



NARAJOLE RAJ COLLEGE

(NAAC Accredited 'B' Grade Govt. Aided College)
NARAJOLE: PASCHIM MEDINIPUR: WEST BENGAL: Pin-721211
E-mail: narajolerajcollege@rediffmail.com
Website: <https://www.narajolerajcollege.ac.in>



Programme Specific Outcomes (PSOs)

Physiology (General)

The students of Physiology (Gen or DSC) will acquire their theoretical and experimental basic knowledge about the different branches of Physiology like Cellular Physiology, Biophysical Principles, Biochemistry, Digestive system & Metabolism, Blood, body fluid and immune System, Cardiovascular System and Respiratory System and Nerve – Muscle Physiology, Nervous system, Skin and Body Temperature Regulation, Sensory Physiology, Endocrine and Reproductive System, Renal Physiology etc. by studying this programme. They will attain the quantitative and predictive understanding of Physiology in different biological phenomena. This programme also opens up the career paths to select in many related and sub-related areas like academics, scientific laboratories, instrumentation and industries etc.

After completion of the programme, the graduates will be capable of-

PSO1: Acquiring the knowledge about the different core branches of Physiology like Cellular Physiology, Biophysical Principles, Biochemistry, Digestive system & Metabolism, Blood, body fluid and immune System, Cardiovascular System and Respiratory System and Nerve –Muscle Physiology, Nervous system, Skin and Body Temperature Regulation, Sensory Physiology, Endocrine and Reproductive System, Renal Physiology etc.

PSO2: Developing the ability to use skills in Physiology for formulating and tackling Physiology-related problems.

PSO3: Acquiring their understanding skills about the different experiments of different branches of Physiology by designing as well as conducting several experimental arrangements for the proper interpretation and analysis of the experimental results and drawing the conclusions by the supporting data.

PSO4: Accumulating their knowledge and skills about the applications of numerical techniques for solving different problems of different branches of Physiology, beside the theoretical and experimental skills.

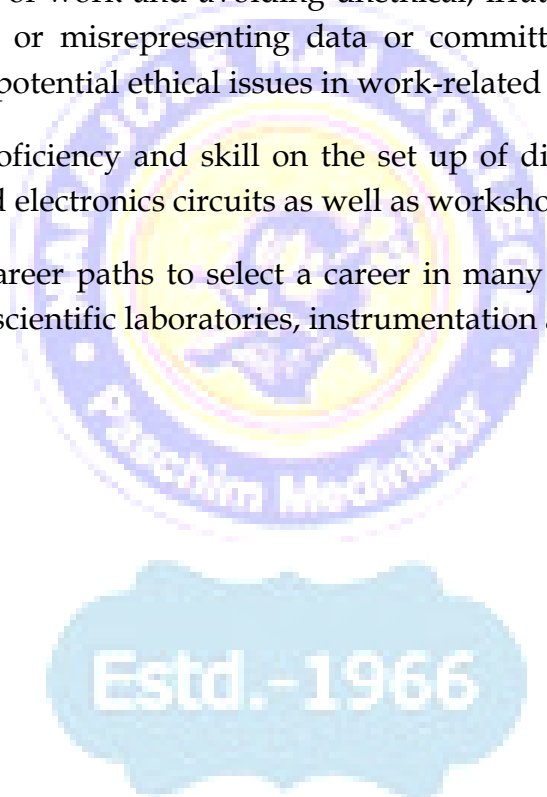
PSO5: Comprehending and cultivating a basic understanding of the influence of Physiology on the modern society as well as different general real-world situations as well as phenomenon.

PSO6: Attaining the quantitative and predictive understanding of Physiology in different biological phenomena.

PSO7: Demonstrating professional behaviour such as being objective, unbiased and truthful in all aspects of work and avoiding unethical, irrational behaviour such as fabricating, falsifying or misrepresenting data or committing plagiarism and the ability to identify the potential ethical issues in work-related situations.

PSO8: Developing proficiency and skill on the set up of different instruments and different electrical and electronics circuits as well as workshops skills.

PSO9: Opening the career paths to select a career in many related and sub-related areas like academics, scientific laboratories, instrumentation and industries, etc.





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Course Outcome

Physiology (Gen.)

Semester	II
Title of Course	Blood, body fluid and immune System, Cardiovascular System and Respiratory System
Paper Code	DSC1BT
Credits	04
Hours	04 hours/week

The students of Physiology (Gen) of Semester-II will acquire the knowledge about the Blood composition & function, roll of body fluids, Structure of Antibody, different part of heart, importance of respiratory system, process of respiration, structure of alveoli by studying this course.

The theory paper (DSC1BT) of this course (CC4) provides the student with-

Blood & Body fluids:

CO1: Know about components in blood, blood tests provide a wealth of information about our health.

CO2: Isolate knowledge how the red blood cells transport oxygen from the lungs to the cells of the body, where it is needed for metabolism.

CO3: Know the quantity of the each type of blood cell.

CO4: Collect idea about blood clotting mechanism.

CO5: Gather concept on role of Coagulation time, bleeding time in normal health, and also prothrombin time and haemolysis process.

CO6: know about Blood groups - The ABO systems, The Rh systems, The MN system and their implication on blood transfusion. Understanding the importance of blood groups, immunological basis of identification of ABO and Rh blood groups.

CO7: diagnose diseases and conditions such as cancer, HIV/AIDS, diabetes, anemia (uh-NEE-me-eh), and coronary heart disease

CO8: Ability to describe importance of Intracellular and extra cellular compartment of body fluids.

CO9: Know the importance of water in normal physiological condition, Water balance and its regulation.

CO10: Understanding about the lymph and tissue fluids and their composition, formation, circulation , function.

Immune System:

CO11: Acquired knowledge about different types of immunity like innate immunity, acquired immunity, cellular immunity and humoral immunity.

CO12: Grow concept about different immune cells and know about their role on immune system.

CO13: Able to discuss antibody structure and function of antibody and also antigen.

CO14: Understanding the basic concept of Vaccination, Immunization- Passive and active immunization and Toxin and Toxoids..

CO15: Collect concept about HIV structure and their role on AIDS. Know about spreading process of AIDS and their prevention.

Cardiovascular system:

CO16: Understood the anatomy and histology of the heart.

CO17: Understanding the basic properties of cardiac muscle and origin, propagation of cardiac impulse.

CO18: Know about different events of cardiac cycle.

CO19: Increase knowledge about Structure of arteries, arterioles, capillaries.

CO20: Understanding the role of Renin- angiotensin system, Vasopressin or ADH in Blood Pressure regulations.

Respiratory system:

CO21: Understanding the role of respiratory muscles in breathing.

CO22: Know about artificial respiration.

CO23: Know the role of respiratory centre, central and peripheral chemo-receptors.

CO24: Gather concept about different respiratory disease like Hypoxia, asphyxia, dyspnea, asthma, cyanosis, dysbarism

Semester	II
Title of Course	Haematology and Human Experiments
Paper Code	DSC1BP
Credits	02
Hours	04 hours/week

The students of Physiology (Gen) of Semester-II will acquire the practical knowledge about the different parts of microscope, identify the different types of blood cells, determine the blood group, measurements process of the blood pressure, measurement heart and pulse rate by studying this course.

The lab paper (DSC1BP) of this course (CC-4) provides the student with-

Haematology:

CO1: Know the structure and function of compound microscope.

CO2: Able to identified different types of blood cells.

CO3: Determined the TC of RBC and WBC by haemocytometer.

CO4: Gather ability to prepare haemin crystal.

CO5: Determined the blood group.

CO6: Determined clotting and bleeding time and know about its normal value.

CO7: Prepared and stain of bone marrow. Measure the diameter of megakaryocyte.

Human Experiments:

CO8: Acquired skill to measure the arterial blood pressure by Sphygmomanometer at rest and after exercise also calculate the mean arterial blood pressure (MABP).

CO9: Measure the heart rate and pulse rate (30 beats methods) during rest and exercise and able to plot the result on graphical plotting .

CO10: Able to determine the physical fitness Index by modified Harvard step test.

Semester	IV
Title of Course	Sensory Physiology, Endocrine and Reproductive System, Renal Physiology (CC-4)
Paper Code	DSC1DT
Credits	04
Hours	04 hours/week

The students of Physiology (Gen) of Semester-IV will acquire the knowledge about the Fundamentals of Dynamics, Work and Energy, Collisions, Rotational Dynamics, Elasticity, Fluid Motion, Gravitation and Central Force Motion, Oscillations, Non-Inertial Systems, Special Theory of Relativity by studying this course.

The theory paper (DSC1DT) of this course (CC-4) provides the student with-

Sensory Physiology:

- CO1: Classify the general and special senses and their receptors.
- CO2: Understanding the basis of neural pathway of olfactory and gustatory sensation and also physiology of olfactory and gustatory sensation.
- CO3: Gather basic concept of Structure of ear and Organ of Corti.
- CO4: Know about Mechanism of hearing and its modern theory.
- CO5: Understood the structure of the eye anatomic consideration and the lens.
- CO6: Able to discuss the Chemical changes in retina on exposure to light.
- CO7: Understood the Visual pathway and effects of lesions of these pathways.
- CO8: Able to differentiate Light and dark adaptation.

Endocrinology:

- CO9: Understanding the anatomy of endocrine system, mechanism and modern concepts of hormone action and basic concept of regulation of hormone actions.
- CO10: Understanding the concept of Hypothalamo-hypophyseal tract and portal system.
- CO11: Basic idea on histological structure, hormones, functions and regulation of anterior, middle and posterior lobes of pituitary.

CO12: Know about histological structure of thyroid and parathyroid hormone: chemistry, biosynthesis, storage and transport and also functions of thyroid hormones (T4 T3) Thyrocalcitonin.

CO13: Ideas of Histological structure and functions of different hormones that biosynthesis from adrenal gland.

Reproductive Physiology:

CO14: Distinguish the Primary and secondary sex organs and their role.

CO15: Able to describe spermatogenesis, spermatogenesis and oogenesis.

CO16: Distinguish between oestrus and menstrual cycles and their hormonal control.

CO17: Acquired knowledge about fertilization, implantation and structure and functions of placenta.

CO18: Understood maintenance of pregnancy process – role of hormones.

CO19: Know the development of mammary gland and lactation - Role of hormones.

Renal Physiology:

CO20: Got ideas on Structure and functions of kidney.

CO21: Understanding the concept of Mechanism of formation of urine.

CO22: Know the normal and abnormal constituents of urine and their clinical significances.

CO23: Understand the process of Physiology of urine storage and micturation.

CO24: Able to discuss Non excretory function of kidney.

CO25: Understand the Dialysis process and Artificial kidney.

Semester	IV
Title of Course	Mechanics (CC-2)
Paper Code	DSC1DP
Credits	02
Hours	04 hours/week

The students of Physics (H) of Semester-I will acquire the practical knowledge about the Staining and identification of kidney and ureters, estrous cycle, Estimation of albumin in urine, Detection of specific gravity of urine, Sperm count and sperm motility in rat, Exploration of conductive and perceptive deafness by tuning fork method by hands on practical experiments.

The lab paper (DSC1DP) of this course (CC-4) provides the student with-

- CO1: Understand staining process and identification of kidney and ureters .
- CO2: Study of necessary theory, working formula and experimental observation of random errors originating in different measurements and their analysis.
- CO3: observed the estrous cycle.
- CO4: Able to Estimate of albumin in urine through experiments.
- CO5: Detect the specific gravity of urine through experiments.

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Semester	II
Title of Course	Developmental Biology / Embryology
Paper Code	GE2T (Theory)
Credits	04
Hours	04 hours/week

The students of Physiology (Gen) of Semester-II will acquire the knowledge about the Gametogenesis: Spermatogenesis & Oogenesis, Fertilization, Cleavage, Blastula formation, Gastrulation, Organogenesis process by studying this course.

The theory paper (GE2T) of this course provides the student with-

CO1: Developmental biology is the study of the process by which organisms grow and develop. Modern developmental biology studies the genetic control of cell growth, differentiation and "morphogenesis," which is the process that gives rise to tissues, organs and anatomy.

CO2: Embryology is a subfield, the study of organisms between the one-cell stage (generally, the zygote) and the end of the embryonic stage.

CO3: Know about Gametogenesis: Spermatogenesis & Oogenesis.

CO4: understand Fertilization: In Sea-urchin and mammals.

CO5: Concept of Cleavage: Cleavage plane, types, role of yolk in cleavage; cleavage process in mammals.

CO6: Acquire knowledge about Gastrulation: Mammals Concept of induction, determination, and differentiation.

CO7: Understand the organogenesis: development of eye as an example of reciprocal and repeated inductive events.

Semester	II
Title of Course	Developmental Biology / Embryology
Paper Code	GE2P (Practical)
Credits	02
Hours	04 hours/week

The students of Physiology (Gen) of Semester-II will acquire the practical knowledge about the H & E staining of ovarian tissue sections and identification of Graafian follicle, Corpus Luteum, and demonstration of preserved mammalian embryo. on practical experiments.

The labpaper (GE2P) of this course provides the student with-

CO1: Observed and collect concept on H & E staining of ovarian tissue sections and identification of Graafian follicle.

CO2: Observed and collect concept on H & E staining of ovarian tissue sections and identification of Corpus Luteum.

CO3: Able to demonstrate of preserved mammalian embryo.

