कार्यालय–प्राचार्य चन्द्रपाल डड़सेना शासकीय महाविद्यालय पिथौरा, जिला–महासमुन्द(छ0ग0)
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List of secience departments with course outcome

Sn.	Name of department	program
1	Chemistry	B.Sc.
2	Zoology	B.Sc.
3	Botany	B.Sc.
4	Physics	B.Sc.
5	Mathemetics	B.Sc.
6	Computer	D.C.A.,
7	Computer	P.G.D..C.A.,

Principal
Chandrapal Dadsena Govt
College Pithora,
Dist-Mahasamund(C.G.)

Principal
Chandrapal Dadsena
Govt.college Pithora

CHANDRAPAL DADSENA GOVERNMENT COLLEGE PITHORA,

DIST- MAHASAMUND (C.G)

Course Outcomes – Bachelor of Science

Department of Chemistry	
Course Outcomes	
Course	**Outcomes** **After completion of the course the student should be able to**
B.Sc. Part I Paper I Inorganic Chemistry	CO – 1. Know the structure of atom in three parts and periodicity in the properties of elements in S,P,D blocks. CO – 2.Understand the process of formation of ionic bond and properties of ionic solids and ionic structures. CO – 3. Know the theories of covalent bond formation, concept of hybridization, shape of the following simple molecules H_2O, NH_3 etc. CO – 4 Introductionto the salient features of s block elements with alkyl and aryls and derivatives of alkaline; and halide, oxides in p-block elements. CO – 5. Understand the chemistry of noble gases and theoretical principles involved in qualitative analysis
B.Sc. Part I Paper II Organic Chemistry	CO – 1. Introduce the basic concepts and electronic effects of organic chemistry, that is hybridization, carbocations, free radicals and types of organic reaction. CO – 2. Understand the stereochemistry of organic molecules, D/L, E/Z configuration. CO – 3. Understand the conformational analysis of alkanes. CO – 4. Know the concept of Aliphatic Hydrocarbons that is C-C bonds, C=C bonds. CO – 5. Understand the concept of aromaticity and electrophilic substitution reaction in aromatic compounds
B.Sc. Part I Paper III Physical	CO – 1. Understand the basic mathematical concept used in chemistry CO – 2. Know the kinetic molecular model of gas and understand the behaviour of real gases CO – 3. Know the intermolecular forces and understand colloid and surface chemistry

Chemistry	CO – 4. Understand the symmetry, crystal system and crystal defects CO – 5. Understand the rate of reaction, factors affecting it and theories of reaction rate and catalysis.
B.Sc. Part I Chemistry Practical	CO – 1. Analyse the inorganic mixtures by the Semi-micro qualitative analysis CO – 2. Estimate the strength of unknown solution by titrimetric method CO – 3. Detect the elements (N, S and halogens) and functional groups in organic compounds CO – 4. Measure the composition of a binary liquid mixture by surface tension method CO – 5. Measure the composition of a binary liquid mixture by viscometer
B. Sc. Part II – Paper I – Inorganic Chemistry	CO – 1. Understand the chemistry of transition series elements CO – 2. Understand the redox potential data & its application and chemistry of coordination compounds CO – 3. Understand the valance bond theory and crystal field theory CO – 4. Understand the chemistry of lanthanides and actinides CO – 5.Know the theories of acid and bases and physical properties & chemical reactions of non-aqueous solvents
B. Sc. Part II – Paper II – Organic Chemistry	CO – 1. Understand the mechanism of nucleophilic substitution and elimination reactions CO – 2. Understand the preparation, properties and reactivity of alcohol and phenol CO – 3. Know the nomenclature, structure and reactivity of carbonyl group CO – 4. Understand the chemistry of carboxylic acid and its derivatives CO – 5. Know the reactivity, structure and properties of organic compounds of nitrogen
B.Sc. Part IIPaper III Physical Chemistry	CO – 1. Understand the laws of thermodynamics and know the meaning of various thermodynamic terms CO – 2. Understand the concept of spontaneity, entropy and free energy CO–3.Know chemical & ionic equilibrium and equilibrium constant CO – 4. Understand the phase rule and its application to one, two and three component system CO–5. Understand the characteristics of electromagnetic radiation, laws of photochemistry and quantum yield
B.Sc. Part II Chemistry	CO – 1. Qualitative semimicro analysis of mixtures containing interfering radicals.

Practical	CO – 2. Determine the strength of solution by volumetric method CO – 3. Identify given organic compound CO – 4. Determine R_f value and identify organic compound through paper chromatography CO – 5. Determine the enthalpy of chemical reactions
B. Sc. Part III – Paper I – Inorganic Chemistry	CO – 1. Understand the metal-ligand bonding in transition metal complexes CO – 2. Understand the magnetic properties of transition metal complexes CO – 3. Know the classification, properties, bonding and applications of organometallic compounds CO – 4. Know the essential and trace elements in biological processes CO – 5.Understand the concepts of hard and soft acid and base and inorganic polymers
B. Sc. Part III – Paper II – Organic Chemistry	CO – 1. Understand organometallic compounds, organ sulphur compounds and emulates CO – 2. Understand the properties and structure of biomolecules CO – 3. Understand the chemistry of synthetic polymers and dyes CO – 4. Understand the principle and applications of Mass, IR and UV – Visible spectra CO – 5. Understand the principle of NMR spectra
B.Sc. Part IIIPaper III Physical Chemistry	CO – 1. Understand the basic concept of quantum mechanics along with Schrodinger's equation & its applications CO – 2. Know the quantum mechanical approach of molecular orbit theory CO – 3. Understand the principle and applications of Microwave, Infrared and Raman spectra CO – 4. Understand the concept of Electronic spectra and photochemistry CO – 5.Understand the thermodynamics, molecular and magnetic properties of substance
B.Sc. Part III Chemistry Practical	CO – 1. Synthesis of inorganic complexes CO – 2. Gravimetric estimation of element CO – 3. Synthesis of Organic Compounds CO – 4. Analysis of an organic mixture containing two solid components CO – 5. Determine the strength of acid or base by conductometric titration

Department of ZOOLOGY

Course Outcomes

Course			Outcomes
B.Sc.	**Paper**	**Name of Paper**	
Part I	**Paper I**	Cell biology and invertebrates	➢ Students will understand the structures and purposes of basic components of prokaryotic and eukaryotic cells, especially macromolecules, membranes, and organelles ➢ The course will cover *Invertebrates*, which is the science that *studies* the animals without backbone. Introduce students to the difference between *invertebrates* and vertebrates. *Study* the link between vertebrates and *invertebrates*.
Part I	**Paper II**	Vertebrates and Embryology	➢ Vertebrate zoology is the biological discipline that consists of the study of Vertebrate animals, i.e., animals with a backbone, such as fish, amphibians, reptiles, birds and mammals. ➢ To develop youth interest in the science of embryology. To provide learning experiences in incubation, hatching and brooding. To provide learning of a life cycle through the beginning stages.
Part I	**Practical**		➢ understand the structures and purposes of basic components of prokaryotic and eukaryotic cells. ➢ Different species museums provide us with snapshots of biodiversity and organisms' traits through time. ➢ Dissection study help to determine classification and identify of organisms.
Part II	**Paper I**	Anatomy & Physiology	➢ The purpose of the teaching and learning of discipline "Human Anatomy" is the acquisition by students of scientific knowledge about the structure of the human body to be used as the study of the following disciplines, as well as for use in professional activities. ➢ This Course is to ensure that students understand how the body works. ... State the functions of each organ system of the body, explain the

			mechanisms by which each functions, and relate the functions and the anatomy.
Part II	**Paper II**	Vertebrates Endocrinology, Reproductive biology, Behaviour, Evolution & Applied Zoology	➢ *endocrinology* is concerned with the *study* of hormones and their actions. This field is rooted in the comparative *study* of hormones in diverse species, which has provided the foundation for the modern fields of evolutionary, environmental, and biomedical *endocrinology*. ➢ This (Reproductive biology) in turn provides an important foundation to consider sexual differentiation and development, contraception, infertility and current reproductive technologies. ➢ A behavioural objective is a learning outcome stated in measurable terms, which gives direction to the learner's experience and becomes the basis for student evaluation. ... Affective objectives emphasize feeling and emotion, such as interests, values, attitudes, appreciation, and methods of adjustment. ➢ In evolutionary study They can *study* how two species that used to be the same became separate species. ➢ To motivate the students for Self-employment in various applied branches of Zoology.
Part II	**Practical**		➢ Practical work can in fact facilitate learning in the classroom. ➢ Using Practical activity can help structure a lesson and improve engagement and knowledge retention: "Many students learn more easily by actually "doing" activities. Like study of limb girdles & vertebrates of rabbit etc. ➢ Using help in self-employment from apiculture,aquaculture,sericulture etc.
Part III	**Paper I**	Ecology,environmental-biology,toxicology, microbiology & Medical zoology	➢ Ecology is the scientific analysis and study of interactions among organisms and their environment. ... Environmental science focuses on the interactions between the physical, chemical, and biological components

			of the environment, including their effects on all types of organisms. ➢ The goal of toxicology is to contribute to the general knowledge of the harmful actions of chemical substances, to study their mechanisms of action, and to estimate their possible risks to humans on the basis of experimental work on biological test systematically study the epidemiology, pathogenesis, processing, clinical diagnosis and prevention including vaccine development of the different microorganisms. He/sheinvestigates the virulence factors and *microbial* physiology, as well as, the physiopathology and immunological responses of the host to the microorganisms.
Part III	**Paper II**	Genetics, cell physiology, biochemistry, Biotechnology &biotechnique	➢ Study of human genetics can answer questions about human nature, can help understand diseases and the development of effective disease treatment, and help us to understand the genetics of human life. ➢ The course biochemistry aims to provide students with a basic understanding of: the molecular architecture of eukaryotic cells and organelles, ➢ *Biotechnology* is a broad area of biology, involving the use of living systems and organisms to develop or make products and bio techniques are used for measuring or detect it by various equipment or technology.
Part III	**Practical**		➢ *Biochemical* Analytical Methods to *Detect* Microorganisms etc. ➢ Experiment of blood group detection to find out our *blood type* sitting at home with the help of a *Blood Group Test* Kit. ➢ pH meter,colorimeter,centrifuge and microscopes are equipment for measure of different types of functions like separation of bio molecules etc.

Department of Botany

Course Outcomes

Course	Outcomes After completion of the course the student should be able to
B.Sc. Part I **Paper I** **Bacteria, viruses, fungi, lichens & Algae.**	1. Understand the diversity among algae, fungi, bacteria, and viruses. 2. Understand theeconomic importance of Algae, fungi, bacteria and mycoplasma lichens 3. Understand the role of blue green alga in nitrogen economy of sort and reclamation of usher land 4. Understand the mushroom biotechnology 5. Understand the recombination procedures in bacteria.
B.Sc. Part I **Paper II** **Bryophytes pteridophytas Gymnosperms and palacobotany.**	1. Understand the morphological diversity of bryophyte pteridophyta and gymnosperm. 2. Know the evolution of Bryophytesptérictophytes and Gymnosperms. 3. Know the scope of pate botany type of fossils and geological time scales 4. Understand the various fossil genera presenting different fossil growth
B.Sc. Part II **Paper I** **Diversity of seed plants and their systematic.**	1. Know the conceptual development of taxonomy and systematic 2. Understand the phylogeny of amigo sperms 3. Trace the history of development of systems of classification 4. Learn about the characters floral formula and floral diagrams of different families 5. Understand various rules, principles and recommendations of plants nomenclature produces pin plant identification.
B.Sc. Part II **Paper II** **Structure development and reproduction in flowering plants.**	1. Understand the various plants of the angiosperm plants (root, shoot, tea flowers) 2. Know the various tissues and their arrangement in monocle and dicot angiosperm plants. 3. Understand the secondary growth in plants 4. Know the method of pollination and fertilization& development types of fruits in angiosperm plants 5. Understand the process of vegetative propagation & seed dispersal method.

	6. Understand the process of triple fusion Or double fertilization
B.Sc. Part III **Paper I** **Plant physiology, Biochemistry and biotechnology**	1. Know the importance and scope of plant physiology biochemistry and biotechnology 2. Learn and understand the mineral nutrition absorptionof will translocation of solutes transpiration photosynthesis repulsion& N2 metabolism in plants. 3. Understand the lexical metabolism in plants 4. Understand the fundamentals of recombinant technology 5. Understand the principles and basic protocols for plant tissue cultures. 6. Understand the structure and function of plants hormones 7. Learn about enzymology 8. Understand the process of physiology of flowering.
B.Sc. Part III **Paper II** **Ecology and utilization of plants.**	1. Understand plant communities and ecological adoptions in plants 2. Understand the role of plants in human welfare 3. Gain knowledge about various plants of economic users 4. Understand the properties of community ecology ecosystem 5. Understand the biographical region of India types grassland and forest type of India 6. Understand biochemical Cycles. 7. Know the process of succession

Department of Physics

Course Outcomes

Course	Outcomes **After completion of the course the student should be able to**
B.Sc.Part I **Paper I** **Mechanics, oscillation and properties of matter**	CO – 1.To denote the position of Particles we use Cartesian, cylindrical, Polar and spherical coordinate system. CO – 2.The main objective to study rigid body motion is to understand the motion of Particles. CO – 3.Simple Harmonic motion explain the motion of any particles without any External force, But in the presence of external force the motion is damped Harmonic motion.

	CO – 4. Understand the motion of Charged Particles in the Presence of Electric and Magnetic fields. CO – 5.Properties of elasticity, Viscosity and Surface tension.
B.Sc. Part I Paper II Electricity, Magnetism and Electro- magnetic theory	CO – 1.Analyse the Properties of Vectors and Vector Integrals of line, surface and Volume elements. CO – 2.Know the Coulombs law, Gauss law, electric potential and Capacitor. CO – 3. Understand the Properties of Dielectrics. Study about Steady and alternating currents. CO – 4.Rules for the direction of Lorentz force and relation between **B, H** and **M;** Magnetic Permeability and Magnetic Susceptibility. CO – 5.To Study about time varying fields, Maxwell equation and electromagnetic waves.
B.Sc.Part I Practical	CO – 1. Determination of surface tension of liquid CO – 2. Determination of viscosity of fluid CO – 3. Study of decay of current in LR and RC circuit CO – 4.Response curve for LCR circuit CO – 5. Study of magnetic field due to current
B.Sc.Part II Paper I	CO – 1.To study aboutlaws of thermodynamics and Entropy. CO – 2.Know the Thermodynamic relationships CO – 3. Understand the Maxwellien distribution of speeds in an ideal gas CO – 4.Know the statistical basis of thermodynamics CO – 5. Understand the indistinguishability of particles and its consequences
B.Sc.Part II Paper II	CO – 1. Know the waves in media CO – 2. Know the Fermat's Principle of extremum path, the aplanatic points of a sphere and other applications. CO – 3. Know the interference of light CO – 4. Understand the Fresnel half-period zones&Fraunhefer diffraction CO – 5. Know the Laser system and Application of lasers
B.Sc.Part II Practical	CO – 1.Study of Brownian motion CO – 2. Determine heating efficiency of electrical kettle with varying voltages. CO – 3. Know the characteristics of a microphone-loudspeaker system. CO – 4.Determine the principal points of a combination of

	lenses CO – 5.Use of diffraction grating and its resolving limit.
B.Sc.Part III Paper I Relativity, Quantum Mechanics, Atomic Molecular And Nuclear Physics.	CO – 1. Know the Reference systems, inertial frames CO – 2. Know the origin of the quantum theory CO – 3. Understand the Quantum Mechanics & its applications CO – 4. Understand the spectra of hydrogen, deuteron and alkali atoms CO – 5. Know the interaction of charged particles and neutrons with mater
B.Sc. Part III Paper II– Solid State Physics, Solid State Devices and Electronics	CO – 1.Know Amorphous and crystalline solids CO – 2.KnowFree electron model of a metal CO – 3.I Knowintrinsic semiconductors, carrier concentration in thermal equilibrium CO – 4.KnowHalf and full wave rectifier CO – 5.KnowIntroduction to computer organisation, time sharing and multi programming systems
B.Sc. Part III Practical	CO – 1. Know the characteristics of transistor CO – 2.Characteristics of a tunnel diode CO – 3.Study of voltage regulation system CO – 4.Study of a regulated power supply

Department of Mathematics

Course Outcomes

Course	Outcomes **After completion of the course the student should be able to**
B.Sc. Part I Paper I Algebra and Trigonometry	CO – 1.UsingElementary operations; Understand Rank, Normal and Echelon forms on Matrices. CO – 2. Understand theApplication of matrices to a system of linear (both homogeneous and nonhomogeneous) equations CO – 3. Know the Mappings, Equivalence relations, partitions, Groups, Subgroups etc. CO – 4.Study ofHomomorphism and Isomorphism of groups and its theorems. CO – 5.Know the De-Mover's theorem and its applications, Logarithm, expansions of Trigonometric functions.
B.Sc. Part I Paper II	CO – 1.Study the $\varepsilon - \delta$ definition of the limit of a function. CO – 2.Understand the Asymptotes. Curvature. CO – 3.Finding the Integration of transcendental functions.

Calculus	CO – 4.Know the Degree and order of a differential equation, Homogeneous and Linear equations. CO – 5.Understand the Linear differential equations of second order.
B.Sc. Part I Paper III– Vector Analysis and Geometry	CO – 1.Know the Scalar and vector product of three and four vectors CO – 2. Understand the concepts ofVector integration, Green and Gauss's theorems. CO – 3.Concepts of 2D and understand the General equation of second degree CO – 4. Concepts of 3D andunderstand the properties of Sphere, Cone and Cylinder. CO – 5.Know the Central Conchoids and Paraboloids
B.Sc. Part II Paper I Advanced Calculus	CO – 1.Definition ofsequence, theorems on limits of sequences. Concepts of series and its tests. CO – 2.Understand the concept of continuity of function of one variable, sequential continuity and its properties. CO – 3.Know the limit and continuity of functions of two variables. CO – 4. Know the Envelopes, Evolutes, Maxima, minima and saddle points of functions. CO – 5.Understand the Beta and Gamma functions, Double and triple integrals.
B.Sc. Part II Paper II Differential equations	CO – 1.Understand the Series solutions of differential equations, Power series method, Bessel and Legendre method and Sturm Liouville problem CO – 2.Finding the Laplace Transformation, inverse Laplace transformation and its applications. CO – 3.Know the Partial differential equations of the first order. CO – 4.Know the Partial differential equations of second and higher orders. CO – 5.Understand the concept of Calculus of Variations.
B.Sc. Part II Paper III Mechanics	CO – 1.Know the Analytical conditions of Equilibrium. CO – 2.Know the Forces in three dimensions. CO – 3.Know the Simple harmonic motion. CO – 4.Know the Kepler's laws of motion. CO – 5.Know the Motion in a resisting medium.
B.Sc. Part III Paper I Analysis	CO – 1.Understand the Series of arbitrary terms. Convergence, divergence and Oscillation and its tests. Fourier series and expansion.

	CO – 2.Understand Riemann integral and its theorems. CO – 3.Know the concepts ofgeometric representation of Complex numbers. CO – 4.Knowthe definition and examples of metric spaces. CO – 5.Knowdense subsets. Baire's Category theorem. Separable, second countable and first countable spaces.
B.Sc. Part III Paper II– Abstract Algebra	CO – 1. Know the concept of group-Automorphisms and inner automorphism. CO – 2.Understand theRing theory and Ring homomorphism. CO – 3. Know Definition and examples of vector spaces. CO – 4. Know Linear transformations and their representation as matrices. CO – 5. Know Inner Product Spaces-Cauchy-Schwarz inequality.
B.Sc. Part III Paper III Discrete Mathematics	CO – 1.Understand the properties of Sets and Propositions. CO – 2.Know the basic terminology of Graphs and Planar Graphs. CO – 3.UnderstandFinite State Machines. CO – 4.UnderstandRecurrence Relations and Recursive Algorithms. CO – 5. Understand Boolean Algebras.

(Post Graduate Diploma in Computer Application)

PGDCA

Semester- First, Second

Course Outcome

- **Software knowledge** - apply knowledge of basic concept for developing software with different from traditional software development concept.
- **Problem analysis** – By using concept of entity relationship diagram and basic concept, feasibility study will be operational and technical feasible.
- **Design and development of system** - by using concept of entity relationship diagram and basic concept of computer and developing software.
- **Modern toolset uses** - create, select and apply appropriate techniques resources like 4G, OOP.
- **Testing** - After analysis and design of new system can perform testing of error for error free software.
- **Social responsibility** - study will conducted which will concern with operation of system and effect of system on society which called as social feasibility.
- **Ethics** - In this integrated one year course ethical principal and commits to professional ethics and responsibility and norm of software engineering practice