No.EDN-H(21)F(10)-/2009-Syllabus
Directorate of Higher Education
Himachal Pradesh

Dated : Shimla-171001, 22nd April 2009.

To

All the Principals of
Govt. Sr. Sec. Schools (where Science is running)
in Himachal Pradesh.

Sub :- Unit wise distribution of syllabus of 10+1 and 10+2 Science Stream.

Memo:-

It has been observed that generally the syllabus of 10+1 & 10+2 classes as prescribed by the H.P. Board of School Education, Dharamshala is not covered well in time due to which the students suffer not only in Board Examinations but are also deprived of basic concepts in ensuing respective competitive examinations. Consequently, the overall success rate of selection of students in all India/State Engineering and Medical Entrance remains very low.

Therefore, to bring out the qualitative improvement, uniformity and to maintain a vigil throughout the state that the whole syllabus is completed well in time it has been decided that there should be a uniform distribution of syllabus to be taught to students throughout the state. This will also be useful when a teacher is transferred from one institution to another institution. It is also directed that unit wise distribution of syllabus will be mandatory to be taught in prescribed time period and it would be reflected by every teacher in "Teacher Diary". Any officer visiting the school may check the "Teacher Diary" and status of syllabus covered by the concerned teacher. The copy of unit wise distribution of syllabus of 10+1 & 10+2 Science Stream is enclosed. However the same is also available on departmental website **www.educationhp.org** .

These instructions may be complied with by all the Lecturers of Science Stream and violation of these instructions shall be viewed seriously.

Director of Higher Education
Himachal Pradesh

Endst. No. Even Dated : Shimla-171001 22nd April 2009.

Copy for information to :-

1. The Principal Secretary (Education) to the Govt. of H.P. Shimla-2.
2. The Secretary, H.P. Board of School Education, Dharamshala Distt. Kangra, H.P.
3. All the Deputy Directors of Higher Educations in Himachal Pradesh.

Director of Higher Education
Himachal Pradesh

Unit wise distribution of syllabus in respect of 10+1 & 10+2 Science Stream

For Summer Closing Schools		For Winter Closing Schools	
Unit No.	Month	Unit No.	Month
Unit No.1	May	Unit No.1	May
Unit No.2	June	Unit No.2	June
Unit No.3	July & Aug	Unit No.3	July
Unit No.4	September	Unit No.4	August
Unit No.5	October	Unit No.5	September
Unit No.6	November	Unit No.6	October
Unit No.7	December	Unit No.7	November
Unit No.8	January	Unit No.8	December

+1 syllabus

PHYSICS (8 Units)

Unit No.	Syllabus
Unit 1	***1.Physical World and Measurement*** **2.*Kinematics –(I)*** Frame of reference. Motion in a straight line: Position-time graph, speed and velocity. Uniform and non-uniform motion, average speed and instantaneous velocity. Uniformly accelerated motion, velocity-time and position-time graphs, relations for uniformly accelerated motion (graphical treatment). Elementary concepts of differentiation and integration for describing motion. *Scalar and vector quantities*: Position and displacement vectors, general vectors and notation, equality of vectors, multiplication of vectors by a real number; addition and subtraction of vectors. Relative velocity.
Unit 2	***1.Kinematics –(II)*** Unit vectors. Resolution of a vector in a plane – rectangular components. Motion in a plane. Cases of uniform velocity and uniform acceleration – projectile motion. Uniform circular motion. **2.*Laws of Motion***
Unit 3	***1.Work, Energy and Power***
Unit 4	1.***Motion of System of Particles and Rigid Body*** **2.*Gravitation –(I)*** Kepler's laws of planetary motion. The universal law of gravitation. Acceleration due to gravity and its variation with altitude and depth.
Unit 5	1.***Gravitation –(II)*** Gravitational potential energy; gravitational potential. Escape speed, orbital velocity of a satellite. Geostationary satellites. ***2.Properties of Bulk Matter(I)*** Elastic behavior, Stress-strain relationship, Hooke's law, Young's modulus, bulk modulus, shear, modulus of rigidity. Pressure due to a fluid column; Pascal's law and its applications (hydraulic lift and hydraulicbrakes). Effect of gravity on fluid pressure.
Unit 6	1.***Properties of Bulk Matter(II)*** Viscosity, Stokes' law, terminal velocity, Reynold's number, streamline and turbulent flow. Bernoulli's theorem and its applications. Surface energy and surface tension, angle of contact, application of surface tension ideas to drops, bubbles and capillary rise. Heat, temperature, thermal expansion; specific heat capacity – calorimetry; change of state – latent heat. Heat transfer – conduction, convection and radiation, thermal conductivity, Newton's law of cooling.

Unit 7	***1.Thermodynamics*** ***2.Behaviour of Perfect Gas and Kinetic Theory***
Unit 8	1.***Oscillations and Waves***

CHEMISTRY (8 Units)

Unit No.	**Syllabus**
Unit 1	***1. Some Basic Concepts in Chemistry*** ***2. Atomic Structure***
Unit 2	1. ***Classification of Elements and Periodicity in Properties*** ***2. Chemical Bonding and Molecular Structure***
Unit 3	***1. State of Matter***
Unit 4	1. ***First Law of Thermodynamics and Chemical Energetic*** 2. ***Equilibrium I- Physical*** Equilibrium in physical and chemical processes, dynamic nature of equilibrium, law of mass action, equilibrium constant, factors affecting equilibrium – Le Chatelier's principle;
Unit 5	***1. Equilibrium II-Ionic*** Ionic equilibrium – ionization of acids and bases, strong and weak electrolytes, degree of ionization, concept of pH. Hydrolysis of salts (elementary idea), buffer solutions, solubility product, common ion effect (with illustrative examples). ***2. Redox Reactions*** ***3. Hydrogen***
Unit 6	**1.** ***The S-block Elements*** **Group 1 and Group 2 elements:** ***2. Some p-block elements***
Unit 7	***1. Some Basic Principles & Techniques (Organic Chemistry)***
Unit 8	**1.** ***Hydrocarbons*** **Classification of hydrocarbons** *2.* ***Environmental Chemistry***

BIOLOGY (8 Units)

Unit No.	**Syllabus**
Unit 1	1. The Living World 2. Biological Classification 3. Plant Kingdom
Unit 2	1. Animal Kingdom 2. Structural Organization in Animals
Unit 3	1. Morphology of Flowering Plants 2. Anatomy of Flowering Plants
Unit 4	1. Cell : The Unit of Life 2. Biomolecules 3. Cell Cycle and Cell Division

Unit 5	1. Transport in Plants 3. Photosynthesis in Higher Plants	2. Mineral Nutrition
Unit 6	1. Respiration in Plants	2. Plant Growth and Development
Unit 7	1. Digestion and Absorption 3. Body Fluids and Circulation	2. Breathing and Exchange of Gases 4. Excretory Products and Their Elimination
Unit 8	1. Locomotion and Movement 3. Chemical Coordination and Integration	2. Neural Control and Coordination

MATHEMATICS (8 Units)

Unit No.	**Syllabus**
Unit 1	***1. Sets*** ***2. Relations and Functions***
Unit 2	***1.Trigonometric Functions*** ***2. Principle of Mathematical Induction***
Unit 3	***1. Complex Numbers and Quadratic Equations*** . ***2. Linear Inequalities***
Unit 4	***1. Permutations and Combinations*** ***2. Binomial Theorem***
Unit 5	***1. Sequence and Series*** ***2. Straight Lines*** ***3. Introduction to Three- dimensional Geometry***
Unit 6	***1. Conic Sections*** ***2.Statistics***
Unit 7	***1. Limits and Derivatives***
Unit 8	***1. Mathematical Reasoning*** ***2. Probability***

+2 syllabus

PHYSICS (8 Units)

Unit No.	Syllabus
Unit 1	***1.Electrostatics*** ***2.Current Electricity* –(I)** Electric current, flow of electric charges in a metallic conductor, drift velocity and mobility, and their relation with electric current; Ohm's law, electrical resistance, V-I characteristics (linear and non-linear), electrical energy and power, electrical resistivity and conductivity. Carbon resistors, colour code for carbon resistors; series and parallel combinations of resistors; temperature dependence of resistance.
Unit 2	**1.*Current Electricity* –(I I)** Internal resistance of a cell, potential difference and emf of a cell, combination of cells in series and in parallel. Kirchhoff 's laws and simple applications. Wheatstone bridge, metre bridge. Potentiometer – principle and applications to measure potential difference, and for comparing emf of two cells; measurement of internal resistance of a cell. **2.*Magnetic Effects of Current and Magnetism (I)*** Concept of magnetic field, Oersted's experiment. Biot - Savart law and its application to current carrying circular loop. Ampere's law and its applications to infinitely long straight wire, straight and toroidal solenoids. Force on a moving charge in uniform magnetic and electric fields. Cyclotron. Force on a current-carrying conductor in a uniform magnetic field. Force between two parallel current-carrying conductors – definition of ampere. Torque experienced by a current loop in a magnetic field.
Unit 3	***1.Magnetic Effects of Current and Magnetism* (II)** Moving coil galvanometer – its current sensitivity and conversion to ammeter and voltmeter. Current loop as a magnetic dipole and its magnetic dipole moment. Magnetic dipole moment of a revolving electron. Magnetic field intensity due to a magnetic dipole (bar magnet) along its axis and perpendicular to its axis. Torque on a magnetic dipole (bar magnet) in a uniform magnetic field; bar magnet as an equivalent solenoid, magnetic field lines; Earth's magnetic field and magnetic elements. Para-, dia- and ferro - magnetic substances, with examples. Electromagnets and factors affecting their strengths. Permanent magnets.
Unit 4	***1.Electromagnetic Induction and Alternating Currents*** ***2.Electromagnetic Waves***
Unit 5	***1.Optics (I)*** Reflection of light, spherical mirrors, mirror formula. Refraction of light, total internal reflectionand its applications, optical fibres, refraction at spherical surfaces, lenses, thin lens formula, lensmaker's formula. Magnification, power of a lens, combination of thin lenses in contact. Refraction and dispersion of light through a prism. Scattering of light – blue colour of the sky and reddish appearance of the sun at sunrise and sunset. Optical instruments: Human eye, image formation and accommodation, correction of eye defects. (myopia, hypermetropia, presbyopia and astigmatism) using lenses. Microscopes and astronomical telescopes (reflecting and refracting) and their magnifying powers. Wave optics: Wavefront and Huygens' principle, reflection and refraction of plane wave at a plane surface using wavefronts. Proof of laws of reflection and refraction using Huygens' principle
Unit 6	1.***Optics (II)*** 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. Resolving power of microscopes and astronomical telescopes. Polarisation, plane polarised light; Brewster's law, uses of plane polarised light and Polaroids. **2.*Dual Nature of Matter and Radiation***

Unit 7	***1.Atoms and Nuclei***
Unit 8	***1.Electronic Devices*** ***2.Communication Systems***

CHEMISTRY (8 Units)

Unit No.	**Syllabus**
Unit 1	***1. Solid State*** ***2. Solutions***
Unit 2	***1. Electrochemistry*** ***2. Chemical Kinetics***
Unit 3	***1. Surface Chemistry*** ***2.Extraction of Elements***
Unit 4	***1. The p-block Elements***
Unit 5	***1. The d- and –f- block elements*** ***2. Coordination compounds***
Unit 6	***1. Haloalkanes and Haloarenes*** ***2. Alcohols, Phenols and Ethers***
Unit 7	***1. Aldehydes, Ketones, Carboxylic acids*** ***2. Organic compounds containing Nitrogen***
Unit 8	***1. Biomolecules*** ***2.Polymers*** ***3. Chemistry in Everyday life***

BIOLOGY (8 Units)

Unit No.	**Syllabus**
Unit 1	1. Sexual Reproduction in Flowering Plants
Unit 2	1. GENETICS AND EVOLUTION 1: Mendelian Inheritance, Chromosomal Theory of Inheritance,deviations from Mendelian ratio.Sex determinations of Human beings:XX,XY. Linkage and crossing over.Inheritance pattern of haemophilia and blood groups in human beings.
Unit 3	1. 1. GENETICS AND EVOLUTION 11: DNA , its replication,transcription & translation, Gene expression and regulation.
Unit 4	1. GENETICS AND EVOLUTION 111 : Genome and Human genome Project,DNA Fingerprinting and Evolution:Theories and Evidences

Unit 5	1. BIOLOGY AND HUMAN WELFARE 1: Animal husbandry,Basic concepts of immunology,Vaccines,Pathogens,Parasites,Plant Breeding,Plant Tissue Culture.food production. Microbes in Human welfare(food, industry, sewage etc.)
Unit 6	1. BIOLOGY AND HUMAN WELFARE 11: Cancer,AIDS.Adolescence & drug/alcohol abuse 2. Biotechnology and its Applications 1: Recombinant DNA Technology,Application in health,Agriculture & Industry
Unit 7	1. Biotechnology and its Applications 11 : GM Organisms,Biosafety issues,INSULIN & Bt. cotton 2.ECOLOGY AND ENVIRONMENT 1 :Ecosystem:components.types & energy flow.Species, population and community
Unit 8	1. ECOLOGY AND ENVIRONMENT 11: Biodiversity and Conservation ,National parks & Sanctuaries. Environmental Issues

MATHEMATICS (8 Units)

Unit No.	**Syllabus**
Unit 1	***1. Relations and Functions*** ***2. Inverse Trigonometric Functions***
Unit 2	***1. Matrices***
Unit 3	***1. Determinants***
Unit 4	***1. Continuity and Differentiability*** ***2. Applications of Derivative***
Unit 5	***1. Integrals*** ***2. Applications of the Integrals***
Unit 6	***1. Differential Equations*** ***2. Vectors***
Unit 7	***1. Probability***
Unit 8	***1. Three-dimensional Geometry*** ***2. Linear Programming***