# Delhi Board of School Education

# Draft Syllabus – Class 12

# Academic Year 2024-25

# Term 1 & 2

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# Syllabus for English

## Term 1

## Reading

**A. Reading Comprehensions**

- One unseen passage to assess comprehension, interpretation, analysis, inference and vocabulary. The passage may be factual, descriptive or literary.
- One unseen case-based factual passage with verbal/visual inputs like statistical data, charts etc.to assess comprehension, interpretation, analysis, inference and evaluation.
- One poem to assess comprehension, interpretation, analysis (literary and figurative), inference and vocabulary.

Multiple Choice Questions / Objective Type Questions will be asked.

**Criteria to be Assessed: A**

**Competencies:** Conceptual understanding, decoding, analysing, inferring, interpreting, appreciating, literary, conventions and vocabulary, summarising and using appropriate format/s.

## Literature

This section would assess the learners' understanding of the text, language used, setting, style, structure, character, plot, various perspectives, themes explored through the text and the element of intertextuality within the texts.

## Flamingo (Prose):

- **Last Lesson**

  Major themes: Culture and language, patriotism and resistance, education and knowledge and community and solidarity.

- **The Lost Spring**

  Major themes: Perpetual state of poverty, loss of childhood and innocence, migration, exploitation, child labour, failed bureaucracy.

- **Indigo**

  Major themes: Effective leadership, freedom struggle, empowerment of the poor, conflict between laws and justice.

**B.**

**Criteria to be Assessed: A, B, C and D**

**Competencies:** Recalling, reasoning, appreciating literary convention, inference, analysis, creativity with fluency, critical thinking.

## Flamingo (Poetry):

- My Mother at 66

  Major themes: Ageing and death, loss of loved ones.

- Keeping Quiet

  Major themes: Sustaining peace and silence, mindfulness, Stillness v/s inactivity.

**Criteria to be Assessed: A, B, C and D**

**Competencies:** Recalling, reasoning, appreciating literary convention, inference, analysis, creativity with fluency, critical thinking.

## Vistas (Prose):

- The Third Level

  Major themes: Time travel , existential crisis, escapism (from the modern world and its insecurities).

- The Tiger King

  Major themes: Sarcasm, humour, transience of power and life, satire on conduct of people in power

**Criteria to be Assessed: A, B, C and D**

**Competencies:** Recalling, reasoning, appreciating literary convention, inference, analysis, creativity with fluency, critical thinking**.**

## Writing skills

- Notice
- Article
- Report

**Criteria to be Assessed: B, C and D**

**Competencies:** Conceptual Understanding, application of rules, analysis, Reasoning, appropriacy of style and tone, using appropriate format and fluency, inference, analysis, evaluation and creativity.

## Term 2

# Reading

### Reading Comprehensions

- One unseen passage to assess comprehension, interpretation, analysis, inference and vocabulary. The passage may be factual, descriptive or literary.
- One unseen case-based factual passage with verbal/visual inputs like statistical data, charts etc.to assess comprehension, interpretation, analysis, inference and evaluation.
- One poem to assess comprehension, interpretation, analysis (literary and figurative), inference and vocabulary.

Multiple Choice Questions / Objective Type Questions will be asked.

**Criteria to be Assessed: A**

**Competencies**: Conceptual understanding, decoding, analysing, inferring, interpreting, appreciating, literary, conventions and vocabulary, summarising and using appropriate format/s.

# Literature

This section would assess the learners' understanding of the text, language used, setting, style, structure, character, plot, various perspectives, themes explored through the text and the element of intertextuality within the texts.

# Flamingo (Prose):

- Deep Water
  Major themes: Effect of childhood fear and trauma on adult life experiences, overcoming fear
- The Rattrap
  Major themes: Human greed, human life a rat race, kindness leading to change of heart and transformation, human loneliness and the need to bond with others.
- Going Places
  Major themes: Teenage fantasies, idea of self, hero worship.

**Criteria to be Assessed: A, B, C and D**

**Competencies:** Recalling, reasoning, appreciating literary convention, inference, analysis, creativity with fluency, critical thinking.

# Hornbill: Poetry

- A Roadside Stand

  **Major themes:** Contrast between the rich and the poor, indifference of the privileged ones, socio-economic disparity

- Aunt Jennifer's Tigers

  **Major themes:** Patriarchy, objectification of women, women's desire of freedom, art as a means of expression, escapism through art. **Criteria to be Assessed: A, B, C and D**

  **Competencies:** Recalling, reasoning, appreciating literary convention, inference, analysis, creativity with fluency, critical thinking.

## Vistas (Prose):

- On the Face of It

  **Major themes:** Human love and kindness, discrimination of the differently abled, inclusion, loneliness and agony experienced by differently abled.

- Memories of Childhood

  a) The Cutting of My Long Hair

  b) We Too are Human Beings

  **Major themes:** Women's oppression, class barriers, racialism, discrimination and exploitation

  **Criteria to be Assessed: A, B, C and D**

  **Competencies:** Recalling, reasoning, appreciating literary convention, inference, analysis, creativity with fluency, critical thinking.

## Writing skills

- Letter – Formal – Letters to the editor (giving suggestions or opinion on issues of public interest) – Job Application
- Formal/Informal Invitation and Reply

  **Criteria to be Assessed: B, C and D**

  **Competencies:** Conceptual Understanding, application of rules, analysis, Reasoning, appropriacy of style and tone, using appropriate format and fluency, inference, analysis, evaluation and creativity.

  Multiple Choice Questions / Objective Type Questions will be asked.

**Competencies:** Conceptual Understanding, application of rules, analysis, Reasoning, appropriacy of style and tone, using appropriate format and fluency, inference, analysis, evaluation and creativity.

# Syllabus for Physics

## Term 1

## Unit 1: Electrostatics

**Electric charges:** Conservation of charge. Coulomb's law forces between two point charges, forces between multiple charges: superposition principle and continuous charge distribution. Electric field: Electric field due to a point charge, Electric field lines. Electric dipole, Electric field due to a dipole. Torque on a dipole in a uniform electric field.

Electric flux. Gauss's law and its applications to find field due to infinitely long uniformly charged straight wire uniformly charged infinite plane sheet, and uniformly charged thin spherical shell. Electric potential and its calculation for a point charge, electric dipole and system of charges; potential difference, Equipotential surfaces, Electrical potential energy of a system of two point charges and of electric dipole in an electrostatic field.

Conductors and insulators. Dielectrics and electric polarisation, capacitors and capacitances, the combination of capacitors in series and parallel, and capacitance of a parallel plate capacitor with and without dielectric medium between the plates. Energy stored in a capacitor.

## Unit 2: Current Electricity

Electric current. Drift velocity, mobility, and their relation with electric current. Ohm's law.

Electrical resistance. V-I characteristics of Ohmic and non-ohmic conductors. Electrical energy and power. Electrical resistivity and conductivity. Series and parallel combinations of resistors; Temperature dependence of resistance. Internal resistance, potential difference, and emf of a cell, a combination of cells in series and parallel. Kirchhoff’s laws and their applications. Wheatstone bridge. Metre

Bridge.

## Unit 3: Magnetic Effects of Current and Magnetism

Biot - Savart law and its application to the current carrying circular loop. Ampere's law and its applications to infinitely long current carrying straight wire and solenoid. Force on a moving charge in uniform magnetic and electric fields.

Force on a current-carrying conductor in a uniform magnetic field. The force between two parallel currents carrying conductors-definition of ampere. Torque experienced by a current loop in a uniform magnetic field: Moving coil galvanometer, its sensitivity, and conversion to ammeter and voltmeter. Current loop as a magnetic dipole and its magnetic dipole moment.

Bar magnet as an equivalent solenoid, magnetic field lines; Magnetic field due to a magnetic dipole (bar magnet) along its axis and perpendicular to its axis. Torque on a magnetic dipole in a uniform magnetic field.

Para-, dia- and ferromagnetic substances with examples, the effect of temperature on magnetic properties.

## Unit 4: Electromagnetic Induction and Alternating Currents

Electromagnetic induction: Faraday's law. Induced emf and current: Lenz's Law, Eddy currents. Self and mutual inductance. Alternating currents, peak and RMS value of alternating current/ voltage: reactance and impedance: LCR series circuit, resonance: power in AC circuits, wattless current. AC generator and transformer.

## Unit 5: Electromagnetic Waves

Displacement current. Electromagnetic waves and their characteristics, Transverse nature of electromagnetic waves, Electromagnetic spectrum (radio waves, microwaves, infrared, visible,ultraviolet. X-rays. Gamma rays), Applications of e.m.waves.

# TERM-2

## Unit 6: Optics

Reflection of light, spherical mirrors, mirror formula. Refraction of light at plane and spherical surfaces, thin lens formula, and lens maker formula. Total internal reflection and its applications. Magnification. Power of a Lens. Combination of thin lenses in contact. Refraction of light through a prism. Microscope and Astronomical Telescope (reflecting and refracting ) and their magnifying powers.

Wave optics: wavefront and Huygens' principle. Laws of reflection and refraction using Huygens principle. Interference, Young's double-slit experiment, and expression for fringe width, coherent sources, and sustained interference of light. Diffraction due to a single slit,width of central maximum. Polarisation, plane-polarised light: Brewster's law, uses of plane-polarised light and Polaroid.

## Unit 7: Dual Nature of Matter and Radiation

Dual nature of radiation. Photoelectric effect. Hertz and Lenard's observations; Einstein's photoelectric equation: particle nature of light. Matter waves-wave nature of particles, de Broglie relation.

## Unit 8: Atoms and Nuclei

Alpha-particle scattering experiment; Rutherford's model of atom; Bohr model, energy levels, hydrogen spectrum. Composition and size of nucleus, atomic masses, Mass-energy relation, mass defect; binding energy per nucleon and its variation with mass number, nuclear fission, and fusion.

## Unit 9: Electronic Devices

Semiconductors; semiconductor diode: I-V characteristics in forward and reverse bias; diode as a rectifier; I-V characteristics of LED. the photodiode, solar cell, and Zener diode; Zener diode as a voltage regulator. Logic gates (OR, AND, NOT, NAND and NOR).

**Criteria D: Physics lab-Experimental skills:**

**Category A:** Observation and inference( for Term - 1 and Term -2)

1. Using a multimeter to:
   (i) See the unidirectional current in case of a diode and an LED.
   (ii) Check whether a given electronic components (e.g diode, resistor etc) are in working order.
2. Identification of diode, LED, resistor and capacitor from a mixed collection of such items.

**Category B:** Investigation, Observation and Inference

**TERM -1**

1. To find the resistance of a given wire using Ohm's law.
2. To find the resistivity of the material of a given wire using a metre bridge.
3. To find the resistance and figure of merit of a galvanometer by half deflection method.
4. To verify the laws of combination (series) of resistances using a metre bridge.
5. To verify the laws of combination (Parallel) of resistances using a metre bridge

**TERM- 2**

6. Determine the focal length of a convex lens by plotting graphs between u and v or between 1/u and 1/v.
7. Determine the focal length of a convex mirror, using a convex lens.
8. To determine angle of minimum deviation for a given triangular prism by plotting a graph between angle of incidence and angle of deviation.
9. To draw characteristic curves of a p-n junction diode in forward and reverse bias.
10. To draw the characteristic curve of a Zener diode and find reverse breakdown voltage.

# Syllabus for Chemistry

## Term 1

## Unit 1: Solutions

Types of solutions, expression of concentration of solutions of solids in liquids, solubility of gases in liquids, solid solutions,Henry`slaw, Raoult's law,vapour pressure of solution,ideal and non ideal solution colligative properties - relative lowering of vapour pressure, elevation of boiling point, depression of freezing point, osmotic pressure, determination of molecular masses using colligative properties, abnormal molecular mass, van't Hoff factor.

## Unit 2: Chemical Kinetics

Rate of a reaction (Average and instantaneous), factors affecting rate of reaction: concentration, temperature, catalyst and pressure; order and molecularity of a reaction, Elimentary and complex reaction, rate law and specific rate constant, unit of rate constant. Differentional rate equation method, integrated rate equations and half-life (only for zero and first order reactions), concept of collision theory (elementary idea, no mathematical treatment), activation energy, Arrhenius equation, effect of temperature on rate of reaction.

## Unit 3: p, d and f -Block Elements

Group-13 to Group 18 element

Electronic configuration and general trends in physical and chemical properties across the periods and down the groups

**Transition elements**

General introduction, electronic configuration, occurrence and characteristics of transition metals, general trends in properties of the first row transition metals – metallic character, ionization enthalpy, oxidation states, ionic radii, colour, catalytic property, magnetic properties, interstitial compounds, alloy formation, preparation and properties of K2Cr2O7 and KMnO4.

**Inner Transition elements**

Lanthanoids - Electronic configuration, oxidation states, chemical reactivity and lanthanoid contraction and its consequences.

Actinoids - Electronic configuration, oxidation states and Actinoids contraction.

## Unit 4: Coordination Compounds

Coordination compounds - Introduction, ligands, coordination number, colour, magnetic properties and shapes, IUPAC nomenclature of mononuclear coordination compounds. Bonding, Werner's theory, VBT, and CFT; structural and stereoisomerism, importance of coordination compounds (in qualitative analysis, extraction of metals and biological system).

## Unit 5: Haloalkanes and Haloarenes

Haloalkanes: Nomenclature, nature of C–X bond, physical and chemical properties, optical rotation mechanism of substitution reactions and its stereochemical aspects.

Haloarenes: Nature of C–X bond, substitution reactions (Directive influence of halogen in monosubstituted compounds only).

Uses and environmental effects of - dichloromethane, trichloromethane, tetrachloromethane, iodoform, freons, DDT.

## Unit 6: Electrochemistry

Redox reactions,Half cell, EMF of a cell, standard electrode potential, Nernst equation and its application to chemical cells, Relation between Gibbs energy change and EMF of a cell, conductance in electrolytic solutions, specific and molar conductivity, variations of conductivity with concentration, Kohlrausch's Law, electrolysis and law of electrolysis (elementary idea)cells and battery-dry cell, lead accumulator, fuel cell.

## Term-2

## Unit 7: Alcohols, Phenols and Ethers

Alcohols: Nomenclature, methods of preparation, physical and chemical propertie, identification of primary, secondary and tertiary alcohols, mechanism of dehydration.

Phenols: Nomenclature, methods of preparation, physical and chemical properties, acidic nature of phenol, electrophillic substitution reactions, uses of phenols Reimer Tiemann reaction, Kolbe reaction.

Ethers: Nomenclature and structure

## Unit 8: Aldehydes, Ketones and Carboxylic Acids

Aldehydes and Ketones: Nomenclature, nature of carbonyl group, methods of preparation, physical and chemical properties, relative reactivity of Aldehydes and Ketones of mechanism of nucleophilic addition, reactivity of α-hydrogen in aldehydes, uses Wolf kishner , clemmensen reduction , Grignard reagent, oxidation , reduction , Cannizaro and heloform reaction.

Carboxylic Acids: Nomenclature, acidic nature and factors affecting acidic strength, methods of preparation, physical and chemical properties; uses.

## Unit 9: Amines

Amines: Nomenclature, classification, structure, methods of preparation, physical and chemical properties, basic character in gaseous and aqueous phase, identification of primary, secondary and tertiary amines ,uses .

Diazonium salts: Preparation, chemical reactions and importance in synthetic organic chemistry.

## Unit 10: Biomolecules

Carbohydrates - Classification (aldoses and ketoses), monosaccahrides (glucose and fructose) open chain and cyclic structure of glucose, D-L configuration oligosaccharides (sucrose, lactose, maltose), polysaccharides (starch, cellulose, glycogen); Importance of carbohydrates.

Proteins -Elementary idea of - amino acids, peptide bond, polypeptides, proteins, structure of proteins - primary, secondary, tertiary structure and quaternary structures (qualitative idea only), denaturation of proteins; enzymes. Hormones - Elementary idea excluding structure.

Vitamins - Classification and functions. Nucleic Acids: DNA and RNA and their chemical constitution

## PRACTICAL SYLLABUS (For Assessment of Criteria-D)

## Term-1

### C. Chemical Kinetics

(a) Effect of concentration and temperature on the rate of reaction between Sodium Thiosulphate and Hydrochloric acid.

(b) Study of reaction rates of any one of the following:

(i) Reaction of Iodide ion with Hydrogen Peroxide at room temperature using different concentration of Iodide ions.

(ii) Reaction between Potassium Iodate, (KIO3) and Sodium Sulphite: (Na2SO3) using starch solution as indicator (clock reaction).

### D. Preparation of Inorganic Compounds

Preparation of double salt of Ferrous Ammonium Sulphate or Potash Alum. Preparation of Potassium Ferric Oxalate.

### E. Determination of concentration/ molarity of KMnO4 solution by titrating it against a standard solution of:

(i) Oxalic acid,

(ii) Ferrous Ammonium Sulphate

(Students will be required to prepare standard solutions by weighing themselves)

### F. Qualitative Analysis (Organic)

Detection of -Nitrogen, Sulphur, Chlorine in organic compounds.

## Term-2

### G. Tests for the functional groups present in organic compounds:

Unsaturation, alcoholic, phenolic, aldehydic, ketonic, carboxylic and amino (Primary) groups.

**H. Characteristic tests of carbohydrates, fats and proteins in pure samples and their detection in given foodstuffs.**

**I. Salt Analysis**

Determination of one anion and one cation in a given salt

Anions - CO32- , S2- , NO2- , SO32-, SO42-, NO3 - , Cl- , Br-, I-, PO43-, CH3COO-

Cations- NH4+, Pb2+, Cu2+, As3+, Al3+, Fe3+, Mn2+, Ni2+, Zn2+, Co2+ , Ca2+, Sr2+, Ba2+, Mg2+,

(Note: Insoluble salts excluded)

**J. Preparation of Organic Compounds**

Preparation of any one of the following compounds

i) Acetanilide

ii) Dibenzalacetone

iii) p-Nitroacetanilide

iv) Aniline yellow or 2-Naphthol Aniline dye.

I . Preparation of Lyophilic and Lyophobic sol (starch ,Gum, Fecl3

## Evaluation Scheme for Practical Examination (Term-1 & 2)

| Experiment | Level |
|---|---|
| **Major Experiment:** Volumetric Analysis/Salt Analysis | 08 |
| Content Based Experiment | 06 |
| Project Work / Practical record | 04 |
| Viva based on project work / experiments | 04 |

**Project work evaluation in Term-1, practical record evaluation to be done in Term-2 assessment.**

# Syllabus for Biology

## Term 1

### Chapter-1: Sexual Reproduction in Flowering Plants

Structure of a typical angiosperm flower as a modified shoot, with special emphasis on male and female reproductive structure, development of male and female gametophyte. Types of pollination-hydrophily, anemophily, entomophily, ornithophily with atleast one example for each; outbreeding devices in flowers; pollen-pistil interaction which leads to double fertilization, endosperm, embryo development in dicots and monocots, development of fruit and seed. and endosperm development; special modes such as apomixis, parthenocarpy, polyembryony along with their significance.

### Chapter-2: Human Reproduction

Structure of Male and female reproductive systems with special reference to anatomy of testis and ovary and glandular secretions; spermatogenesis in males and oogenesis in females; menstrual cycle; fertilisation, elementary idea of embryogenesis till blastocyst formation, implantation; pregnancy and elementary idea of placenta formation, parturition and lactation

### Chapter-3: Reproductive Health

What is reproductive health and why there is need to give emphasis on it? Population explosion, birth control - need and methods, contraception and medical termination of pregnancy (MTP); amniocentesis; Basic understanding of controlling and prevention of Sexually Transmitted Diseases (AIDS, gonorrhoea, syphilis, genital herpes, chlamydiasis, genital warts, trichomoniasis, hepatitis-B); elementary idea of infertility and assisted reproductive technologies.

### Chapter-4: Principles of Inheritance and Variation

Mendelian inheritance; deviations from Mendelian rules – incomplete dominance, co-dominance, multiple alleles and inheritance of blood groups, pleiotropy, polygenic inheritance; Chromosomal theory of inheritance with basic idea of relation between chromosomes and genes, crossing over and linkage; sex determining factors in human beings, birds, drosophila and honey bee; Mendelian disorders - Autosomal disorder with special emphasis on thalassemia, Sex linked disorders with special emphasis on haemophilia and colour blindness; Chromosomal disorders in humans-elementary idea with special emphasis on Down's, Turner's and Klinefelter's syndromes.

### Chapter-5: Molecular Basis of Inheritance

Historical concept for establishment DNA as genetic material; Structure of DNA and RNA; DNA packaging; DNA replication; Central dogma; transcription, genetic code, translation; basic idea of RNA

world; gene expression and regulation in bacteria with special reference of negative regulation- lac operon; concept of genome-human and rice genome projects; DNA fingerprinting.

## Chapter-6: Evolution

Origin of life; biological evolution and evidences for biological evolution (paleontology, comparative anatomy, embryology and molecular evidences); Darwin's contribution, modern synthetic theory of evolution; mechanism of evolution - variation (mutation and recombination) and natural selection with examples, types of natural selection; Gene flow and genetic drift; Hardy - Weinberg's principle; adaptive radiation; human evolution.

## Chapter-7: Human Health and Diseases

Pathogens; parasites causing human diseases (malaria, dengue, chikungunya, filariasis, ascariasis, typhoid, pneumonia, common cold, amoebiasis, ring worm) and their control; Basic concepts of immunology -humoral and cellular immunity, active and passive immunity, concept of vaccination; brief discussion of AIDS and cancer.

# TERM 2

## Chapter-8: Microbes in Human Welfare

In household food processing, industrial production, sewage treatment, energy generation and microbes as biocontrol agents and biofertilizers.

## Chapter-9: Biotechnology - Principles and Processes

Genetic Engineering (Recombinant DNA Technology).

## Chapter-10: Biotechnology and its Applications

Application of biotechnology in health and agriculture: Human insulin and vaccine production, stem cell technology, gene therapy; genetically modified organisms - Bt crops; transgenic animals; biosafety issues, biopiracy and patents.

## Chapter-11: Organisms and Populations

Organisms and environment: population interactions - mutualism, competition, predation, parasitism; population attributes - growth, birth rate and death rate, age distribution.

## Chapter-12: Ecosystem

Ecosystems: Patterns, components; productivity and decomposition; energy flow; pyramids of number, biomass, energy;

## Chapter-13: Biodiversity and its Conservation

Concept and importance of Biodiversity. Patterns and loss of biodiversity; endangered organisms, extinction, Red Data Book; strategies adapted to conserve biodiversity; sacred grooves, wildlife sanctuaries, national parks, biosphere reserves, biodiversity hotspots and Ramsar sites.

## Biology lab

### Criteria D:

**Category A :** Dry Lab Observation and inference

Study of plants for

- Wind pollination (suggested example: maize, Bermuda grass, Pinus)
- Insect pollination (suggested example: Salvia for lever mechanism, Calotropis for translator mechanism)

### Gametogenesis

- study of transverse section of testis
- study of transverse section of ovary
- study of blastula Study of meiosis through permanent slides

**Study of evolution by**

- study of homologous organs (one example from plant and animal each)
- study of analogous organs (one example from plant and animal each)

**Pathogenicity:**

- protozoan disease: Malarial Parasite
- fungal disease: ringworm
- Helminth disease: ascariasis

**Population interaction:**

- symbiotic association in Lichens or coralloid roots of Cycas
- parasitic association in plants (any one such as Cuscuta) and animals (any one such as roundworm, tapeworm, ticks, lice)/

**Category B:** Investigation, observation and inference (wet lab and slide preparation)

1. Pollen germination on slide
2. Pollen germination on stigma (suggested example Sonchus, Portulaca, Tradescantia, Commelina, Cosmos, Tagetus flower, Petunia, grass, maize, sunflower, or any other locally available plant)
3. Study of mitosis
4. Study and verification of Mendel's law of monohybrid cross
5. DNA isolation from plant material
6. Population density and frequency of plants
7. Analysis of soil and its significance for agriculture
    - Water holding capacity of soil
    - pH of soil
    - texture of soil
    - moisture content of soil
8. water analysis and its impact on human health
    - living organisms living in water bodies
    - pH of water
    - turbidity

**Internal assessment**

Internal assessment can be done on any of given topics:

1. exercise on hardy Weinberg principle
2. Pedigree analysis
    - colour blindness
    - blood groups
    - rolling tongue
    - widows peak
    - earlobes
3. Artificial hybridization
4. Hydrarch and xerarch succession
5. Biogas production

Atleast two internal non-pen & paper, based assessment are to be conducted by the subject teachers in each term. Internal assessments should be reported to DBSE as score obtained in different criteria adopted by DBSE on or before the dates mentioned in assessment calendar issued by the board.

# Syllabus for Physical Education

## Term 1

## UNIT 1: Sports Training

**Introduction of Sports Training:**

- Meaning and Definition of Sports Training
- Aims and Objectives of Sports Training
- Principles of Sports Training

**Path of Adaptation in Training:**

- Concept of Load, Recovery and Adaptation
- Overload and its Symptoms
- Conditions affecting Adaptation

**Bio-Motor Abilities and their developing methods in Sports:**

- Speed, its types and developing methods
- Strength, its types and developing methods
- Flexibility, its types and developing methods
- Endurance, its types and developing methods
- Coordinative Abilities, its types and developing methods

**Designing of Sports Training Plan:**

- General introduction of different phases of Periodization (Preparatory, Competition and Transition)
- Types of Cycles in different phases (Micro, Meso and Macro)
- Important steps for developing a sports specific training plan

## UNIT 2: Kinesiology and Biomechanics

**Introduction of Kinesiology and Biomechanics:**

- Uses of Biomechanics
- Identify axis and plane in different movements

**Conceptual Understanding of Movement in Sports:**

- Introduction

- Application of Newton's law of motion in physical activities and sports
- Application of friction in different sports conditions

**Exploring Centre of Gravity in sports:**

- Introduction
- Analyse Conditions for maintaining equilibrium in sports

**Structure of Motor Actions:**

- Differentiate Cyclic Action, Acyclic Action and Movement Combination (with example related to sports movements)
- Use of Lever in Physical Activities and Sports