introduction to Diet Survey	3 (AD + TD)
			Detection of Food Additives /Adulterants and	
		SECB1	Xenobiotics: Tests foridentifying Food Adulterants in food	1 (AD)
			samples and their pathophysiological effects: Metanil	

Tentative	,maysubj	ecttochange:		
Months	Week	Paper	ChapterwiseSyllabusContent (Theory &	No. of
			Practical)	Lectures(Prof.)
March	3 <sup>rd</sup>	СС-8ТН	<b>Digestion</b> : Movements of alimentary canal and their regulations <b>Metabolism:</b> Anaplerotic reactions and Amphibolic nature of TCA cycle; Pentosephosphate pathway	2(AD) 4(RM)
		CC-8P	<b>Dale's Experiment:</b> Kymographic recording of normal movements of rat'sintestine using Dale's apparatus	3 (TM+DD) 3 (RM+ SC)
		СС-9ТН	Molecular Biology: Genetic code – properties and Wobble hypothesis Methodologies :Electrophoresis: Principles and method, uses of agarose gel electrophoresis	2(SC) 2(UC)
		СС10ТН	Nutrition and dietetics: Vitamins: Thiamin, Riboflavin	3 (TD)
			Diet Survey-Principles and Formulation	3(TD + UC)
		CC10P		3 (AD + TD)
		SECB1	Detection of Food Additives /Adulterants and Xenobiotics: Tests foridentifying Food Adulterants in food samples and their pathophysiological effects: Aluminium foil, Chicory,Bisphenol A and Bisphenol S	1 (AD)

Tentative,	,maysubj	ecttochange:		
Months	Week	Paper	ChapterwiseSyllabusContent (Theory &	No. of
			Practical)	Lectures(Prof.)
March	4 <sup>th</sup>	CC-8TH	<b>Digestion</b> : Composition, functions and regulation of the secretion of salivary and gastric juices <b>Metabolism:</b> Gluconeogenesis – Coricycle; Glycogenesis and Glycogenolysis	2(AD) 4(RM)
		CC-8P	<b>Dale's Experiment:</b> Kymographic recording of the effects of acetylcholine on the normal movements of rat'sintestine using Dale's apparatus	3 (TM+DD) 3 (RM+ SC)
		СС-9ТН	<b>Molecular Biology:</b> Translation– codon-anticodon interaction and mechanism in prokaryotes <b>Methodologies :</b> SDS-PAGE	2(SC) 2(UC)
		СС10ТН	Nutrition and dietetics: Vitamins: Ascorbic Acid and niacin	3 (TD)
			Nutrition and Dietetics : Qualitative analysis of potato	3 (TD + UC)
		СС10Р	Diet Survey-Weightment of raw foods	3 (AD + TD)
		SECB1	<b>Detection of Food Additives /Adulterants and</b> <b>Xenobiotics:</b> Tests foridentifying Food Adulterants in food samples and their pathophysiological effects: PolychlorinatedBiphenyls, Dioxin and Urea	1 (AD)

Tentative	Tentative, may subject to change:					
Months	Week	Paper	ChapterwiseSyllabusContent (Theory & Practical)	No. of Lectures(Prof.)		
April	1 <sup>st</sup>	CC-8TH	Digestion: Composition, functions and regulation of the secretion of pancreatic juice & bile; Enterohepatic circulation Metabolism: β-oxidation and biosynthesis of saturated and monounsaturated fatty acids	3(AD) 4(RM)		
		CC-8P	<b>Dale's Experiment:</b> Kymographic recording of the effects of acetylcholine on the normal movements of rat'sintestine using Dale's apparatus	3 (TD+DD) 3 (RM+ SC)		
		СС-9ТН	<b>Molecular Biology:</b> Translation– codon-anticodon interaction and mechanism in prokaryotes	2(SC)		
		СС10ТН	Nutrition and dietetics: Vitamins: Pyridoxine, Pantothenic Acid, Biotin, Inositol	2(UC) 2 (TD)		
			<b>Nutrition and Dietetics :</b> Qualitative analysis of rice and pulses	3 (TD + UC)		
		CC10P	Diet Survey-weightment of raw foods	3 (AD + TD)		
		SECB1	<b>Detection of Food Additives</b> / <b>Adulterants and</b> <b>Xenobiotics:</b> Concept of Xenobiotics- Types, sources and fate.	1 (TD)		

Tentative,	Tentative, may subject to change:					
Months	Week	Paper	ChapterwiseSyllabusContent (Theory &	No. of		
		-	Practical)	Lectures(Prof.)		
April	2 <sup>nd</sup>	CC-8TH	<b>Digestion</b> : Digestion and absorption of carbohydrates <b>Metabolism:</b> Biosynthesis of lecithin. Biosynthesis of	3(AD)		
			Cholesterol. Ketone body metabolism.	4(RM)		
		CC-8P	<b>Dale's Experiment:</b> Kymographic recording of the effects of acetylcholine on the normal movements of rat'sintestine using Dale's apparatus	3 (RM+DD) 3 (RM+ SC)		
		СС-9ТН	<b>Molecular Biology:</b> Regulation of gene expression : operon concept – the lac operon	2(SC)		
			Methodologies :Ultracentrifugation: Density gradient ultracentrifugation	2(UC)		

	СС10ТН	Nutrition and dietetics: Vitamins: Cyanocobalamin, Folic Acid	2 (TD)
	CC10P	Nutrition and Dietetics : Diet Survey-Weightment of raw foods; Analysis of Data	3 (TD + UC) 3 (AD + TD)
	SECB1	<b>Detection of Food Additives /Adulterants and</b> <b>Xenobiotics:</b> Concept of Xenobiotics- Types, sources and fate.	1 (TD)

Tentative, may subject to change:				
Months	Week	Paper	ChapterwiseSyllabusContent (Theory &	No. of
			Practical)	Lectures(Prof.)

April	3 <sup>rd</sup>	CC-8TH	<b>Digestion</b> : Digestion and absorption of lipids & proteins	3(AD)
			Deamination, transamination, amination and	4(RM)
			decarboxylation	
		CC-8P	<b>Dale's Experiment:</b> Kymographic recording of the effects	3 (RM+DD)
			using Dale's apparatus	3 (RM+ SC)
		сс_отн	Molecular Biology: Regulation of gene	2(SC)
		cc-5111	expression : operon concept – the lac operon <b>Methodologies:</b> Radioactivity – Classification and	
			properties. Their use – radiolabelling of biomolecules and	2(UC)
			its detection by autoradiography.	
			Nutrition and dietetics: Vitamins: Vitamins A-	2(TD)
		СС10ТН	deficiency and biochemical functions	2 (ID)
				3 (TD + UC)
		CC10P	Nutrition and Dietetics : Diet Survey- Analysis of Data	3(AD + TD)
				S(AD + ID)
			<b>Detection of Food Additives /Adulterants and</b> <b>Xenobiotics:</b> Concept of Xenobiotics- Types, sources and	
		SECB1	fate.	1 (TD)
				I (ID)

Months	Week	Paper	ChapterwiseSyllabusContent (Theory & Practical)	No. of Lectures(Prof.)
April	4 <sup>th</sup>	CC-8TH	<b>Digestion</b> : Digestion and absorption of nucleic acids; Defecation. GALT. Basic concepts of Peptic Ulcer, Jaundice and Gallstones. <b>Metabolism:</b> Synthesis of Urea and Nitric oxide. Glucogenicandketogenic amino acids. Metabolism of glycine, methionine, tryptophan andphenylalanine.	3(AD) 4(RM)
		CC-8P	<b>Dale's Experiment:</b> Kymographic recording of the effects of adrenaline on the normal movements of rat'sintestine using Dale's apparatus	3 (RM+DD) 3 (RM+ SC)
		СС-9ТН	Molecular Biology: Gene mutation – agents and types. DNA repairing processes. Methodologies:Principlesof RIA, ELISA	2(SC) 2(UC)
		СС10ТН	<b>Nutrition and dietetics: Vitamins:</b> Vitamins D- deficiency and biochemical functions	2 (TD)
		CC10P	<b>Nutrition and Dietetics :</b> Diet Survey- Final Calculation and interpretation	3 (TD + UC) 3 (AD + TD)
		SECB1	<b>Detection of Food Additives</b> / <b>Adulterants and</b> <b>Xenobiotics:</b> Concept of Xenobiotics- Types, sources and fate.	1 (TD)
Tentative	,maysubj	ecttochange:		
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Months	Week	Paper	ChapterwiseSyllabusContent (Theory & Practical)	No. of Lectures(Prof.)
May	1 <sup>st</sup>	CC-8TH CC-8P	<ul> <li>Metabolism: Purines and Pyrimidines– Biosynthesis :de novo and salvage pathways. Catabolism.</li> <li>Dale's Experiment: Kymographic recording of the effects of adrenaline on the normal movements of rat'sintestine using Dale's apparatus</li> </ul>	4(RM) 3 (RM+DD)
		СС-9ТН	Molecular Biology: Concept of oncogenes and properties of cancer cells. Methodologies:Western and Northern Blotting	2(SC) 2(UC)
		CC-9P	Colorimetric method— Estimation of serum protein by Lowry method Thin Layer Chromatography	3 (RM+ SC) 3 (TD + UC)
		СС10ТН	Nutrition and Dietetics: Vitamins: Vitamins E & K- deficiency and biochemical functions SDA, RQ and BMR :Factors affecting. Determination of BMR.;Fuel Values of Food. Body calorie requirements – adult consumption unit	3 (TD) 3 (AD)
		CC10P	Nutrition and Dietetics : Diet Survey- Report Preparation	3 (AD + TD)

Months	Week	Paper	ChanterwiseSyllahusContent (Theory &	No of
111011113	WCCK		Dractical)	Loctures(Prof )
May	2 <sup>nd</sup>	СС-8ТН	Metabolism: Revision of topics	4(RM)
	2	сс-9тн	Molecular Biology: Recombinant DNA technology in brief and its applications – gene	2(SC)
			therapy	2(50)
			Methodologies: Southern blotting techniques. Polymerase chainreaction-basic concept	2(UC)
		CC-9P	Colorimetric method—	3 (RM+DD)
			Estimation of blood glucose by Folin–Wu method Estimation of serum urea by DAM method	3 (RM+ SC)
		сс10тн	<b>Nutrition and Dietetics:</b> Balanced diet and principles of formulation of balanced diets for adult man, adult woman,	3 (AD)
			lactating woman and pregnant women. Revision of Topics taught	3 (TD)

Tentative	,maysubj	ecttochange:		
Months	Week	Paper	ChapterwiseSyllabusContent (Theory & Practical)	No. of Lectures(Prof.)
Мау	3 <sup>rd</sup>	СС-9ТН	Molecular Biology: Recombinant DNA technology in brief and its applications – transgenic animal Methodologies:Revision of topics taught	2(SC) 2(UC)
		CC-9P	Colorimetric method— Estimation of serum protein by Lowry method Estimation of serum albumin by Bromocresol green dye method and calculation of A/G ratio	3 (RM+DD) 3 (RM+ SC)
		СС10ТН	<b>Nutrition and Dietetics:</b> Nitrogen balance.Protein sparers.Supplementary value of proteins.Biological value o proteins.Net proteinutilization.Protein efficiency ratio. Dietary fibres.	f3 (AD)
		CC10P	Revision of Practical Topics	3 (TD+ UC)

тн	СС-8ТН СС-9ТН	Digestion – Revision Molecular Biology: Recombinant DNA technology in brief and its applications – transgenic animal Methodologies:Revision of topics taught	1(AD) 2(SC) 2(UC)
	СС-9ТН	<b>Molecular Biology:</b> Recombinant DNA technology in brief and its applications – transgenic animal <b>Methodologies:</b> Revision of topics taught	2(SC) 2(UC)
	CC-9P	Colorimetric method— Estimation of serum protein by Lowry method Estimation of serum albumin by Bromocresol green dye method and calculation of A/G ratio	3 (RM+TD) 3 (RM+ TD)
	СС10ТН	Nutrition and Dietetics: Nitrogen balance .Protein Sparers .Supplementary value of proteins. Biological value of proteins.Net protein utilization. Protein efficiency ratio. Dietary fibres revision	2 (AD)
	CC10P	Revision of Practical Topics Revision – Viva –voce Discussion	2 (TD+AD) 3 (TD+ UC)
		СС10ТН СС10Р	CC10THNutrition and Dietetics: Nitrogen balance .Protein Sparers .Supplementary value of proteins. Biological value of proteins.Net protein utilization. Protein efficiency ratio. Dietary fibres revisionCC10PRevision of Practical Topics Revision – Viva –voce Discussion

Tentative,	maysubj	ecttochange		1
Months	Week	Paper	ChapterwiseSyllabusContent (Theory &	No. of
			Practical)	Lectures(Prof.)
June	1 <sup>st</sup>	CC-8TH	Digestion – Revision	1(AD)
		СС-9ТН	Molecular Biology: Recombinant DNA technology in brief and its applications – transgenic	2(SC)
			animal- revision <b>Methodologies:</b> Revision of topics taught	2(UC)
		CC-9P	Colorimetric method— Estimation of serum protein by Lowry method Estimation of serum albumin by Bromocresol	3 (RM+TD)
			green dye method and calculation of A/G ratio	3 (RM+ TD)

	СС10ТН	Nutrition and Dietetics: Nitrogen balance .Protein sparers. Supplementary value of proteins. Biological value of proteins.Net protein utilization. Protein efficiency ratio. Dietary fibres revision	2 (AD)
	CC10P	Revision of Practical Topics Revision – Viva –voce Discussion	2 (TD+AD) 3 (TD+ UC)
Result notified (06-06-23) Decraled JUNE 9 <sup>TH</sup>		INTERNAL ASSESSMENT (Notified on 08-06-2023) By 26-06-23	

#### UniversityofCalcuttaUnderGraduateCurriculumunderChoiceBasedCreditSystem(CBCS) Lesson Plan with Syllabus for PHYSIOLOGY (Genl.) –SEMESTER IV (2023)

## (Feb- June, 2023)

Months	Week	Paper	ChapterwiseSyllabusContent (Theory & Practical)	No. of Lectures(Prof.)
February (From	3 <sup>RD</sup>	GE4TH	Endocrinology	1 (DD) 1 (RA)
20.03.23)	.03.23) &			1 (SC)
	4 <sup>™</sup>	GE4P		1 (DD) 1 (RA)

SECB2	<b>Community and Public Health</b> Basic idea about community, public health issues	1 (UC) 1 (AD)
	Basic idea of PCM and their prevention	1 (AD) 1 (TD)

Tentative, may subject to change:					
Months	Week	Paper	ChapterwiseSyllabusContent (Theory &	No. of	
			Practical)	Lectures(Prof.)	
March	1 <sup>st</sup>	GE4TH	Endocrinology	DD	
				RA	
	&			SC	
	2 <sup>nd</sup>	GE4P		DD	
				RA	
				UC	
		CECD3		1 (AD)	
		SECBZ	Community and Public Health		
			Malnutrition in a community, over nutrition and	1 (AD)	
			POSSIBLE remedial measures PCM Marasmus Kwashiorkor	1 (TD)	
			i Civi Marasinus, Kwasinorkor		

Months	Week	Paper	ChapterwiseSyllabusContent (Theory & Practical)	No. of Lectures(Prof.)
March	3 <sup>rd</sup> &	GE4TH	Endocrinology	DD RA SC
4 <sup>th</sup>	4 <sup>th</sup>	GE4P		DD RA UC
	SECB2	SECB2	<b>Community and Public Health</b>	3 +3 (AD) 3 +3 (AD + RA)
		Diet management of obese	1 (TD)	

Tentative,	Tentative, may subject to change:					
Months	Week	Paper	ChapterwiseSyllabusContent (Theory &	No. of		
			Practical)	Lectures(Prof.)		
April	1 <sup>st</sup>	GE4TH	Endocrinology	DD		
				RA		
	&			SC		
	2 <sup>nd</sup>	GF4P		DD		
	2	UL41		RA		
				UC		
		SECB2	Community and Public Health	3 +3 (AD + TD)		

Tentative, may subject to change:					
Week	Paper	ChapterwiseSyllabusContent (Theory &	No. of		
		Practical)	Lectures(Prof.)		
3 <sup>rd</sup>	GE4TH	Endocrinology	DD		
			RA		
&			SC		
4 <sup>th</sup>	GE4P		DD		
	_		RA		
			UC		
	SECB2	Community and Public Health	3 +3 (AD + SC)		
	naysubjec Week 3 <sup>rd</sup> & 4 <sup>th</sup>	maysubjecttochange:WeekPaper3rdGE4TH&4thGE4PSECB2	Maysubjecttochange:       ChapterwiseSyllabusContent (Theory & Practical)         3rd       GE4TH       Endocrinology         &       4th       GE4P         SECB2       Community and Public Health		

Months	Week	Paper	ChapterwiseSyllabusContent (Theory & Practical)	No. of Lectures(Prof.)
May	1 <sup>st</sup>	GF4TH	Fndecrinology	
lvidy	2.	UL TIT	Endoermology	RA
	and			SC
	ard			
	3"			DD
	8	GE4P		RA
	4 <sup>th</sup>			UC
				3 + 3 (AD + TD)
		SECB2	Community and Public Health	

L		

Months	Wook	Daner	ChanterwiseSyllabusContent (Theory &	No. of
wonths	week	Paper	ChapterwiseSynabusContent (Theory &	
			Practical)	Lectures(Prof.)
June	1 <sup>st</sup>	GE4TH	REVISION	DD
				RA
				SC
			DEVICION	
		GF4P	REVISION	DD
				RA
				UC
			REVISION	$3+3(\Delta D + TD)$
		SECB2		$5+5(\mathbf{AD}+\mathbf{ID})$
June 2 <sup>nd</sup>			INTERNAL ASSESSMENT	
			(Notified on 08-06-2023)	
Result			By 26-06-23	
notified			2, 20 00 20	
00-00-23)				
Decraled				
JUNE 9 <sup>TH</sup>				

# University of Calcutta under Graduate Curriculum under Choice Based Credit System (CBCS)

## Lesson Plan with Syllabus for PHYSIOLOGY (Hons.) –SEMESTER II (2023)

Months	Week	Paper	ChapterwiseSyllabusContent (Theory & Brastical)	No. of
March (20.03.2023 onwards)	4th	CC-3TH	Muscle Physiology: Microscopic and electron microscopic structure of skeletal, smooth and cardiac muscles Nerve Physiology: Structure, classification and functions of neurons and neuroglia Cell Signalling :Cell surface receptor proteins – ion channel coupled, G-protein coupled andenzyme-coupled	2(TD) 2 (UC) 1 (SC)
		ССЗР СС-4ТН	Staining of skeletal muscle by methylene blue The Nervous System: Structural organization of different	3 (UC+ TD) 3 (RM/DD) 3 (DD/UC)
			parts of brain and spinal cord Autonomic nervous system:organization, outflow, ganglia, centres andfunctions. Brain: Structure, connections and functions.	2 (RM) 2(DD)
				2 (AD)

#### (Feb- June, 2023)

Tentative,n	naysubject	tochange:		
Months	Week	Paper	ChapterwiseSyllabusContent (Theory &	No. of
			Practical)	Lectures(Prof.)
April	1st	СС-ЗТН ССЗР	Muscle Physiology: The sarcotubular system. Red and white striated muscle fibres Nerve Physiology: Cytoskeletalelements and axoplasmic flow. Myelinogenesis Cell Signalling :Cell surface receptor proteins – ion channel coupled, G-protein coupled andenzyme-coupled Staining of cardiac muscle by methylene blue	2(TD) 2 (UC) 1 (SC) 3 (UC+ RM)
				3 (RM/DD) 3 (DD/UC)
		CC-4TH	The Nervous System: Reflexaction – definition, reflex arc, classification and properties	2 (RM)
			Autonomic nervous system:organization, outflow, ganglia, centres andfunctions.	2(DD)
			<b>Brain:</b> Structure, connections and functions.brain stem, cerebellum	2 (AD)

Tentative,ma	aysubject	tochange:		
Months	Week	Paper	ChapterwiseSyllabusContent (Theory &	No. of
			Practical)	Lectures(Prof.)
April	2 <sup>nd</sup>	CC-3TH	Muscle Physiology: Single-unit and multi-unit smooth muscle. Muscle groups: antagonists and agonists; Excitation-contraction coupling. Dihydropyridine receptors & Ryanodine receptors Nerve Physiology: The resting membrane potential. The action potential. Electrotonic potentials. Current of injury Cell Signalling :Intracellular messengers – cAMP	2(TD) 2 (UC) 1 (SC)
		ССЗР	Staining of isolated nerve fibre by silver nitrate method <b>The Nervous System:</b> Reflexaction – definition, reflex arc, classification and properties; <b>Ascending tracts:</b> origin, courses, termination and functions <b>CSF:</b> Formation, circulation and functions. Reticular formation and limbic system	3 (UC+ TD) 3 (RM/DD) 3 (DD/UC) 2 (RM) 2(DD) 2 (AD)

Tentative, may subject to change:						
Months	Week	Paper	ChapterwiseSyllabusContent (Theory &	No. of		
			Practical)	Lectures(Prof.)		
April	3rd	CC-3TH	Muscle Physiology: Mechanism of skeletal and smooth muscle contraction and relaxation; muscleproteins. Nerve Physiology: Propagation of nerve impulse in different types of nerve fibers. Compound action potentials. Cell Signalling :Intracellular messengers – IP3 & DAG	2(TD) 2 (UC) 1 (SC)		
		CC4P	Biceps jerk, knee jerk, plantar reflex, Babinski sign	3 (UC+ SC) 3 (TD/DD)		
		CC-4TH	The Nervous System: Ascending tracts: origin, courses,	3 (RM/DD) 2 (RM)		

	Chemical transmission in autonomic nervous systems; Functions of the spinal cord:with special reference to functional changesfollowing hemisection and complete section of spinal cord	2(DD)
	Limbic system connections, Basal nuclei, cerebral cortex	2 (AD)

Months	Week	Paper	ChapterwiseSyllabusContent (Theory & Practical)	No. of Lectures(Prof.)
April	4th	CC-3TH	Muscle Physiology: Properties of skeletal muscle: excitability, contractility, all or none law, summation of stimuli, summation of contractions Nerve Physiology: The neuromuscular junction : structure, transmission, end-plate potential, MEPP, post- tetanic potentiation Cell Signalling :Intracellular messengers – cGMP	2(TD) 2 (UC) 1 (SC)
		CC4P	Gastrocnemius-sciatic nerve preparation; kymographic recording of isotonic muscle twitch	3 (UC+ SC) 3 (DD/UC)
		СС-4ТН		3 (RM/DD)
			termination and functions Blood-CSF and Blood-Brainbarrier; Functions of the spinal cord:with special reference to functional changes following hemisection and complete section of spinal cord	2 (RM) 2(DD)
			Vestibular apparatus, sleep	2 (AD)

Tentative, may subject to change:					
Months	Week	Paper	ChapterwiseSyllabusContent (Theory &	No. of	
			Practical)	Lectures(Prof.)	

May	1 <sup>st</sup>	CC-3TH	Muscle Physiology: Properties of skeletal muscle: effects	2(TD)
			of repeated stimuli, genesis of tetanus, onset of fatigue, refractory period, tonicity, conductivity, extensibility and elasticity. Optimal load, optimal length of fibres <b>Nerve Physiology:</b> Properties of nerve fibers : excitability, conductivity, all or none law, accommodation, adaptation, summation, refractory period, indefatigability.	2 (UC)
		CC4P	Gastrocnemius-sciatic nervepreparation; kymographic recording of isotonic muscle twitch	3 (UC+ SC) 3 (DD/UC)
				3 (RM/DD)
		CC-4TH	The Nervous System: Descending tracts:origin, courses, termination and functions Blood-CSF and Blood-Brainbarrier; Functions of the spinal cord:with special reference to functional changesfollowing hemisection and complete section of spinal cord Cerebral circulation, stroke Principles, uses, advantages and disadvantages of CT scan,	2 (RM) 2(DD) 2 (AD) 1 (SC)
			MRI and PETscan	

Tentative,m	naysubjectt	ochange:		
Months	Week	Paper	ChapterwiseSyllabusContent (Theory &	No. of
			Practical)	Lectures(Prof.)
May	2 <sup>nd</sup>	CC-3TH	<b>Muscle Physiology</b> : Mechanical components of muscle. Isometric and isotonic contractions – muscle length, tension and velocity relationships <b>Nerve Physiology:</b> Synapses :types, structure, synaptic transmission of the impulse, synaptic potentials, neurotransmitters, cotransmitters, neuromodulators	2(TD) 2 (UC)
		CC4P	Gastrocnemius-sciatic nervepreparation; kymographic recording of isotonic muscle twitch	3 (UC+ SC) 3 (DD/UC) 3 (RM/DD)
		CC-4TH	The Nervous System: Descending tracts:origin, courses, termination and functions Pain production, perceptionand regulation. Referred pain Cerebral circulation, stroke Principles,uses, advantages and disadvantages of PETscan	2 (RM) 2(DD) 2 (AD) 1 (SC)

Tentative,m	naysubject	tochange:		
Months	Week	Paper	ChapterwiseSyllabusContent (Theory &	No. of
			Practical)	Lectures(Prof.)
May 3 <sup>rd</sup>	3 <sup>rd</sup>	CC-3TH	<b>Muscle Physiology</b> : Chemical, thermal and electrical changes in skeletalmuscle during contraction and relaxation <b>Nerve Physiology</b> : Chronaxie, rheobase and utilization time; Motor unit, Motor point; denervation hypersensitivity Thermal changes of nerve during activity; Nerve growth factors	2(TD) 2 (UC)
		CC4P	Gastrocnemius-sciatic nervepreparation; kymographic recording of isotonic muscle twitch	3 (UC+ SC) 3 (DD/UC)
				3 (RM/DD)
		СС-4ТН	The Nervous System: Structure, nerve connections and functions of brainstem, cerebellum Muscle spindle and golgi tendon organ: their structure, innervations andfunctions, postural reflexes	2 (RM) 2(DD) 2 (AD)
			Learning, memory, Emotion Molecular neurobiology:General concept of ionotropic and metabotropic receptors	1 (SC)

Months	Week	Paper	ChapterwiseSyllabusContent (Theory &	No. of
			Practical)	Lectures(Prof.)
May	4 <sup>th</sup>	CC-3TH	Muscle Physiology: Electromyography; Force velocity relationship Nerve Physiology: Injury to peripheral nerves – degeneration and regeneration in nerve fibre, changes in the nerve cell body, trans neuronal degeneration, changes in receptors andmotor end-plates	2(TD) 2 (UC)
		CC4P	Gastrocnemius-sciatic nervepreparation; kymographic recording of effects of twosuccessive stimuli	3 (UC+ SC) 3 (DD/UC)
		СС-4ТН	The Nervous System: Structure, nerve connections and functions of reticular formation, hypothalamus	3 (RM/DD) 2 (RM)

Decorticate, decerebrate rigidity and spinal animal	2(DD)
Learning, memory, Emotion Structure and functions of vestibular apparatus. Stroke	2 (AD)
<b>Molecular neurobiology:</b> Structure, sub-types and functions of nicotinic and muscarinic acetylcholine	1 (SC)

Tentative,m	aysubjectt	tochange:		
Months	Week	Paper	ChapterwiseSyllabusContent (Theory & Practical)	No. of Lectures(Prof.)
June	1 <sup>st</sup>	CC-3TH	Muscle Physiology: Revision of topics taught	2(TD)
			Nerve Physiology: Revision of topics taught	2 (UC)
		CC4P	Gastrocnemius-sciatic nervepreparation; kymographic recording of effects of twosuccessive stimuli	3 (UC+ SC) 3 (DD/UC)
				3 (RM/DD)
		CC-4TH	The Nervous System: Structure, nerve connections and functions of thalamus, basal nuclei and cerebral cortex-Speech and aphasia	2 (RM)
			Revision of topics taught	2(DD)
			Revision of topics taught	2 (AD)
			Molecular neurobiology:Structure, sub-types and functions of nicotinic and muscarinic acetylcholine receptors; histamine receptors	1 (SC)

Months	Week	Paper	ChapterwiseSyllabusContent (Theory & Practical)	No. of Lectures(Prof.)
June	2 <sup>nd</sup>		INTERNAL ASSESSMENT (Notified on 08-06-2023) By 26-06-23	

### UniversityofCalcuttaUnderGraduateCurriculumunderChoiceBasedCreditSystem(CBCS) Lesson PlanwithSyllabusforPHYSIOLOGY (Genl.) –SEMESTER II (2022)

#### (Feb- June, 2023)

Tentative, ma	aysubject			
Months	Week	Paper	ChapterwiseSyllabusContent (Theory &	No. of
			Practical)	Lectures(Prof.)
March (21.03.2022 onwards)	4th	GE-2TH	Blood and body fluids:Blood: composition and functions Cardiovascular system:Anatomy and histology of the heart	2(RA)
			<b>Respiratory System:</b> Anatomy and histology of the respiratory passage and organs.	1 (SC)
		GE2P	Preparation and staining of human blood film with Leishman's stain	3 (RA+ UC)

Tentative, may subject to change:						
Months	Week	Paper	ChapterwiseSyllabusContent (Theory &	No. of		
			Practical)	Lectures(Prof.)		

April	1 <sup>st</sup>	GE-2TH	Blood and body fluids:Blood: composition and functions	2(RA)
		GE2P	Cardiovascular system:Properties of cardiac muscle Respiratory System:Anatomy and histology of the respiratory passage and organs. Preparation and staining of human blood film with Leishman's stain	1 (DD) 1 (SC) 3 (RA+UC)

Tentative,m	aysubject	tochange:		
Months	Week	Paper	ChapterwiseSyllabusContent (Theory &	No. of
			Practical)	Lectures(Prof.)
April	2 <sup>nd</sup>	GE-2TH	Blood and body fluids: Plasma proteins: origin and functions	2(RA)
			Cardiovascular system:Properties of cardiac muscle	1 (DD)
			<b>Respiratory System:</b> Role of respiratory muscles in breathing	1 (SC)
		GE2P	Preparation and staining of human blood film with Leishman's stain	3 (RA+ UC)

Tentative,m	aysubject	tochange:		
Months	Week	Paper	ChapterwiseSyllabusContent (Theory &	No. of
			Practical)	Lectures(Prof.)
April	3 <sup>rd</sup>	GE-2TH	Blood and body fluids:Bloodcells their morphology and functions Cardiovascular system:Origin andpropagation of cardiac impulse Respiratory System: Lung volumes and capacities	2(RA) 1 (DD) 1 (SC)
		GE2P	Preparation and staining of human blood film with Leishman's stain	3 (RA+ UC)

Months	Week	Paper	ChapterwiseSyllabusContent (Theory &	No. of
			Practical)	Lectures(Prof.)
April	4 <sup>th</sup>	GE-2TH	Blood and body fluids:Bloodcells their morphology and functions Cardiovascular system:Origin and propagation of cardiac	2(RA) 1 (DD)
			<b>Respiratory System:</b> Lung volumes and capacities	1 (SC)
		GE2P	Preparation and staining of human blood film with Leishman's stain	3 (RA+ UC)

Tentative,m	Tentative, may subject to change:						
Months	Week	Paper	ChapterwiseSyllabusContent (Theory & Practical)	No. of Lectures(Prof.)			
May	1 <sup>st</sup>	GE-2TH	Blood and body fluids: Erythropoiesis	2(RA)			
			Cardiovascular system: Cardiac cycle : Events	1 (DD)			
			Respiratory System:Exchange of respiratory gases between lung and blood and between blood and tissues	1 (SC)			
		GE2P	Preparation and staining of human blood film with Leishman's stain	3 (RA+ UC)			

Tentative, may subject to change:						
Months	Week	Paper	ChapterwiseSyllabusContent (Theory &	No. of		
			Practical)	Lectures(Prof.)		
May	2 <sup>nd</sup>	GE-2TH	<b>Blood and body fluids:</b> Hemoglobin : different types of compounds and derivatives	2(RA)		
			Cardiovascular system:Heart sounds. Heart rate	1 (DD)		
			<b>Respiratory System:</b> Exchange of respiratorygases between lung and blood and between blood and tissues	1 (SC)		
			Preparation of hemin crystals	3 (RA+ UC)		

	GE2P	

Tentative,m	Tentative, may subject to change:						
Months	Week	Paper	ChapterwiseSyllabusContent (Theory &	No. of			
			Practical)	Lectures(Prof.)			
May	3 <sup>rd</sup>	GE-2TH	Blood and body fluids: Coagulation of blood: mechanism	2(RA)			
			<b>Cardiovascular system:</b> Cardiacoutput: Determination by following Fick principle	1 (DD)			
			<b>Respiratory System:</b> Transport of oxygen andcarbon dioxide in blood	1 (SC)			
		GE2P	Measurement of systolic and diastolic pressure by sphygmomanometer anddetermination of pulse and mean pressure	3 (RA+ UC)			

Tentative, may subject to change:						
Months	Week	Paper	ChapterwiseSyllabusContent (Theory &	No. of		
			Practical)	Lectures(Prof.)		
May	4 <sup>th</sup>	GE-2TH	Blood and body fluids:procoagulants, anticoagulants	2(RA)		
			Cardiovascular system: Cardiacoutput: factors affecting	1 (DD)		
			<b>Respiratory System:</b> Transport of oxygen andcarbon dioxide in blood	1 (SC)		
		GE2P	Measurement of systolic and diastolic pressure by sphygmomanometer anddetermination of pulse and mean pressure	3 (RA+ UC)		

Tentative, may subject to change:						
Months	Week	Paper	ChapterwiseSyllabusContent (Theory &	No. of		

			Practical)	Lectures(Prof.)
June	1 <sup>st</sup>	GE-2TH	<b>Blood and body fluids:</b> Lymph and tissue fluids: composition, formation, and functions	2(RA)
			<b>Cardiovascular system:</b> Pulse - arterial and venous. Blood pressure and factors controlling	1 (DD)
			<b>Respiratory System:</b> Regulation of respiration - neural and chemical	1 (SC)
		GE2P	Pneumographic recording of normal respiratory movements	3 (RA+UC)

Tentative,m	Tentative, may subject to change:						
Months	Week	Paper	ChapterwiseSyllabusContent (Theory & Practical)	No. of Lectures(Prof.)			
June	2 <sup>nd</sup>	GE-2TH	Blood and body fluids: Lymph and tissue fluids: composition, formation, and functions Cardiovascular system: Baro- and Chemoreceptors; Vasomotor reflexes	2(RA) 1 (DD)			
		CEAD	<b>Respiratory System:</b> Regulation of respiration - neural and chemical	1 (SC)			
		GLEI	Pneumographic recording of the effects of hyperventilation and breath-holding on normal respiratory movements	3 (RA+ UC)			

Tentative,m	Tentative, may subject to change:						
Months	Week	Paper	ChapterwiseSyllabusContent (Theory &	No. of			
			Practical)	Lectures(Prof.)			
June	3 <sup>rd</sup>	GE-2TH	Blood and body fluids:Lymph and tissue fluids: composition, formation, and functions Cardiovascular system:Peculiarities of regional circulations: coronary andcerebral Respiratory System:Regulation of respiration - neural and chemical; hypoxia	2(RA) 1 (DD) 1 (SC)			
		GE2P	Pneumographic recording of the effects of hyperventilation and breath-holding on normal respiratory movements	3 (RA+ UC)			

Tentative,n	Tentative, may subject to change:							
Months	Week	Paper	ChapterwiseSyllabusContent (Theory & Practical)	No. of Lectures(Prof.)				
June	4 <sup>th</sup>		INTERNAL ASSESSMENT					