Department of Physiology

Bhairab Ganguly College

Program Outcomes and Course outcomes of B.Sc. in PHYSIOLOGY

Physiology Program Outcomes:

Physiology is a branch of science and most fascinating integrative science. It is the study of the normal functioning of a living organism, including all chemical and physical processes. Each type of living organism, from bacteria to complicated human being, has its own functional features. The vast field of physiology can be divided into cellular physiology, plant physiology, animal physiology, human physiology and many more subdivisions. In human physiology, multiple body systems integrate their function to the maintenance of constant internal environment.

At the end of the undergraduate program of Physiology, the student will able to acquire following knowledge and skill.

- They will understand the all physiological systems of human body like cardiovascular system, respiratory system, nervous system, endocrine and reproductive system, reticuloendothelial system excretory system, immune system and musculoskeletal system.
- They will understand how these separate systems interact to yield integrated physiological response to challenges such as high altitude, stress and exercise;
- They will be able to explain the mechanisms in maintaining homeostasis, molecular mechanism of cell signalling, aging, cancer and other pathological disorders.
- They will be able to analyse the biophysical, biochemical, histological experiments.
- They will be able to formulate the diet chart for adult, child, lactating and pregnant mother.
- They will be able to perform data analysis and interpretation of observed result of field work and research work.
- They will able to enhance their skills regarding histological, experimental, haematological techniques and biochemical analysis of blood sample.

Course Specific Outcomes – B.Sc. Physiology (HONOURS)

The physiology course curriculum for the undergraduates includes 14 core courses (CC), 4 discipline specific electives (DSE) and 2 skill enhancement courses (SEC). Generic electives (GE) will also enable them to integrate their knowledge among various interdisciplinary courses. The purpose of this curriculum is to provide the key knowledge base and laboratory resources to prepare students for careers as professional in the field of physiology.

SEMESTER I

- **CC1-Cellular Basis of Physiology (PHYACOR01T and PHYACOR01P)**
    - On completion of the course, students are able to:
    - Understand the types and functions of tissues and organ systems, Components of blood, lymph, tissue fluid like CSF and synovial fluid.
    - Know the functional morphology of cell, transport across cell membranes, cell signalling, cell cycle and general concept of homeostasis.
    - Understand the mitosis, meiosis, aging process and programme cell death.
    - Analyse the interrelationship amongst the different organs and tissues and their mutual communication.
    - Understand the histology of different stained sections of Mammalian Tissues like Bone, Cartilage, Trachea, Lungs, Spleen, Lymph gland, Esophagus, Stomach, Duodenum, Ileum, Jejunum, large Intestine, Liver, Kidney, Ureter, Salivary glands, Pancreas, Adrenal gland, Thyroid gland, Testes, Ovary, Spinal Cord, Cerebral cortex, Cerebellum, Skin, Cardiac muscle, Skeletal muscle, Smooth muscle, Artery, Vein, Tongue, Uterus.

- **CC2-Biological Physics and Enzymes (PHYACOR02T and PHYACOR02P)**
    - On completion of the course, students are able to:
    - Understand the major physio-chemical forces important to biological systems and the application of such forces in modern analytical techniques.
    - Understand all conventional techniques like dialysis and ultracentrifugation, chromatography, electrophoresis, autoradiography, cell fractionation and tracer techniques.
    - Know the importance of measuring concentration of solutes, principles of dilution, pH, Buffers, surface tension, specific gravity, viscosity and resistance, acids, bases, buffers, and pH.
    - Understand the principles and concept of heat flow with special relevance to biological systems, know the scope and application of thermodynamics in studying living stems.
    - Understand the types of enzymes, kinetics of enzyme substrate reaction, enzyme inhibition and modulation of enzyme activities.
    - Analyse the areas where biological thermodynamics differ from classical thermodynamics dealing with nonliving objects.
    - Understand the concept of oncotic pressure of colloidal solutions; the methodology for determining blood pressure by non-invasive methods (Auscultatory Methods) and the assay enzyme activities (e.g., SOD, CAT, Amylase, Transaminases etc.).

SEMESTER II

- **CC3- Physiology of Nerve and Muscle cells (PHYACOR03T and PHYACOR03P)**
    - On completion of the course, students are able to:
    - Understand the types of nerves and properties of nerve, such as excitation & conduction, all and none law, summation, refractory period and indefatigability.
    - Understand the electrical events during resting potential and action potential.
    - Understand the neurochemistry of synapses, and its transmission, electrical events at synapses, inhibition & facilitation at synapses, principal neurotransmitter systems, synaptic plasticity & learning, neuromuscular junction and its transmission.
    - Know the insights into the three forms of muscle--cardiac, skeletal, and smooth--from molecular anatomy, basic physiology, electrical phenomena & ionic Fluxes, contractile responses, energy sources & metabolism, disease mechanisms, and targets of therapy.

    - Understand the staining of nerve fibres with node(s) of Ranvier and muscle fibres, preparation of sciatic nerve innervated gastrocnemius muscle of toad.
    - Understand the 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 a single stimulus and two successive stimuli, kymographic recording of the effects of variations of temperature and load (after-load) on single muscle twitch and calculation of work done by the muscle.

- **CC4-Chemistry of Biomolecules (PHYACOR04T and PHYACOR04P)**
    - On completion of the course, students are able to:
    - Understand the classification, properties and functions
    - of carbohydrates, isomerism of monosaccharides.
    - Understand the classification and properties of amino acids and proteins.
    - Understand the classification and properties of lipids. Classification and properties of fatty acids.
    - Understand the structure of nucleic acid and nucleotide, types and function of DNAs and RNAs
    - Understand the 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.

SEMESTER III

- **CC5-Circulating Body Fluids (PHYACOR05T and PHYACOR05P)**
    - On completion of the course, students are able to:
    - Understand blood, bone marrow, white blood cells, immune mechanisms, platelets, red blood cells, blood types, plasma, homeostasis, lymph, haemoglobin.
    - Understand different haematological techniques like preparation and staining of blood film with Leishman's stain, identification of the blood corpuscles, differential count of WBC, total count of RBC and WBC, bleeding time and clotting time, haemoglobin estimation, preparation of haemin crystal, preparation and staining of bone marrow, measurement of diameter of megakaryocyte, reticulocyte staining and blood group determination.

- **CC6-Circulation (PHYACOR06T and PHYACOR06P)**
    - On completion of the course, students are able to:
    - Understand the origin of the Heartbeat & the Electrical Activity of the heart Origin & Spread of Cardiac Excitation, Electrocardiogram, Cardiac Arrhythmias, Electrocardiographic Findings in Other Cardiac & Systemic Diseases, hypertrophy and cardiac myopathy, mechanical events of the Cardiac Cycle, Cardiac Output, Dynamics of Blood & Lymph Flow and arterial & arteriolar circulation, capillary circulation, lymphatic circulation & interstitial fluid volume, venous Circulation
    - Know the cardiovascular regulatory mechanisms, circulation through special regions like cerebral circulation, coronary circulation, splanchnic circulation, and circulation of the skin, placental & foetal Circulation.
    - Know the cardiovascular homeostasis in health & disease, compensation for gravitational effects, exercise, inflammation & wound healing, shock, hypertension, heart Failure, stroke.
    - Understand the preparation of amphibian ringer solution, kymographic recording of the movements of perfused heart of toad.
    - Understand the effects of changes in perfusion fluid pressure, changes in temperature, excess calcium and potassium ion concentration, acetylcholine, adrenaline on the movement of heart.

- **CC7-Functions of Nervous System (PHYACOR07T and PHYACOR07P)**
    - On completion of the course, students are able to:

- Understand about reflexes, cutaneous, deep & visceral Sensation, arousal mechanisms, Sleep, & the electrical activity of the brain, electroencephalogram, consciousness & sleep, and will be able to interpret abnormal EEG pattern.
- Understand different parts of reticular formation & the reticular activating system, thalamus & the cerebral cortex, corticospinal & corticobulbar system, basal ganglia, cerebellum, medulla oblongata, hypothalamus.
- Analyse the Posture & Movement, responses of effector organs to autonomic nerve impulses, hunger, thirst, instinctual behaviour & emotions, higher Functions of the nervous system.
- Understand the experiments on superficial (plantar) and deep (knee jerk) reflex, measurement of grip strength.
- Analyse the reaction time by stick drop test and short term memory test and two point discrimination test.

SEC1 Haematological techniques (PHYSSEC01M)

- On completion of the course, students are able to:
- Understand different haematological techniques like preparation and staining of blood film with Leishman's stain, bleeding time (BT) and clotting time (CT), haemoglobin estimation, preparation of haemin crystal and blood group determination.
- Observe different type of blood corpuscles, shape of hemin crystal and agglutination reaction in between agglutinogen and agglutinin in glass slide.
- Learn about CT, BT and normal value of haemoglobin level in blood.

SEMESTER IV

- **CC8- Energy Balance, Metabolism and Nutrition (PHYACOR08T and PHYACOR08P)**

- On completion of the course, students are able to:
- Understand the basic molecular basis of biochemical reactions occurring in human body like reactions involved in carbohydrate, fat & protein metabolism.
- Grasp the concepts of calculations associated with ATP, the energy currency of the cell.
- Analyse the chemical reactions and associated with various chemical reactions taking place in different organelles in the cell.
- Understand the definition of BMR, RQ, RDA, SDA, NPU, Biological value of proteins.
- Know about different types of vitamins and minerals and their importance in human body.

- Understand the quantitative estimation of glucose and sucrose by Benedict's method and also quantitative estimation of amino nitrogen [Sorensen's formol titration method (percentage as well as total quantity to be done)].
- Understand the estimation of percentage quantity of lactose in milk by Benedict's method.

- **CC9-Gastrointestinal Function** (**PHYACOR09T and PHYACOR09P**)
  - On completion of the course, students are able to:
  - Understand the basics of Gastrointestinal system namely its anatomy, physiology & essential histology
  - Know how our gastrointestinal system responds to different kinds of principles of food like carbohydrate, protein & fats & also how different diseases affect the GI tract.
  - Analyse dietary requirements & different kinds of disease states commonly associated with the Gastrointestinal System
  - Understand the preparation of Dale's fluid, Kymographic recording of normal movements of rat's intestine in Dale's apparatus.
  - Learn about Effects of hypoxia, acetylcholine and adrenaline on normal intestinal movements.

- **CC10- Respiration** (**PHYACOR10T and PHYACOR10P**)
  - On completion of the course, students are able to:
  - Understand the core concepts associated with Respiratory physiology like its anatomy, physiology & essential histology.
  - Know the basics of how each part of our respiratory system (like lungs & its associated structures like respiratory muscles) works at a molecular level.
  - Analyse the role of oxygen & carbon dioxide in gaseous exchange and also analyse the disease states associated with the system.
  - Understand the methodology for determination of peak expiratory flow rate, oxygen saturation by pulse oximeter and forced expiratory volume (FEV) in first second.

SEC2 Diet Survey (**PHYSSEC02M**)

- On completion of the course, students are able to:
- Understand the importance of diet survey in daily life & also in calculation of the deficiency in different principles of food.
- Observe the dietary plan in different economic levels
- Learn the calculation of deficiency of different types of dietary components associated with day to day life.

SEMESTER V

- **CC11-Special Senses** (**PHYACOR11T and PHYACOR11P**)
    - On completion of the course, students are able to:
    - Understand the molecular mechanism behind the perception of smell.
    - Learn the molecular mechanism behind the perception of hearing.
    - Understand the molecular mechanism of vision and Taste
    - Know the basic principles and the molecular mechanism of all the special senses
    - Analyse the different disease sates and also the changes occurring in the mechanism which controls these special senses.
    - Know the staining process of nervous tissues and endocrine glands and able to determine visual acuity and colour blindness.

- **CC12-Endocrinology** (**PHYACOR12T and PHYACOR12P**)
    - On completion of the course, students are able to:
    - Understand the basic principles as well as the molecular mechanism & pathways which are activated during different hormone signalling.
    - Know the basic differences between different types of hormones such as peptide hormones, amino acid hormones & steroid hormones and their different modes of action and molecular mechanism.
    - Analyse different methods associated with the detection of disease states and the different parameters which changes during the disease states associated with several diseases of endocrine system.
    - Know the effects of oxytocin on uterine contraction and effects of adrenaline on intestinal / uterine movements

- **DSE1 -Biological Statistics** (**PHYADSE01T and PHYADSE01P**)
    - On completion of the course, students are able to:
    - Understand the fundamentals of biostatistics
    - Know the basics of statistics as applicable to biology
    - Analyse the experimental data and they can also normalize the data and also infer valuable information from data. They can also decide which test to be performed in which scenario.
    - Learn about Computation of mean, median, mode, standard deviation and standard error of the mean with physiological data like body temperature, pulse rate, respiratory rate, height and weight of human subjects.
    - Learn about presentation of data in frequency distribution and graphical form in frequency polygon and histogram.
    - Understand the Null hypothesis, errors of inference, levels of significance and perform chi square test, Student's 't' test for significance of difference between means

- **DSE2- Microbiology and Immunology (PHYADSE02T and PHYADSE02P)**
    - On completion of the course, students are able to:
    - Understand the diversity among Bacteria and Viruses and Know the systematic morphology and structure of Bacteria and Viruses.
    - Know the process of sterilization and pasteurization.
    - Understand the technique of Gram staining of bacteria and identification Gram positive and Gram negative bacteria.
    - Understand about bacteriostatic and bacteriocidal antibiotics and bacterial genetics.
    - Know the basic principles of how our body fights against microorganisms and also the very details of molecular mechanism (innate and acquired immune response) behind the immune response of our body to fight against these microbes.
    - Analyse the immune response of our body in disease states and also how our immune system sometimes backfires and this may lead to damage of our organ systems (like during autoimmune disease).
    - Learn about vaccine and importance of vaccination.

SEMESTER VI

- **CC13 -Reproductive Function (PHYACOR13T and PHYACOR13P)**
    - On completion of the course, students are able to:
    - Understand the scope reproductive physiology
    - Know the principles which govern the reproductive cycles in female and also the molecular mechanisms which play a critical role in the development of reproductive organs and also the role of endocrine factors in the controlling the reproductive health of an individual.
    - Analyse the different disease states and also the abnormal conditions associated with the increase & decrease of endocrine functions which govern the reproductive physiology as a whole.
    - Know the estrous cycle of rat, pregnancy test from urine of human.
    - Understand the spectrophotometric method for estimation of estrogen hormone.

- **CC14- Formation and Excretion of Urine (PHYACOR14T and PHYACOR14P)**
    - On completion of the course, students are able to:
    - Understand the mechanism of formation & excretion of urine.
    - Know the detailed mechanism which occurs in the unit of kidney called the nephron leading to the formation of urine. Students will also get the knowledge of the mechanism of excretion of urination which is an autonomic nervous system driven mechanism.

- Analyse the disease stated associated with kidney diseases like renal calculi, glomerulonephritis.
- Know the practical method for identification of normal and abnormal constituents of urine.

- **DSE04 -Human Nutrition and Dietetics (PHYADSE04T and PHYADSE04P)**
  - On completion of the course, students are able to:
  - Understand the constituents of food, basic concept calorific and physiological fuel value of foods.
  - Know the dietary requirement of different nutrients, balanced diet, principle of diet survey and formulation of balanced diets for growing child, adult man and woman, pregnant woman and lactating woman.
  - Know about BMR, RQ, ACU, SDA, dietary fibres, nitrogen balance and essential amino acids
  - Understand the physiology of starvation and obesity.
  - Prepared the diet survey report of a family as per ICMR specification.

- **DSE05-Genetics and Molecular Biology (PHYADSE05T and PHYADSE05P)**
  - On completion of the course, students are able to:
  - Understand basics of genetics such as Mendel's laws, epigenetics, genetic control & the cellular processes such as replication, transcription & translation.
  - Know the molecular mechanism of replication, transcription & translation in both prokaryotes (*E.coli* as model organism) & eukaryotes.
  - Study of Genetics will also enable the students to grasp the basics of methods in genetics used for the gene mapping, heritability of genes and chromosomes.
  - Analyse the genetics experiments such as tests associated with the linkage and genetic mapping as well as analyse any defect in the process of replication, transcription & translation in prokaryotes & eukaryotes.
  - Understand the regulation of gene expression, gene mutation and DNA repair.
  - Know about Recombinant DNA technology and its applications, Polymerase chain reaction, DNA gel electrophoresis, Paper chromatography and Thin Layer Chromatography.

Course Specific Outcomes – B.Sc. Physiology (GENERAL)

SEMESTER I

- **DSC1/GE1- Nutrition, Metabolism and Gastrointestinal Functions (PHYGCOR01T and PHYGCOR01P)**
    - On completion of the course, students are able to:
    - Understand the types of enzymes, kinetics of enzyme substrate reaction, enzyme inhibition and modulation of enzyme activities.
    - Learn about the classification, properties and functions of carbohydrates, isomerism of monosaccharides.
    - Understand the classification and properties of amino acids and proteins.
    - Understand the classification and properties of lipids. Classification and properties of fatty acids.
    - Understand the structure of nucleic acid and nucleotide, types and function of DNAs and RNAs
    - Understand the basic molecular basis of biochemical reactions occurring in human body like reactions involved in carbohydrate, fat & protein metabolism. Grasp the concepts of calculations associated with ATP, the energy currency of the cell.
    - Analyse the chemical reactions and associated with various chemical reactions taking place in different organelles in the cell.
    - Understand the definition of BMR, RQ, RDA, SDA, NPU, Biological value of proteins. Know about different types of vitamins and minerals and their importance in human body.
    - Understand the basics of Gastrointestinal system namely its anatomy, physiology & essential histology. Digestion of food like carbohydrate, protein & fats.
    - Understand the 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.
    - Understand the Quantitative estimation of glucose and sucrose by Benedict's method. Quantitative estimation of amino nitrogen [Sorensen's formol titration method (percentage as well as total quantity to be done)]. Estimation of percentage quantity of lactose in milk by Benedict's method.

SEMESTER II

- **DSC2/GE2- Circulation, Respiration and Excretion (PHYGCOR02T and PHYGCOR02P)**
    - On completion of the course, students are able to:

- Understand blood, bone marrow, white blood cells, immune mechanisms, platelets, red blood cells, blood types, plasma, homeostasis, lymph, haemoglobin.
- Understand the origin of the Heartbeat & the Electrical Activity of the heart Origin & Spread of Cardiac Excitation, Electrocardiogram, Cardiac Arrhythmias, Electrocardiographic Findings in Other Cardiac & Systemic Diseases, hypertrophy and cardiac myopathy, mechanical events of the Cardiac Cycle, Cardiac Output, Dynamics of Blood & Lymph Flow and arterial & arteriolar circulation, capillary circulation, lymphatic circulation & interstitial fluid volume, venous Circulation.
- Understand the core concepts associated with Respiratory physiology like its anatomy, physiology & essential histology.
- Know the basics of how each part of our respiratory system (like lungs & its associated structures like respiratory muscles) works at a molecular level.
- Analyse the role of oxygen & carbon dioxide in gaseous exchange and also analyse the disease states associated with the system.
- Understand the mechanism of formation & excretion of urine.
- Know the detailed mechanism which occurs in the unit of kidney called the nephron leading to the formation of urine. Students will also get the knowledge of the mechanism of excretion of urination which is an autonomic nervous system driven mechanism.
- Understand the Sphygmomanometric measurement of arterial blood pressure at rest and after exercise.
- Know about modified Harvard step test and determination of physical fitness and pneumographic recording of effects of talking, drinking, laughing, coughing, exercise, hyperventilation and breath - holding.

SEMESTER III

- **DSC3/GE3-Nervous system and Special Senses (PHYGCOR03T and PHYGCOR03P)**
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    - On completion of the course, students are able to:
    - Understand about reflexes, cutaneous, d**e**ep & visceral Sensation, arousal mechanisms, Sleep, & the electrical activity of the brain, electroencephalogram, consciousness & sleep, and will be able to interpret abnormal EEG pattern.
    - Understand different parts of reticular formation & the reticular activating system, thalamus & the cerebral cortex, corticospinal & corticobulbar system, basal ganglia, cerebellum, medulla oblongata, hypothalamus.

- Analyse the Posture & Movement, responses of effector organs to autonomic nerve impulses, hunger, thirst, instinctual behaviour & emotions, higher Functions of the nervous system.
- Understand the molecular mechanism behind the perception of smell.
- Learn the molecular mechanism behind the perception of hearing.
- Understand the molecular mechanism of vision and Taste
- Know the basic principles and the molecular mechanism of all the special senses
- Analyse the different disease sates and also the changes occurring in the mechanism which controls these special senses.
- Know the procedure of isolation and staining of nerve fibres with node(s) of Ranvier ($AgNO_3$) and muscle fibres (H and E).
- Analyse the visual acuity by Snellen's chart and colour blindness by Ishihara chart.

- **SEC1-** Haematological techniques (**PHYSSEC01M)**

  - On completion of the course, students are able to:
  - Understand different haematological techniques like preparation and staining of blood film with Leishman's stain, bleeding time (BT) and clotting time (CT), haemoglobin estimation, preparation of haemin crystal and blood group determination.
  - Observe different type of blood corpuscles, shape of hemin crystal and agglutination reaction in between agglutinogen and agglutinin in glass slide.
  - Learn about CT, BT and normal value of haemoglobin level in blood.

SEMESTER IV

- **DSC4/GE4-Endocrinology and Reproduction (PHYGCOR04T and PHYGCOR04P)**
  - On completion of the course, students are able to:
  - Understand the basic principles as well as the molecular mechanism & pathways which are activated during different hormone signalling.
  - Know the basic differences between different types of hormones such as peptide hormones, amino acid hormones & steroid hormones and their different modes of action and molecular mechanism.
  - Understand the scope reproductive physiology
  - Know the principles which govern the reproductive cycles in female and also the molecular mechanisms which play a critical role in the development of reproductive organs and also the role of endocrine factors in the controlling the reproductive health of an individual.
  - Analyse the different disease states and also the abnormal conditions associated with the increase & decrease of endocrine functions which govern the reproductive physiology as a whole.

- Understand the histology of different stained sections of Mammalian Tissues like Bone, Cartilage, Trachea, Lungs, Spleen, Lymph gland, Esophagus, Stomach, Duodenum, Ileum, Jejunum, large Intestine, Liver, Kidney, Ureter, Salivary glands, Pancreas, Adrenal gland, Thyroid gland, Testes, Ovary, Spinal Cord, Cerebral cortex, Cerebellum, Skin, Cardiac muscle, Skeletal muscle, Smooth muscle, Artery, Vein, Tongue.

SEC2-Diet Survey (PHYSSEC02M)

- On completion of the course, students are able to:
- Understand the importance of diet survey in daily life & also in calculation of the deficiency in different principles of food.
- Observe the dietary plan in different economic levels
- Learn the calculation of deficiency of different types of dietary components associated with day to day life.

SEMESTER V

- **DSE2-Sports and Exercise Physiology (PHYGDSE02T and PHYGDSE02P)**

  - On completion of the course, students are able to:
  - Understand the basic concept of bioenergetics, energy sources during exercise, cardio-respiratory responses during different grades of exercise, EPOC, fatigue, aerobic work capacity.
  - Know about principles of physical training, training to improve aerobic and anaerobic power, effect of overtraining and detraining.
  - Understand the nutritional supplements and ergogenic aids, sports injury and its management.
  - Know the measurement procedure of blood pressure before and after different grades of exercise, determination of VO_2max by queen college step, determination of endurance time by hand grip dynamometer and measurement of body fat percentage.

- **SEC1-** Haematological techniques (**PHYSSEC01M)**

  - On completion of the course, students are able to:
  - Understand different haematological techniques like preparation and staining of blood film with Leishman's stain, bleeding time (BT) and clotting time (CT), haemoglobin estimation, preparation of haemin crystal and blood group determination.
  - Observe different type of blood corpuscles, shape of hemin crystal and agglutination reaction in between agglutinogen and agglutinin in glass slide.
  - Learn about CT, BT and normal value of haemoglobin level in blood.

SEMESTER VI

- **DSE3-Community Nutrition and Public Health (PHYGDSE03T and PHYGDSE03P)**
    - On completion of the course, students are able to:
    - Understand the constituents of food, basic concept calorific and physiological fuel value of foods.
    - Know the dietary requirement of different nutrients, balanced diet, principle of diet survey and formulation of balanced diets for growing child, adult man and woman, pregnant woman and lactating woman.
    - Know about ACU, RDA, SDA and dietary fibres.
    - Understand the diet management of obese, diabetic, hypertensive person and athlete, basic idea on PCM, marasmus, kwashiorkor and their prevention.
    - Know about food toxicity, sound pollution as a community health issue; definition, concept of noise, source of extraordinary sound, effects of sound pollution on human health, quantitative assessment of noise.
    - Prepared the diet survey report of a family as per ICMR specification.

- **SEC2-Diet Survey (PHYSSEC02M)**
    - On completion of the course, students are able to:
    - Understand the importance of diet survey in daily life & also in calculation of the deficiency in different principles of food.
    - Observe the dietary plan in different economic levels
    - Learn the calculation of deficiency of different types of dietary components associated with day to day life.