

DEPARTMENT OF PHYSIOLOGY
Academic year:2022-2023

Distribution of Syllabus for Honours Practical Courses for odd semester(1/3/5)

<u>Name of Teacher</u>	<u>First Semester</u>	<u>Third Semester</u>	<u>Fifth Semester</u>
Subhasree Sana		<p style="text-align: center;">CC5</p> <ol style="list-style-type: none"> 1. Preparation and staining of blood film with Leishman's stain. 2. Identification of the blood corpuscles. 3. Differential count of WBC. 4. Total count of RBC and WBC. 5. Bleeding time and clotting time 6. Hemoglobin estimation 7. Preparation of haemincrystals . 8. Preparation and staining of bone marrow. 9. Measurement of diameter of megakaryocyte. 10. Reticulocyte staining 11. .Blood group determination <p style="text-align: center;">CC7</p> <p>Experiments on superficial (plantar) and deep (knee jerk) reflex</p> <ol style="list-style-type: none"> 2. Measurement of grip strength 3. Reaction time by stick drop test 4. Short term memory test (shape, picture word) 	<p style="text-align: center;">CC11</p> <ol style="list-style-type: none"> 1. Principles of fixation and staining, 2. Staining and identification of fixed endocrine glands and nervous tissue.

		5. Two point discrimination test	
ManojKumar Chowdhury	-	-	-
Chandan Banerjee	<p style="text-align: center;">CC2</p> <p>a) Determination of Systolic, Diastolic, Pulse and Mean Blood Pressure by non invasive methods (Auscultatory method).</p> <p>b) Determination of enzyme activities (eg. SOD, CAT, Amylase, Transaminase etc.)</p>	<p style="text-align: center;">CC6</p> <p>1. Preparation of Amphibian Ringer solution 2. Kymographic recording of the movements of perfused heart of toad. 3. Study of the effects of changes in perfusion fluid pressure, changes in temperature, excess calcium and potassium ion concentration, acetylcholine, adrenaline on the on the movement of heart.</p>	
AmaleshMondal	<p style="text-align: center;">CC1</p> <p>Study and identification of stained section of different mammalian tissues and organs: Hyaline cartilage, Trachea, Lung, Spleen, Lymph gland, Parotid gland, Bone, Sub maxillary gland, Sublingual gland, Tongue, Oesophagus, Stomach, Duodenum, Jejunum, Ileum, Large intestine, Liver, Kidney, Ureter, Pancreas, Adrenal gland, Thyroidgland, Testis, Ovary, Spinalcord, Cerebralcortex, Cerebellum, Skin, Cardiac muscle, Skeletal muscle, Smooth muscle, Artery, Vein, Uterus.</p>		<p style="text-align: center;">DSE 1B</p> <p>1. Gram staining of bacteria and identification of Gram positive and Gram negative bacteria. 2. Demonstration: Spore Staining, Radial immune-diffusion.</p>

Distribution of Syllabus for Honours Theory Courses for odd semester(1/3/5)

<u>Name of Teacher</u>	<u>First Semester</u>	<u>Third Semester</u>	<u>Fifth Semester</u>
Subhashree Sana	<p><u>CC1</u></p> <ol style="list-style-type: none"> 1. Capillary wall 2. Intercellular communication Basic idea of tight junctions, gap junctions and cell adhesion molecules. 3. Cell cycle 4. Cell division a. Mitosis 5. Meiosis 6. Homeostasis 7. Aging 	<p align="center"><u>CC7</u></p> <p>Reflexes :</p> <ol style="list-style-type: none"> a) Introduction b) Monosynaptic Reflexes: The Stretch Reflex c) Polysynaptic Reflexes: The Withdrawal Reflex d) General Properties of Reflexes <p>2. Cutaneous, Deep and Visceral Sensation</p> <ol style="list-style-type: none"> a) Introduction b) Ascending and descending tracts: origin, courses, termination and functions. Lower and upper motor neurones. Functions of the spinal cord with special reference to functional changes following hemisection and complete section of spinal cord. Brown-Sequard syndrome, Spinal animal. Pain production, perception and regulation. Referred pain. c) Pathways d) Touch e) Proprioception f) Temperature g) Pain h) Other Sensations <p>3. Arousal Mechanism, Sleep and the Electrical Activity of the Brain</p>	<p align="center"><u>CC12</u></p> <p>The Thyroid</p> <ol style="list-style-type: none"> a. Introduction b. Anatomy c. Formation of Thyroid d. Transport of Hormones e. Effects of Hormones f. Regulation of Secretion g. Clinical <p>2. Endocrine Pancreas & Carbohydrate</p> <ol style="list-style-type: none"> a. Introduction b. Islets c. Structure & Secretion d. Effects e. Mechanism f. Insulin g. Regulation of Secretion h. Glucose i. Other Hormones

		<ul style="list-style-type: none"> a) Introduction b) The Reticular Formation & the Reticular Activating System c) Reticular formation: organization, connection and functions of ascending and descending reticular formation. Physiological basis of sleep and wakefulness d) The Thalamus & the Cerebral Cortex e) Evoked Cortical Potentials f) The Electroencephalogram g) Physiological Basis of the EEG, Consciousness, & Sleep h) Interpretation of abnormal EEG pattern <p>4. Control of Posture and Movement</p> <ul style="list-style-type: none"> a) Introduction b) General Principles c) Corticospinal&Corticobulbar System d) Anatomy & Function e) Posture and its regulation- Decerebrate rigidity, Decorticate rigidity, Postural reflexes and regulation of Posture f) Basal Ganglia g) Cerebellum h) Movement disorders <p>5. The Autonomic Nervous System</p> <ul style="list-style-type: none"> a. Introduction b. Anatomic Organization of Autonomic Outflow c. Chemical Transmission at autonomic Junctions d. Responses of Effector Organs to Autonomic Nerve Impulses 	<ul style="list-style-type: none"> j. Hypo Diab Hum <p>3. The Adrenal Adrenal Co</p> <ul style="list-style-type: none"> a. Intro b. Adre c. Adre <ul style="list-style-type: none"> i. S c F ii. F M <p>d. Adre</p> <ul style="list-style-type: none"> i. S F A F F C F C S F M A S F M A S ii. F A F C F C S F M A S iii. F C F C S F M A S iv. F F C F C S F M A S v. F C F C S F M A S vi. F M A S vii. F A S viii. S
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		<p>e. Cholinergic and Adrenergic Discharge</p> <p>6. Central Regulation of Visceral Function</p> <p>a. Introduction</p> <p>b. Medulla Oblongata</p> <p>c. Hypothalamus</p> <p>i. Anatomic Considerations</p> <p>ii. Hypothalamic Function</p> <p>iii. Relation to Autonomic Function</p> <p>iv. Relation to Sleep</p> <p>v. Relation to Cyclic Phenomena</p> <p>vi. Hunger</p> <p>vii. Thirst</p> <p>viii. Control of Posterior Pituitary Secretion</p> <p>ix. Control of Anterior pituitary Secretion</p> <p>x. Temperature Regulation, fever</p> <p>7. Neural Basis of Instinctual Behaviour and Emotions</p> <p>a. Introduction</p> <p>b. Anatomic Considerations</p> <p>c. Limbic Functions</p> <p>d. Limbic system: structure, connections and functions. Physiology of emotion.</p> <p>e. Sexual Behavior</p> <p>f. Fear & Rage</p> <p>g. Motivation</p> <p>8. Higher Functions of the Nervous System</p> <p>a. Introduction</p> <p>b. Methods</p> <p>c. Learning & Memory</p> <p>d. Higher functions of nervous system: conditioning, learning, short-term and long- term</p>	<p>DSE 2B: S</p> <p>EXERCISE</p> <p>1. Impo exerc well</p> <p>2. Basi Bioe sour (Pho syste syste</p> <p>3. Card respo grad</p> <p>4. Con exerc cons phys reco</p> <p>5. Aero Mea phys appl</p> <p>6. 42</p> <p>7. Train phys Train aero pow over detra</p> <p>8. Nutr and</p>
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		<p>memory. Speech and Aphasia. Asymmetrical organization of certain cognitive functions-split brain</p> <p>e. Functions of the Neocortex</p> <p>f. Electrophysiology of brain: spontaneous electrical activity of brain, EEG and ECoG, evoked potential, DC potential. Isolated cortex.</p> <p>g. Disorders relating learning and memory</p>	<p>9. Spor...</p> <p>man...</p> <p>10. Basi...</p> <p>reha...</p> <p>med...</p>
ManojChaowdhury	=	-	
Chandan Banerjee	<p style="text-align: center;"><u>CC2</u></p> <p>1. A Study of Units for Measuring Concentration of Solutes: Moles, Equivalent, Osmoles</p> <p>2. Principles of Dilution, pH, Buffers</p> <p>a. Proteolysis of water, pH, acid-base neutralization curves</p> <p>3. Bonds and Forces in Biomolecules</p> <p>4. Colloids, Properties, Importance</p> <p>a. Colloids: Classification, properties—optical, electrical, electro kinetic. Biological importance of colloids</p> <p>5. Surface tension, Specific Gravity</p> <p>a. Surface tension and Specific Gravity: characteristics, factors influencing and biological applications</p> <p>6. Viscosity and Resistance</p> <p>a. Viscosity and Resistance characteristics, factors influencing and biological applications</p>	<p style="text-align: center;"><u>CC6</u></p> <p>1. Origin of the Heartbeat & the Electrical Activity of the heart a. Introduction</p> <p>b. Origin & Spread Of Cardiac Excitation</p> <p>Cardiac action potential. Origin and propagation of cardiac impulse.</p> <p>c. The Electrocardiogram</p> <p>Electrocardiography –the normal electrocardiogram, electrocardiographic leads, vectorial analysis, the vectorcardiogram, the mean electrical axis of heart. The His bundle electrogram.</p>	<p>1. Vision</p> <p>b. Anatomical</p> <p>c. The Image</p> <p>Mechanism</p> <p>visual acuity</p> <p>d. The Photo</p> <p>Mechanism</p> <p>Electrical R</p> <p>e. Visual Pat</p> <p>lesions of th</p> <p>f. Color Vis</p> <p>g. Other Asp</p> <p>Function</p>

	<p>7. Acids, Bases, Buffers and pH a. Buffer action: Henderson-Hasselbalch equation. Regulation of pH by blood buffers. Determination of pH– Basic concept of indicators, principle of pH meter- hydrogen electrode and glass electrode</p> <p>8. Flow and Pressure</p> <p>9. Diffusion and Osmosis: osmotic pressure–laws.</p> <p>10. Dialysis and Ultracentrifugation a. Dialysis and ultrafiltration</p> <p>11. Chromatography</p> <p>12. Electrophoresis</p> <p>13. Autoradiography</p> <p>14. Cell Fractionation and Tracer Techniques</p> <p>15. Nanoparticles and its application in Physiology</p> <p>16. Laminar and Streamline Flow</p> <p>17. Poiseuille- Hagen Formula</p> <p>18. Laws of Laplace</p> <p>19. Thermodynamics a. Thermodynamics: Types of surroundings and systems, First Law–Internal energy, enthalpy. 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.</p> <p>20. Laws</p> <p>21. Application in Physiology</p> <p>22. Osmosis and Diffusion a. Diffusion and Osmosis: osmotic pressure–laws.</p> <p>23. A Study of Enzymes</p> <p>24. Structures, coenzymes and Prosthetic Groups</p> <p>25. Classification- EC nomenclature, Concept of apoenzyme, holoenzyme, coenzyme, cofactors and prosthetic group.</p>	<p>d. Cardiac Arrhythmias Cardiac Arrhythmias – Normal cardiac rate. Myocardial Infarctions. Cardioplegic solutions. e. Electrocardiographic Findings in Other Cardiac & Systemic Diseases, hypertrophy and cardiac myopathy 19</p> <p>2. The Heart as a Pump a. Introduction Anatomy of the heart. Properties of cardiac muscle. Cardiac Innervation. Stannius ligature. b. Mechanical Events of the Cardiac Cycle The cardiac cycle- pressure and volume changes. Heart sounds. Murmurs. c. Cardiac Output Cardiac output– measurement by application of Fick’s principle and dye dilution method, factors affecting. Starling’s law of heart.</p> <p>3. Dynamics of Blood & Lymph Flow a. Introduction b. Anatomic Considerations Functional morphology of arteries, arterioles, capillaries, venules and veins, sinusoids. General pattern of circulation and significance of branching of blood vessels. c. Biophysical Considerations</p>	<p>h. Eye Mov i. Errors in v</p> <p>2. Hearing a. Introduction b. Anatomic c. Hair cells d. Mechanis e. Vestibular f. Loss of he</p> <p>3. Smell & b. Smell c. Receptors d. Physiolog e. Taste i. Re Pathways ii. Physiolog</p>
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- 26. Mechanism of Enzyme Action
- 27. Mechanism of enzyme action: Activation energy, Enzyme-substrate complex, Transition state and Products. Models of enzyme-substrate interactions. Specificity of enzymes. Kinetics
- 28. Concept of initial rate, maximum velocity and steady-state kinetics.
- 29. Michaelis Constant
- 30. Michaelis constant, Michaelis-Menten equation, Graphical representation of hyperbolic kinetics--Lineweaver-Burk plot. Significance of K_m and V_{max} .
- 31. Modulation of Enzyme Activities
- 32. Competitive, non-competitive and uncompetitive inhibitions. Regulation of enzyme activities covalent modifications, allosteric modifications--Sigmoid kinetics and Hill equation: K- and M-series, Feed-back inhibition. Rate-limiting enzymes
- 33. Factors controlling Enzyme Activities
- 34. Factors influencing enzyme-catalyzed reactions: substrate concentration, enzyme concentration, Max pH, temperature.
- 35. Isoenzymes, Allosteric Enzymes
- 36. Pro-enzymes
- 37. Ribozymes, Abzymes
- 38. Concept of Rate Limiting Enzymes

Hemodynamics of blood flow.
d. Arterial & Arteriolar Circulation
e. Capillary Circulation
f. Lymphatic Circulation & Interstitial Fluid Volume
g. Venous Circulation

4. Cardiovascular regulatory Mechanisms

- a.** Introduction
- b.** Local Regulatory Mechanisms

Cardiac and vasomotor centers, baroreceptors and chemoreceptors, cardiac and vasomotor reflexes.

- c.** Substances Secreted by the Endothelium
- d.** Systemic Regulation by Hormones
- e.** Systemic Regulation by the Nervous System

Cardiovascular homeostasis--neural and chemical control of cardiac functions and blood vessels.

5. Circulation Through special Regions

- a.** Introduction
- b.** Cerebral Circulation **i.** Anatomic Considerations
- ii.** Cerebrospinal Fluid
- iii.** Cerebrospinal Fluid
- iv.** The Blood-Brain barrier
- v.** Cerebral Blood Flow
- vi.** Regulation of Cerebral Circulation
- vii.** Brain Metabolism & Oxygen Requirements

		<p>c. Coronary Circulation d. Splanchnic Circulation e. Circulation of the skin f. Placental & Fetal Circulation 4. Cardiovascular Homeostasis in Health & Disease a. Introduction b. Compensation for Gravitational Effects c. Exercise d. Inflammation & Wound Healing e. Shock ,Cardiovascular adjustment after haemorrhage. Hypovolemic and hypervolemic shock. RTI and atherosclerosis. f. Hypertension ,The pulse – arterial and venous. Blood pressure– its measurement and factors affecting. g. Heart Failure, stroke</p>	
AmalleshMondal	<p><u>CC1</u></p> <ol style="list-style-type: none"> 1. Body fluid components 2. Organ systems, tissues and cells 3. Functional morphology of cells <p>Microscopic structure and functions of eukaryotic endoplasmic reticuli, ribosome, golgi bodies, mitochondria, lysosomes, peroxisomes, cytoskeletal elements and centrosomes. Plasma membrane and subcellular membranes.</p> <ol style="list-style-type: none"> 4. Transports accross cell membrane <p>Ionpores,ion pumps, ion channels ionophores. Passive transport. Facilitated diffusion, uniport, symport, antiport. Active transport.</p>	<p><u>CC5</u></p> <ol style="list-style-type: none"> a) Introduction b) Blood Formed elements of blood– origin, formation, functions and fate. Blood volume –normal values, regulation and determination by dye and radioisotope methods. c) Bone Marrow d) White Blood Cells e) Immune Mechanisms f) Platelets g) Red Blood Cells Haemoglobin– Structure, reactions, biosynthesis and catabolism. 	<p><u>CC12</u></p> <ol style="list-style-type: none"> 4. Hormonal Physiology Calcium Metabolism Introduction b. Calcium Metabolism c. Bone Physiology d. Vitamin D Hydroxycholecalciferol e. The Parathyroid Hormone f. Calcitonin g. Effects of Parathyroid Hormone &Humoral Factors on Calcium Metabolism

		<p>Foetalhaemoglobin. Abnormal haemoglobins- Sickle-cell anemia and Thalassemia. Different types of anaemia and their causes.</p> <p>h) Blood Types</p> <p>i) Blood group – ABO and Rh. Erythroblastosisfoetalis. Blood transfusion and its hazards.</p> <p>j) Plasma, Hemostasis</p> <p>k) Plasmaproteins– normal values, origin and functions. Hemostasis– factors, mechanism, anticoagulants, procoagulants. Disorders of hemostasis. Hemophilia, thrombosis and embolism</p> <p>l) Lymph</p> <p>m)Lymph and tissue fluids– formation, circulation, functions and fate. Lymphatic organs- histological structures and functions of lymph gland and spleen.</p> <p>n) Clinical implications.</p>	<p>5. The Pituitary Gland</p> <p>Introduction</p> <p>a. Morphology</p> <p>b. Posterior Pituitary</p> <p>c. Growth Hormone</p> <p>d. Growth Hormone Deficiency</p> <p>e. Physiology of Growth Hormone</p> <p>f. Pituitary Tumors</p> <p>g. Pituitary Surgery</p> <p>h. Pituitary and the Hypothalamus</p> <p>6. Endocrine System</p> <p>Kidneys, Hypothalamus and Pituitary Gland</p> <p>a. Introduction</p> <p>b. The Renin-Angiotensin System</p> <p>c. Erythropoietin</p> <p>d. The Endocrine Hypothalamus</p> <p>e. Heart: Atrial Natriuretic Peptide</p> <p>f. Pineal Gland</p> <p>g. Human chorionic gonadotropin</p> <p>h. Biological rhythms</p> <p>i. Concepts and models</p> <p>1. Bacteria</p> <p>a. Introduction</p> <p>b. Gram positive bacteria</p> <p>c. Gram negative bacteria</p> <p>d. Pathogenic bacteria</p> <p>e. Sterilization and disinfection</p> <p>f. Pasteurization</p> <p>g. Antibiotics</p> <p>h. Bacterial growth</p> <p>i. Bacterial genetics</p> <p>j. Bacterial immunology</p> <p>k. Bacterial vaccines</p> <p>l. Bacterial toxins</p> <p>m. Bacterial pathogenesis</p> <p>n. Bacterial epidemiology</p> <p>o. Bacterial control</p>
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			<p>e. Viruses- S Lytic and ly - basic idea</p> <p>2. Overview</p> <p>a. Idea about immunity. I Cells.</p> <p>b. Humoral immunity.</p> <p>c. Antigen-a</p> <p>d. Immunog classification function.</p> <p>40</p> <p>e. Antigen p Histocompa (MHC).</p> <p>f. Cytokines system.</p> <p>g. Vaccinati importance</p> <p>h. Basic prin immunologi pregnancy.</p> <p>i. Immuniza immunizatio Hepatitis-B, Measles, WH Tuberculosi vaccine, All mode of tran human body</p>
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			<p>measures, p diagnostic t (ELISA).</p> <p>j. Immunop principles o and transpla</p>
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Distribution of Syllabus of Honours Practical Courses for even semester(2/4/6)

<u>Name of Teacher</u>	<u>Second Semester</u>	<u>Fourth Semester</u>	<u>Sixth Semester</u>
Subhasree Sana		<p align="center"><u>CC-8</u></p> <ol style="list-style-type: none"> 1. Quantitative estimation of amino nitrogen (Sorensen's formol titration method [percentage as well as total quantity to be done]). 2. Quantitative estimation of glucose and sucrose by Benedict's method. 3. Estimation of percentage quantity of lactose in milk by Benedict's method. <p align="center"><u>CC-10</u></p> <ol style="list-style-type: none"> 1. Measurement of peak expiratory flow rate 2. Measurement of oxygen saturation by pulse oxymeter before and after exercise 3. Measurement of forced expiratory volume (FEV) 	<p align="center"><u>CC-14</u></p> <ol style="list-style-type: none"> 1. Identification of normal and abnormal constituents of urine. <p align="center"><u>DSE-3A</u></p> <ol style="list-style-type: none"> 1. Diet survey report (hand-written) of a family (as per ICMR specification): Each student has to submit a report on his/her own family. 2. A report (hand-written) on the basis of field survey from ONE of the followings: <ol style="list-style-type: none"> i. Physiological parameters of human (at least three parameters). ii. Anthropometric measurements on human (at least three parameters). iii. Epidemiological studies on human.
Manoj Kumar Chawdhury	-	-	-
Chandan Banerjee	<p align="center"><u>CC-3</u></p> <ol style="list-style-type: none"> 1. Isolation and staining of nerve fibers with node(s) of Ranvier (AgNO₃) and muscle fiber (H and E). 2. Preparation of Sciatic nerve innervate 		<p align="center"><u>CC-13</u></p> <ol style="list-style-type: none"> 1 Study of estrous cycle 2 Staining and identification of kidney and ureters, Estimation of estrogen by spectrophotometric method 3 Pregnancy test from human urine by kit

	<p>dGastrocnemius muscle of toad.</p> <ol style="list-style-type: none"> Study of Kymograph, Induction coil, Key and other instruments used to study mechanical responses of skeletal muscle. Kymographic recording of mechanical responses of Gastrocnemius muscle to single stimulus and two successive stimuli. Kymographic recording of the effects of variations of temperature and load (after-load) on single muscle twitch. Calculation of work done by the muscle. Determination of nerve conduction velocity. 		<p>method.</p> <p style="text-align: center;"><u>DSE-4</u></p> <p>Physiological (experimental) Experiments</p> <p>Kymographic recording of the effects of Hg, Pb and As compounds on: the contraction of perfused heart of toad, the intestinal movements of rats in Dale's bath.</p> <p>Histo-chemical Experiments</p> <p>Histochemical studies: chronic effects of food additives and arsenic compounds on liver, kidney, intestine, brain, muscle and lung tissues in rat.</p>
Amalesh Mondal	<p style="text-align: center;"><u>CC-4</u></p> <ol style="list-style-type: none"> Qualitative tests for the identification of physiologically important substances: Hydrochloric acid, lactic acid, Uric acid, Glucose, Galactose, Fructose, Sucrose, Lactose, Albumin, Gelatin, Peptone, Starch, Dextrin, Urea, Glycerol, Bile salts. 	<p style="text-align: center;"><u>CC-9</u></p> <ol style="list-style-type: none"> Kymographic recording of normal movements of rat's intestine in Dale's apparatus. Effects of hypoxia, acetylcholine and adrenaline on normal intestinal movements. 	

<u>Name of Teacher</u>		<u>Fourth Semester</u>	<u>Sixth Semester</u>
Subhasree Sana	<p style="text-align: center;"><u>CC-3</u> <u>Excitable Tissues: Nerve</u></p> <ol style="list-style-type: none"> 1. Introduction 2. Nerve cells 3. Structure, classification and functions of neurons, Cytoskeletal elements and axoplasmic flow. 4. Excitation and Conduction 5. Measurement of electrical events 6. Propagation of nerve impulse in different types of nerve fibers. 7. Ionic basis of excitation and conduction 8. The resting membrane potential, action potential, electrotonic potentials, current of injury and compound action potential. 9. Properties of mixed nerves Properties of nerve fibers: excitability, conductivity, all or none law, accommodation, adaptation, summation, refractory period, Indefatigability, Chronaxie & rheobase and utilization time. Injury to peripheral nerves – degeneration and regeneration in nerve fiber, 	<p style="text-align: center;"><u>CC-8</u></p> <ol style="list-style-type: none"> 1. Introduction 2. Energy metabolism 3. Carbohydrate metabolism Glycolysis, R-L cycle Detail, TCA cycle. Gluconeogenesis Cori cycle, Glucose Alanine cycle. Anaplerotic reactions and Amphibolic nature of TCA cycle. Pentose Phosphate Pathway. Glycogenesis and Glycogenolysis. <i>(Hormonal regulation of the above mentioned biochemical pathways/cycles not required.)</i> 4. Protein metabolism – Amino acids Amino acid pool. Deamination, transamination, amination and decarboxylation. Synthesis of Urea and Nitric oxide. Basic and ketogenic amino acids. Metabolism of glycine, sulfur-containing amino acids, tryptophan and phenylalanine. <i>(Hormonal regulation of the above mentioned biochemical pathways/cycles not required.)</i> 5. Fat and cholesterol metabolism – β-oxidation and biosynthesis of saturated and monounsaturated fatty acids. Carnitine shuttle. Metabolism of 	<p style="text-align: center;"><u>CC-13</u> <u>The Female Reproductive system</u></p> <ol style="list-style-type: none"> 1. The Menstrual Cycle 2. Histology of ovary, Oogenesis, folliculogenesis and ovulation. Formation, functions of corpus luteum and luteolysis, Menstrual cycle and its regulation 3. Ovarian Hormones 4. Control of Ovarian Function 5. Abnormalities of Ovarian Function 6. Abnormalities in menstrual cycle. Onset of menopause and post-menopausal changes, Postmenopausal syndromes 7. DSE-3A 8. Constituents of food and their significance. 9. Basal metabolic rate – factors, determination by Benedict-Roth apparatus. 10. Respiratory quotient. 11. Specific dynamic action. 12. Basic concept of energy and units. 13. Calorific value of foods. 14. Body calorie requirements – adult consumption unit 15. Dietary requirements of

	<p>changes in the nerve cell body, trans neuronal degeneration, changes in receptor and motor end-plates, denervation hypersensitivity. The normal changes of nerve during activity</p> <p>10. Nerve fibre types and function</p> <p>11. Neurotrophins</p> <p>12. Nerve growth factors and Neurotrophins</p> <p>13. Glia</p> <p>14. Structure, classification and function of neuroglial cells</p> <p><u>Excitable Tissues: Muscle</u></p> <p>a) Introduction</p> <p>b) Skeletal Muscle</p> <p>c) Morphology</p> <p>d) Microscopic and electron microscopic structure of skeletal muscles. The sarco-tubular system. Red and white striated muscle fibres. Muscle groups: antagonists and agonists. Muscle proteins.</p> <p>e) Electrical phenomena and Ionic Fluxes</p> <p>f) Chemical, thermal and electrical changes in skeletal muscle during contraction and relaxation. Electromyography.</p> <p>g) Contractile Responses</p> <p>h) Mechanism of skeletal muscle contraction and relaxation: Excitation-contraction coupling. Dihydropyridine receptors &</p>	<p>Triglycerides. Biosynthesis of Lecithin, Cephalin and Cholesterol. Metabolism of Adipose Tissue. Role of lipoproteins in transport and storage of lipids. Formation of Reactive Oxygen Species (ROS) and the role of Catalase, Superoxide Dismutase, Glutathione Peroxidase and Glutathione Reductase in combating oxidative stress— role of vitamins.</p> <p><i>(Hormonal regulation of the above mentioned biochemical pathways/cycle not required).</i></p> <p>6. Integration of carbohydrate, fat and protein metabolism—Biological oxidation—Redox Potential. Mitochondrial Electron Transport Chain. Oxidative Phosphorylation—Inhibitors and uncouplers.</p> <p>7. Nutrition—BMR, RQ, RDA, SDA, NPU, Biological value of proteins, vitamins and minerals, Basal metabolic rate—factors, determination by Benedict-Roth apparatus. biological value of proteins—measurement and factors affecting. Protein spacers. Supplementary value of protein. Protein efficiency ratio and net protein utilization of dietary proteins. Dietary fibres</p>	<p>carbohydrate, protein, lipid and other nutrients.</p> <p>16. Balanced diet and principles of formulation of balanced diets for growing child, adult man and woman, pregnant woman and lactating woman.</p> <p>17. Nitrogen balance, essential amino acids, biological value of proteins.</p> <p>18. Supplementary value of protein.</p> <p>19. Protein efficiency ratio and net protein utilization of dietary proteins.</p> <p>20. Dietary fibres.</p> <p>21. Vitamins.</p> <p>22. Principle of diet survey.</p> <p>23. Composition and nutritional value of common foodstuffs.</p> <p>24. Physiology of starvation and obesity.</p> <p>25. Sources and physiological significances of vitamins and minerals.</p> <p>26. Space nutrition.</p>
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	<p>Ryanodine receptors.</p> <p>i) Energy sources and Metabolism</p> <p>j) Mechanical components of muscle. Isometric and isotonic contractions—muscle length, tension and velocity relationships.</p> <p>k) Properties of Muscle in the intact Organism</p> <p>l) Properties of skeletal muscle: excitability, contractility, all or none law, summation of stimuli, summation of contractions, effects of repeated stimuli, genesis of tetanus, onset of fatigue, refractory period, tonicity, conductivity, extensibility and elasticity. Optimal load, optimal length of fibers.</p> <p>m) Cardiac Muscle</p> <p>n) Morphology</p> <p>o) Microscopic and electron microscopic structure of cardiac muscles.</p> <p>p) Electrical Properties</p> <p>q) Mechanical Properties</p> <p>r) Metabolism</p> <p>s) Pacemaker Tissue</p> <p>t) Smooth Muscle</p> <p>u) Morphology</p> <p>v) Microscopic and electron microscopic structure of smooth muscles. Single-unit and multiunit smooth muscle</p> <p>w) Visceral smooth Muscle</p>		
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x) Multi-unit Smooth Muscle

CC=4

Classification of Carbohydrates

Definition and
classification of Carbohydrates

Structure of Carbohydrates

Cyclic structures-

Pyranose and furanose forms, structure of
disaccharides and polysaccharides.

Properties of Carbohydrates

stereoisomerism, optical isomerism, optical
activity, epimerism, anomers, mutarotation
and its mechanism.

Chemical reactions of monosaccharides
(Glucose & Fructose)-

Reactions with concentrated mineral acids,
alkali, phenylhydrazine and their
biochemical importance

Function of Carbohydrates

Derivatives of
monosaccharides -- Amino
sugars, deoxy sugars, sugar
alcohols, sugar acids, sugar esters,
their biochemical and physiological
importance.

Manoj Kumar Chawdhury	-	-	-
Chandan Banerjee	<p>CC-3</p> <p>Neuromuscular Transmission</p> <p>Neuromuscular Junction</p> <p>The neuromuscular junction: structure, transmission, end-plate potential, MEPP and post-tetanic potentiation. Motor unit and Motor point.</p> <p>Denervation Hypersensitivity</p> <p>Initiation of Impulses in Sense Organs</p> <p>Introduction</p> <p>Sense Organs and Receptors</p> <p>Classification of general and special senses. Receptors as biological transducers. General concept of ionotropic and metabotropic receptors. Structure, sub-types and functions of nicotinic and muscarinic acetylcholine receptors. Adrenoceptors, glutamate receptors (NMDA and AMPA receptors), GABA, opiate, serotonin, dopamine and histamine receptors.</p> <p>The Senses</p>	<p>CC-9</p> <p>Digestion & Absorption</p> <p>Introduction</p> <p>Anatomy and histology of alimentary canal, Deglutition and Movements of alimentary canal and their regulations.</p> <p>Carbohydrates</p> <p>Proteins & Nucleic Acids</p> <p>Lipids</p> <p>Absorption of Water & Electrolytes</p> <p>Absorption of Vitamins & Minerals</p> <p>Regulation of Gastrointestinal Function</p> <p>Introduction</p> <p>Digestive glands – histological structures of salivary glands, pancreas and liver.</p> <p>General Considerations</p> <p>Composition, functions and regulation of the secretion of salivary, gastric, pancreatic and intestinal juices and bile. Synthesis</p>	<p>CC-13</p> <p>Pregnancy</p> <p>Fertilization, Preliminary ideas of implantation. Structure and functions of placenta. Maintenance of pregnancy and the bodily changes during pregnancy. Pregnancy tests. Parturition.</p> <p>Lactation</p> <p>Mammogenesis, Galactopoiesis: Hormonal control</p> <p>Physiological concepts for a planned family</p> <p><u>DSE-4A</u></p> <p>Toxins and Toxicology</p> <p>Factors Affecting toxicity</p> <p>LD50, LOD50, ED50, NOEL, LOEL</p> <p>Concept of Acute and Chronic Effects</p> <p>Birth defects and Teratogens</p> <p>Concepts of Biomagnification and Bioconcentration</p> <p>Popular Food Additives and Food Adulterants</p>

<p>Electrical and Ionic Events in Receptors</p> <p>Muller's law of specific nerve energies. Weber-Fechner law, Steven's power law.</p> <p>Sensory transduction in Pacinian corpuscle</p> <p>.Adaptation of receptors – phasic and tonic adaptations.</p> <p>“Coding” of Sensory Information</p> <p>CC=4</p> <p>Properties of Proteins and lipids</p> <p>Properties of Fat and Fatty acids-- Hydrolysis, Saponification, Saponification number, Iodine number, Acetylation-Acetyl number, Hydrogenation, Rancidity-Acid number, Reichert-Meissl number. Cis-trans isomerism.</p> <p>Eicosanoids, Phospholipids, Glycolipids, Sphingolipids, Cholesterol & its ester- their structure and physiological importance. Protonic equilibria of Amino acids– Zwitterions, Isoelectric point, titration curve of amino acids.</p> <p>Reactions with ninhydrin and formaldehyde. Reactions with Sanger's and Edman's reagent. Biuret reaction. Denaturation and Renaturation.</p>	<p>isof Bile acids. Enterohepatic circulation, Feces and defecation. GALT, MALT. Basic concepts of Peptic Ulcer, Jaundice and Gall-stones Cholelithiasis.</p> <p>Gastrointestinal hormones</p> <p>Mouth & Esophagus</p> <p>Stomach</p> <p>Exocrine Portion of the Pancreas</p> <p>Liver & Biliary System</p> <p>Small Intestine</p> <p>Colon</p>	<p>Prevention of Food Adulteration Act, 1954</p> <p>Other Food Toxicants: BPA, BPS, Pesticides, PAH, Dioxin, PCB, Heavy Metals: Pb, Hg, Cd, As etc</p>
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	<p>Functions of Proteins and lipids</p> <p>Physiological importance of proteins and lipids</p>		
Amallesh Mondal	<p>CC-3</p> <p>Synaptic and Junctional Transmission</p> <p>Introduction</p> <p>Synaptic Transmission</p> <p>Functional Anatomy</p> <p>Synapses: types, structure, synaptic transmission of the impulse, .</p> <p>Electrical Events at Synapses</p> <p>synaptic potentials</p> <p>Inhibition and Facilitation at Synapses</p> <p>Chemical Transmission at Synaptic Activity</p> <p>Neurotransmitters, cotransmitters and neuromodulators</p> <p>Principal neurotransmitter systems</p> <p>Synaptic Plasticity and learning</p> <p>Neuromuscular Transmission</p> <p>Neuromuscular Junction</p> <p>The neuromuscular junction: structure, tra</p>	<p>CC-10</p> <p>Pulmonary Function</p> <p>Introduction</p> <p>Properties of Gases</p> <p>Anatomy of the Lungs</p> <p>Mechanics of breathing</p> <p>Gas Exchange in the lungs</p> <p>Pulmonary Circulation</p> <p>Other Functions of the Respiratory System</p> <p>Gas Transport Between the Lungs & the Tissues</p> <p>Introduction</p> <p>Oxygen Transport</p> <p>Carbon Dioxide Transport</p> <p>Respiratory acidosis and alkalosis</p> <p>Regulation of Respiration</p> <p>Introduction</p> <p>Neural control of Breathing</p>	<p>CC-13</p> <p>Introduction</p> <p>Primary and accessory sex organs and secondary sex characters, Physiology of puberty.</p> <p>Sex Differentiation & Development</p> <p>Chromosomal Sex</p> <p>Embryology of the Human Reproductive System</p> <p>Aberrant Sexual Differentiation</p> <p>Puberty</p> <p>Precocious & Delayed Puberty</p> <p>Menopause</p> <p>Pituitary Gonadotropins & Prolactin</p> <p>The male reproductive system</p> <p>Structure Histology of testis</p> <p>Gametogenesis & Ejaculation</p> <p>Endocrine Function of the Testes</p> <p>Control of Testicular Function</p>

<p>transmission, end-plate potential, MEPP and post-tetanic potentiation. Motor unit and Motor point.</p> <p><u>CC-4</u></p> <p>Classification of Proteins and lipids</p> <p>Definition and classification of proteins and Fatty acids - Classification, systematic nomenclature. Mono, Di and Tri glycerides. Classification, Structure, Nomenclature of proteins and amino acids.</p> <p>Structure of Proteins and lipids</p> <p>Structure and properties of peptide bonds -- Phi and Psi angles. Different levels of protein structure -- Primary, Secondary (α-helix and β-pleated sheet), Tertiary and Quaternary. Forces stabilizing the structures.</p> <p>Lipoproteins - Structure and classification.</p>	<p>Chemical Control of Breathing</p> <p>Nonchemical Influences on Respiration</p> <p>Respiratory Adjustments in Health & Disease</p> <p>Introduction</p> <p>Effects of Exercise</p> <p>Other Forms of Hypoxia</p> <p>Oxygen Treatment e.g. Hypercapnia & Hypocapnia</p> <p>Other Respiratory Abnormalities</p> <p>Effects of Increased Barometric Pressure</p> <p>Artificial Respiration</p>	<p>Abnormalities of Testicular Function</p> <p>CC-14</p> <p>Renal Functions and Malnutrition:</p> <p>Introduction</p> <p>Anatomy of kidney. Histology of Nephron.</p> <p>Function of Malpighian corpuscles and renal tubule, counter-current mechanism. Formation of urine – glomerular function and tubular functions. Counter-current multiplier and exchanger. Formation of hypertonic urine.</p> <p>Water Excretion</p> <p>Renal regulation of osmolarity and volume of blood fluids</p> <p>Acidification of the Urine & Bicarbonate Excretion</p> <p>Renal regulation of acid-base balance, acidification of urine.</p> <p>Regulation of Na⁺ & Cl⁻ Excretion</p> <p>Renal Circulation</p> <p>peculiarities and autoregulation</p> <p>Diuretics Disorders of Renal Functions</p> <p>Diabetes insipidus. Renal function tests – creatinine, inulin, urea and PAH clearance tests. Abnormal constituents of urine, their detection and</p>
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			<p>significance. Renal dialysis.</p> <p>ArtificialKidney.</p> <p>Filling of the Bladder</p> <p>Physiologyofurinarybladder</p> <p>EmptyingoftheBladder micturition.</p> <p>Non-excretoryfunction ofkidney</p>
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Distribution of Syllabus for General Practical Courses for odd semester(1/3/5)

<u>Name of Teacher</u>	<u>First Semester</u>	<u>Third Semester</u>
Subhashree Sana	-	-
ManojChawdhury	<p>2. Identification of permanent slides : Bone, Lung, Trachea, Spleen, Lymphgland,Liver,Salivarygland,Pancreas,Adrenalgland,,Thyroid gland, Spinal cord, Cerebellum, Cerebral cortex, Kidney, Skin, Testis, Ovary,Tongue,Oesophagus,Stomach,Smallintestine,Largeintestine.</p> <p>3. Fresh tissue experiments:</p> <p>4. Examination and staining of fresh tissues (other than blood) squamous,ciliatedandcolumnarepithelium,skeletal muscle, cardiac muscle by methylene blue stain.</p> <p>5. StainingofadiposetissuebySudanIIIorIV.</p>	<p>7. Haematological experimentsI</p> <p>8. Leishman'sstaining ofhumanblood film and identification of different types of blood corpuscles.</p> <p>9. PreparationofHaemincrystals.</p> <p>10. Haematological experimentsII</p> <p>11. DCofWBC,estimationofhaemoglobin,bloodgroup determination,</p> <p>12. Bleedingtimeandcoagulationtime.</p> <p>13. Demonstration:Haematocrit,MCV,TCofRBCandWBC,ESR.</p>
Chandan Banerjee	-	-
AmaleshMondal	-	-

Distribution of Syllabus for General Theory Courses for odd semester(1/3/5)

<u>Name of Teacher</u>	<u>First Semester</u>	<u>Third Semester</u>	<u>Fifth Semester</u>
Subhashree Sana	<p><u>CC-1A</u> UnitsofHumanSystem</p> <p>a. Structureandfunctionsofplasmamembrane,nucleusanddifferent cell organelles</p> <p>b. Endoplasmicreticulum,Golgibodies,Mitochondria,Lysosomeand Peroxisome.</p> <p>c. Structure,functionandclassificationofEpithelial,Connective, Muscular and Nervous tissues.</p> <p>d. Carbohydrates: Definitionandclassification.</p> <p>e. Monosaccharide– Classification,structure.Chemicalreactionsof monosaccharide (Glucose & Fructose) - Reactions with concentrated mineral acids, alkali, phenylhydrazine and their biochemical importance.</p> <p>f. Disaccharides– Maltose,LactoseandSucrose:Structure, occurrence and physiological importance.</p> <p>g. Polysaccharides– Starch,Glycogen,Dextrin,Cellulose.</p> <p>h. Lipids: Definition and classification. Fatty acids ----- Classification.PropertiesofFatandFatty</p>	<p><u>CC-1C</u></p> <ol style="list-style-type: none"> 1. Anatomyandhistologyoftherespiratory passageandorgans. 2. Roleofrespiratorymusclesinbreathing .Artificialrespiration. 3. Significanceofphysiologicalandanatomicaldeadspace. 4. Lungvolumesandcapacities. 5. Exchange of respiratory gases between lung and blood and between blood and tissues. 6. Transportofoxygenandcarbondioxide inblood. 7. Regulationofrespiration-neuralandchemical.Hypoxia. 	

	<p>cids—Hydrolysis, Saponification, Saponification number, Iodine number, Hydrogenation, Rancidity-Acid number. Phospholipids, Cholesterol & its ester - physiological importance.</p> <p>i. Amino acids, Peptides and Protein Classification and structure. Structure of peptide bonds.</p>		
<p>ManojC hawdhur y</p>		<p><u>CC-1C</u> 1. Cardiovascular Physiology</p> <p>a. Anatomy and histology of the heart. b. Properties of cardiac muscle. c. Origin and propagation of cardiac impulse. d. Cardiac cycle: events. Heart sounds. Heart rate. Cardiac output: methods of determination (dye dilution and Fick principle), factors affecting, regulation. e. Structure of arteries, arterioles, capillaries, venules and veins. f. Pulse-arterial and venous.</p> <p>1. Blood and Body Fluids</p> <p>a. Blood pressure and its regulation and factors controlling. Baro- and chemoreceptors. Vasomotor reflexes. Methods of measurement of blood pressure. Peculiarities of</p>	<p><u>DSE-1A</u> <u>Nervous System</u></p> <p>1. A brief outline of organization and basic functions (sensory, motor and association) of the nervous system, central and peripheral nervous system. (emphasis on the structure of spinal cord and brain stem). 2. Ascending tracts carrying touch, kinaesthetic, temperature and pain sensations. Descending tracts: pyramidal tract and brief outline of the extra-pyramidal tracts. Pain. 3. Reflex action- definition, reflex arc, classification, properties. 4. Functions of the spinal cord. Outline of functions of brain stem. 5. A brief idea of the structure, connections and functions of cerebellum. 6. Different nuclei and functions of thalamus</p>

		<p>regional circulations coronary, pulmonary, renal, hepatic and cerebral.</p> <p>1. Blood and Body Fluids</p> <p>a. Blood: composition and functions.</p> <p>b. Plasma proteins: origin and functions. Plasma pheresis.</p> <p>c. Bone marrow. Formed elements of blood-their morphology and functions.</p> <p>d. Erythropoiesis and leucopoiesis.</p>	<p>and hypothalamus.</p>
<p>Chandan Banerjee</p>	<p><u>CC-1A</u></p> <p>1. Biophysical and Biochemical Principles</p> <p>a. Physiological importance of the following physical processes:</p> <p>i. Diffusion</p> <p>ii. Osmosis</p> <p>iii. Dialysis</p> <p>iv. Ultrafiltration</p> <p>v. Surface tension</p> <p>vi. Adsorption</p> <p>vii. Absorption.</p> <p>b. A brief idea about acids, bases, buffers and indicators. pH—definition, significance and maintenance of pH in the blood.</p> <p>c. Colloids—definition, classification and physiological importance</p>		

	<p>d. Enzymes: definition, classification, factors affecting enzyme action. Concept of coenzymes and isozymes.</p>		
<p>Amalesh Mondal</p>			<p><u>DSE-1A</u> <u>Muscle and Nerve Physiology</u></p> <ol style="list-style-type: none"> 2. Different types of muscle and their structure. Red and white muscle. 3. Muscular contraction: structural, mechanical and chemical changes in skeletal muscle during contraction and relaxation. 4. Isotonic and isometric contractions. 5. Properties of muscle: all or none law, beneficial effect, summation, refractory period, tetanus, fatigue. 6. A brief idea about the muscle spindle. 7. Structure and classification of nerves. 8. Origin and propagation of nerve impulse. 9. Velocity of impulse in different types of nerve fiber. 10. Properties of nerve fibers: all or none law, rheobase and chronaxie, refractory period, indefatigability. 11. Synapses: structure, different types, mechanism of synaptic transmission. 12. Motor unit. Myoneural junction: structure, 13. Mechanism of impulse transmission.

			14. Degenerationandregenerationinnerv efibres
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Distribution of Syllabus for General Practical Courses for even semester(2/4/6)

<u>Name of Teacher</u>	<u>Second Semester</u>	<u>Fourth Semester</u>	<u>Sixth Semester</u>
Subhashree Sana	-	-	-
ManojChaudhury	<ol style="list-style-type: none"> 1. Qualitative Experiments: 2. Qualitative tests for identification of starch, dextrin, lactose, sucrose, 3. glucose, fructose, albumin, gelatin, peptone, lactic acid, hydrochloric acid, uric acid, acetone, glycerol, bile salts, urea. 4. Quantitative Experiments: 5. Quantitative estimation of glucose by Benedict's method. 6. Quantitative estimation of amino-nitrogen by Sorensen's formol titration method. Percentage and total quantity to be done. 7. Demonstration: 8. Quantitative estimation of Sucrose by Benedict's method. 9. Analysis of wheat, rice, milk and oil to test the presence of carbohydrate, protein and fat. 10. Salivary amylase activity on starch at body temperature (37.5 C), above 40°C and in presence of HCl. 	<p align="center"><u>Biochemistry II</u></p> <ol style="list-style-type: none"> a) Identification of normal constituents of urine - chloride, sulphate, phosphate, creatinine and urea. b) Identification of abnormal constituents of urine - glucose, protein, acetone blood and bile salts. c) Demonstration: Blood sugar estimation (Folin-Wu method) 	<p align="center"><u>Human Experiments II</u></p> <ol style="list-style-type: none"> a) Determination of Physical Fitness Index (PFI) of an individual by modified b) Harvard step test and recording of recovery heart-rate after standard c) exercise. d) Pneumographic recording of respiratory movements along with the e) effect of drinking of water, talking, forced hyperventilation and breath holding. f) Measurement of some common anthropometric parameters: stature, weight, eye height, shoulder height, elbow height, sitting height, elbow rest height (sitting), knee height (sitting), arm reach from wall, mid-arm circumference, waist circumference, hip circumference, neck circumference, head circumference, chest circumference. g) Calculation of Body Surface Area (using nomogram) and Body Mass Index from anthropometric measurements. h) Demonstration: i) Ergographic recording of muscular fatigue by 'Moss's ergograph. j) Clinical

			k) Classification of reflexes: superficial reflex- planter reflex, Deep reflex – knee jerk, visceral reflex - pupillary light reflex.
Chandan Banerjee	-	-	-
Amalesh Mondal	-	-	-

Distribution of Syllabus for General Theory Courses for even semester(2/4/6)

<u>Name of Teacher</u>	<u>Second Semester</u>	<u>Fourth Semester</u>	<u>Sixth Semester</u>
Subhashree Sana	<p align="center"><u>CC-1A</u> <u>Nutrition</u></p> <ol style="list-style-type: none"> 1. Basic constituents of food and their nutritional significance. 2. Vitamins: definition, classification, functions, deficiency symptoms and daily requirements. Hypervitaminosis. 3. Mineral metabolism-Ca, P, Fe. 4. BMR: definition, factors affecting, determination by Benedict-Roth apparatus. Respiratory quotient: definition, factors affecting and significance. 5. Biological value of proteins. Essential and non-essential amino acids, Nitrogen equilibrium. 6. Minimum protein requirement- Positive and negative nitrogen balance. 7. SDA: definition and importance. 	<p align="center"><u>CC-1D</u> <u>Endocrine System</u></p> <ol style="list-style-type: none"> 1. Anatomy of endocrine system. Hormones - classification. Basic concept of regulation of hormone actions. Positive and negative feedback mechanism. Elementary idea of hormone action. 2. <i>Hypothalamus</i>: Basic concept of neurohormone. Hypothalamo-hypophyseal tract and portal system. 3. <i>Pituitary</i>: Histological structure, hormones, functions. Hypo and hyperactive states of pituitary gland. 4. <i>Thyroid</i>: Histological structure. Functions of thyroid hormones & thyrocalcitonin. Hypo and hyper-active states of thyroid. 	
Manoj Chawdhury		<p align="center"><u>CC-1D</u> <u>Renal Physiology</u></p> <ol style="list-style-type: none"> 1. Elementary Structure of Kidney & Location. 2. Relationship between structure and functions of kidney. 3. Mechanism of formation of urine. 	<p align="center"><u>Reproductive Physiology</u></p> <ol style="list-style-type: none"> 1. Primary and accessory sex organs and secondary sex characters. 2. Testis: histology, spermatogenesis, testicular hormones and their functions. 3. Ovary: histology, oogenesis, ovarian hormones and their functions.

		<p>4. Normal and abnormal constituents of urine.</p> <p>5. Physiology of urine storage and micturition.</p> <p>6. Renal regulation of acid-base balance.</p> <p>7. Non-excretory functions of kidney</p> <p><u>Skin and Regulation of Body Temperature</u></p> <p>a) Structure and functions of skin.</p> <p>b) In sensible and sensible perspiration</p> <p>c) Regulation of body temperature -- physical and physiological processes involved in it.</p> <p>d) Physiology of sweat secretion and its regulation</p>	<p>Spermatogenesis & Oogenesis – processes and factors controlling.</p> <p>4. Oestrus and menstrual cycles and their hormonal control.</p> <p>5. Fertilization, implantation and structure and functions of placenta.</p> <p>Maintenance of pregnancy – role of hormones. Development of mammary gland and lactation - role of hormones</p>
Chandan Banerjee	<p><u>Digestive System</u></p> <p>a) Structure in relation to functions of alimentary canal and digestive glands.</p> <p>b) Composition, functions and regulation of secretion of digestive juices including bile.</p> <p>c) Digestion and absorption of carbohydrate, protein and lipid.</p> <p>d) Movement of the stomach and small intestine</p>	<p><u>CC-1D</u></p> <p><u>Endocrine System</u></p> <p>1. <i>Parathyroid</i>: Histological structure, functions of parathyroid hormone. Tetany. <i>Adrenal Cortex</i>: Histological structure and functions of different hormones. Hypo and hyperactive states of adrenal cortex.</p> <p>2. <i>Adrenal Medulla</i>: Histological structure and functions of medullary hormones. The relation of adrenal medulla with the sympathetic nervous system.</p> <p>3. <i>Pancreas</i>: Histology of islets of Langerhans. Origin and functions of pancreatic hormones. Diabetes mellitus. Brief idea of the origin and functions of renin-angiotensin, prostaglandins. Erythropoietin and melatonin. Elementary idea of gastrointestinal hormone.</p>	

<p>Amalesh Mondal</p>	<p style="text-align: center;">1. Metabolism</p> <p>a) Glycolysis, TCA cycle, Glycogenesis, Glycogenolysis. Gluconeogenesis.</p> <p>b) Depot fat. Betaoxidation of saturated fatty acid</p> <p>c) Ketone bodies formation and significance.</p> <p>d) Deamination, Transamination. Amino acid pool-fate and functions of amino acids in the body.</p> <p>e) Formation of urea and its importance.</p> <p>f) Brief idea of HMP shunt and its significance (detailed enzymatic reactions are not required).</p> <p>g) Lipoproteins-types and functions.</p> <p>h) Purine and pyrimidine bases, nucleosides, nucleotides and polynucleotides.</p> <p>i) Pathophysiological significance of the following blood constituents: glucose, urea, creatinine, uric acid, cholesterol, bilirubin, SGPT and SGOT, alkaline and acid phosphatases and ketone bodies.</p>		<p><u>Sensory Physiology</u></p> <ol style="list-style-type: none"> 1. Classification of general and special senses and their receptors. Receptors as biological transducer. 2. Olfaction and Gustation: Structure of sensory organ, neural pathway of olfactory and gustatory sensation. Physiology of olfactory and gustatory sensation. Olfactory and gustatory adaptation. After-taste. 3. Audition: Structure of ear, auditory pathway, mechanism of hearing. 4. Vision: Structure of the eye. Histology of retina. Visual pathway. Light reflex. Chemical changes in retina on exposure to light. Accommodation - mechanism and pathway. Errors of refraction. Positive and negative after-image. Light and dark adaptation. Elementary idea of colour vision and colour blindness.
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