



BHILAI MAHILA MAHAVIDYALAYA, HOSPITAL SECTOR,  
BHILAI

DEPARTMENT OF MATHEMATICS

NAME OF THE PROFESSOR: M. BHAGYALAXMI

SESSION: 2022- 2023

SUBJECT: ALGEBRA AND TRIGONOMETRY

(PAPER –I)

CLASS: B.Sc. I YEAR

S.NO.	MODULE (UNIT)	TOPIC	LECTURES ALLOCATED (in Days/Class)
1	UNIT-I	Elementary operations on matrices, Inverse of a matrix. Linear independence of row and column matrices, Row rank, column rank and rank of a matrix. Equivalence of column and row ranks. Eigenvalues, eigenvectors and the characteristic equations of a matrix. Cayley Hamilton theorem and its use in finding inverse of a matrix.	15
2	UNIT- II	Application of matrices to a system of linear (both homogeneous and nonhomogeneous) equations. Theorems on consistency of a system of linear equations. Relation between the roots and coefficients of general polynomial equations in one variable. Transformation of equations. Descarte's rule of signs. Solutions of cubic equations (Cardons method), Biquadratic equation.	15
3	UNIT-III	Mappings, Equivalence relations and partitions. Congruence modulo n. Definition of a group with examples and simple properties. Subgroups, generation of groups, cyclic groups, coset decomposition, Lagrange 's theorem and its consequences. Fermat's and Euler's theorems. Normal subgroups. Quo tient group, Permutation groups. Even and odd permutations. The alternating groups $A_n$ . Cayley's theorem	10
4	UNIT -IV	Homomorphism and Isomorphism of groups. The fundamental theorems of homomorphism. Introduction, properties and examples of rings, Subrings, Integral domain and fields Characteristic of a ring and Field.	20
5	UNIT -V	De-Moivre's theorem and its applications. Direct and inverse circular and hyperbolic functions. Logarithm of a complex quantity. Expansion of trigonometrical functions. Gregory's series. Summation of series.	20



BHILAI MAHILA MAHAVIDYALAYA, HOSPITAL SECTOR BHILAI  
DEPARTMENT OF BOTANY

NAME OF THE PROFESSOR:- Dr. Pratiksha Pandey

SESSION: 2022 - 2023

CLASS: BSc part I,II,III

Sl No	MODULE (UNIT)	TOPIC	LECTURES ALLOCATED(in days/class)
1. BSc part I	Paper 1 Unit 1	<b>Virus:</b> General characteristics; types of viruses based on structure and genetic material; multiplication of viruses (General account); Lytic and Lysogenic cycle; Economic importance; Structure and multiplication of Bacteriophages; General account of Viroids; Viroids; Prions and Cynophases ; Mycorrhiza-Types and significance.	25
	Paper 1 Unit 2	<b>Bacteria:</b> The First year Botany students after the completion of this course will be able to understand and describe about General characteristics and classification (on the basis of morphology), Fine structure of bacterial cell, Gram positive and Gram negative bacteria; Mode of nutrition and reproduction vegetative, asexual and recombination (Conjugation, transformation and transduction; Economic importance; Microbial Biotechnology, <i>Rhizobium</i> , <i>Azotobactor</i> , <i>Anabena</i> .	30
BSc part II	Paper 2 Unit 2	The shoot system: the shoot apical meristem and its histological organization; vascularization of primary shoot in monocotyledons and dicotyledons; formation of internodes, branching pattern; monopodial and sympodial growth canopy architecture; cambium and its functions; formation of secondary xylem, a general account of wood structure in relation to conduction of water and minerals; characteristics of growth rings, sapwood and heart wood; role of woody skeleton; secondary phloem – structure, function, relationships, periderm.	30
	Paper 2 Unit 4	Flower: a modified shoot; structure, development and varieties of flower, functions, structure of anther and pistil, the male and female gametophytes; types of pollination; attractions and rewards for pollinators; pollen-pistil interaction, self incompatibility, double fertilization, formation of seed-endosperm and embryo; fruit development and maturation.	40
BSc part III	Paper 1 Unit 3	ATP - the biological energy currency; aerobic and anaerobic respiration; Kreb's cycle, electron transport mechanism (chemi-osmotic theory); redox potential; oxidative phosphorylation; pentose phosphate pathway, Nitrogen and lipid metabolism: Biology of nitrogen fixation;importance of nitrate reductase and its regulations; ammonium assimilation; structure and function of lipids; fatty acid biosynthesis; Betaoxidation; saturated and unsaturated fatty acids; storage and mobilization of fatty acids.	25
	Paper 2 Unit 2	Community ecology: community characteristics, frequency, density, cover, life forms biological spectrum; ecological succession, ecosystems: structure, abiotic and biotic components; food chain, food web, ecological pyramids, energy flow; biogeochemical cycles of carbon, nitrogen and phosphorus.	30

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DEPARTMENT OF BOTANY

NAME OF THE PROFESSOR:- Dr.Pratiksha Pandey

SESSION:2022-2023

CLASS: MSc I & III Semester

Sl no	Module (unit)	Topic	Lectures allocated (in days/class)
1. MSc Sem 1 Paper I	Unit I	Chromatin organization: Chromosome structure and packaging of DNA, molecular organization of centromere and telomere, nucleolus and ribosomal RNA genes, chromatin and heterochromatin, Karyotype and ideogram, banding pattern, specialized type of chromosome, polytene, lamp brush, B chromosome and sex chromosome.	18
	Unit II	Mapping of Bacteriophage genome, phage phenotype, recombination in phage, genetic transformation and transduction in bacteria. Molecular basis of chromosome pairing, Chromosomal aberration and polyploidy.	16
	Unit III	Genetic recombination & genetic mapping; Mechanism of crossing over; molecular mechanism of recombination; role of enzymes in recombination; site specific recombination; linkage; linkage group; genetic marker; Tetrad analysis in Neurospora crassa.	16
	Unit IV	Plant breeding techniques: introduction ,selection, emasculation, bagging, tagging, hybridization ,mutation, resist and susceptical, heterosis, inbreeding depression, chimera. Alien gene transfer through chromosome manipulation; Transfer of whole genome examples from Wheat; Arachis & Brassica; Transfer of individual chromosomes & chromosome segment; methods for detecting alien chromatin production.	18
2. MSc Sem 3	Paper II Unit I	ECOSYSTEM ORGANISATION:- Structure and functions; primary production (Methods of measurement, global pattern, controlling factors); Energy dynamics (trophic organization; energy flow pathways; ecological efficiencies); Litter fall and decomposition; (mechanism, substrate quality, and climatic factors); global biogeochemical cycles of C, N, P, and S, mineral cycles (pathways, processes and budgets) in terrestrial and aquatic ecosystems.	20
	Paper II Unit II	ECOSYSTEM STABILITY AND MANAGEMENT Concept (resistance and resilience); Ecological perturbations (natural and anthropogenic) and their impact on plants and ecosystems; ecology of plant invasion; environment impact assessment; ecosystem restorations; Concept of Sustainable development; sustainability indicators.	18
	Paper II Unit III	VEGETATION ORGANISATION:- Concepts of community and continuum; analysis of communities (analytical and synthetic characters); Community coefficients; inter specific associations; ordination; and concept of ecological niche.	16
	Paper II Unit IV	VEGETATION DEVELOPMENT :- Temporal changes (cyclic and non cyclic); mechanism of ecological succession (relay floristic and initial floristic composition; facilitation; tolerance and inhibition models); change in ecosystem properties during succession.	16

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NAME OF THE PROFESSOR:- **Dr. Pratiksha Pandey**

SESSION: 2022-2023

CLASS: MSc II & IV Semester

Sl no	Module (unit)	Topic	Lectures allocated (in days/class)
1. MSc Sem II	Paper I Unit I	Plant nomenclature historical background of nomenclature, binominal nomenclature, international code of Botanical nomenclature. Plant identification herbaria, botanical garden, taxonomic literature, taxonomic keys, taxonomic hierarchy major categories species concept, taxonomic evidences morphology, Anatomy, palynology, embryology, cytology, phytochemistry, genome analysis and nucleic acid hybridization.	18
	Paper I Unit II	Pre Darwinian Classification Based on form relationship (Bentham and Hooker); Post Darwinian classification Engler and Prantl, Bessey's, Hutchinson, Takhtajan and Cronquist; Recent modifications : Dahlgren's system of classification; Fossil angiosperm.	20
	Paper I Unit III	Study of following families with particular reference to systematic position, phylogeny, evolutionary trends and economic importance; Polypetalae: Ranunculaceae; Magnoliaceae; Nymphaeaceae; Brassicaceae; Sterculiaceae; Meliaceae; Moringaceae; Fabaceae; Myricaceae; Cucurbitaceae; Apiaceae (Umbelliferae); Gamopetalae: Rubiaceae; Asteraceae; Sapotaceae; Oleaceae; Asclepiadaceae; Solanaceae; Bignoniaceae; Verbenaceae; Lamiaceae (Labiateae)	18
	Paper I Unit IV	Study of following families with particular reference to systematic position; phylogeny; Evolutionary trends and economic importance; Monochlamydae- Nyctaginaceae; Amaranthaceae; Polygonaceae; Euphorbiaceae; Moraceae; Casuarinaceae; Monocot families- Orchidaceae; Iridaceae; Amaryllidaceae; Scitamineae; (Musaceae) Zingiberaceae; Cannaceae; Liliaceae; Commelinaceae; Palmae (Araceae); Araceae; Cyperaceae; Poaceae (Graminae) study of local available familiar plants.	16
2. MSc Sem IV Paper II	Unit I	CLIMATE; SOIL AND VEGETATION PATTERNS OF THE WORLD : Life zones; major biomes; major vegetation types and soil types of the world; barren land. POLLUTION, CLIMATE CHANGE AND ECOSYSTEMS : Air, water and soil pollution:- kinds, sources, quality parameters, effects on plants and ecosystem; Green house gases (Carbon dioxide, methane, nitrous oxide, Chloro fluorocarbons: sources, trends and role); ozone layer; ozone hole, consequences of climate change) Carbon dioxide fertilization; global warming; sea level rise, UV radiation).	20
	Unit II	BIOLOGICAL DIVERSITY :- Concepts and levels; status in India; Utilization and concerns; role of biodiversity in ecosystem functions and stability; speciation and extinction; IUCN categories of threat; distribution and global patterns; terrestrial biodiversity hot spots; inventory; World centers of primary diversity of domesticated plants; The Indo Burmese center; plant introductions and secondary centers.	15
	Unit III	CONSERVATION STRATEGIES Principles of conservation, extinctions; environmental status of plants based on International union for conservation of Nature; In situ conservation; International efforts and Indian initiatives; protected areas in India- sanctuaries; national parks, biosphere reserves; Wetlands; Mangroves and coral reefs for conservation of wild biodiversity;	18
	Unit IV	Ex situ conservation : Principles and practices; botanical gardens; field gene bank; seed banks; in vitro repositories; cryo banks; general account of the activities of Botanical survey of India (BSI); National Bureau of plant genetic resources (NBPGR); Indian council of Agriculture research (ICAR); Council of scientific and Industrial research (CSIR); and the department of Biotechnology (DBT) for conservation and non formal conservation efforts.	20

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BHILAI MAHILA MAHAVIDYALAYA, HOSPITAL SECTOR BHILAI  
DEPARTMENT OF BOTANY

NAME OF THE PROFESSOR:- Dr. Deepti Chauhan

SESSION: 2022 - 2023

CLASS: BSc part I,II,III

SI No	MODULE (UNIT)	TOPIC	LECTURES ALLOCATED <sup>9</sup> in days/class)
1. BSc part I	Unit III	Algae: General characters, range of Thallus organization Gaidukov phenomenon; reproduction; life cycle pattern and economic importance; Classification, systematic position, occurrence; structure and life cycle of following genera; <i>Nostoc</i> ; <i>Gleocapsa</i> ; <i>Volvox</i> , <i>Oedogonim</i> , <i>Vaucheria</i> ; <i>Chara</i> , <i>Ectocarpus</i> ; <i>Polysiphonia</i>	25
	Unit IV	Range of Thallus organization, cell wall composition, nutrition and reproduction in Fungi; Heterothallism and Parasexuality; Outlines of classification of Fungi; Economic importance of Fungi; Life cycles of <i>Saprothrgnia</i> ; <i>Albugo</i> ; <i>Aspergillus</i> ; <i>Peziza</i> ; <i>Agaricus</i> ; <i>Ustilago</i> ; <i>Puccinia</i> ; <i>Alternaria</i> and <i>Cercospora</i> ; VAM Fungi.	30
BSc part II	Unit IV	General account of the families- Ranunculaceae, Brassicaceae, Malvaceae, Rutaceae, Fabaceae, Apiaceae, Acanthaceae, Apocynaceae, Asclepiadaceae, Solanaceae, Lamiaceae, Chenopodiaceae, Euphorbiaceae, Liliaceae and Poaceae.	30
	Unit IV	Leaf: origin, development, arrangement and diversity in size and shape; internal structure in relation to photosynthesis and water loss; adaptations to water stress; senescence and abscission, the root system: the root apical meristem; differentiation of primary and secondary tissues and their roles; structural modification for storage, respiration, reproduction and for interaction with microbes.	40
BSc part III	Paper III	Plant-water relations: importance of water to plant life; physical properties of water; diffusion and osmosis; absorption, transport of water and transpiration; physiology of stomata, mineral nutrition: essential macro and micro-elements and their role; mineral uptake; deficiency and toxicity symptoms.	25
	Paper V	Growth and development: definitions; phases of growth and development; kinetics of growth, seed dormancy, seed germination and factors of their regulation; plant movements; the concept of photoperiodism; physiology of flowering; florigen concept; biological clocks; physiology of senescence, fruit ripening; plant hormones auxins, gibberellins, cytokinins, abscisic acid and ethylene, history of their discovery, biosynthesis and mechanism of action; photomorphogenesis; phytochromes and cryptochromes, their discovery, physiological role and mechanism of action.	30

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NAME OF THE PROFESSOR:- Dr. Deepti Chauhan

SESSION:2022-2023

CLASS: MSc I & III Semester

Sl no	Module (unit)	Topic	Lectures allocated (in days/class)
1. MSc Sem I	Paper III Unit I	Archebacteria and Eubacteria general account ,ultra structure, nutrition and reproduction, Biology and economic importance. Cynobacteria salient feature and biological importance.	20
	Paper III Unit II	Viruses: Characteristics and ultra-structure of virions; isolation and purification of viruses; chemical nature; replication; transmission of viruses; economic importance; Prions; viroids (PSTV); virusoids; Phytoplasma and Mycoplasma: General characteristic and role in causing plant diseases.	22
	Paper III Unit III	Phycology : Algae in diversified habitats (terrestrial, freshwater, marine, parasite, symbiotic, epiphytic, endophytic, endozoic); thallus organization; cell ultra-structure, reproduction (vegetative, asexual,sexual); Criteria for classification of Chlorophyta; Xanthophyta; Bacillariophyta; Phaeophyta and Rhodophyta; Economic importance of algae; Pigmentation in algae; Perennation in algae; Evolution and development of sex in algae.	22
	Paper III Unit IV	Mycology : General characters of fungi, substrate relationship in fungi; cell structure unicellular and multicellular organization; cell wall composition, nutrition (saprobic biotrophic, symbiotic) reproduction; (vegetative, asexual, sexual) heterothallism; heterokaryosis; Para sexuality; recent account of Mastigomycotina; Zygomycotina; Ascomycotina; Basidiomycotina; Deuteromycotina; fungi as biocontrol agent; economic importance of fungi; Mycorrhiza; VAM fungus	20
2. MSc Sem 3	Paper IV Unit I	Introduction and history of plant pathology; General Principles of plant pathology and classification of plant diseases; Diseases inciting organisms - Animate Pathogens-fungi; Bacteria; Mycoplasma; Viruses; Nematodes; their general characteristics; heterotrophic behaviour with emphasis on parasitism ability and virulence.	20
	Paper IV Unit II	Disease Syndrome and General Symptoms of plant diseases : Pathogenic and nonpathogenic; Symptoms caused by fungi, Bacteria, Viruses, Mycoplasma and Nematodes. 2. Sources of Infection : Seeds, soil, water and airborne diseases of plants; Significance of phylosphere and rhizosphere studies. 3. Pathogenesis - Dissemination of plant pathogens; Mode of infection; Inoculum potential.	20
	Paper IV Unit III	Effect of environment on disease development- Predisposing factors; Survival of fungi; Germination of spores; Disease initiation and Epidemics; Host Parasites relationship - Mechanism and physiology of infection; Path of infection; Role of enzymes; growth regulators and toxins in pathogenesis; Physiological specialization : General account; Physiological specialization with special reference to smuts and rusts.	20
	Paper IV Unit IV	Recurrence of disease with special reference of recurrence of rust disease in India; Methods of Studying Plant Diseases: General account; Macroscopic study; Microscopic study; Koch postulates; Culture technique; Preparation of culture tubes; media preparation; Inoculation; Isolation; Pure culture; Parasitism of obligate parasites; Methods in bacteriology; Techniques required in introductory bacteriology.	15

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DEPARTMENT OF BOTANY

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SESSION:2022-2023

CLASS: MSc II & IV Semester

Sl no	Module (unit)	Topic	Lectures allocated (in days/class)
1. MSc Sem II Paper III	Unit I	Membrane transport and translocation of water and solutes plant water relation ,physical and chemical properties of water, imbibitions, osmosis, diffusion, DPD,OP,TP,WP, plsmolysis ,deplamolysis mechanism of water transport through xylem, root microbe intrection in facilitating nutrient uptake. Comparison of xylem and phloem transport, phloem loading and unloading, passive and active solute transport membrane transport system.	20
	UnitII	Signal Transduction :Overview; receptors and G proteins; Phospholipids signaling; role of C-AMP; calcium-calmodulin cascade; diversity in protein kinases and phosphatases; specific signaling mechanism- two component sensor regulatory system in bacteria.	22
	Unit III	Stress physiology :mineral nutrition in plants (excess and deficiency); Plant responses to biotic and abiotic stress; mechanism of biotic and abiotic stress tolerance; HR Fundamental and SAR; water deficit and drought resistance; salinity stress; metal toxicity; freezing and heat stress; oxidative stress.	22
	Unit IV	Sensory photobiology history of discovery of phytochrome and cryptochrome and their photo chemical and biochemical properties, photophysiology of light under responses, cellular localization and molecular mechanism of action of enzyme. The flowering process photoperiodism and its significance endogenous clock and its rwegulation floral induction and development genetic molecular analysis role of vernalization.	
2. MSc Sem IV Paper IV	Unit I	Epidemiology and disease forecasting: form of epidemics, factors responsible for the establishment of an epidemic, disease forecasting; General principles of plant disease control : General account; Prophylactic. Chemical (including fungicides, systemic fungicides, fumigants, antibiotics, growth regulators etc.) and biological control; Breeding for disease resistance varieties of host plants; Plant quarantine.	20
	Unit II	Defense Mechanism- Defense of host against pathogen, Structural defense; Physiological defense, Biochemical defense-role of phenolic compounds; Phytoalexins Defense through hyper-sensitive reactions; Resistance and susceptibility: General account, types of resistance, vertical and horizontal resistance; breeding for disease resistance.	20
	Unit III	Wilt disease: General account, symptoms of wilt disease, Mechanism of wilting; Diseases due to fungi: Rusts, smuts; Downy mildews powdery mildew diseases; Wilts; Leaf blight; Ergots; Tikka; necrosis; Rots-red rot of sugarcane; Damping off and warts diseases of economically important plants; Diseases due to Bacteria: Bacterial blight of Rice; Tundu disease; citrus canker; Crown galls of stone fruits; Angular leaf spots.	18
	Unit IV	Diseases due to Viruses: Mosaic of tobacco; Potato and tomato; Leaf curl of tomato & papaya; Yellow vein mosaic of Bhindi; Bunchy top of banana; Grassy shoot disease of sugarcane; Diseases due to Mycoplasma: Sandal spike; Little leaf of Brinjal; Grassy shoot disease; Sesamum; phyllody; Citrus greening; Diseases due to Nematodes: General characteristics of plants nematodes; Root knot; Malaya disease of Barley; wheat; Citrus nematodes; Ear cockle of wheat.	15

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**BHILAI MAHILA MAHAVIDYALAYA, HOSPITAL SECTOR BHILAI**

DEPARTMENT OF BOTANY

NAME OF THE PROFESSOR:- Ms. Alpana Adil

SESSION:2022-2023

CLASS: MSc I & III Semester

Sl no	Module (unit)	Topic	Lectures allocated (in days/class)
1. MSc Sem I Paper I	I	Dynamic cells; Structural organization of the plant cell; specialized plant cell types; chemical foundation; biochemical energetic; Cell wall - Structure and functions; biogenesis and growth; Plasma membrane; structure, models and functions, site for ATPase, ion carriers' channels and pumps; receptors.	20
	II	Chloroplast-structure, genome organization; gene expression, RNA editing; Mitochondria; structure, genome organization; biogenesis; Plant Vacuole - Tonoplast membrane; ATPases transporters as a storage organelle.	22
	III	Nucleus: Structure, nuclear pore; Nucleosome organization; Ribosome-Structure and functional significance; Cell cycle and Apoptosis; Control mechanisms, role of cyclin dependent kinases; Amitosis, mitosis and meiosis; karyokinesis and cytokinesis and cell plate formation; mechanisms of programmed cell death (PCD).	22
	IV	Other cell organelles: Structure and functions of microbodies; microtubules; microfilaments; Golgi apparatus; lysosome; endoplasmic reticulum; Techniques in cell biology: Immune techniques; in situ hybridization to locate transcripts in cell types; Electron microscope; camera lucida; micrometry- stage and ocular microtome principles	20
2. MSc Sem 3 Paper III	I	BIOTECHNOLOGY - Basic concepts; principles and scope; RECOMBINANT D.N.A. TECHNOLOGY : Gene cloning principles; Tools - Restriction Endonucleases; DNA modifying enzymes; Choice of Vectors; Plasmid; Cosmid; Bacteriophage vectors; phagmids; Artificial chromosomes; Shuttle vectors; Yeast vectors; Expression vectors and techniques, construction of genomic / cDNA libraries.	20
	II	MICROBIAL GENETIC MANIPULATION: Bacterial transformation; selection of recombinants and transformants; genetic improvement of industrial microbes and nitrogen fixers, fermentation technology; GENETIC ENGINEERING OF PLANTS : Aims, strategies for development of transgenies (with suitable examples); Gene transfer methods - Vector mediated gene transfer-Agrobacterium the natural genetic engineer; t-DNA mediated DNA transformation; Virus mediated gene transfer; Vectorless or direct DNA transfer.	20
	III	DNA SYNTHESIS AND SEQUENCING : Chemical synthesis of gene; Polymerase chain reaction, its variation; application; advantages and limitations; DNA sequencing - Sanger and Coulson method; Maxam Gillbert method; High throughput DNA sequencing; DNA finger printing.	20
	IV	GENOMICS AND PROTEOMICS : Genetic and physical mapping of genes; molecular markers for intregression of useful traits; Transposon mediated gene tagging; genome projects; bioinformatics; functional genomics; microarrays; protein profiling and its significance.	15

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DEPARTMENT OF BOTANY

NAME OF THE PROFESSOR:- Ms. Alpana Adil

SESSION:2022-2023

CLASS: MSc II & IV Semester

Sl no	Module (unit)	Topic	Lectures allocated(in days/class)
1. MSc Sem II Paper IV	I	Photosynthesis : General concepts and historical background; evolution of photosynthetic apparatus; photosynthetic pigments and light harvesting complexes; photo oxidation of water; mechanism of electron and proton transport; Carbon assimilation; the Calvin cycle; photorespiration and its significance; the C4 cycle; the CAM pathway; biosynthesis of starch and sucrose; physiological and ecological considerations.	20
	II	Plant respiration; aerobic and anaerobic; glycolysis; Fermentation; Krebs' cycle (TCA cycle); electron transport and ATP synthesis; Pentose phosphate pathway; alternative oxidative system; structure and function of lipids; fatty acid biosynthesis; synthesis of membrane lipids; structural lipids and storage lipids and their catabolism; Glyoxylate cycle.	22
	III	Nitrogen and Sulphur metabolism: Overview; biological nitrogen fixation; nodule formation and nod factors; nif gene; nitrogenase; leghaemoglobin; mechanism of nitrate uptake and reduction; ammonium assimilation; sulphur uptake; transport and assimilation; nitrogen cycle; sulphur cycle.	22
	IV	Physiological effects and mechanism of action of auxins; gibberellins; cytokinins; ethylenes; abscisic acid; brassinosteroid; polyamines; jasmonic acid and salicylic acid; hormone receptors; Movements in plants-types and its measurement; Fundamentals of enzymology : Structure and nature of enzymes; inhibitions; General aspects of allosteric mechanism; regulatory & active sites; isozymes; kinetics of enzymatic catalysis; Michaelis-Menton equation and its significance.	20
2. MSc Sem IV Paper III	I	PLANTS CELLS AND TISSUE CULTURE: General introduction, history, scope; concept of cellular differentiation; cellular totipotency; TISSUE CULTURE MEDIA: Introduction, Media constituents, Media selection, Media preparation; CELL CULTURE: Introduction isolation of single cells; Suspension cultures; Culture of Single cell; Plant cell reactors; Applications of cell culture; CLONAL PROPAGATION - Auxiliary bud proliferation; Meristem and shoot tip culture; bud culture; ORGANOGENESIS AND ADVENTIVE EMBRYOGENESIS : Fundamental aspects of morphogenesis; organogenesis via callus formation, direct adventitive organ formation.	20
	II	SOMATIC EMBRYOGENESIS AND ANDROGENESIS : Mechanisms, techniques and utility; SOMATIC HYBRIDIZATION : Methods of Protoplast isolation; Spontaneous and induced methods of protoplasm fusion; identification and selection of hybrid cells; Regeneration of hybrid plants; Verification and Characterization of somatic hybrids; Cybrids; possibilities; achievements and limitations of protoplast research.	20
	III	CRYOPRESERVATION AND GERMLASM STORAGE: Raising sterile tissue cultures; Addition of cryoprotectants and pretreatment; freezing, storage; thawing; determination of survival viability; Plant growth and generation; verification; encapsulation and dehydration; Slow growth method; Applications; INTELLECTUAL PROPERTY RIGHTS : Possible ecological risks and ethical concerns.	20
	IV	APPLICATION OF PLANT TISSUE CULTURE : Artificial seeds, Production of hybrids and soma clones; PRODUCTION OF SECONDARY METABOLITES / NATURAL PRODUCTS : Morphological and chemical differentiations; Medium composition for secondary product formation; Growth production patterns; Environmental factors; Selection of cell lines producing high amounts of a useful metabolite; Problems associated with secondary metabolite production Immobilized cell system; TRANSGENICS IN CROP IMPROVEMENT: Transgenic for Resistance to biotic and abiotic stresses; Transgenes for quality modification; Terminator seed technology; Chloroplast transformation and its utility.	15

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DEPARTMENT OF BOTANY

NAME OF THE PROFESSOR:- Ms. Alpana Adil

SESSION: 2022-2023

CLASS: BSc part I,II,III

SI No	MODULE (UNIT)	TOPIC	LECTURES ALLOCATED(in days/class)
1. BSc part I	Paper 2 Unit 1	<b>Bryophyta:</b> General characteristics; affinities; range of Thallus organization; General Classification and economic and ecological importance ;systematic position; occurrence; morphology; anatomy and reproductive structure in <i>Riccia</i> ; <i>Marchantia</i> ; <i>Funaria</i> ; Vegetative reproduction in Bryophytes; Evolution of sporophytes.	25
	Paper 2 Unit 2	<b>Pteridophyta:</b> General characteristics; affinities; economic importance and classification; Heterospory and seed habit; stellar system in Pteridophytes; Apospory and apogamy; Telome theory; <i>Azolla</i> as Biofertilizer	15
	Paper 2 Unit 2	Systematic position; occurrence; morphology; anatomy; and reproductive structure of <i>Psilotum</i> , <i>Lycopodium</i> , <i>Sleginella</i> , <i>Equisetum</i> , <i>Marselia</i>	15
BSc part II	Paper 2 Unit 1	Characteristics of seed plants; evolution of the seed habit; seed plants with (angiosperms) and without (gymnosperms) fruits; fossil and living seed plants, general features of gymnosperms and their classification; evolution and diversity of gymnosperms; geological time scale, fossilization and fossil gymnosperms.	30
	Paper 2 Unit 2	Morphology of vegetative and reproductive parts; anatomy of roots, stem and leaf, reproduction and life cycle of <i>Pinus</i> , <i>Cycas</i> and <i>Ephedra</i> .	40
BSc part III	Paper 1 Unit 2	Transport of organic substances: mechanism of phloem transport; source-sink relationship; factors affecting translocation, basic of enzymology: discovery and nomenclature; characteristics of enzymes; concept of holoenzyme, apoenzyme, coenzyme and cofactors; regulation of enzyme activity, mechanism of action, photosynthesis: significance; historical aspects; photosynthetic pigments; action spectra and enhancement effects; concept of two photosystems; Z-scheme; photo-phosphorylation; Calvin cycle; C4 pathway; CAM plants; photorespiration.	25
	Paper 1 Unit 5	Genetic engineering: tools and techniques of recombinant DNA technology; cloning vectors; genomic and cDNA library; transposable elements; techniques of gene mapping and chromosome walking, biotechnology: functional definition; basic aspects of plant tissue culture; cellular totipotency, differentiation and morphogenesis; biology of <i>Agrobacterium</i> ; vectors for gene delivery and marker genes; salient achievements in crop biotechnology.	30

  
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**BHILAI MAHILA MAHAVIDYALAYA, HOSPITAL SECTOR BHILAI**

DEPARTMENT OF BOTANY

NAME OF THE PROFESSOR:- Ms. Heena Verma

SESSION:2022-2023

CLASS: MSc II & IV Semester

Sl no	Module (unit)	Topic	Lectures allocated (in days/class)
1. MSc Sem II Paper II	I	RNA and DNA Structure; A, B, C and Z Forms of DNA; HnRNA; mRNA; tRNA; rRNA; exon; intron; split gene; junk DNA; DNA replication; damage and repair.	20
	II	Transcription; translation in prokaryotes and eukaryotes; Molecular Cytogenetics: Nuclear DNA content; C-value paradox; Cot curve and its Significance; Restriction mapping - concept and techniques; Multigene families and their evolution.	22
	III	Gene structure and expression; fine structure of gene; Cis-trans test; fine structure analysis of eukaryotes; introns and their significance; RNA splicing; regulation of gene expression in prokaryotes and eukaryotes; Protein sorting: Targeting of proteins to organelles.	22
	IV	Mutation: Spontaneous and induced mutation; physical and chemical mutagens molecular basis of gene; transposable elements in prokaryotes and eukaryotes mutation induced by transposones; site directed mutagenesis Inherited human diseases and defects in DNA repair; translocation, intersect Robertsonian translocation; B-Atranslocation.	20
2. MSc Sem IV	I	Reproduction :Vegetative reparation; Methods of propagation; Pollination; Pollination- mechanism and vector; Structure of pistil; Pollen stigma interaction; Sporophytic and gametophytic Self-incompatibility (Cytological, biochemical and molecular aspects), Fertilization, double fertilization, in-vitro fertilization.	20
	II	Male gametophyte : Structure of anther; Microsporogenesis; Role of tapetum; pollen development; male sterility; sperm dimorphism and hybrid seed production; Pollen germination; Pollen tube growth and guidance; Pollen storage; Pollen allergy; Pollen embryo sac; Female gametophyte : Ovule development; Organization of embryo sac and Structure of embryo sac cells.	20
	III	Seed and Fruit development: Endosperm development during early; maturation and desiccation stages; Embryo genesis; Storage proteins of endosperm; Ultra structure and nuclear cytology; Cell lineage during late embryo development; Polyembryony; Apomixes; Embryo culture; Endospermic and non-endospermic seeds; Dynamics of fruit growth; biochemistry and biology of fruit maturation.	20
	IV	Utilization of resources: Plant used as avenue trees for shade; Pollution control and aesthetics; Innovation for meeting world food demands Origin of Agriculture; Green revolution; benefits and adverse consequences; Ethanobotanically important plants of Chhattisgarh; World centers of primary diversity of domesticated plants.	15

*Heena*

Signature of professor

Ms. Heena Verma

*P. Pandey*

Signature of HOD

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Bhilai Mahila Mahavidyalaya, Bhilai



**BHILAI MAHILA MAHAVIDYALAYA, HOSPITAL SECTOR BHILAI**

DEPARTMENT OF BOTANY

NAME OF THE PROFESSOR:- Ms. Heena Verma

SESSION:2022-2023

CLASS: MSc I & III Semester

Sl no	Module (unit)	Topic	Lectures allocated (in days/class)
1. MSc Sem 1 Paper IV	I	Bryophyta : morphology; structure; reproduction; life history; distribution; classification; General account of Marchantiales; Jungermanniales; Anthocerotales; Sphagnales; Funariales and Polytrichales; Economic and ecological importance; Progressive sterilization of sporogenous tissue in bryophytes; Spore dispersal mechanism in bryophytes; Thallus organization of bryophytes; Progressive and reduction theory of origin and development in bryophytes	20
	II	Pteridophyta: morphology; anatomy and reproduction; classification; evolution of stele; Telome theory; concept of first vascular plants Homospory; Heterospory and origin of seed habit; General account of fossil pteridophyta; Prothallus organization Introduction to Psilopsida; Lycopsida; Sphenopsida and Pteropsida.	22
	III	General characters of gymnosperm mentioning diversity; Classification of gymnosperm; Resemblances and difference amongst gymnosperm; pteridophyta and angiosperm; Gymnosperm distribution in India; Gymnosperm Biotechnology; Economic importance of gymnosperm; Structure and theories regarding origin of Paleozoic ovule.	22
	IV	Extinct gymnosperm : general account of pteridospermales; Glossopteridales; Caytoniales; Pentoxylales; Extant gymnosperm; Cycadales; Ginkgoales; Coniferales; Ephedrales; Gnetales; and Welwitschia	20
2. MSc Sem 3 Paper I	I	Introduction: Unique features of plant development; Metabolism of nucleic acids; proteins and mobilization of food reserves; tropisms; control of cell division; Programmed cell death in the life cycle of plants; Seed germination; Hormonal control of Seedling growth; Seed dormancy; Over coming of seed dormancy; Bud dormancy; Root development : Organization of root apical meristem (RAM); Cell fates and lineages; Vascular tissue differentiation of root; Lateral roots; Root hairs, Root microbe interaction.	20
	II	Shoot development : Organization of shoot apical meristem (SAM); Cytological and molecular analysis of SAM; Control of tissue differentiation; especially Xylem and Phloem, Vascular cambium; Secretary ducts and laticifers; Wood development in relation to environmental factors.	20
	III	Leaf development : Development; Phyllotaxy; Control of leaf form; Differentiation of epidermis (with special reference to Stomata and Trichome) and Mesophyll cell; Senescence; Influences of hormones and environmental factors on senescence; Flower development : Floral characteristics; Flower development; Genetics of floral organ differentiation: Homeotic mutant in Arabidopsis and Antirrhinum; Sex determination.	20
	IV	Plant resources : Origin; Evolution; Cultivation and Uses of (i) Food; Forage and Fodder crops; (ii) Fiber crops; (iii) Medicinal and Aromatic plants; (iv) Vegetable Oil-yielding crops (v) fruits; Important fire-wood; Timber-yielding plants and Non-wood forest products (NFPs) such as bamboos, gums, tannins, dyes and resins.	15

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**BHILAI MAHILA MAHAVIDYALAYA, HOSPITAL SECTOR, BHILAI****DEPARTMENT OF COMMERCE**

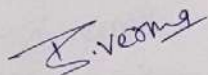
NAME OF THE ASSISTANT PROFESSOR: Dr. Bharati Verma

SESSION : 2022-23

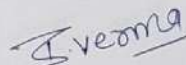
SUBJECT : Financial Accounting

CLASS : B.Com. Part- I Plain and with Computer Applications

S.NO.	MODULE(UNIT)	TOPIC	LECTURES ALLOCATED (in Days/Class)
01.	UNIT -I	Accounting introduction	30
	UNIT -II	Final accounts	30
	UNIT -III	Depreciation	30
	UNIT -IV	Special accounting-Hire purchase and installment system	30
	UNIT -V	Partnership Accounts	30



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HOD Commerce

**DEPARTMENT OF COMMERCE**

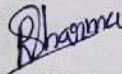
NAME OF THE ASSISTANT PROFESSOR: Dr. RAJSHREE SHARMA

SESSION : 2022- 23

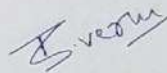
SUBJECT : Business Communication

CLASS : B.Com. Part- I Plain and with Computer Applications

S.NO.	MODULE (UNIT)	TOPIC	LECTURES ALLOCATED (in Days/Class)
01.	UNIT -I	Introduction to Business Communication, principles of Effective Communication, Theories of Communication etc.	15
	UNIT -II	Corporate Communication, Group Discussion, Seminars etc.	15
	UNIT -III	Writing Skills, Business Letters, Resume etc.	15
	UNIT -IV	Report Writing, Oral Presentation etc.	15
	UNIT -V	Non-Verbal Communication, Interviewing Skills etc.	15



Signature of the Asst. Professor



Signature of HOD



SESSION: 2022- 23

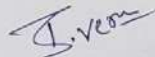
SUBJECT: Corporate Accounting

CLASS: B.Com. Part- II Plain and with Computer Applications

S.NO.	MODULE (UNIT)	TOPIC	LECTURES ALLOCATED (in Days/Class)
01.	UNIT -I	Issue of Equity Shares, Issue and Redemption of preference Shares & Issue and Redemption of Debentures	40
	UNIT -II	Final Accounts of Company as per Company Act 2013 & Liquidation of Companies	24
	UNIT -III	Valuation of Good Will & Shares	28
	UNIT -IV	Amalgamation & Reconstruction of Companies Excluding External Reconstruction	30
	UNIT -V	Consolidated Balance Sheet of Holding & Subsidiary Companies	28



Signature of the Asst. Professor



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DEPARTMENT OF COMMERCE  
NAME OF THE ASSISTANT PROFESSOR: Dr. Nidhi Monika Sharma  
SESSION: 2022- 23  
SUBJECT: Business Regulatory Frame Work  
CLASS: B.Com. Part- I Plain and with Computer Applications

S.NO.	MODULE (UNIT)	TOPIC	LECTURES ALLOCATED (In Days/Class)
01.	UNIT -I	Law of Contract Act- 1872	15
	UNIT -II	Law of Contract- 1892	15
	UNIT -III	Sale of Goods Act-1930	15
	UNIT -IV	Negotiable Instruments Act- 1881	15
	UNIT -V	Consumer Protection Act- 1986 Partnership Act- 1932 & Introduction to Intellectual Property Rights Act	15

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**BHILAI MAHILA MAHAVIDYALAYA, HOSPITAL SECTOR, BHILAI  
DEPARTMENT OF COMMERCE**


NAME OF THE PROFESSOR: Dr. Alpana Sharma

SESSION: 2022 - 2023

SUBJECT: Business Economics

CLASS: B.Com. Part- I Plain and with Computer Applications

S.NO.	MODULE (UNIT)	TOPIC	LECTURES ALLOCATED (in Days/Class)
01.	UNIT - 1	Introduction of Economics and Utility Analysis	15
	UNIT - 2	Law & Elasticity of Demand	15
	UNIT - 3	Production and Production Function	15
	UNIT - 4	Market Structure	15
	UNIT - 5	Theory of Distribution	15

  
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**BHILAI MAHILA MAHAVIDYALAYA, HOSPITAL SECTOR, BHILAI**  
**DEPARTMENT OF COMMERCE**

NAME OF THE PROFESSOR: Ms. Vaishali Sahu

SESSION: 2022 - 23

SUBJECT: Computer Fundamentals

CLASS: B.Com Part- I with Computer Application (PAPER - 1)

S.NO.	MODULE (UNIT)	TOPIC	LECTURES ALLOCATED (in Days/Class)
01.	UNIT-I	Introduction to computers	15
	UNIT-II	Computers peripherals	15
	UNIT-III	Basic components and storage	15
	UNIT-IV	Computer software and languages	15
	UNIT-V	Introduction to ms-dos and windows	15

*V. Sahu*

*10/07/23*



BHILAI MAHILA MAHAVIDYALAYA, HOSPITAL SECTOR, BHILAI

DEPARTMENT OF CHEMISTRY

NAME OF THE PROFESSOR: Dr. Madhulika Shrivastava

SESSION: 2022-23

SUBJECT: Inorganic Chemistry

CLASS: B.Sc. Part -2

S.No.	Module (Unit)	Topic/Title	Lectures Allocated(In Days/Class)
1. Part II	Unit – I	CHEMISTRY OF TRANSITION SERIES ELEMENTS Transition Elements: Position in periodic table, electronic configuration, General Characteristics, viz., atomic and ionic radii, variable oxidation states, ability to form complexes, formation of coloured ions, magnetic moment $\mu_{so}$ (spin only) and $\mu_{eff}$ and catalytic behaviour.	12
	Unit – II	A. OXIDATION AND REDUCTION: Redox potential, electrochemical series and its applications, Principles involved in extraction of the elements. B. COORDINATION COMPOUNDS: Werner's theory and its experimental verification, IUPAC nomenclature of coordination compounds, isomerism in coordination compounds. Stereochemistry of complexes with 4 and 6 coordination numbers. Chelates, polynuclear complexes.	09
	Unit – III	COORDINATION CHEMISTRY Valence bond theory (inner and outer orbital complexes), electroneutrality principle and back bonding. Crystal field theory, Crystal field splitting and stabilization energy, measurement of $10 Dq$ ( $\Delta_o$ ), CFSE in weak and strong fields, pairing energies, factors affecting the magnitude of $10 Dq$ ( $\Delta_o$ , $\Delta_t$ ). Octahedral vs. tetrahedral coordination.	13
	Unit – IV	A. CHEMISTRY OF LANTHANIDE ELEMENTS Electronic structure, oxidation states and ionic radii and lanthanide contraction, complex formation, occurrence and isolation, lanthanide compounds. B. CHEMISTRY OF ACTINIDES General features and chemistry of actinides, chemistry of separation of Np, Pu and Am from uranium, similarities between the latter actinides and the latter lanthanides.	12
	Unit – V	A. ACIDS BASES : Arrhenius, Bronsted-Lowry, conjugate acids and bases, relative strengths of acids and bases, the Lux-flood, Solvent system and Lewis concepts of acids and bases. B. NON-AQUEOUS SOLVENTS .Physical properties of a solvent, types of solvents and their general characteristics, reaction in non-aqueous solvents with reference to liquid ammonia and liquid sulphur dioxide, HF, H <sub>2</sub> SO <sub>4</sub> , Ionic liquids.	10

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BHILAI MAHILA MAHAVIDYALAYA, HOSPITAL SECTOR, BHILAI

DEPARTMENT OF CHEMISTRY

NAME OF THE PROFESSOR: Dr. Madhulika Shrivastava

SESSION: 2022-23

SUBJECT: Inorganic Chemistry

CLASS: B.Sc. Part -3

S.No.	Module (Unit)	Topic/Title	Lectures Allocated(In Days/Class)
1 Part III	Unit – I	Metal-Ligand Bonding in Transition Metal Complexes Limitations of valence bond theory, an elementary idea of crystal field theory, crystal field splitting in octahedral, tetrahedral and square planar complexes, factors affecting the crystal field parameters. Thermodynamic and kinetic aspects of metal complexes. A brief outline of thermodynamic stability of metal complexes and factors affecting the stability, substitution reactions of square planar complexes.	18
	Unit – III	Organometallic Chemistry: Definition, nomenclature and classification of organo metallic compounds. Preparation, properties, bonding and applications of alkyls and aryls of Li, Al, Hg, Sn, & Ti, A brief account of metal-ethylenic complexes and homogeneous hydrogenation, mononuclear carbonyls and nature of bonding in metal carbonyls	14

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BHILAI MAHILA MAHAVIDYALAYA, HOSPITAL SECTOR, BHILAI

DEPARTMENT OF CHEMISTRY

NAME OF THE PROFESSOR: Dr. Madhulika Shrivastava

SESSION: 2022-2023

SUBJECT: Group Theory and Chemistry of Metal Complexes

CLASS: MSc Sem 1

S.No.	Module (Unit)	Topic/Title	Lectures Allocated (In Days/Class)
1.	Unit – I	SYMMETRY AND GROUP THEORY IN CHEMISTRY: Symmetry elements and symmetry operation, definitions of group, subgroup, relation between orders of a finite group and its subgroup. Conjugacy relation and classes. Point symmetry group. Schoen flies symbols, representations of groups by matrices (representation for the $C_n$ , $C_{nv}$ , $C_{nh}$ , $D_{nh}$ etc. groups to be worked out explicitly). Character of a representation. The great orthogonality theorem (without proof) and its importance. Character tables of $C_{2v}$ , $C_{2h}$ , $C_{3v}$ and their use in spectroscopy.	21
	Unit – II	Metal-Ligand Bonding: Limitation of crystal field theory, molecular orbital theory, octahedral, tetrahedral and square planar complexes. $\pi$ -bonding and molecular orbital theory. B. METAL-COMPLEXES: Metal carbonyls, structure and bonding, vibrational spectra of metal carbonyls for bonding and structural elucidation, important reactions of metal carbonyls. Preparation, bonding, structure and important reactions of transition metal nitrosyl, Dinitrogen and dioxygen complexes: Tertiary phosphine as ligand. Fact, theory and concept. Hypothesis: Definition, sources, characteristics, importance, Types of variables.	20
	Unit – III	Metal-Ligand Equilibria in Solution: Stepwise and overall formation constants and their interaction, trends in stepwise constants, factors affecting the stability of metal complexes with reference to the nature of metal ion and ligand, chelate effect and its thermodynamic origin, determination of binary formation constants by pH- metry and spectrophotometry. Isopoly Acid and Heteropoly acid: Isopoly and heteropoly acids of Mo and W. Preparation, properties and structure. Classification, preparation, properties and structures of borides, carbides, nitrides and silicides. Silicates- Classification and structure. Silicones - Preparation, properties and application.	21
	Unit – IV	Metal Clusters: Higher boranes, carboranes, metalloboranes and metallocarboranes. Metalcarbonyl and halide cluster, compounds with metalmetal multiple bonds. B. CHAINS: Catenation, heterocatenation, intercatenation. C. RINGS: Borazines, phosphazines.	21

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BHILAI MAHILA MAHAVIDYALAYA, HOSPITAL SECTOR, BHILAI

DEPARTMENT OF CHEMISTRY

NAME OF THE PROFESSOR: Dr. Madhulika Shrivastava

SESSION: 2022-2023

SUBJECT: Transition Metal Complexes

CLASS: MSc Sem II

S.No.	Module (Unit)	Topic/Title	Lectures Allocated (In Days/Class)
1.	Unit – I	Reaction Mechanism of Transition Metal Complexes: Energy profile of a reaction, reactivity of metal complexes, inert and labile complexes, kinetic application of valence bond and crystal field theories, kinetics of octahedral substitution, anation reactions and reactions without metal ligand bond cleavage. Substitution reactions in square planar complexes, the trans effect. Redox reactions, electron transfer reactions, mechanism of one electron transfer reactions, outer sphere type reactions, cross reactions and Marcus-Hush theory, inner sphere type reactions.	21
	Unit – II	ELECTRONIC SPECTRA AND MAGNETIC PROPERTIES OF TRANSITION METAL COMPLEXES: Spectroscopic ground states, Selection rules, mechanism for breakdown of the selection rules, intensity of absorption, band width correlation, Orgel and Tanabe-Sugano diagram for transition metal complexes ( $d^1$ - $d^9$ states), spectra of d-d metal complexes of the type $[M(H_2O)_6]^{n+}$ , spin free and spin paired $ML_6$ complexes of other geometries, Calculations of $Dq$ , $B$ and $\beta$ parameters, spin forbidden transitions, effect of spin-orbit coupling, Spectrochemical and Nephelouxic series. Magnetic properties of complexes of various geometries based on crystal field model, spin free-spin paired equilibria in octahedral stereochemistry.	22
	Unit – III	Transition Metal Complexes: Transition metal complexes with unsaturated organic molecules, alkanes, allyl, diene dienyl, arene and trienyl complex, preparations, properties, nature of bonding and structure features. Important reaction relating to nucleophilic and electrophilic attack on ligands and organic synthesis. B. Transition Metal Complexes with Bond to hydrogen.	20
	Unit – IV	A. ALKYL AND ARYL OF TRANSITION METALS: Types, routes of synthesis, stability and decomposition pathways, organocopper in organic synthesis. B. COMPOUNDS OF TRANSITION METAL - CARBON MULTIPLE BONDS : Alkylidenes, low valent carbenes, nature of bond and Structural characteristics. C. FLUXIONAL ORGANOMETALLIC COMPOUNDS: Fluxionality and dynamic equilibria in compounds such as olefin, allyl and dienyl complexes.	20

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## BHILAI MAHILA MAHAVIDYALAYA, HOSPITAL SECTOR, BHILAI

DEPARTMENT OF CHEMISTRY

NAME OF THE PROFESSOR: **Dr. Amarpreet Kour Bhatia**

SESSION: 2022-2023

SUBJECT: Chemistry

Paper: II<sup>nd</sup>

Paper Title: Organic Chemistry

CLASS: B.Sc (II) (Biology, Maths, Biotechnology, Microbiology)

S. No.	Module (Unit)	Topic/Title	Lectures Allocate (In Days / Class)
1.	Unit-I	Alkyl halide and Aryl halides: preparation, including preparation from diazonium salts, Nucleophilic Aromatic Substitution; Benzyne mechanism. Relative reactivity of Alkyl, allyl/benzyl, vinyl and aryl halides towards nucleophilic substitution reactions.	05
2.	Unit-II	<p><b>A. Alcohols:</b> Nomenclature, preparation, properties and relative reactivity of 1°, 2°, 3°, alcohols, Bouvaelt-Blane reduction for the preparation of alcohols, Dihydric alcohols – methods of formation, chemical reactions of vicinal glycols, oxidative cleavage [Pb(OAc)<sub>4</sub> and HIO<sub>4</sub>] and pinacol-pinacolone rearrangement.</p> <p><b>B. Trihydric alcohols:</b> Nomenclature, method of formation, chemical reactions of glycerol.</p> <p><b>C. Phenol:</b> Structure and Boiling in phenols, physical properties and acidic character, Comparative acidic strength of alcohols and phenols, acylation and carboxylation.</p> <p><b>D. Mechanism of Fries rearrangement, Claisen rearrangement, Gatterman synthesis, Hauben-Hoesh reaction. Lederer-Manasse reaction and Reimer-Tiemann reaction.</b></p>	15
3.	Unit-III	<p><b>A.</b> Nomenclature, structure and reactivity of carbonyl group, General methods of preparation of aldehydes and ketones. Mechanism of Nucleophilic addition of carbonyl groups: Benzoin, Aldol, perkin and Knoevenagel condensation. Condensation with ammonia and its derivatives, wittig reaction, mannich reaction, Beckmann and Benzil-Benzilic rearrangement.</p> <p><b>B.</b> Use of acetate as protective group, Oxidation of aldehydes, Baeyer-Villiger oxidation of ketones, Cannizzaro reaction, MPV, Clemmensen reduction, Wolf-Kishner reaction, LiAlH<sub>4</sub> and NaBH<sub>4</sub> reduction. Halogenation of enolization ketones, An introduction to <math>\alpha</math>, <math>\beta</math> – unsaturated aldehyde and ketones.</p>	12
4	Unit IV	Carboxylic Acids, Carboxylic Acid Derivatives	
5.	Unit V	Organic Compound of nitrogen.	



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DEPARTMENT OF CHEMISTRY

NAME OF THE PROFESSOR: **Dr. Amarpreet Kour Bhatia**

SESSION: 2022 – 2023

SUBJECT: Chemistry

Paper: III<sup>rd</sup>

Paper Title: Physical Chemistry

CLASS: B.Sc (I) (Biology, Maths, Biotechnology, Microbiology)

S. No.	Module (Unit)	Topic/Title	Lectures Allocate (In Days / Class)
1.	Unit II, II (A), V	Gaseous State Chemistry, Colloids And Surface Chemistry, Chemical Kinetics AND Catalysis	

DEPARTMENT OF CHEMISTRY

NAME OF THE PROFESSOR: **Dr. Amarpreet Kour Bhatia**

SESSION: 2022-2023

SUBJECT: Chemistry

CLASS: M.Sc

S. No.	Module(UNIT)	Topic	Lectures Allocated
1.	CLASS: M.Sc (II <sup>nd</sup> ) Paper: CH-10 Paper Title: THEORY AND APPLICATIONS OF SPECTROSCOPY –II UNIT –I	ULTRAVIOLET AND VISIBLE SPECTROSCOPY: Introduction, Intensity of vibrational – electronic spectra, Frank-Condon principle, dissociation energy, Rotational fine structure of electronic – vibrational transitions, shape of molecular orbitals of some molecules viz., H <sub>2</sub> , He <sub>2</sub> , N <sub>2</sub> , O <sub>2</sub> . Electronic spectra of organic molecules, chromophores, Applications of electronic spectroscopy and identification of organic molecules. Spectrophotometric studies of complex ions, determination of ligand/metal ratio in a complex, determination of stability constants.	20
2.	CLASS: M.Sc (II <sup>nd</sup> ) Paper: CH-10 Paper Title: THEORY AND APPLICATIONS OF SPECTROSCOPY –II UNIT –III	MASS SPECTROMETRY: Introduction, basic principles, separation of the ions in the analyzer, resolution, molecular ion peak, mass spectral fragmentation of organic compounds, factors affecting fragmentation, McLafferty rearrangement. Instrumentation, Characteristics of mass spectra of Alkanes, Alkenes, Aromatic hydrocarbons, Alcohols,	20



**BHILAI MAHILA MAHAVIDYALAYA, HOSPITAL SECTOR, BHILAI**

3.	<p>CLASS: M.Sc (II<sup>nd</sup>)          Paper: CH-10          Paper Title: THEORY AND APPLICATIONS OF SPECTROSCOPY –II          UNIT –IV</p>	<p>NUCLEAR RESONANCE SPECTROPHOTOMETRY: Theory of NMR spectroscopy, interaction of nuclear spin and magnetic moment, chemical shift, precessional motion of nuclear particles in magnetic field, spin-spin splitting, coupling constants, factor affecting the chemical shift, shielding effect, effect of chemical exchange, hydrogen bonding, instrumentation of Fourier transform NMR spectrophotometer, structure determination of organic compounds, Carbon-13 NMR spectroscopy, Multiplicity-proton (<sup>1</sup>H) decoupling noise decoupling, off resonance decoupling, selective proton decoupling. Chemical shift (aliphatic, olefinic, alkyne, aromatic and carbonyl carbon)</p>	21
4.	<p>CLASS: M.Sc (III<sup>rd</sup>)          Paper: CH-14          Paper Title: Chemistry Of Biomolecules.          UNIT –I</p>	<p>A. BIOENERGETICS: Standard free energy change in biochemical reactions, exergonic, endergonic. Hydrolysis of ATP, synthesis of ATP from ADP.</p> <p>B. ELECTRON TRANSFER IN BIOLOGY: Structure and function of metalloproteins in electron transport processes – cytochromes and iron-sulphur proteins, synthetic models.</p> <p>TRANSPORT AND STORAGE OF DIOXYGEN: Heme proteins and oxygen uptake, structure and function of haemoglobin, myoglobin, haemocyanins and haemerythrin, model synthetic complexes of iron, cobalt and copper.</p>	24
6.	<p>CLASS: M.Sc (III<sup>rd</sup>)          Paper: CH-14          Paper Title: Chemistry Of Biomolecules. UNIT –II</p>	<p>A. METALLOENZYMES: Zinc enzymes – carboxypeptidase and carbonic anhydrase. Iron enzymes – catalase, peroxidase and cytochrome P-450. Copper enzymes – superoxide dismutase. Molybdenum oxotransferase enzymes – xanthine oxidase.</p> <p>B. ENZYME MODELS: Host-guest chemistry, chiral recognition and catalysis, molecular recognition, molecular asymmetry and prochirality. Biomimetic chemistry, Cyclodextrin-based enzyme models, calixarenes, ionophores, synthetic enzymes</p> <p>C. orsynzymes.</p>	24





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7.	<p>CLASS: M.Sc (III<sup>rd</sup>)          Paper: CH-14          Paper Title: Chemistry Of Biomolecules.          UNIT –III</p>	<p>A. ENZYMES: Nomenclature and classification of Enzyme. Induced fit hypothesis, concept and identification of active site by the use of inhibitors.          CO-ENZYME CHEMISTRY: Structure and biological functions of coenzyme A, thiamine pyrophosphate, pyridoxal phosphate, NAD<sup>+</sup>, NADP<sup>+</sup>, FMN, FAD, lipoic acid, vitamin B12.</p> <p>C. BIOTECHNOLOGICAL APPLICATIONS OF ENZYMES: Techniques and methods of immobilization of enzymes, effect of immobilization on enzyme activity, application of immobilization enzymes in medicine and industry. Enzymes B. and Recombinant DNA Technology.</p>	17
9.	<p>CLASS: M.Sc (III<sup>rd</sup>)          Paper: CH-14          Paper Title: Chemistry Of Biomolecules.          UNIT –IV</p>	<p>A. BIOPOLYMER INTERACTIONS: forces involved in biopolymer interaction. electrostatic charges and molecular expansion, hydrophobic forces, dispersion force interactions. Multiple equilibria and various types of binding processes in biological systems. Hydrogen ion titration curves.</p> <p>B. THERMODYNAMICS OF BIOPOLYMER SOLUTIONS: Thermodynamics of biopolymer solution, osmotic pressure, membrane equilibrium, muscular contraction and energy generation in mechanochemical system.</p> <p>CELL MEMBRANE AND TRANSPORT OF IONS: Structure and functions of cell membrane, ion transport through cell membrane, irreversible thermodynamic treatment of membrane transport and Nerve conduction.</p>	22
10.	<p>CLASS: M.Sc (III<sup>rd</sup>)          Paper: CH-16          Paper Title: Analytical Techniques And Data Analysis          UNIT –I</p>	<p>Sample preparation, digestion and statistical analysis.</p>	15
11.	<p>CLASS: M.Sc (III<sup>rd</sup>)          Paper: CH-16          Paper Title: Analytical Techniques And Data Analysis          UNIT –II</p>	<p>SEPARATION TECHNIQUES A. Efficiency of extraction, Selectivity of extraction, Extraction system, Method of Extraction, applications. B. Principle, classification of chromatographic techniques, Technique and applications of paper chromatography, Thin-</p>	15



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		layer chromatography, HPLC, Column chromatography. Gas Chromatography	
12.	CLASS: M.Sc (IV <sup>th</sup> ) Paper: CH-19 Paper Title: INSTRUMENTAL METHODS OF ANALYSIS UNIT- II- X-RAY AND PROTON INDUCED SPECTROSCOPY	A. X-Ray fluorescent method: Principles- Characteristics x-ray emission. Instrumentation X-raytube, radioactive sources. Wave length dispersive instruments. Energy dispersive instruments. Analytical Applications-Qualitative Analysis. Proton Induced X-Ray Spectroscopy: Theory, instrumentation and application.	24
13.	CLASS: M.Sc (IV <sup>th</sup> ) Paper: CH-19 Paper Title: INSTRUMENTAL METHODS OF ANALYSIS UNIT – IV- ATOMIC ABSORPTION SPECTROSCOPY AND HYPHENATEDTECHNIQUES	A. Theory instrumentation and application of flame and graphite furnace AAS, cold-vapour and hydride generation AAS. Theory, instrumentation and application of hyphenated techniques i.e. GC/HPLC/-MS, GC/IC/HPLC- ICP-MS.	24

Signature of Professor

Signature of HOD



## BHILAI MAHILA MAHAVIDYALAYA, HOSPITAL SECTOR, BHILAI

NAME OF THE PROFESSOR: Dr. Barna Pal Mazumdar

SESSION: 2022- 2023

SUBJECT: Chemistry

CLASS: B.Sc. 1, 3, and M. Sc. 1,2,3,4

S.NO.	MODULE (UNIT)	TOPIC	LECTURES ALLOCATED (in Days/Class)
1.	B.Sc. I (Physical Chemistry) 2.5 unit	Mathematical Concepts For Chemist, , Liquid State Chemistry, ,Solid State Chemistry	01 periods/week
2.	B.Sc.II (Organic Chemistry)		02 periods/week
4.	M.Sc. 1 Sem (CH-3) All Units	Quantum Chemistry, Thermodynamics And Chemical Dynamics – I	06 periods/week
5.	M.Sc. 2 Sem (CH-9) (U-1,2)	Quantum Chemistry, Thermodynamics	03 periods/week
6.	M.Sc. 3 Sem (CH 13) UNIT 3 AND 4	-	-
7.	M.Sc. 4 Sem (CH-21) All Units	Material And Nuclear Chemistry	06 periods/week

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## BHILAI MAHILA MAHAVIDYALAYA, HOSPITAL SECTOR, BHILAI

Name of the Assistant Professor: Dr. Nishi Verma  
Session: 2022-23  
Subject: Inorganic Chemistry  
Class: B.Sc. – I<sup>st</sup> Year

Class & Paper	Allotted Units	Topic	Lectures Allocated
B.Sc. – I <sup>st</sup> Paper-I	Unit-I	<b>A. ATOMIC STRUCTURE</b> Bohr's theory, its limitation and atomic spectrum of hydrogen atom. General idea of de-Broglie matter-waves, Heisenberg uncertainty principle, Schrödinger wave equation, significance of $\Psi$ and $\Psi^2$ , radial & angular wave functions and probability distribution curves, quantum numbers, Atomic orbital and shapes of s, p, d orbitals, Aufbau and Pauli exclusion principles, Hund's Multiplicity rule, electronic configuration of the elements.  <b>B. PERIODIC PROPERTIES</b> Detailed discussion of the following periodic properties of the elements, with reference to s and p block. Trends in periodic table and applications in predicting and explaining the chemical behavior. a) Atomic and ionic radii, b) Ionization enthalpy, c) Electron gain enthalpy, d) Electronegativity, Pauling's, Mulliken's, Allred Rochow's scales. e) Effective nuclear charge, shielding or screening effect, Slater rules, variation of effective nuclear charge in periodic table.	12
	Unit-II	<b>CHEMICAL BONDING</b> <b>Ionic bond:</b> Ionic Solids - Ionic structures, radius ratio & co-ordination number, limitation of radius ratio rule, lattice defects, semiconductors, lattice energy Born- Haber cycle, Solvation energy and solubility of ionic solids, polarising power & polarisability of ions, Fajans rule, Ionic character in covalent compounds: Bond moment and dipole moment, Percentage ionic character from dipole moment and electronegativity difference, Metallic bond-free electron, Valence bond & band theories	10
	Unit-III	<b>CHEMICAL BONDING II</b> Covalent bond: Lewis structure, Valence bond theory and its limitations, Concept of hybridization, Energetics of hybridization, equivalent and non-equivalent hybrid orbitals. Valence shell electron pair repulsion theory (VSEPR), shapes of the following simple molecules and ions containing lone pairs and bond pairs of electrons: H <sub>2</sub> O, NH <sub>3</sub> , PCl <sub>3</sub> , PCl <sub>5</sub> , SF <sub>6</sub> , H <sub>3</sub> O <sup>+</sup> , SF <sub>4</sub> , ClF <sub>3</sub> , and ICl <sub>2</sub> - Molecular orbital theory. Bond order and bond strength, Molecular orbital diagrams of diatomic and simple polyatomic molecules N <sub>2</sub> , O <sub>2</sub> , F <sub>2</sub> , CO, NO.	10





## BHILAI MAHILA MAHAVIDYALAYA, HOSPITAL SECTOR, BHILAI

	<b>Unit-IV</b>	<b>A. s-BLOCK ELEMENTS</b> General concepts on group relationships and gradation properties, Comparative study, salient features of hydrides, solvation & complexation tendencies including their function in biosystems and introduction to alkyl & aryls, Derivatives of alkali and alkaline earth metals <b>B. p-BLOCK ELEMENTS</b> General concepts on group relationships and gradation properties. Halides, hydrides, oxides and oxyacids of Boron, Aluminum, Nitrogen and Phosphorus. Boranes, borazines, fullerenes, graphene and silicates, interhalogens and pseudohalogens.	<b>12</b>
	<b>Unit-V</b>	<b>A. CHEMISTRY OF NOBLE GASES</b> Chemical properties of the noble gases, chemistry of xenon, structure, bonding in xenon compounds <b>B. THEORETICAL PRINCIPLES IN QUALITATIVE ANALYSIS (H<sub>2</sub>S SCHEME)</b> Basic principles involved in the analysis of cations and anions and solubility products, common ion effect. Principles involved in separation of cations into groups and choice of group reagents. Interfering anions (fluoride, borate, oxalate and phosphate) and need to remove them after Group II.	<b>10</b>

Signature of the Teacher

Signature of HOD



## BHILAI MAHILA MAHAVIDYALAYA, HOSPITAL SECTOR, BHILAI

Name of the Assistant Professor: Dr. Nishi Verma  
Session: 2022-23  
Subject: Inorganic Chemistry  
Class: B.Sc. – III<sup>rd</sup> Year

Class & Paper	Allotted Units	Topic	Lectures Allocated
B.Sc. – III <sup>rd</sup> Paper-II	Unit-II	<b>A. Carbohydrates :</b> Configuration of monosaccharides, threo and erythro diastereomers. Formation of glycosides ethers and esters Determination of ring size of monosaccharides. Cyclic structure of D(+) glucose. Structure of ribose and deoxyribose. An introduction to disaccharides (maltose, sucrose and lactose) and polysaccharides (starch and cellulose) without involving structure determination. <b>B. Amino Acids</b>	12
	Unit-III	<b>Synthetic Dyes</b> Colour and constitution (Electronic Concept). Classification of Dyes. Chemistry of dyes. Chemistry and synthesis of Methyl Orange, Congo Red, Malachite Green, Crystal Violet, Phenolphthalein, fluorescein, Alizarine and Indigo.	06
	UNIT-V	A. InfraRed Spectroscopy: IR absorption Band their position and intensity, Identification of IR spectra. B. UV-Visible Spectroscopy: Beer Lambert's law, effect of Conjugation max Visible spectrum and colour. Anthocyanin as natural colouring matter (Introduction only) UV-Visible. C. NMR Spectroscopy: Introduction to NMR. Shielding and Number of signal in PMR, Chemical shift and characteristic values, splitting of Signals and Coupling constant. Application to organic molecules. <sup>13</sup> CMR Spectroscopy: Principal & Application. Magnetic Resonance Imaging (MRI)- Introductory idea.	12

Signature of the Teacher

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## BHILAI MAHILA MAHAVIDYALAYA, HOSPITAL SECTOR, BHILAI

Name of the Assistant Professor: Dr.Nishi Verma  
Session: 2022-23  
Subject: Catalysis, Solid State and Surface Chemistry  
Class: M.Sc. III Sem

S. No.	Module (Unit)	Topic/Title	Lectures Allocatd (InDays/Class)
1.	Unit-I	Acids, Bases, electrophiles, Nucleophiles and catalysis: Acid-base dissociation, Electronic and Structural effects, acidity and basicity. Acidity function and their applications. Hard and soft acids and bases, Nucleophilicity scales. Nucleofugacity. The alpha effect. Ambivalent Nucleophile. Acis base catalysis-specific and general catalysis, Bronsted catalysis, Enzyme Catalysis.	10
2.	Unit-II	Micelles and Adsorption: Classification of surface active agents, mecellization, hydrophobic interaction, critical micellar concentration (CMC), factors affecting the CMC of Surfactants. Thermodynamic of micellization-phase separation and mass action models. Revers micells, micro-emulsion. Micellar Catalysis, Surface tension capillary action. Pressure difference across curved surface (Laplace equation), vapoue pressure of droplets (Kelvin eqation), Gibbs adsorption isotherm.  Solid State Chemistry:Crystal defects and Non-stoichiometry-Perfect and	15



## BHILAI MAHILA MAHAVIDYALAYA, HOSPITAL SECTOR, BHILAI

3.	Unit-III	imperfect crystals, intrinsic and extrinsic defects-point defect, line and plane defects, vacancies-Schotty defects and Frankel defects. Thermodynamics of Schotty and frenkel defect, formation of color centres, non-stoichiometry and defects. Electronic properties and Band theory of semiconductors.	12
4.	Unit-IV	Macromolecules: Definition, types of polymers, electrically conducting, fire resistant, liquid crystal polymers, kinetic of polymerization. Molecular mass, average molecular mass, molecular mass determination(Osmometry, Viscometry, diffusion and light scattering methods), sedimentation, chain configuration of macromolecules, calculation of average dimensions of various chain structures.	12

Name of the Assistant Professor: Nishi Verma

Session: 2022-23

Subject: Resonance spectroscopy, Photochemistry, and Organocatalysis

Class: Msc Sem III

S.No.	Module (Unit)	Topic/Title	Lectures Allocated(In Days/Class)
1.	Unit-III	Photochemical reactions: Interaction of electromagnetic radiation with matter, Stern Volmer equation, types of excitations, fate of excited molecule, quantum yield, transfer of excitation energy, Actinometry. Determination of Reaction mechanism: Classification, rate constant and life times of reactive energy states, determination of rate constant of reactions. Effect of light intensity on the rate of photo chemical reactions. Miscellaneous Photochemical Reactions: Photo-Fries reactions of anilides, Photo-Fries rearrangement. Barton reaction. Singlet molecular oxygen reactions. Photochemical formation of smog. Photo degradation of Polymers, Photochemistry of vision.	21
2.	Unit-IV	Organocatalysis: Energetics catalytic cycles, catalytic efficiency and life time, selectivity. Type of organocatalytic reactions: Ligand substitution, Oxidative addition, reductive elimination and insertion and de-insertion. Homogenous catalysis: Hydrogenation of alkenes, Hydroformylation, Monosubstituted acetic acid synthesis, wacker oxidation of alkenes. Alkene metathesis, Palladium-catalysed C-C bond forming reactions, asymmetric oxidation. Heterogenous catalysts, fischer-Tropsch synthesis, alkene polymerization.	20

Signature of Assistant Professor

Signature of HOD





## BHILAI MAHILA MAHAVIDYALAYA, HOSPITAL SECTOR, BHILAI

Name of the Teacher: Dr.Vijayasri.

KSubject: Physical Chemistry

Class: B.Sc. Part-2

S. NO.	MODU LE (UNI T)	TOPIC	LECTURES ALLOCATED	
B.Sc. II Year  Paper- III Physic al Chemi stry	Uni t-1	<p>A. Thermodynamics-I: Intensive and extensive variables; state and path functions; isolated, closed and open systems; Zeroth law of thermodynamics. First law: Concept of heat, work, internal energy and statement of first law; enthalpy, Relation between heat capacities, calculations of q, w, U and H for reversible, irreversible and free expansion of gases under isothermal and adiabatic conditions. Joule-Thomson expansion, inversion temperature of gases, expansion of ideal gases under isothermal and adiabatic condition.</p> <p>B. Thermo chemistry: Thermochemistry, Laws of Thermochemistry, Heats of reactions, standard states; enthalpy of formation of molecules and ions and enthalpy of combustion and its applications; calculation of bond energy, bond dissociation energy and resonance energy from thermochemical data, effect of temperature (Kirchhoff's equations) and pressure on enthalpy of reactions, Adiabatic flame temperature, explosion temperature.</p>	15	
	Uni t-2	<p>A Thermodynamics-II Second Law of Thermodynamics: Spontaneous process, Second law, Statement of Carnot cycle and efficiency of heat engine, Carnot's theorem, thermodynamic state of temperature. Concept of entropy: Entropy change in a reversible and irreversible process, entropy change in isothermal reversible expansion of an ideal gas, entropy change in isothermal mixing of ideal gases, physical signification of entropy, Molecular and statistical interpretation of entropy.</p> <p>B. Gibbs and Helmholtz free energy, variation of G and A with pressure, volume, temperature, Gibbs-Helmholtz equation, Maxwell relations, Elementary idea of Third law of Thermodynamics, concept of residual entropy, calculation of absolute entropy of molecule.</p>	18	
	Uni t-3	<p>A. Chemical Equilibrium-Criteria of thermodynamic equilibrium, degree of advancement of reaction, chemical equilibria in ideal gases. Concept of Fugacity, Thermodynamic derivation of relation between Gibbs free energy of reaction and reaction quotient. Coupling of exergonic and endergonic reactions. Equilibrium constants and their quantitative dependence on temperature, pressure and concentration. Thermodynamic derivation of relations between the various equilibrium constants <math>K_p</math>, <math>K_c</math> and <math>K_x</math>. Le Chatelier principle (quantitative treatment). Equilibrium between ideal gas and a pure condensed phase.</p> <p>B. Ionic Equilibria-Ionization of weak acids and bases, pH scale, common ion effect; dissociation constants of mono protic acids</p>	18	
			(exact treatment). Salt hydrolysis-calculation of hydrolysis constant, degree of hydrolysis and pH for different salts. Buffer solutions; derivation of Henderson equation and its applications. Solubility and solubility product of sparingly soluble salts – applications of solubility product principle.	
	Uni t-4	<p>PHASE EQUILIBRIUM</p> <p>A. Phase rule, Phase, component and degree of freedom, derivation of Gibbs phase rule, Clausius-Claperon equation and its applications to Solid-Liquid, Liquid-Vapor and SolidVapor,</p>	18	



## BHILAI MAHILA MAHAVIDYALAYA, HOSPITAL SECTOR, BHILAI

	<p>limitation of phase rule, applications of phase rule to one component system: Water system and sulphur system. Application of phase rule to two component system: Pb-Ag system, desilverization of lead, Zn-Mg system, Ferric chloride-water system, congruent and incongruent melting point and eutectic point. Three component system: Solid solution liquid pairs.</p> <p>B. Nernst distribution law, Henry's law, application, solvent extraction</p>	
Unit-5	<p><b>PHOTOCHEMISTRY</b></p> <p>Characteristics of electromagnetic radiation, Interaction of radiation with matter, difference between thermal and photochemical processes, Lambert-Beer's law and its limitations, physical significance of absorption coefficients. Laws of photochemistry: Grothus-Drapper law, StarkEinstein law, quantum yield, actinometry, examples of low and high quantum yields, Photochemical equilibrium and the differential rate of photochemical reactions, Quenching, Role of photochemical reaction in biochemical process. Jablonski diagram depicting various process occurring in the excited state, qualitative description of fluorescence, phosphorescence, non-radiative processes (internal conversion, intersystem crossing), photosensitized reactions, energy transfer processes {simple examples), photostationary states, Chemiluminescence.</p>	18

**Name of the Teacher: Dr.Vijayasri.**

**KSubject: organic Chemistry**

**Class: B.Sc. Part-3**

Class & Paper	Allotted Units	Topic	Lectures Allocated
B.Sc. Part-III & Paper-II	Unit-I	<p><b>A. ORGANOMETALLIC COMPOUNDS</b></p> <p>Organomegenesium compounds: Grignard reagents-formation, structure and chemical reactions. Organozinc compounds: formation and chemical reactions.</p> <p>Organolithium compounds : formation and chemical reactions.</p> <p><b>B. Organosulphur Compounds</b></p> <p>Nomenclature, structural features, methods of formation and chemical reactions of thiols, thioethers, sulphonic acids, sulphonamides and sulphaguanidine.</p> <p><b>Organic Synthesis via Enolates</b></p> <p>Active methylene groupalkylation of diethylmalonate and ethyl acetoacetate. Synthesis of ethyl acetoacetate : the Claisen condensation. Keto-enol tautomerism of ethyl acetoacetate.</p>	12
	Unit-II	<p><b>BIOMOLECULES</b></p> <p><b>A. Carbohydrates :</b></p> <p>Configuration of monosaccharides, threo and erythro diastereomers. Formation of glycosides ethers and esters Determination of ring size of monosaccharides. Cyclic structure of D(+) glucose. Structure of ribose and deoxyribose. An introduction to disaccharides (maltose, sucrose and lactose) and polysaccharides (starch and cellulose) without involving structure determination.</p>	07



## BHILAI MAHILA MAHAVIDYALAYA, HOSPITAL SECTOR, BHILAI

	<b>Unit-III</b>	<b>SYNTHETIC POLYMERS</b> A. Addition or chain growth polymerization, Free radical vinyl polymerization, Ziegler-Natta polymerization, Condensation or Step growth polymerization, polyesters, polyamides, phenols-formaldehyde resins, urea-formaldehyde resins, epoxy resins and polyurethanes, natural and synthetic rubbers <b>Synthetic Dyes</b> Colour and constitution (Electronic Concept). Classification of Dyes. Chemistry of dyes. Chemistry and synthesis of Methyl Orange, Congo Red, Malachite Green, Crystal Violet, Phenolphthalein, fluorescein, Alizarine and Indigo.	<b>10</b>
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Name of the Teacher: Dr.Vijayasri.K

Subject: organic Chemistry

Class: M.SC 1<sup>st</sup> sem

Class & Paper	Allotted Units	Topic	Lectures Allocated
M.Sc. SEM-I & Paper-CH-2	Unit-I	<b>A. NATURE OF BONDING IN ORGANIC MOLECULES:</b> Localized and delocalized chemical bond, conjugation and cross-conjugation, Bonding in Fullerenes, Bonds weaker than covalent, Addition compounds, Crown ether complexes and cryptands. Inclusion compounds, Cyclodextrins, Catenanes and rotaxanes.  <b>B. AROMATICITY:</b> Aromaticity in benzenoid and non-benzenoid compounds, Huckel's rule anti-aromaticity, homo-aromaticity. PMO approach for Aromaticity, Annulenes.	<b>12</b>
	Unit-II	<b>A. CONFORMATIONAL ANALYSIS:</b> Conformational analysis of cycloalkanes, decalins, effect of conformation on reactivity, conformation of sugars, steric strain due to unavoidable crowding.  <b>B. STEREOCHEMISTRY:</b> Elements of symmetry, chirality, molecules with more than one chiral center, methods of resolution, optical purity, stereospecific and stereoselective synthesis. Asymmetric synthesis. Optical activity in the absence of chiral carbon (Biphenyls, allenes and spiranes), chirality due to helical shape.	<b>11</b>
	Unit-III	<b>A. REACTION INTERMEDIATES:</b> Generation, structure, stability and reactivity of carbocations, carbanions, free radicals, carbenes and nitrenes. Sandmeyer reaction, Free radical rearrangement and Hunsdiecker reaction.  <b>B. ELIMINATION REACTIONS:</b> The E2, E1 and E1c B mechanisms. Orientation of the double bond. Reactivity, effects of substrate structures, attacking base, the leaving group and the medium	<b>12</b>



## BHILAI MAHILA MAHAVIDYALAYA, HOSPITAL SECTOR, BHILAI

	<b>Unit-IV</b>	<b>PERICYCLIC REACTIONS:</b> Classification of pericyclic reactions. Woodward- Hoffmann correlation diagrams. FMO and PMO approach. Electrocyclic reactions - conrotatory and disrotatory motions, $4n$ , $4n+2$ and allyl systems. Cycloadditions - antarafacial and suprafacial additions, $4n$ and $4n+2$ system, $2+2$ addition of ketenes, $1, 3$ dipolar cycloadditions and cheletropic reactions. <b>Sigmatropic rearrangements - suprafacial and antarafacial shifts of H, sigmatropic shifts involving carbon moieties, <math>3, 3-</math> and <math>5, 5-</math> sigmatropic rearrangements. Claisen, Cope and Aza- Cope rearrangements. Ene reaction.</b>	<b>10</b>
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Name of the Teacher: Dr.Vijayasri.K

Subject: organic Chemistry

Class: M.SC 3<sup>rd</sup> sem

Class & Paper	Allotted Units	Topic	Lectures Allocated
M.Sc. SEM-III & Paper-CH-16	Unit-III	<b>THERMAL AND AUTOMATED METHODS</b> <b>A.</b> Principle, Instrumentation, Application of TGA, DTA and DSC methods. <b>B.</b> Automated methods, Principle, instrumentation and application of flow injection analysis.	<b>09</b>
	Unit-IV	<b>A. ELECTROCHEMISTRY</b> Principles and instrumentation of pH potentiometry, coulometry and conductometry. <b>B. POLAROGRAPHY</b> Basic principles, Diffusion current, polarized electrode, Micro electrode, Dropping Mercury Electrode, Ilkovic equation, Polarographic wave, Qualitative analysis Stripping methods, Cyclic Voltammetry, Amperometric titration:- curves, Differential pulse polarography and Squarewave polarography.	<b>12</b>

Name of the Teacher: Dr.Vijayasri.K

Subject: organic Chemistry

Class: M.SC 2<sup>nd</sup> sem

Class & Paper	Allotted Units	Topic	Lectures Allocated
M.Sc. II & Paper-CH-8	Unit-III	<b>ADDITION TO CARBON-CARBON MULTIPLE BONDS:</b> Mechanistic and stereochemical aspects of addition reactions involving electrophiles, nucleophiles and free radicals, regio- and chemoselectivity. Addition to cyclopropane ring, Hydrogenation of double and triple bonds, hydrogenation of aromatic rings, Hydroboration, Micheal reaction. Sharpless asymmetric epoxidation.	<b>10</b>





## BHILAI MAHILA MAHAVIDYALAYA, HOSPITAL SECTOR, BHILAI

	<b>Unit-IV</b>	<b>ADDITION TO CARBON-HETERO MULTIPLE BONDS:</b> Mechanism of metal hydride reduction of saturated and unsaturated carbonyl compounds, acids, esters and nitriles. Addition of Grignard Reagents, Organo-Zinc and Organo-lithium to carbonyls and unsaturated carbonyl compounds, Wittig reaction. Mechanism of condensation reactions involving enolates-Perkins, Aldol, Claisen, benzoin, Mannich, Knoevengel, Stobber reactions. Hydrolysis of esters and amides, ammonolysis of esters.	<b>11</b>
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Name of the Teacher: Dr. Vijayasri.K

Subject: organic Chemistry

Class: M.SC 4<sup>th</sup> sem

Class & Paper	Allotted Units	Topic	Lectures Allocated
M.Sc. IV & Paper-CH-20	Unit-I	A. <b>Terpenoids and Carotenoids:</b> Classification, nomenclature, occurrence, isolation, general methods of structure determination of Citral, Geraniol, $\alpha$ -Terpeneol, Menthol, Farnesol, Zingiberene, Santonin, Phytol, Abietic acid and $\beta$ -Carotene. B. <b>Alkaloids:</b> Definition, nomenclature and physiological action, occurrence, isolation, general methods of structure elucidation, degradation, classification based on Nitrogen heterocyclic ring, role of alkaloids in plant. Synthesis and biosynthesis of the following: Ephedrine, (+) - Conine, Nicotine, Atropine, Quinine and Morphine.	<b>12</b>
	Unit-II	A. <b>Steroids:</b> Isolation, structure determination and synthesis of Cholesterol, Bile acids, Androsterone, Testosterone, Esterone, Progesterone, Aldosterone and Biosynthesis of cholesterol. B. <b>Plant Pigments:</b> Occurrence, nomenclature and general method of structure determination. Isolation and synthesis of Apigenin, Luteolin, Quercetin, Myrcetin, Quercetin-3-glucoside, Vitexin, Diadzein, Butein, Aureusin, Cyanidin, Hirsutidin.	<b>15</b>



BHILAI MAHILA MAHAVIDYALAYA, HOSPITAL SECTOR, BHILAI  
DEPARTMENT OF COMPUTER SCIENCE

NAME OF THE PROFESSOR: MS. SALMA MOHD. SHAFI  
DESIGNATION:- HEAD & ASSTT. PROF.  
SESSION: 2022- 2023  
SUBJECT: PROGRAMING IN C LANGUAGE + FUNDAMENTAL  
CLASS: BSc Part I

S.No	Module (Unit)	Topic/Title	Lectures Allocated (In Days/Class)
1.	Unit – I	Fundamentals for using the Computer:	15
2.	Unit – II	(A) Working with MS-Office, Mail merge ‘Working on InternetIntoduction, World WideWeb (WWW), Internet Electronic Mail (E-Mail), FTP (File transfer Protocol)	15
3.	Unit – III	PROGRAMMING WITH C : PART – A Identifiers and Keywords, Operators and Expressions, , Loops	15
4.	Unit – IV	PROGRAMMING WITH C : PART – B Scope and Extent, Arrays, Pointers and functions.	15
5.	Unit – V	PROGRAMMING WITH C :PART – C Structure and Union, File	15

SUBJECT: PROGRAMING IN C++  
CLASS: M.Sc-I SEM

S.No.	Module (Unit)	Topic/Title	Lectures Allocated (In Days/Class)
1.	Unit – I	Language Fundamental	12
2.	Unit – II	Structure, Function & Array	12
3.	Unit – III	Object Classes and Inheritance	12
4.	Unit – IV	Pointers	12

5.	Unit – V	Virtual Function and File & Stream	12
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SUBJECT: PC SOFTWARE AND MULTIMEDIA TOOLS  
CLASS: BCA-I YEAR

S.No.	Module (Unit)	Topic/Title	Lectures Allocated (In Days/Class)
1.	Unit – I	Using Office 2007 MS-Word	15
2.	Unit – II	Working with MS-Excel	15
3.	Unit – III	Working with MS-PowerPoint & MS-Access	15
4.	Unit – IV	Introduction to HTML and Designing Web Page using MS-FrontPage -. HTML Editor, Hyperlinks,	15
5.	Unit – V	Animations and Graphics: Flash Animation; Interface of Photoshop	15

SUBJECT: Object Oriented Analysis And Design  
CLASS: M.Sc-III SEM

S.No.	Module (Unit)	Topic/Title	Lectures Allocated (In Days/Class)
1.	Unit – I	Introduction: Two views of software Developments: SSAD and OOAD,.Object Oriented Methodologies	12
2.	Unit – II	Unified Approach Object-Oriented Systems Development Process	12
3.	Unit – III	Analysis, ObjectOriented analysis .	12
4.	Unit – IV	Design Phases .	12
5.	Unit – V	Design Refinement , Persistent Object and Database Issues , Testing	12

SUBJECT: COMPUTER SYSTEM ARCHITECTURE  
CLASS: M.Sc-I SEM

S.No	Module (Unit)	Topic/Title	Lectures Allocated (In Days/Class)
1.	Unit – I	Representation of Information	17
2.	Unit – II	Register transfer language and micro operations	18

SUBJECT: Data Mining & Data Warehouse  
CLASS: M.Sc-IV SEM

S.No.	Module (Unit)	Topic/Title	Lectures Allocated (In Days/Class)
1.	Unit – I	Introduction & Data Warehousing and OLAP Technology for Data Mining –	12
2.	Unit – II	Data Preprocessing, Data Mining Primitive, Languages and System Architecture –	12
3.	Unit – III	Mining Association Rules in Large Databases-	12
4.	Unit – IV	Classification and Prediction & Cluster Analysis –	12
5.	Unit – V	Mining Complex Types of Data & Applications and Trends in Data Mining -	12



SUBJECT: Programming in Visual Basic  
CLASS: M.Sc-II SEM

S.No.	Module (Unit)	Topic/Title	Lectures Allocated (In Days/Class)
1.	Unit – I	Visual Basic Fundamentals :	12
2.	Unit – II	Visual Basic Control Fundamentals : Menus and Dialog Boxes	12
3.	Unit – III	Executing and Debugging a New Project Arrays : Using Class Modules :	12
4.	Unit – IV	Using COM Components ActiveX Controls ActiveX EXE and ActiveX DLL	12
5.	Unit – V	Data Access using ADO Data Environment and Data Report	12



BHILAI MAHILA MAHAVIDYALAYA, HOSPITAL SECTOR, BHILAI DEPARTMENT OF  
COMPUTER SCIENCE

NAME OF THE PROFESSOR: Deepak Das Manikpuri  
Designation: Astd. Prof.  
SESSION: 2022-23  
SUBJECT: Paper II-Computer Graphics  
CLASS: M.Sc. III Semester COMPUTER SCIENCE

S.No.	Module(Unit)	Topic/Title	Lectures Allocated (InDays/Class)
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1.	Unit-I	Introduction of computer Graphics and its applications, Overview of Graphics systems, Interactive input devices, Logical classification of input devices,	15
2.	Unit-II	Line drawing algorithms, DDA, Bresenham's, Circle generating, Mid-point circle algorithm, Ellipse generating, Polynomials, Scan-line polygon fill, Boundary fill	15
3.	Unit-III	Basic transformation's, Translation, Rotation, Scaling, Matrix representation's & homogeneous co-ordinates, Composite transformation's, Reflection, Two dimensional viewing, Twodimensional clipping, Line, Polygon, Curve, Text. 3D-transformation, Projection, Viewing, Clipping.	15
4.	Unit-IV	Spline representation, Cubic spline, Bezier curve, Bezier surfaces, Beta spline, B-spline surfaces, B-spline curve, Hidden surfaces, Hidden lines, Z-buffer	15
5.	Unit-V	Fractal's geometry Fractal generation procedure, Classification of Fractal, Fractal dimension, Fractal construction methods. Color models, XYZ, RGB, YIQ, CMY & HSV, Shading algorithms, Shading model, Illumination model, Gouraud shading, Phong shading	15

SUBJECT: Paper- III programming in C(103)  
CLASS: BCA. I

S.No	Module (Unit)	Topic/Title	Lectures Allocated (In Days/Class)
1.	Unit - I	Fundamentals of C Programming	15
2.	Unit - II	Arrays, Strings and Functions	15

3.	Unit – III	Structure, Union & Enum	15
4.	Unit – IV	Dynamic Data Structures in 'C'	15
5.	Unit – V	File Handling and Miscellaneous Features	15

SUBJECT: Paper III-Data Structure through algorithms using 'C'  
CLASS: M.Sc. I Semester COMPUTER SCIENCE

S.No.	Module(Unit)	Topic/Title	Lectures Allocated (InDays/Class)
1.	Unit–I	Introduction and Preliminaries	12
2.	Unit–II	String Processing, Arrays, Records And Pointers	12
3.	Unit–III	Linked Lists, Stacks, Queues, Recursion	12
4.	Unit–IV	Trees & Graphs	12
5.	Unit–V	Sorting And Searching	13

SUBJECT: Paper II COMPUTER SOFTWARE  
CLASS: B.Sc. III COMPUTER SCIENCE

S.No.	Module(Unit)	Topic/Title	Lectures Allocated (InDays/Class)
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1.	Unit-II	RELATIONAL DATABASE MANAGEMENT SYSTEM	15
2.	Unit-III	INTRODUCTION TO RDBMS SOFTWARE - ORACLE	15
3.	Unit-IV	G.U.I. PROGRAMMING	15
4.	Unit-V	DATA BASE PROGRAMMING IN VB	15

SUBJECT: Paper II COMPUTER SOFTWARE  
CLASS: B.Sc. II COMPUTER SCIENCE

S.No.	Module(Unit)	Topic/Title	Lectures Allocated (InDays/Class)
1.	Unit-II	IMAGE, INTERNAL AND EXTERNAL LINKING BETWEEN WEBPAGES	15
2.	Unit-III	INTRODUCTION TO OOP	15
3.	Unit-IV	OBJECT CLASSES AND INHERITANCE	15
4.	Unit-V	POINTERS AND VIRTUAL FUNCTION	15

SUBJECT: RDBMS (SQL Programming with Oracle)  
CLASS: M.Sc-II SEM

S.No.	Module (Unit)	Topic/Title	Lectures Allocated (In Days/Class)
1.	Unit – I	Overview of Database Management -	12
2.	Unit – II	Relational Model & Relational Algebra -	12
3.	Unit – III	SQL	12

4.	Unit – IV	PL/SQL	12
5.	Unit – V	Relational Database Design-	12

SUBJECT: Artificial Intelligence and Expert System  
CLASS: M.Sc-IV SEM

S.No.	Module (Unit)	Topic/Title	Lectures Allocated (In Days/Class)
1.	Unit – I	General Issues and overview of AI Problem solving, search and control strategies	12
2.	Unit – II	Heuristic Search techniques Game playing	12
3.	Unit – III	Knowledge Representa AI Programming Languages tion	12
4.	Unit – IV	Natural language processing Planning	12
5.	Unit – V	Natural language processing Planning	12

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BHILAI MAHILA MAHAVIDYALAYA, HOSPITAL SECTOR BHILAI

DEPARTMENT OF Computer Science  
NAME OF THE PROFESSOR: Mrs Kavita Dubey  
SESSION: 2022-2023  
SUBJECT: Computer Hardware Paper - 1  
CLASS B.Sc. First year

S.NO.	MODULE (UNIT)	TOPIC	LECTURES ALLOCATED (in Days/Class)
1	UNIT 1	<b>UNIT-I CLASSIFICATION AND ORGANIZATION OF COMPUTERS</b> Digital and analog computers and its evolution. Major components of digital computers; Memory addressing capability of CPU; word length and processing speed of computers. Microprocessors single chip microcomputers; large and small computers. Users interface Hardware software and firmware. multi programming multi user system. Dumb smart and intelligent terminals computer network and multi-processing, LANparallel processing. Flynn's classification of computers. Computer flow and data flow computers.	10
2	UNIT 2	<b>UNIT-II CENTRAL PROCESSING</b> UNIT. CPU organization, ALU control unit registers. Instructions for INTEL 8085, Instruction word size, Various addressing mode interrupts and exceptions, some special Control signals and I/O devices. Instruction cycle fetch and execute operation, time Diagram, data flow.	10
3	UNIT 3	<b>UNIT-III MEMORY OF COMPUTERS.</b> Main memory secondary memory, backup memory Memory controller and magnetic memory; RAM; disks, optical disks Magnetic bubble memory; DASD, destructive and nondestructive. Readout. Program of data Memory and MMU.	10
4	UNIT 4	<b>UNIT-IV I/O DEVICES.</b> O devices of micro controller; processors. I/O devices, printer, plotter, other output devices, I/O port serial data transfer scheme, Micro controller, signal processor, I/O processor I/O processor arithmetic processor.	10
5	UNIT 5	<b>UNIT-V SYSTEM SOFTWARE AND PROGRAMMING TECHNIQUE.</b> Development, flow & chart multi programming, multiuser,multi tasking Protection, operating system and utility program, application package.	10

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SUBJECT:  
CLASS

Computer Hardware Paper - 1  
B.Sc. Second year

S.NO.	MODULE (UNIT)	TOPIC	LECTURES ALLOCATED (in Days/Class)
1	UNIT 1	UNIT-I CLASSIFICATION AND ORGANIZATION OF COMPUTERS Digital and analog computers and its evolution. Major components of digital computers;Memory addressing capability of CPU; word length and processing speed of computes.Microprocessors single chip	10
2	UNIT 2	UNIT-II CENTRAL PROCESSING UNIT. CPU organization, ALU control unit registers. Instructions for INTEL 8085, Instruction word size, Various addressing mode interrupts and exceptions, some special Control signals and I/O devices. Instruction cycle fetch	10
3	UNIT 3	UNIT-III MEMORY OF COMPUTERS. Main memory secondary memory, backup memory, cache memory; real and virtual Memory Semiconductor memory. Memory controller and magnetic memory; RAM; disks, optical disks Magnetic bubble mem	10
4	UNIT 4	UNIT-IV I/O DEVICES. I/O devices of micro controller; processors. I/O devices, printer, plotter, other output devices, I/O port serial data transfer scheme, Micro controller, signal processor, I/O processor I/O processor arithmetic processor.	10
5	UNIT 5	UNIT-V SYSTEM SOFTWARE AND PROGRAMMING TECHNIQUE. ML, AL, HLL, stac subroutine debugging of programs macro, micro programming, Program Design, software development, flow & chart multi programming, multiuser, multi tasking Protection, operating	10

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SUBJECT:

Computer Hardware Paper - 1

CLASS :

B.Sc. Third year

S.NO.	MODULE (UNIT)	TOPIC	LECTURES ALLOCATED (in Days/Class)
1	UNIT 1	<p>Introduction &amp; organization of Micro-Computer : (a) Basic Components of Micro-computer : Interconnecting Components in a Micro-computer Interconnecting Components in a Micro-computer</p> <p>An Introduction to the various as: (a) General understanding of different P or CPU: Intel 8088, 286, 386, 486, 586 Pentium, P54C, MMX P55C; Motorola 6800 &amp; 88100 series; CYRIX &amp; AMD CPUs. (b) The Registers of CPU: (Give Example of P -8088) Register organization of 8088,</p> <p>SYSTEM HARDWARE ORGANISATION OF COMPUTERS: 1. Hardware Organization of the Personal Computer: (a) Block diagram with various parts of PC. (b) The Mother Board of General P.C. : 8088 CPU; ROM &amp; RAM; Keyboard &amp; its interface; System timer/counters; Hardware interrupt vectoring; DMA controller &amp; channels;</p>	10
2	UNIT -2	<p>SYSTEM HARDWARE ORGANISATION OF COMPUTERS: 1. Hardware Organization of the Personal Computer: (a) Block diagram with various parts of PC. (b) The Mother Board of General P.C. : 8088 CPU; ROM &amp; RAM; Keyboard &amp; its interface; System timer/counters; Hardware interrupt vectoring; DMA controller &amp; channels; Interfacing to audio speaker; Bus slots &amp; facture cards</p> <p>The Video Display of PCs : (a) Video Monitors; Monochrome and colour. (b) Video Display Adapters &amp; Their Video Modes; Monochrome &amp; colour graphics adapters. (c) Video Control Through ANSI-SYS. (d) Video Control Through ROM-BOIS : INT 10H. (e) Direct Video Control; Monochrom &amp; colour graphi</p>	10
3	UNIT -3	<p>The fundamental of Operating System viz. DOS/WINDOWS : (a) The loading of DOS &amp; Its Basic Structure ; ROM bootstrap, IO.SYS, DOS.SYS &amp; Command.COM. (b) The Execution of the programs under DOS ; EXEC functions, program segment prefix; Features of COM &amp; EXE program file</p>	15

4	UNIT -4	<p>The fundamental of Operating System viz. DOS/WINDOWS : (a) The loading of DOS &amp; Its Basic Structure ; ROM bootstrap, IO.SYS, DOS.SYS &amp; Command.COM. (b) The Execution of the programs under DOS ; EXEC functions, program segment prefix; Features of COM &amp; EXE program file</p> <p>Memory Allocation, Program Loading and Execution : (a) Memory Management under DOS : EXEC loader; Memory Management &amp; its functions; Modifying a Program's memory allocation. (b) Loading and Executing Programs under DOS : The EXEC function ; Memory considerations; parameter blocks; calling &amp; returning from EXEC</p>	10
5	UNIT- 5	<p>ORGANISATION OF HARDWARE BY OPERATING SYSTEM: 1. Interrupt Handling through DOS : (a) Types of interrupts. (b) Interrupt Vector Table in PC. (c) Interrupt Service Routines. (d) Special Interrupts in PC : Clock Interrupt;</p> <p>2. Filters for DOS : (a) Filters in operating systems. (b) Redirection of I/O under DOS. (c) The Filters Supplied with DOS</p> <p>Handling of Various Versions of Windows O.S. : (a) Setup Installation (b) Trouble shooting (c) Networking features Text Book</p>	10

SUBJECT: LINUX  
CLASS: M.Sc III SEMESTER

S.No	Module (Unit)	Topic/Title	Lectures Allocated (In Days/Class)
1.	Unit – I	Introduction : File System :	13
2.	Unit – II	Shell Programming :	13
3.	Unit – III	Introduction to Shell : Process Control :	13
4.	Unit – IV	Inter-process Communication :	13
5.	Unit – V	System Administration :	13

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SUBJECT: WEB TECHNOLOGY  
CLASS: BCA I YEAR

S.No	Module (Unit)	Topic/Title	Lectures Allocated (In Days/Class)
1.	Unit – I	Basics of Internet	13
2.	Unit – II	HTML	13
3.	Unit – III	Dhtml And Javascript	13
4.	Unit – IV	Introduction to Php	13
5.	Unit – V	Introduction to E-Commerce	13

SUBJECT: OFFICE AUTOMATION & TALLY  
CLASS : P.G.D.C.A first semester

S.NO.	MODULE (UNIT)	TOPIC	LECTURES ALLOCATED (in Days/Class)
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1	UNIT 1	Windows Concept Features, Structure, Desktop, Icons, Taskbar, Start Menu, My Computer, Recycle Bin, My document, creating shortcut. Accessories: Calculator, Notepad, Paint, Word Pad, Character Map. Windows Explorer	15
2	UNIT 2	Word Processing & Spreadsheet Word Thesaurus, Mail Merge, Table & Charts, Handling Graphics, Converting Word Documents into other format Excel: Worksheet Basics, Creating, Opening, & Moving in Worksheet, Working with Formula Cell referencing, Absolute & Relative addressing, Working with Ranges, Formatting of Worksheet, Power Point	15
3	UNIT 3	Power Point Transitions, animations and linking, preparing handouts, presenting a slide show. Creating table, creating chart playing a slide show, slide transition, advancing slides, setting time,	13
4	UNIT 4	Access Introduction to MS Access, The Tables of a Database, Introduction to the Record of a Table, Introduction to Controls Design, Details on Controls Design, The Characteristics of a Table, The Characteristics of a Form, The Characteristics of a Window Control, Data Controls, Getting Assistance With Data Entry, Database Strings, Database Numeric Values, Database Conditional Values, Database Date and Time Values, Creating Reports, Characteristics of Reports. Multiple queries a	10
5	UNIT 5	Tally Setting up Ledger & Groups. Study of recording of transactions in the 'Voucher'. (According to Golden rules). Study of 'Final A/C preparation & displaying in different mode/format'. Study of alteration & Deletion of ledger/Groups. Study of cash & fund flow, day book, sales register, purchase register, bills receivable/Payable etc. Study of data security & backing up data. Outline of entry for	10

SUBJECT: Software Engineering  
CLASS: M.Sc-IV SEM

S.No.	Module (Unit)	Topic/Title	Lectures Allocated (In Days/Class)
1.	Unit – I	Introduction Software Requirements analysis & specifications	12
2.	Unit – II	Software Project Planning Software Design	12
3.	Unit – III	Software Metrics: Software Reliability	12
4.	Unit – IV	Software Testing: Software Maintenance:	12

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SUBJECT: Principles of Compiler Design  
 CLASS: M.Sc-II SEM

S.No.	Module (Unit)	Topic/Title	Lectures Allocated (In Days/Class)
1.	Unit – I	Introduction to Compilers:	12
2.	Unit – II	Scanning and Parsing Techniques	12
3.	Unit – III	Memory Allocation	12
4.	Unit – IV	Compilation of Control Structures	12
5.	Unit – V	Code Optimization	12



BHILAI MAHILA MAHAVIDYALAYA, HOSPITAL SECTOR, BHILAI  
 DEPARTMENT OF COMPUTER SCIENCE

NAME OF THE PROFESSOR: Miss Kuljeet Kaur  
 Designation: Lecturer  
 SESSION: 2022-23  
 SUBJECT: INTRODUCTION TO SOFTWARE ORGANISATION  
 CLASS: PGDCA I SEM

S.No.	Module (Unit)	Topic/Title	Lectures Allocated (In Days/Class)
1.	Unit – I	UNIT – I: Introduction to Computers: Computers – Introduction, Computer System Characteristics, Strength and Limitations of Computer, Development of Computers, Types of Computers, Generations of Computers. Introduction to Personnel Computers – Uses of PC's, Components of PC's, Evolution of PC's, Developments of Processors, Architecture of Pentium IV, Configuration of PC's; Input Device; Output Devices.	15
2.	Unit – II	Computer Organization: - Central Processing Unit – Arithmetic Logic Unit, Control Unit, Registers, Instruction Set, Processor speed. Storage Devices – Storage and its need, Storage Evaluation Units, Primary Storage, Secondary Storage, Data Storage and Retrieval Systems, SIMM, DIMM, Types of Storage Devices.	15
3.	Unit – III	Computer Software: - Basics of Software – needs of Software, Types of Software; Free Domain Software; Open Source Software, Compiler, Interpreter and Assembler; Linker and Loader; Debugger; Integrated Development Environment; Operating System – Introduction, Uses of OS, Functions of OS, Booting process, Types	15

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		of Reboot, Booting from different OS, Types of OS, DOS, Windows, Linux.	
4.	Unit – IV	Programming Languages – Introduction, Comparison between Human and Computer Language; Program; Data, Information and Knowledge; Characteristics of Information; Types of Programming Languages; Generations of Languages; Program Development Steps; Programming Paradigms; Object-Oriented Programming; Structured Programming, Functional Programming, Process Oriented Programming.	15
5.	Unit – V	Communication, Networks and Internet Communication – Introduction, process, Types, Protocols, Channels/Media. Networks – Introduction; Types of Network; Topology; Media - NIC, NOS, Bridges, HUB, Routers, Gateways. Internet – Introduction, Growth of Internet, Owner of Internet, Internet Service Provider, Anatomy of Internet, ARPANET and, Services Available on Internet - File Transfer Protocol, Gopher, E-mail, Telnet, Newsgroups, WWW, Applications of Internet..	15

SUBJECT: COMPUTER SYSTEM ARCHITECTURE  
CLASS: M.Sc-I SEM

S.No	Module (Unit)	Topic/Title	Lectures Allocated (In Days/Class)
1.	Unit – III	Basic Computer Organization and Design	15
2.	Unit – IV	Computer Software	15
3.	Unit – V	Input –Output & Memory Organization	15

SUBJECT: LINUX  
CLASS: BCA-II YEAR

S.No	Module (Unit)	Topic/Title	Lectures Allocated (In Days/Class)
1.	Unit – I	Introduction Basic concept	13
2.	Unit – II	Process management Process state Scheduling queue	13
3.	Unit – III	Memory management Virtual memory Page replacement policies	13
4.	Unit – IV	Introduction to unix System structure File system	13
5.	Unit – V	Shell programming	13

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SUBJECT: Dot Net Technology(303)

CLASS:

BCA. III

S.No.	Module(Unit)	Topic/Title	Lectures Allocated (InDays/Class)
1.	Unit-I	Inside the .Net Framework	15
2.	Unit-II	Programming with VB.Net	15
3.	Unit-III	Windows Forms:	16
4.	Unit-IV	OOPS concept	16
5.	Unit-V	Database Programming	13

SUBJECT:

Computer System Architecture (306)

CLASS:

BCA. III

S.No.	Module(Unit)	Topic/Title	Lectures Allocated (InDays/Class)
1.	Unit-I	Data Representation - Data Types, Number System, Fixed Point Representation - I's, 12 complement, Binary Fixed point representation, Arithmetic operation on Binary operation Overflow & Underflow, Codes,	15
2.	Unit-II	Digital Logic Circuits - Logic Gates AND, OR, NOT, Gates & their truth tables, NOR, NAND XOR Gates, Product of sums, Combinational & sequent circuits Half adder & Full adder, Full Subtractor, Flip Flop - RS, D, JK & T Flip Flop, Shift register, RAM & ROM.	15
3.	Unit-III	CPU organization, ALU & control circuit, Idea about arithmetic circuits, Program control Instruction sequencing, Introduction to Microprocessor, System buses, Registers, Program counter, Block diagram of a Macro computer system	15
4.	Unit-IV	Input output organization, I/O Interface, Properties of simple I/O devices and their Controller isolated versus Memory mapped I/O, Modes of Data transfer	15
5.	Unit-V	Auxiliary memory - Magnetic drum, Disk & Tape, Semiconductor memories, Memory hierarchy, Associative memory, Virtual memory,	

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SUBJECT:  
CLASS:

Programming in C++(203)  
BCA. II

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S.No.	Module(Unit)	Topic/Title	Lectures Allocated (InDays/Class)
1.	Unit-I	Language Fundamentals	16
2.	Unit-II	Structure & Union	15
3.	Unit-III	Object Classes And Inheritance	15
4.	Unit-IV	Pointers And Inheritance	16
5.	Unit-V	Polymorphism	15

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SUBJECT: Advanced Computer Networks  
CLASS: M.Sc-II SEM

S.No.	Module (Unit)	Topic/Title	Lectures Allocated (In Days/Class)
1.	Unit – I	Introduction to Computer Networking The OSI and TCP/IP Reference Model	12
2.	Unit – II	Transmission of Digital Data Multiplexing and Switching	12
3.	Unit – III	Multiplexing and Switching Data Link Layer and Routing Algorithms The concept of ICMP, ARP, RARP, RSVP, CIDR and Ipv6.	12
4.	Unit – IV	Transport Layer ATM	12
5.	Unit – V	Comparative study of Networking Technologies Network Security	12

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SUBJECT: Programming in Visual Basic  
CLASS: PGDCA-II SEM

S.No.	Module (Unit)	Topic/Title	Lectures Allocated (In Days/Class)
1.	Unit – I	Introduction to visual Basic Creating Programs	12
2.	Unit – II	Variable and Procedures Controlling Program Execution	12
3.	Unit – III	Working with Controls Error Trapping & Debugging	12
4.	Unit – IV	Sequential and Random Files Data Access Using the ADO Data Control	12
5.	Unit – V	Sequential and Random Files Data Access Using the ADO Data Control Report Generation Advances Tools	12



BHILAI MAHILA MAHAVIDYALAYA, HOSPITAL SECTOR, BHILAI  
DEPARTMENT OF COMPUTER SCIENCE

NAME OF THE PROFESSOR: Miss Prabha Kharsan  
Designation: Lecturer  
SESSION: 2022-23  
SUBJECT: Paper II-Programming in "C"(102)  
CLASS: PGDCA. I Semester

S.No.	Module(Unit)	Topic/Title	Lectures Allocated (InDays/Class)
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1.	Unit-I	Introduction to C	15
2.	Unit-II	Control Structures	15
3.	Unit-III	Functions & Arrays	15
4.	Unit-IV	Pointers	15
5.	Unit-V	Structure and Union	15

SUBJECT: DBMS  
CLASS: BCA-II YEAR

S.No	Module (Unit)	Topic/Title	Lectures Allocated (In Days/Class)
1.	Unit - I	OVERVIEW OF DATABASE MANAGEMENT SYSTEM	15
2.	Unit - II	ENTITY-RELATIONSHIP MODEL	15
3.	Unit - III	Structured Query Language	15
4.	Unit - IV	Relational Database Design	15
5.	Unit - V	INTRODUCTION TO ORACLE	15

SUBJECT: DATA STRUCTURE  
CLASS: BCA-III YEAR

S.No	Module (Unit)	Topic/Title	Lectures Allocated (In Days/Class)
1.	Unit - I	INTRODUCTION	15
2.	Unit - II	CONCEPTS OF ARRAYS, RECORDS AND POINTERS	15
Signature of Professor	Unit - III	LINKED LISTS, STACKS, QUEUES, RECURSION	Signature of HOI

4.	Unit – IV	TREES	15
5.	Unit – V	SORTING AND SEARCHING	15

SUBJECT: MATHS  
CLASS: M.SC-I SEM

S.No	Module (Unit)	Topic/Title	Lectures Allocated (In Days/Class)
1.	Unit – I	Mathematical Logic, Sets Relations and functions Mathematical Logic Set Theory	15
2.	Unit – II	Lattices & Boolean Algebra Lattices Boolean Algebra	15
3.	Unit – III	Groups Fields & Ring Groups: Fields & Rings	15
4.	Unit – IV	Graphs	15
5.	Unit – V	Trees	15

SUBJECT: DIGITAL IMAGE PROCESSING  
CLASS: M.Sc-III SEM

S.No	Module (Unit)	Topic/Title	Lectures Allocated (In Days/Class)
1.	Unit – I	Digital Image fundamentals	15
2.	Unit – II	Image Transforms	15
3.	Unit – III	Image Enhancement Image filtering and restoration	15
4.	Unit – IV	Image compression Image segmentation	15
5.	Unit – V	Representation and description	15

SUBJECT: PROGRAMMING IN PYTHON  
CLASS: BCA III YEAR

S.No	Module (Unit)	Topic/Title	Lectures Allocated (In Days/Class)
1.	Unit – I	Introduction to Python: Installing Python, basic syntax, interactive shell, editing saving and running a script; The concept of data types, variables, assignments; immutable variables; numerical types,	15

		operators and expressions; comments in the program, understanding error messages	
2.	Unit – II	Creating Python Programs: - Input and Output Statements, Control Statements (Branching, Looping, Conditional Statement, Exit function, Difference between break, continue and pass). Function: Defining a function, calling a function, types of function, Function Arguments, Anonymous Functions, global and local variables, Recursion	15
3.	Unit – III	Strings and Text Files: - Manipulating files and directories, os and sys modules, text files: reading/writing text and numbers from/to a file, creating and deleting a formatted file (csv or tab-separated). String Manipulations: subscript operator, indexing, slicing a string; strings and number system: converting string to numbers and vice-versa, Binary, octal and hexadecimal numbers.	15
4.	Unit – IV	Lists, Tuples and Dictionaries: Basic list operators, replacing, inserting and removing an element, searching and sorting lists, Accessing tuples, traversing dictionaries. Data Structures using Lists: Elementary Data Representation-Linear List Array, Stacks, Queues, Linked Lists, and Trees.	15
5.	Unit – V	Modules: - Importing module, Math module, Random Module, packages, Composition, Exception Handling: Exception, Exception Handling, except clause, try, finally clause, User-Defined Exceptions.	15

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SUBJECT: RDBMS  
CLASS: PGDCA-II SEM

S.No.	Module (Unit)	Topic/Title	Lectures Allocated (In Days/Class)
1.	Unit – I	: Introduction To DBMS	12
2.	Unit – II	E-R Model	12
3.	Unit – III	Relational Model	12
4.	Unit – IV	Relational Database Design	12
5.	Unit – V	Structured Query Language : DDL and DML:	12

SUBJECT: RDBMS  
CLASS: PGDCA-II SEM

Signature of Professor S.No.	Module (Unit)	Topic/Title	Signature of HOD Lectures Allocated (In Days/Class)
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1.	Unit – I	: Introduction To DBMS	12
2.	Unit – II	E-R Model	12
3.	Unit – III	Relational Model	12
4.	Unit – IV	Relational Database Design	12
5.	Unit – V	Structured Query Language : DDL and DML:	12

SUBJECT: Numerical Analysis  
CLASS: M.Sc-II SEM

S.No.	Module (Unit)	Topic/Title	Lectures Allocated (In Days/Class)
1.	Unit – I	Solution of Polynomial and Transcendental Algebraic Equations	12
2.	Unit – II	Simultaneous Equations and Matrix	12
3.	Unit – III	Curve-Fitting from Observed Data	12
4.	Unit – IV	Numerical Differentiation and Integration	12
5.	Unit – V	Solution of Differential Equations	12



BHILAI MAHILA MAHAVIDYALAYA, HOSPITAL SECTOR, BHILAI  
DEPARTMENT OF COMPUTER SCIENCE

NAME OF THE PROFESSOR: Miss Renuka Gajpal  
Designation: Guest Lecturer  
SESSION: 2022-23  
SUBJECT: COMPUTER NETWORKING  
CLASS: BCA-II YEAR

S.No.	Module (Unit)	Topic/Title	Lectures Allocated (In Days/Class)
1.	Unit – I	Introduction to Computer Networking, Protocols and Standards, Topology ,Categories of Network	15

2.	Unit – II	The OSI Model TCP/IP reference model, comparison of TCP/IP & OSI, Novell Netware, Arpanet, NSFNET.	15
3.	Unit – III	Transmission of Digital Data ,DTE-DCE.	15
4.	Unit – IV	Introduction to Internet Technology - Introduction to CGI Scripting.	15
5.	Unit – V	Scripting Language for Web Design, Cascading Style Sheets & Web Server	15

SUBJECT: OPERATING SYSTEM  
CLASS: M.Sc-I SEM

S.No	Module (Unit)	Topic/Title	Lectures Allocated (In Days/Class)
1.	Unit – I	Introduction	15
2.	Unit – II	Advanced Processor Management Features	15
3.	Unit – III	Advanced Memory Management	15
4.	Unit – IV	Advanced Device Management Feature	15
5.	Unit – V	Advanced File Management Features	15

SUBJECT: Paper I: Programming in Java  
CLASS: M.Sc-III SEM

S.No	Module (Unit)	Topic/Title	Lectures Allocated (In Days/Class)
1.	Unit – I	Introduction: History and features of Java, Difference between C, C++ & JAVA. JAVA and Internet, WWW, Web Browsers, java supports system, Java Environment. JDK, JVM, Byte code Java Programming Basics: Structure of Java program, JAVA tokens and Statements, Constants & Variables, Data types, Operators,	15
2.	Unit – II	Inheritances: Specifying sub class, types of inheritance, visibility control: public, private, protected, package. super keyword, Overriding methods, Dynamic method dispatch, Abstract methods and classes, final methods & classes, Packages & Interfaces : Introduction to packages, naming conventions, package statement, creating packages, import statement, accessing package, use of CLASSPATH, adding class to package, Multithreading: Creation threads, Extending Thread class, implements Runnable interface, stopping and blocking thread, Thread life cycle, thread priorities & Thread synchronization, using Thread methods	15
3.	Unit – III	Exception Handling: Managing errors, types of errors, exceptions, syntax of exception handling code. try, catch, throw, throws and finally statements, multiple catch & nested try statements. Java	15

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		Input Output: Java I/O package, Byte/Character Stream, Buffered reader / writer, File reader / writer, File Sequential / Random. Reading numeric, character & strings data from keyboard. Applet programming: Applet Vs. Application, Creating applets, life cycle, local & remote applets.	
4.	Unit – IV	Abstract Windows Toolkit (AWT): Components and Graphics, Containers, Frames and Panels, Layout Managers, Border layout, Flow layout, Grid layout, Card layout, AWT components. Event delegation Model, Event source and handler JDBC: Java database connectivity, Types of JDBC drivers, Writing JDBC applications, Types of statement objects	15
5.	Unit – V	Networking with Java : Networking basics, Sockets, port., Internet addressing, java.net – networking classes and interfaces, Implementing TCP/IP based Server and Client Servlets: Introduction Servlet API Overview, Writing and running Simple Servlet, Servlet Life cycle, Generic Servlet, HTTPServlet, ServletConfig, ServletContext, Writing Servlet to handle Get and Post methods	15

SUBJECT: Paper- IV Software engineering  
CLASS: BCA. III

S.No	Module (Unit)	Topic/Title	Lectures Allocated (In Days/Class)
1.	Unit – I	Software Analysis: Abstraction;	15
2.	Unit – II	System design: Idealised and constrained design; process oriented design Object oriented design (Booch approach); Cohesion and coupling; Design metrics; design documentation standards	15
3.	Unit – III	Role of Case Tools: Coding and Programming	15
4.	Unit – IV	Software Quality and Testing	15
5.	Unit – V	Software Project Management	15

SUBJECT: COMPUTER FUNDAMENTAL(102)  
CLASS: BCA. I

S.No	Module (Unit)	Topic/Title	Lectures Allocated (In Days/Class)
1.	Unit – I	Introduction Of Computers	15
2.	Unit – II	Computer Peripherals: Computer Input And Output Device	15

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3.	Unit – III	Basic Components And Storage: Central Processing Unit, Storage Unit	15
4.	Unit – IV	Computer Software And Language System Software, Application Software , Computer Language	15
5.	Unit – V	Introduction To Ms Dos And Windows	15

**SUBJECT:** COMPUTER SOFTWARE  
**CLASS:** B.Sc. Part- III

S.No	Module (Unit)	Topic/Title	Lectures Allocated (In Days/Class)
1.	Unit – I	CONCEPT OF D.B.M.S. AND DATA MODELS: (a) Introduction to DBMS (b) E-R Model	15
2.	Unit – IV	G.U.I. PROGRAMMING: Introduction to Visual Basic : Event Driven Programming, IDE, Introduction to Object, Controlling Objects, Models and Events, Working with Forms, MDI Form Working with standardControls.	15

**SUBJECT:** COMPUTER SOFTWARE  
**CLASS:** B.Sc. Part- II(0856)

S.No	Module (Unit)	Topic/Title	Lectures Allocated (In Days/Class)
1.	Unit – I	HTML BASICS & WEB SITE DESIGN PRINCIPLES: Concept of a Web Site, Web Standards, What is HTML?, Structure of the homepage ,HTML Tags, XHTML, CSS, Extensible Markup Language (XML),Extensible Style sheet language (XSL)	15
2.	Unit – IV	OBJECT CLASSES AND INHERITANCE: Object and Class, class constructor, class destructors, struct and classes , Friend function, Friend class, operatoroverloading. Type of inheritance, Base class, Derive class. Access Specifier:protected. Function Overriding, member function, String.	15

Signature of Lecturer

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**SUBJECT:** Signature of Professor  
**CLASS:**

ESSENTIALS OF E –COMMERCE & HTML  
PGDCA-II SEM  
Signature of HOD

S.No.	Module (Unit)	Topic/Title	Lectures Allocated (In Days/Class)
1.	Unit – I	Introduction to Electronic Commerce	12
2.	Unit – II	Internet, Security and E-Commerce	12
3.	Unit – III	HTML Basics & Web Site Design Principles	12
4.	Unit – IV	Image, Internal and External Linking between Web Pages	12
5.	Unit – V	Creating Business Websites with Dynamic Web Pages	12

Signature of Professor

Signature of HOD



BHILAI MAHILA MAHAVIDYALAYA, HOSPITAL SECTOR, BHILAI

DEPARTMENT OF HOME SCIENCE

NAME OF THE PROFESSOR: Dr. Sunita G Rao

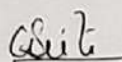
SESSION: 2022-2023

SUBJECT: Intro to Res. Mgt., Tex & fibre Sci, Foundation of Art and Design

CLASS: B.Sc. Part -1,2, 3

S.No.	Module (Unit)	Topic/Title	Lectures Allocated(In Days/Class)
1. Part I	Unit – I	Introduction to Resource Management Definitions it's Types and Limitation.	12
	Unit – II	Factors Motivating Management	18
	Unit – III	Resource and Decision Making	20
	Unit – IV	Management Process	17
	Unit – V	Management of Time and Energy, Work Simplification	13
2. Part II	Unit – I	Principles of laundry and its methods, Equip. for washing, Soap and detergent, Water.	18
	Unit – II	Washing of different kinds of fabrics, Bleach, Starch, Blue.	20
	Unit – III	Dry Cleaning, Stain removal, Disinfection, Care and Storage of fabrics, Consumer problems and protections.	17
	Unit – IV	Equipment and supplies used in clothing construction	13
	Unit – V	Sewing machine, Selection of fabric for dress according to Climate, Age, Personality, Fashion etc., Wardrobe Planning, Tailoring, Pattern	20
3. Part III	Unit – I	Intro. to foundation of art, Design, Definition, types, Elements & Principles of design	17
	Unit – II	Indian, regional, traditional and contemporary arts and their use, Appreciation of art.	13
	Unit – III	Family's Housing Needs, Factors influencing selection and purchase of site to house building, House planning.	20
	Unit – IV	Financial Considerations, Disability of owning versus renting.	15
	Unit – V	Furniture, Furnishing fabrics, Selection and use.	

Signature of Professor

  
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BHILAI MAHILA MAHAVIDYALAYA, HOSPITAL SECTOR, BHILAI

DEPARTMENT OF HOME SCIENCE

NAME OF THE PROFESSOR: Dr. Sunita G Rao

SESSION: 2022-23

SUBJECT: Res. Methodology, Textile designing, Dyeing &amp; Printing

CLASS: M.Sc. Sem. -1,2

S.No.	Module (Unit)	Topic/Title	Lectures Allocated(In Days/Class)
1. SEM I (HD And T&C)	Unit – I	Science, scientific methods, scientific approach.	18
	Unit – II	Definition and identification of research problem, Fact, Theory and concept, Hypothesis, Types of variables.	17
	Unit – III	Basic principles of research design, Data gathering instrument.	16
	Unit – IV	Theory of probability, Sampling & its types.	14
	Unit – V	Classification and tabulation of data.	20
2. SEM I T&C	Unit – I	Elements used in creating a design.	17
	Unit – II	Design analysis.	19
	Unit – III	Components of fashion.	16
	Unit – IV	Motif development, Big and small motifs, Colour consideration, Creation of patterns and designs Combining motifs	14
	Unit – V	Preparation of fabric for dyeing and printing.	20
3. SEM II T&C	Unit – I	Dyes Classification.	19
	Unit – II	Dyeing with: natural dyes, Use of pigments.	16
	Unit – III	Textiles design through dyeing, Tie and dye.	14
	Unit – IV	Introduction to printing, Screens used at cottage and industrial level.	20
	Unit – V	Printing paste, Styles of Printing.	22

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2022-23



BHILAI MAHILA MAHAVIDYALAYA, HOSPITAL SECTOR, BHILAI

DEPARTMENT OF Home - Science


NAME OF THE PROFESSOR: Mrs. Jyoti bala Choubey

SESSION: 2022-2023

SUBJECT: Management and project planning, Methods of studying H.D. Persons with disabilities.

CLASS: M.Sc. II Sem and IV Sem Human development.

S.NO.	MODULE (UNIT)	TOPIC	LECTURES ALLOCATED (in Days/Class)
7	Management-Project-Planning P-6 - II sem.	I - Management	08
		II - Programme for children	08
		III - Maternal and child nutrition	08
		IV - Planning	08
		V - project identification	12
8	Methods of studying H.D. P-6 - IV	I - Different - method of study	12
		II observation method	08
		III interview method	12
		IV Questionnaire method.	08
		V Case study method.	16
9	Persons with disabilities P-6 - IV	I Approaches to disabilities.	12
		II Sensory handicapped	08
		III Intellectual handicapped.	12
		IV Normality and disability	08
		V Physical and social barrier	08

  
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2022-23



BHILAI MAHILA MAHAVIDYALAYA, HOSPITAL SECTOR, BHILAI

DEPARTMENT OF Home-Science

NAME OF THE PROFESSOR: Mrs. Jyoti bala choubey

SESSION: 2022-2023

SUBJECT: B- Early childhood edu, Current trends, Psychopathology, Human Right, Early-Childhood education

CLASS: M.Sc.Sem.I, M.Sc.III sem Humandev, B.Sc.III, BA-1

B.A-1 - Psychopathology

Subject Mod.	S.NO.	MODULE (UNIT)	TOPIC	LECTURES ALLOCATED (in Days/Class)
1	E.C.E. P.G.	I Sem. P.G.	I Principles of ECE.	10
			II Historical overview	10
			III Organization of Pre-school centres	10
			IV Programme planning	10
			V Music and maths for ECE	06
2	Current trends P.G.	I sem. P.G.	I Trends and issues.	16
			II Children in difficult conditions	24
			III Trends- life span development-	14
			IV Development of self.	05
			V Self and lifespan.	05
3	Psychopathology P.G.III	III sem - P.G.	I Concept of normality	12
			II Adaptation of stress	23
			III Mental health, Psy. disorders.	10
			IV Obsessive compulsive disorders.	11
			V Psychotic disorders.	10
4	Child and Human Rights	III Sem - P.G.	I Evolution of rights	10
			II Status of Women, Their rights.	10
			III Status- difficult circumstances	15
			IV Types of violation	16
			V Human rights - Advocacy.	15
5	Early childhood education	UG. Part III -	I Significance and objectives	12
			II Scope of ECE to ECCE	28
			III Curriculum development-	18
			IV Language development-	06
			V Environmental Studies	05
6	Psychopathology UG. I	BA I -	I Concept and models of Psychopathology	12
			II Assessment-techniques	06
			III Anxiety disorders.	12
			IV Mood disorders.	16
			V Management of Psychopathology	16

Signature of Professor Jyoti Bala Choubey

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Total Pages = 02

(1)

Sheet No. 1



BHILAI MAHILA MAHAVIDYALAYA, HOSPITAL SECTOR, BHILAI

DEPARTMENT OF Home - Science

NAME OF THE PROFESSOR: Dr. Swarna Jata Verma

SESSION: 2022-2023

SUBJECT: Extension Education - Gr. III Paper B

CLASS: B.Sc. Part - III

S.NO.	MODULE (UNIT)	TOPIC	LECTURES ALLOCATED (in Days/Class)
1.	unit - I	a) Meaning of Extension education, its Process Envt. for learning... b) Communication Process	36
2.	unit - II	a) concept of adult and formal Education b) Five year plans...	33
3.	unit - III	National Food Prod. Prog Poverty alleviation...	36
4.	unit - IV	a) Prog. to enhance food Production - a - b) Role of NGO'S	34
5.	unit - V	Advertisement - - - out door - Indoor - Exhibition - Trade sugar	36

Swarna

Signature of Professor

Signature of HOD,



Sheet No (2)

Session, 2022 - 23

Answers

MSc. H.D - I<sup>st</sup> sem  
III



BHILAI MAHILA MAHAVIDYALAYA, HOSPITAL SECTOR, BHILAI

DEPARTMENT OF Home - Science

NAME OF THE PROFESSOR: Dr. Swarnlata Verma

SESSION: 2022-23

SUBJECT: Theories of Human - Dev - [2022 - 23]

CLASS: MSc. [Hsc] - H.D - 1<sup>st</sup> sem / 2 | 3<sup>rd</sup> sem

S NO.	MODULE (UNIT)	TOPIC	ALLOTTED	Total	
1.	unit - I	Introducing Theories - - - -	18	(91)	
2.	unit - II	Freud, Maslow, Sullivan etc Learning Theories - - - -	15		
3.	unit - III	Theories of self etc. - - - -	20		
4.	unit - IV	cognitive & motivational - - - -	18		
5.	unit - V	Personality Theories - - - -	19		
Subject - PARENTING IN ECE : - MSc [H.D] - II					
1.	unit - I	Science Experience - - - -	16	(88)	
2.	II	creativity - - - -	19		
3.	III	parenting skills - - - -	18		
4.	IV	Interaction - - - -	19		
5.	V	Techniques of Parenting - - - -	16		
Subject - PRINCIPLES OF GUIDANCE AND					DTTEs
1.	unit - I	Defining Guidance - - - -	20	(91)	
2.	II	Principles - - - -	16		
3.	III	Psychological disorders - - - -	19		
4.	IV	Basic - AID/HIV - - - -	18		
5.	V	Counselling Patients - - - -	18		
Subject - Advanced study in H.D - MSc. [H.D]					
1.	unit - I	Defining Growth - - - -	18	(89)	
2.	II	Neonate - - - -	19		
3.	III	Early lang - - - -	17		
4.	IV	middle childhood - - - -	18		
5.	V	Adulthood - - - -	16		

Signature of Professor  
Dr. Swarnlata Verma.  
A.P [Hsc].

Signature of HOD

Teaching Plan - ~~Context~~ - (1)

Dr. Rupam A. Yadav

BHILAI MAHILA MAHAVIDYALAYA, HOSPITAL SECTOR, BHILAI

DEPARTMENT OF HOME SCIENCE

SESSION 2022-2023

NAME OF THE PROFESSOR : Dr. (Mrs.) RUPAM AJEET YADAV

CLASS : B. Sc. ( H. Sc.) Part I

SUBJECT : BASIC NUTRITION

S. No.	Module (Unit)	Topic	Lecture Allotted (in Days/Class)
1.	I	Nutrition, Health, functions of food, terminology in food preparation	18
2.	II	Macronutrients-water, carbohydrate, fat, protein, fibre	16
3.	III	Calcium Iron, Mg, Zn, Fluorine, Iodine, Copper, Manganese, Fat soluble Vitamins, Water soluble vitamins, other vitamins	20
4.	IV	Cereals, millets, pulses, fruits, vegetable, milk & milk products.	17
5.	V	Methods of cooking, fermentation, supplementation, substitution, Enrichment and fortification.	15

BHILAI MAHILA MAHAVIDYALAYA, HOSPITAL SECTOR, BHILAI

DEPARTMENT OF HOME SCIENCE

SESSION : 2022-2023

NAME OF THE PROFESSOR : Dr. (Mrs.) RUPAM AJEET YADAV

CLASS : B. Sc. ( H. Sc.) Part I

SUBJECT : INTRODUCTION TO HUMAN DEVELOPMENT

S. No.	Module (Unit)	Topic	Lecture Allotted (in Days/Class)
1.	I	Human development preschool centre, day care centre, hobby centre ICDS, family welfare programme, children with special needs, growth & development, heredity-environment	18
2.	II	Beginning of a new life physical, motor development	17
3.	III	Cognitive development and language development	18
4.	IV	Social emotional and personality development	16

Rupam

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BHILAI MAHILA MAHAVIDYALAYA, HOSPITAL SECTOR, BHILAI

DEPARTMENT OF HOME SCIENCE

SESSION - 2022-2023

NAME OF THE PROFESSOR : Dr. (Mrs.) RUPAM AJEET YADAV

CLASS : B.Sc. (H.Sc.) Part II

SUBJECT : LIFE SPAN DEVELOPMENT

S No	Module (Unit)	Topic	Lecture Allotted (in Days/Class)
1	I	Life span development prenatal development infancy childhood, all developments, play, pre School education	18
2	II	Adolescence, physical development, identify, emotional problems	16
3	III	Adulthood early, middle & late adulthood menopause Retirement, late adulthood, old age homes	16
4	IV	different development from infancy to toddlerhood	14
5	V	creativity and art activities, blocks, printing etc.	15

BHILAI MAHILA MAHAVIDYALAYA, HOSPITAL SECTOR, BHILAI

DEPARTMENT OF HOME SCIENCE

SESSION : 2022 - 2023

NAME OF THE PROFESSOR : Dr. (Mrs.) RUPAM AJEET YADAV

SUBJECT - CLINICAL - NUTRITION

S No	Module (Unit)	Topic	Lecture Allotted (in Days/Class)
1	I	Health, Nutrition, Energy requirement, Nutritionally adequate diet, Meal planning	18
2	II	Nutrition through the Life cycle, Adulthood, pregnancy, Lactation, Infancy, Preschool, Adolescence, Old age	16
3	III	Principles of Diet therapy, Modification of Normal diet, Underweight, obesity, Anaemia, Typhoid	16
4	IV	G.I.T. disorder, Liver disorder and musculoskeletal disease	16
5	V	Diabetes, Cardiovascular disease, Renal disease	15

Rupam  
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(H.Sc.)

BHILAI MAHILA MAHAVIDYALAYA, HOSPITAL SECTOR, BHILAI

DEPARTMENT OF HOME SCIENCE

SESSION : 2022-2023

NAME OF THE PROFESSOR : Dr. (Mrs.) RUPAM AJEET YADAV

CLASS : B. Sc. (H. Sc.) Part III

SUBJECT : FOOD PRESERVATION

S. No.	Module (Unit)	Topic	Lecture Allotted (In Days/Class)
1.	I	Food and its preservation principles, causes of Food spoilage	15
2.	II	Storage principles and method, canning, Nutritive value	16
3.	III	Drying, Dehydration, Pasteurization	16
4.	IV	Refrigeration, Freezing, Pickling and fermentation, small scale/ Cottage Industry	16
5.	V	Chemical preservation, Crystallized, glazed fruits, Food processing	15

SIGNATURE OF THE PROFESSOR

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BHILAI MAHILA MAHAVIDYALAYA, HOSPITAL SECTOR, BHILAI

DEPARTMENT OF Home - science

NAME OF THE PROFESSOR: Dr. P. Chandralekar

SESSION: 2022-2023

SUBJECT: Consumer Economics, Communication Process, Apparel Making & Fashion Designing

CLASS BSc(HSC) part II, & III

S.NO.	MODULE (UNIT)	TOPIC	LECTURES ALLOCATED (in Days/Class)
1.	Consumer Economics	I Definition of consumer, Rights Buying Habits	11
		II Personal income, saving & investment	12
		III Consumer in Market Buying process	10
		IV consumer protective services	11
		V Decision making, consumer Aids.	12
2.	Communication Process	I Concept, meaning, purpose	12
		II Communication process	11
		III Methods of communication to reach individual	10
		IV Role play Radio, newspapers	11
		V Media for development of communication.	12
3.	Apparel Making & Fashion Designing	I Anatomy, Normal, Abnormal Body.	11
		II Figure Head Theories. Element of Design	11
		III Colour, Fashion, neckline	10
		IV Tucks, pleat, seam, frills	12
		V Traditional Embroidery of India, Entrepreneurship	11

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BHILAI MAHILA MAHAVIDYALAYA, HOSPITAL SECTOR, BHILAI

DEPARTMENT OF Home-science

NAME OF THE PROFESSOR: Dr. P. Chandrabar

SESSION: 2022-2023

SUBJECT: Home science - Extension Education, Fibre & Textile science

CLASS: B.A part I & II

S.NO.	MODULE (UNIT)	TOPIC	LECTURES ALLOCATED (in Days/Class)
1.	Extension Education	I Home-science, goals, principal & methods of HSE	11
		II Community Develop problems	12
		III Teaching methods & Aids	12
		IV Attitude towards Home science	10
		V Curriculum planning in Home science	11
2.	Fibre & Textile science	I Introduction of Fibre, classification, properties	12
		II Basic finishes, colours	10
		III Printing, Methods, Tie & Dye	12
		IV cleaning - water, soap, starch, Blue	10
		V Clothing & personality, Drafting, Seam, Darts, Tucks	12

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BHILAI MAHILA MAHAVIDYALAYA, HOSPITAL SECTOR, BHILAI

DEPARTMENT OF Home-Science

NAME OF THE PROFESSOR: Dr. P. Chandrakar

SESSION: 2022-2023

SUBJECT: Textile & clothing, Community Development, Personal Empowerment

CLASS: Bsc(Hsc) part I

S.NO.	MODULE (UNIT)	TOPIC	LECTURES ALLOCATED (in Days/Class)
1.	Textile & Clothing	I - classification of Textile fibre	12
		II study of yarn	11
		III Finishes	12
		IV Dyes & its Methods	11
		V Printing	10
2.	Community Development	I Community Develop. Goals & Issues	12
		II Support structure	12
		III Social stratification, organization	11
		IV Poverty, Religion & culture	11
		V Gender Analysis, methods of Socio economic Analysis	12
3.	Personal Empowerment & Comp. Basic	I Personal Growth & personality	11
		II Empowerment of women	12
		III Home science education as Empowerment	11
		IV Gender issues, Healthy Habits	12
		V <del>Comp. Basic</del>	

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BHILAI MAHILA MAHAVIDYALAYA, HOSPITAL SECTOR, BHILAI

DEPARTMENT OF Home Science

NAME OF THE PROFESSOR: Dr. Sarita Nitin Joshi

SESSION: 2022-2023

SUBJECT: II<sup>nd</sup> Quality Control in Text, Fashion Illustration, IV<sup>th</sup> Knitting Technology & Apparel & its Social - Fashion Merchandising.

CLASS:

S.NO.	MODULE (UNIT)	TOPIC	LECTURES ALLOCATED (in Days/Class)
I <sup>st</sup> sem 1 Quality Control in Textiles	Unit I	Dyeing & Printing	15
	Unit II	Textile Finishing	16
	Unit III	Introduction to Testing	20
	Unit IV	Properties - Fibres, Yarns	16
	Unit V	Fabrics, strength, fabric faults	15
2 Fashion Illustration	Unit I	Garments - Necklines, collars	15
	Unit II	Lacing, blouses, Jackets	16
	Unit III	Sketching Accessories	14
	Unit IV	Basic Rendering Techniques	15
	Unit V	Theme Rendering	16
IV <sup>th</sup> sem Knitting Tech & Draping	Unit I	Woven sequence	15
	Unit II	Principles of colour	16
	Unit III	Introduction to Draping	17
	Unit IV	Development of Pattern	18
	Unit V	Draping of Various dresses	15
Apparel & its Social Psychological Aspects	Unit I	Capes Hoods -	14
	Unit II	Clothing for people	15
	Unit III	Evaluating the quality of Apparel	14
	Unit IV	Origin of clothing	16
	Unit V	The study of Dress	15
Fashion Merchandising	Unit I	Market Segmentation	16
	Unit II	Product, Brand	15
	Unit III	Promotion & Distribution	17
	Unit IV	Designing of Retail outlets	18
	Unit V	Domestic vs. Export Market	20

*Sarita Joshi*

Signature of Professor

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BHILAI MAHILA MAHAVIDYALAYA, HOSPITAL SECTOR, BHILAI

DEPARTMENT OF Home Science

NAME OF THE PROFESSOR: Dr. Sarita Nitin Jashi

SESSION: 2022 - 20 23

SUBJECT: I-Textile Chemistry, Fashion Retailing III<sup>rd</sup> sem-

CLASS: M.Sc (H.Sc) I<sup>st</sup> & III<sup>rd</sup> sem Tex & clo

Fabric Construction  
Apparel Design  
Textile Industry

S.NO.	MODULE (UNIT)	TOPIC	LECTURES ALLOCATED (in Days/Class)
1 I <sup>st</sup> sem Textile Chemistry	Unit I	Introduction, Polymer Chemistry	15
	Unit II	Orientation, Crystallinity	16
	Unit III	Protein fibers - wool, silk	16
	Unit IV	Synthetic fibers	20
	Unit V	Blends & Other fibers	12
2 Fashion Retailing	Unit I	The Dynamics of Fashion	14
	Unit II	Concept of Retailing	15
	Unit III	Elements of principles of design	15
	Unit IV	Sketching of Crocky & Stock	18
	Unit V	Visual Merchandising	14
3 III <sup>rd</sup> sem Fabric Construction	Unit I	Modern Developments in yarns	15
	Unit II	Texturisation, yarns	15
	Unit III	Fabric Manufacturing	18
	Unit IV	Knitting, Non woven	12
	Unit V	Technical Textiles	13
4 Apparel Design	Unit I	Industrial Machines	15
	Unit II	Emblishment, Needles etc	16
	Unit III	Pattern Making	18
	Unit IV	Layouts Paper patterns	15
5 Textile Industry	Unit V	Readymade garments, fitting	12
	Unit I	Business Environment	14
	Unit II	Importance of Text Industry	15
	Unit III	National Textile Policy	16
	Unit IV	Marketing Merchandising	15
Unit V	SWOT, business buying -	13	

Sarita

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3-Syllabus-Over All

4-Academic Calendar



BHILAI MAHILA MAHAVIDYALAYA, HOSPITAL SECTOR, BHILAI

DEPARTMENT OF PHYSICS

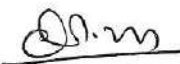
NAME OF THE PROFESSOR: Mrs. P.C.Claudius

SESSION: 2022 - 2023

SUBJECT: PHYSICS

CLASS: M.Sc -Semster-3

S.NO.	MODULE (UNIT)	TOPIC	LECTURES ALLOCATED (in Days/Class)
1	Paper 4-Unit 1	Klystron, Magnetron & TWT.	4 Periods
2	Paper-4 Unit -2	Microwave Wave Guide & Components.	6 Periods
3	Paper-4 Unit -3	Microwave Cavities & TEDs	8 Periods
4	Paper-4 Unit-4	Radar System	6 Periods
5	Paper-4 Unit-5	Satellite Communication	6 Periods

  
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BHILAI MAHILA MAHAVIDYALAYA, HOSPITAL SECTOR, BHILAI

DEPARTMENT OF PHYSICS

NAME OF THE PROFESSOR: Mrs. P.C.Claudius

SESSION: 2022 - 2023

SUBJECT: PHYSICS

CLASS: M.Sc -Semster-4

S.NO.	MODULE (UNIT)	TOPIC	LECTURES ALLOCATED (in Days/Class)
1	Paper 4-Unit 1	Laser Characteristics	6 Periods
2	Paper-4 Unit -2	Laser system	6 Periods
3	Paper-4 Unit -3	Advance in Laser Physics	6 Periods
4	Paper-4 Unit -4	Multi Photon Process & Laser Spectroscopy	6 Periods
5	Paper-4 Unit -5	Laser Applications & Communication by Laser.	6 Periods

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BHILAI MAHILA MAHAVIDYALAYA, HOSPITAL SECTOR, BHILAI

DEPARTMENT OF PHYSICS

NAME OF THE PROFESSOR: Mrs. P.C.Claudius

SESSION: 2022 - 2023

SUBJECT: PHYSICS

CLASS: M.Sc. Semester -1

S.NO.	MODULE (UNIT)	TOPIC	LECTURES ALLOCATED (in Days/Class)
1	Paper 2-Unit-1	Newtonian Mechanics & Lagrangian Formulation.	16 Periods
2	Paper-2 Unit -2	Hamiltonian Formulation.	16 Periods
3	Paper-2 Unit-3	Canonical Transformation - HJ Theory.	16 Periods
4	Paper-2 Unit-4	Central Force , Kepler's Problem	16 Periods
5	Paper-2 Unit-5	Rigid Body Dynamics	16 Periods

Mrs HOD



BHILAI MAHILA MAHAVIDYALAYA, HOSPITAL SECTOR, BHILAI

DEPARTMENT OF PHYSICS

NAME OF THE PROFESSOR: Mrs. P.C.Claudius

SESSION: 2022 - 2023

SUBJECT: PHYSICS

CLASS: M.Sc. - Semester-2

S.NO.	MODULE (UNIT)	TOPIC	LECTURES ALLOCATED (in Days/Class)
1	Paper 2-Unit-1	Foundation of statistical Mechanics	9 Periods
2	Paper-1 Unit -5	Statistical Mechanics of Interacting System	10 Periods

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(2) . BHILAI MAHILA MAHAVIDYALAYA, HOSPITAL SECTOR, BHILAI

DEPARTMENT OF PHYSICS

NAME OF THE PROFESSOR: Mrs. P.C.Claudius

SESSION: 2022 - 2023

SUBJECT: PHYSICS

CLASS: B.Sc.-part-II (M+C.Sc.)

S.NO.	MODULE (UNIT)	TOPIC	LECTURES ALLOCATED (in Days/Class)
1	Paper 1-Unit 1	Laws of Thermodynamics	10 Periods
2	Paper-1 Unit -2	Thermodynamic Relationship & Black Body Radiation	16 Periods
3	Paper-1 Unit -3	Maxwell's Distribution of Speed & Velocity, Transport Phenomena & Liquefaction of Gases	22 Periods
4	Paper-1 Unit-4	Statistical Basis of Thermodynamics	16 Periods
5	Paper-1 Unit -5	Quantum Statistics	16 Periods

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HOD



BHILAI MAHILA MAHAVIDYALAYA, HOSPITAL SECTOR, BHILAI

DEPARTMENT OF PHYSICS

NAME OF THE PROFESSOR: Ms. Nandita Khanra

SESSION: 2022 - 2023

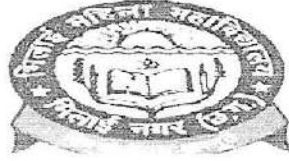
SUBJECT: PHYSICS

CLASS: B.Sc. part-I

S.NO.	MODULE (UNIT)	TOPIC	LECTURES ALLOCATED (in Days/Class)
1	Paper-2 Unit-1	Mathematical Background	3 Periods
2	Paper 2-Unit-2	Electrostatics	8 Periods
3	Paper-2 Unit-3	Dielectrics, Steady & Alternating current	6 Periods
4	Paper-2 Unit -4	Magnetostatics	16 Periods
5	Paper-2 Unit-5	Time varying Fields & Electromagnetic Waves	5 Periods

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BHILAI MAHILA MAHAVIDYALAYA, HOSPITAL SECTOR, BHILAI

DEPARTMENT OF PHYSICS

NAME OF THE PROFESSOR: Ms. Nandita Khanra

SESSION: 2022 - 2023

SUBJECT: PHYSICS

CLASS: B.Sc.- Part- II

S.NO.	MODULE (UNIT)	TOPIC	LECTURES ALLOCATED (in Days/Class)
1	Paper-2 Unit -3	Interference	10 Periods
2	Paper-2 Unit -4	Diffraction	14 Periods

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BHILAI MAHILA MAHAVIDYALAYA, HOSPITAL SECTOR, BHILAI

DEPARTMENT OF PHYSICS

NAME OF THE PROFESSOR: Ms. Nandita Khanra

SESSION: 2022- 2023

SUBJECT: PHYSICS

CLASS: M.Sc -Semster-1

S.NO.	MODULE (UNIT)	TOPIC	LECTURES ALLOCATED (in Days/Class )
1	Paper 1-Unit-1	Vector space and matrices	9 Periods
2	Paper 1-Unit-2	Complex variables	10 Periods
3	Paper 1-Unit-3	Differential Equation	12 Periods
4	Paper-1 Unit -4	Special Functions	13 Periods
5	Paper-1 Unit-5	Integral Transform	16 Periods

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BHILAI MAHILA MAHAVIDYALAYA, HOSPITAL SECTOR, BHILAI

DEPARTMENT OF PHYSICS

NAME OF THE PROFESSOR: Ms. Nandita Khanra

SESSION: 2022 - 2023

SUBJECT: PHYSICS

CLASS: M.Sc -Semster-2

S.NO.	MODULE (UNIT)	TOPIC	LECTURES ALLOCATED (in Days/Class)
1	Paper-4 Unit-1	Linear & Non linear Algebraic Equations	12 Periods
2	Paper-4 Unit-2	Finite Differences	12 Periods
3	Paper-4 Unit-3	Numerical Solutions of Ordinary Differential Equations.	10 Periods
4	Paper-4 Unit-4	Elementary Information about Digital Computer	9 Periods
5	Paper-4 Unit-5	Basics of FORTRAN Programming.	10 Periods
6	Paper-2 Unit-2	Elements of ensemble theory	9 Periods

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BHILAI MAHILA MAHAVIDYALAYA, HOSPITAL SECTOR, BHILAI

DEPARTMENT OF PHYSICS

NAME OF THE PROFESSOR: Ms. Nandita Khanra

SESSION: 2022 - 2023

SUBJECT: PHYSICS

CLASS: M.ScSemster-3

S.NO.	MODULE (UNIT)	TOPIC	LECTURES ALLOCATED (in Days/Class)
1	Paper 3-Unit 1	Electrons in solids & Electronic Properties	16 Periods
2	Paper-3 Unit -2	Fermi surfaces & Metals.	16 Periods
3	Paper-3 Unit -3	Crystal Vibration & Thermal properties	16 Periods
4	Paper-3 Unit -4	Superconductivity	16 Periods
5	Paper-3 Unit -5	Semiconductor Crystals	16 Periods

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BHILAI MAHILA MAHAVIDYALAYA, HOSPITAL SECTOR, BHILAI  
DEPARTMENT OF PHYSICS

NAME OF THE PROFESSOR: Ms. Nandita Khanra

SESSION: 2022 - 2023

SUBJECT: PHYSICS

CLASS: M.Sc. Semester -4

S.NO.	MODULE (UNIT)	TOPIC	LECTURES ALLOCATED (in Days/Class)
1	Paper-3 Unit-1	Plasmons, Polaritons	11 Periods
2	Paper-3 Unit-2	Dielectrics & Ferroelectrics	10 Periods
3	Paper-3 Unit -3	Magnetism	12 Periods
4	Paper 3-Unit-4	Ferromagnetism & Antiferromagnetism	15 Periods
5	Paper-3 Unit-5	Optical Process & Excitons	16 Periods

*Ms*

HOD *Ms. N. Khanra*



BHILAI MAHILA MAHAVIDYALAYA, HOSPITAL SECTOR, BHILAI

DEPARTMENT OF PHYSICS


NAME OF THE PROFESSOR: DR. ARCHANA SHARAN

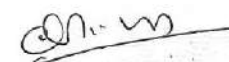
SESSION: 2022 - 2023

SUBJECT: PAPER-II

CLASS: M.Sc.- III SEM

S.NO.	MODULE (UNIT)	TOPIC	LECTURES ALLOCATED (in Days/Class)
1.	UNIT-1	Quantum states of one electron	12 lectures
2.	UNIT-2	Pauli's Principle for non equivalent electrons	10 lectures
3.	UNIT-3	Normal and Anomalous Zeeman Effect	16 lectures
4.	UNIT-4	Types of molecules	16 lectures
5.	UNIT-5	Vibrational spectra of diatomic molecules	12 lectures.

  
Signature of Professor

  
Signature of HOD



BHILAI MAHILA MAHAVIDYALAYA, HOSPITAL SECTOR, BHILAI

DEPARTMENT OF PHYSICS

NAME OF THE PROFESSOR: DR. ARCHANA SHARAN

SESSION: 2022 - 2023

SUBJECT: PAPER-1

CLASS: M.Sc.- IV SEM

S.NO.	MODULE (UNIT)	TOPIC	LECTURES ALLOCATED (in Days/Class)
1.	UNIT-1	Nuclear Interactions	15 lectures
2.	UNIT-2	Nuclear Reactions	11 lectures
3.	UNIT-3	Nuclear Decay	16 lectures
4.	UNIT-4	Nuclear Models	13 lectures
5.	UNIT-5	Elementary particle Physics	12 lectures.

Signature of Professor

Signature of HOD





BHILAI MAHILA MAHAVIDYALAYA, HOSPITAL SECTOR, BHILAI

DEPARTMENT OF PHYSICS

NAME OF THE PROFESSOR: DR. ARCHANA SHARAN

SESSION: 2022 - 2023

SUBJECT: PAPER-III & IV

CLASS: M.Sc. - II SEM

S.NO.	MODULE (UNIT)	TOPIC	LECTURES ALLOCATED (in Days/Class)
1.	UNIT-1	Special Bipolar Devices	13 lectures
2.	UNIT-2	Unipolar Devices	16 lectures
3.	UNIT-3	Special Microwave Devices	14 lectures
4.	UNIT-4	Photonic Devices	13 lectures
5.	UNIT-5	Optical Modulators and Display Devices	12 lectures.
6.	UNIT-4	Statistical Mechanics	10 lectures

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BHILAI MAHILA MAHAVIDYALAYA, HOSPITAL SECTOR, BHILAI

DEPARTMENT OF PHYSICS

NAME OF THE PROFESSOR: DR. ARCHANA SHARAN

SESSION: 2022 - 20 23

SUBJECT: PAPER-III

CLASS: M.Sc. -I Sem

S.NO.	MODULE (UNIT)	TOPIC	LECTURES ALLOCATED (in Days/Class)
1.	UNIT-1	Maxwell's Equation	15 lectures
2.	UNIT-2	Radiation by Moving Charges	16 lectures
3.	UNIT-3	Bremsstrahlung Radiation	14 lectures
4.	UNIT-4	Plasma	15 lectures
5.	UNIT-5	Elementary concepts of plasma kinetic energy	16 lectures

Signature of Professor

Signature of HOD



BHILAI MAHILA MAHAVIDYALAYA, HOSPITAL SECTOR, BHILAI

DEPARTMENT OF PHYSICS


NAME OF THE PROFESSOR: DR. ARCHANA SHARAN


SESSION: 2022 - 20 23

SUBJECT: PAPER-II

CLASS: B.Sc. -I I (M+CS)

S.NO.	MODULE (UNIT)	TOPIC	LECTURES ALLOCATED (in Days/Class)
1.	UNIT-1	Waves In Media	16 lectures
2.	UNIT-2	Fermats Principle	14 lectures
3.	UNIT-5	Laser System	16 lectures

  
Signature of Professor

  
Signature of HOD



BHILAI MAHILA MAHAVIDYALAYA, HOSPITAL SECTOR, BHILAI

DEPARTMENT OF PHYSICS

NAME OF THE PROFESSOR: DR. ARCHANA SHARAN

SESSION: 2022 - 2023

SUBJECT: PAPER-I

CLASS: B.Sc. - III (M+CS)

S.NO.	MODULE (UNIT)	TOPIC	LECTURES ALLOCATED (in Days/Class)
1.	UNIT-1	Relativity and Quantum Theory	16 lectures
2.	UNIT-2	Quantum Mechanics	16 lectures
3.	UNIT-3	Atomic Physics	16 lectures
4.	UNIT-4	Molecular Physics	16 lectures
5.	UNIT-5	Nuclear Physics	16 lectures.

Signature of Professor

Signature of HOD

**BHILAI MAHILA MAHAVIDYALAYA ,HOSPITAL  
SECTOR,BHILAI**

**DEPARTMENT OF EDUCATION**

**NAME OF THE PROFESSOR Dr Mohana Sushant Pandit**

**SESSION: 2022- 2023**

**CLASS B.Ed**

<b>Paper 1</b>	PHILOSOPHICAL PERSPECTIVES OF EDUCATION	EDUCATION ,NATURE &MEANING ITS OBJECTIVES AIMS IN RELATION TO THE TIME& PLACE *PHILOSOPHICAL SYSTEM A. REALISM WITH REFERENCE TO ARISTOTLE AND JAINISM B. NATURALISM WITH REFERENCE TO THE VIEW OF ROUSSWEAU AND RAVINDRA NATH TAIGOR C. IDEALISM WITH REFERENCE TO PLATO.SOCRETES AND ADVAITA PHILOSOPHY D. HUMANISM .HISTORICAL ,SCIENTIFIC AND BUDDHISTS. CONTEMPORARY THOUGHT - CRITICAL AND COMPARATIVE STUDY OF THE PERIOD AND SOCIO-POLITICAL PERSPECTIVES OF THE WESTERN AND INDIAN THINKERS ./ -CONTEMPRARY PHILOSOPHICAL
	LEARNER AND LEARNING PROCESS	NATURE OF PHYCHOLOGY AND LEARNERS . PSYCHOLOGY: ITS MEANING NATURE METHOD AND SCOPE ;FUNCTION OF EDUCATIONAL PSYCHOLOGY . - STAGE OF HUMAN DEVELOPMENT ;STAGE SPECIFIC CHARACTERSTICS AND DELOPMENTAL TASK. - ADOLECENCE IN INDIAN CONTEXT – CHARACTERISICS AND PROBLEM OF ADOLESCENT -THERE NEEDS AND

		ASPIRATIONS . -GUIDENCE AND COUNSELING FOR ADOLESCENTS. *STAGES OF HUMAN DEVELOPMENT ADOLESCENCE GUIDANCE & COUNSELLING .
	PEDAGOGY OF SOCIAL SCIENCE	SOCIAL SCIENCE AS AN INTERGRATING AREA OF STUDY :CONTEXT AND CONCERNS TEACHING –LEARNING RESOURCES IN SOCIAL SCIENCES SOCIAL SCIENCE CURRICULUM FOR SCHOOLS IN INDIA TEACHING- LEARNING OF GEOGRAPHY – SPACE, RESOURCES AND DEVELOPMENT TEACHING LEARNING OF ECONOMICS :STATE, MARKET ,AND DEVELOPMENT
	PEDAGOGY OF SOCIAL SCIENCE	TEACHING – LEARNING OF HISTORY TEACHING – LEARNING OF POLITICAL SCIENCE DEMOCRACY ,DEVELOPMENT ,AND DIVERSITY ASSESSMENT FOR LEARNING IN SCHOOL SCIENCES ANALYSIS OF SOCIAL SCIENCES TEXTBOOKS AND QUESTION PAPERS INTER-DISCIPLINARITY THROUGH PROJECTS AND FIELD VISIT
	ASSESSMENT IN LEARNING	OVERVIEW OF ASSESSMENT AND EVALUATION -PERSPECTIVES ON ASSESSMENT AND EVALUATION OF LEARNING IN A CONSTRUCTIVIST PARADIGM - DISTINCTION BETWEEN ASSESSMENT OF LEARNING AND ASSESSMENT FOR LEARNING - PURPOSE OF ASSESSMENT IN A CONSTRUCTIVIST PARADIGM ASSESSMENT OF SUBJECT BASED PAPER IV UNIT -IV 2 ND SEM SOCIOLOGICAL PERSPECTIVES OF EDUCATION UNIT I LEARNING - ENLARGING NOTIONS OF SUBJECT –BASED LEARNING IN CONSTRUCTIVIST PERSPECTIVE - ASSESSMENT TOOLS -KINDS OF



		TASK:PROJECT ASSINGMENT ,PERFORMANCES -KINDS OF TEST AND THEIR CONSTRUCTIONS
	EDUCATIONAL ADMINISTRATION &MANAGEMENT	CONCEPTUAL FRAMEWORK CONCEPT OF EDUCATIONAL ADMINISTRATION . UNIT-3 UNIT - 4 -CONCEPT OF EDUCATIONAL MANAGEMENT HUMAN BIENGS AS INPUTS ,PROCESS AND PRODUCTS INPUTS . -NATURE ,OBJECTIVES AND SCOPE OF EDUCATIONAL ADMINISTRTION - ROLE AND FUNCTIONS OF HEADMASTER TEACHER : BASIC FUNCTION ADMINISRATION PLANING,ORGANISING DIRECTING AND CONTROLLING. COMMUNICATION IN EDUCATIONAL ADMINISTRATION ROLE OF COMMUNICATION IN EFFECTIVE MANAGEMENT AND ADMINISTRATION -METHOFD OF COMMUNICATION MANAGEMENT OF SCHOOLS :ROLE OF HEADMASTER IN PLANNING OF SCHOOL ACTIVITIES APPROCHES SOCIAL
	4 TH SEM GENDER SCHOOL & SOCIETY	GENDER KEY CONCEPT –SOCIAL CONSRTION PF GENDER GENDER AND SCHOOLING GENDER AND SEXUUALITY PSYCHOLOGICAL AND UNIT V SOCIOLOGICAL PERSPECTIVES -RADICAL FEMINIST -SOCIALIST –FEMINIST -PSYCHOANALYTICAL AND OTHER PERSPECTIVES -RECENT DEBATES .



BHILAI MAHILA MAHAVIDYALAYA, HOSPITAL SECTOR, BHILAI

DEPARTMENT OF Education

NAME OF THE PROFESSOR: Ms.Hemalata Sidar

CLASS: B.Ed First Sem

S.NO.	MODULE (UNIT)	TOPIC	LECTURES ALLOCATED (in Days/Class )
1	Philosophical Perspective of Education	UNIT 1 <ul style="list-style-type: none"> <li>• Education Nature an Meaning its objectives/Aims in related to the and Place</li> <li>• Educational aims in the western context Russell &amp; Dewey</li> <li>• Indian Thinker Gandhi &amp; Tagore</li> <li>• Philosophy and Education</li> </ul> UNIT 2 <ul style="list-style-type: none"> <li>• Realism with reference to Aristotle and Jainism</li> <li>• Naturalism with reference to the view Rousseau and Rabindranath Tagore</li> <li>• Ideallism with reference to plato Socretes And Advaita philosophy</li> <li>• Pragmatism with reference to Dewey</li> <li>• Humanism and Buddhists</li> </ul> UNIT 3 <ul style="list-style-type: none"> <li>• M.KGandhi Basic Education</li> <li>• Giju Bhai</li> <li>• Swami vivekanad</li> <li>• Shri Aurobindo</li> <li>• J.Krishna Murthy</li> </ul> UNIT 4 <ul style="list-style-type: none"> <li>• J.J Rousseau</li> <li>• John Dewey</li> <li>• Antonio Gramsmic</li> <li>• Pawlo Friere</li> </ul>	
2	Pedagogy of Hindi Shikshan	1- 2- 3- 4- 5- 6- 7- 8-	1 2

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1	<p>Sociological perspective of Education</p> <p>Gender and Society</p> <p>Language Proficiency Hindi</p>	<p>UNIT 1</p> <ul style="list-style-type: none"> <li>Understanding diversity in Indian Society with Special reference to Chhattisgarh</li> </ul> <p>UNIT 2</p> <ul style="list-style-type: none"> <li>Sociological Concepts relating to Social Stratification</li> </ul> <p>UNIT 3</p> <ul style="list-style-type: none"> <li>Aim of Education &amp; Commission</li> </ul> <p>UNIT 4</p> <ul style="list-style-type: none"> <li>Democracy and Education</li> </ul> <p>UNIT 5</p> <ul style="list-style-type: none"> <li>The Current Concerns of Indian education</li> </ul> <p>UNIT 2</p> <p>Gender and Schooling</p> <p>1 -</p> <p>2 -</p> <p>3 -</p>	
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		<p>INDIAN THINKERS :-  *M.K GANDHI  GIJU BHAI  SWAMIVIVEKANAND  ARVINDO  J.KRISNAN MURTI</p>
	UNIT -3	<p>WESTERN THINKERS :-  J.J ROUSSEAU  JOHN DEWEY</p>
	UNIT -4	<p>MEANING NATURE METHOD  SCOPE &amp; FUNCTION OF  EDUCATIONAL PHILOSOPHY</p>
	UNIT -5	<p>*STAGES OF HUMAN  DEVLPOMENT  ADOLOSCENCE  GUIDANCE &amp;COUNSELLING .</p>
	PEDAGOGY OF LANGUAGE (ENGLISH ) UNIT -1	<p>ROLE OF LANGUAGE   *POSITION OF ENGLISH IN INDIA</p>
	UNIT -2	<p>*AN OVERVIEW OF LANGUAGE</p>
	UNIT -3	<p>*NATURE OF LANGUAGE</p>
	UNIT -4	<p>*ACQUISITION OF LANGUAGE SKILLS</p>
	UNIT-5	
	SOCIOLOGICAL PERSPECTIVES OF EDUCATION	<p>UNDERSTADNIN DIVERSITY IN INDIAN SOCITY WITH SPECIAL REFRENCE TO C.G.</p>

PAPER -3	UNIT -1  UNIT -2 UNIT-3  CURRICULAM AND KNOWLEDGE UNIT -3  PEDAGOGY OF LANGUAGE (ENGLISH )  UNIT 6 UNIT 7 UNIT 8 UNIT 9 UNIT 10	SOCIOLOGICAL CONCEPT RELATING TO SOCIAL STRAITIFICATION  AIMS OF EDUCATION & COMMISION DEMOCRACY & EDUCATION THE CURRENT CONCERS OF INDIAN THINKERS .  MORAL VALUES .  LANGUAGE ,LITERATURE AND AESTHETICS -1  LANGUAGE ,LITRETURE AND AESTHETICS -2  DEVELOPMENT AND ANALYSIS OF SYLLABUS &  TECTUAL MATERIALS  ASSESSEMENT –ITS ROLE AND IMPORTANCE .
PAPER -4	ASSESSMENT IN LEARNING UNIT -1  UNIT-2  UNIT -3	OVERVIEW OF ASSESSMENT AND EVALUATION  WHAT IS TO BE ASSESSED FEEDBACK .



**BHILAI MAHILA MAHAVIDYALAYA ,HOSPITAL  
SECTOR,BHILAI  
DEPARTMENT OF EDUCATION**

**NAME OF THE PROFESSOR Mrs Naazneen Baig**

**SESSION: 2022- 2023**

**CLASS B.Ed**

<b>Sem 1</b>	LEARNER AND LEARNIG PROCESS	<p>CONCEPT OF EXCEPTIONAL CHILDREN TYPES AND CHARACTERISTIC OF EACH TYPE INCLUDIND CHILDREN WITH LEARNINF DISABILITIES</p> <p>-INDIVIDUAL DIFFRENCE NATURE ,ACCOMMODATING INDIVIDUAL DIFFERENCES IN THE</p> <p>CLASSROOM ,LEARNER CENTERED TECHNIQUES FOR TEACHING EXCEPTIONAL CHILDREN.</p> <p>- PERSONALITY ;DEFINATION MEANING AND NATURE ,DEVLOPMENT OF PERSONALITY TYPE AND TRAIT THEORIES OF OF PERSONALITY .</p> <p>-GROUP DYNAMICS ,PSYCHOANALYSIS</p> <p>-MICRO TEACHING SKILLS</p>
	PHILOSOPHICAL PERSPECTIVES OF EDUCATION UNIT IV	<p>WESTERN THINKERS</p> <p>-JJROUSSEAU</p> <p>-ANTONIO GRAMSCI</p> <p>-PAULO FRIERE</p>
	<p>PEDAGOGY OF MATHAMATICS</p> <p>UNIT -I</p> <p>UNIT II</p> <p>UNIT III</p> <p>UNIT IV</p>	<p>NATURE AND SCOPE OF MATHAMATICS</p> <p>EXPLORING LEARENERS</p> <p>AIMS AND</p> <p>OBJECTIVES OF TEACHING SCHOOLS MATHEMATICS</p> <p>SCHOOLS MATHEMATICS CURRICULAM</p> <p>APPROACHES AND STRATIGIES IN TEACHING AND</p>

	UNIT-V	LEARNING OF MATHEMATICAL CONCEPTS
	CURRICULAM AND KNOWLEDGE	CURRICULAM AND PRODUCTIVE WORK .
	ELECTIVE GROUP (EDUCATIONAL AND MENTAL MEASUREMENT ) UNIT 1	<p>CONCEPT OF MEASUREMENT TESTING AND EVALUATION</p> <ul style="list-style-type: none"> <li>-SCALES OF MEASUREMENT NOMINAL ,ORDINAL ,INTERVAL AND RATIO SCALES</li> <li>-DISCRETE AND CONTINUES VARIABLES .</li> <li>- QUALITIES OF A TEXT REABLITIES .</li> </ul> <p>EDUCATIONAL STATISTICS MEASURES OF CENTRAL TENDENCY FROM GROUPED AND NON-GROUPED DATA</p> <ul style="list-style-type: none"> <li>-MEASURES OF VARIABILITY RANGE ,QUALITIES ,DEVIATION ,STANDARD DEVIATION ,</li> <li>-GRAFICAL REPRESENTATION OF DATA .</li> </ul> <p>TECHNIQUES OF TEST CONDUCT</p> <ul style="list-style-type: none"> <li>-IMPORTANCE OF ESTABLISHMENT OF REPORT WITH THE STUDENTS ,ARRANGING THE SEATS AND DISTRIBUTION OF QUESTION FOR MINIMUM PILAUAGE AND COPYING TECNIQUES FOR AVOIDINF QUESTINING IN ANSWERING OBJECTIVE SCORING .</li> </ul> <p>INTERPRETING MEASUREMENT NORMAL PROBABILITY CURVES ,SKEWNESS AND KURTOSIS</p> <ul style="list-style-type: none"> <li>-PERCENTIES AND PERSENTILE RANK</li> <li>-STANDARD SCORES</li> <li>-CO-EFFICIENT OF CRRELETION BY SPEARMANS METHOD AND ITS INTERPRETATION .</li> </ul> <p>-ACHIVEMENT TEST- CONSTRUCTION OF STANDRISED SCHIEVMENT TEST</p> <ul style="list-style-type: none"> <li>-TYPES OF TEXT ITEMS</li> <li>-MEASUREMENT OF INTELIGENCE CONCEPT OF INTELIGENCE BINET TEST ,CONCEPT OF I.Q</li> </ul>

		<ul style="list-style-type: none"> <li>-INDIVIDUAL AND GROUP TEST OF INTELIGENCE</li> <li>-APTITUDES AND PERSONALITY TEST USE OF A</li> <li>APPTITUDES TEST OVERVIEW</li> </ul>
	<p>ASSESSMENT IN LEARNING 3<sup>RD</sup> SEM</p>	<p>ASSESSMENTV OF SUBJECT BASED LEARNING</p> <ul style="list-style-type: none"> <li>-ENLARGING NOTIONS OF SUBJECT –BASED LEARNING ON A CONSRUTIVIST PERSPECTIVES</li> <li>-ASSESSMENT TOOLS</li> <li>-KINDS OF TASKS;PROJECTIVES ASSINGMENT ,PERFORMANCES</li> <li>-OBSERVATION OF LEARNING PROCESS BY SELF BY PEERS BY TEACHERS</li> <li>-SELF ASSESSMENT AND PEER ASSESSMENT</li> <li>-CONSTRUCTING PORTOTIES QUANTITATIVE AND QUALTITATIVE ASPECT OF ASSESSMENT APPROPRIATE TOOLS FOR EACH .</li> </ul>
	<p>PEDAGOGY OF MATHEMATICS PART II UNIT VI</p> <p>UNIT VII</p> <p>UNIT VIII</p> <p>UNIT IX</p>	<p>PLANNING FOR TEACHING –LEARNING MATHEMATICS</p> <p>LEARNING RESOURCES IN MATHEMATICS ASSESSMENT AND EVALUATION</p> <p>MATHEMATICS FOR ALL PROFESSIONAL</p> <p>ASSESSMENT –ITS ROLE AND IMPORTANCES</p>

BHILAI MAHILA MAHAVIDYALAYA, HOSPITAL SECTOR, BHILAI

DEPARTMENT OF Education 2022-2023

NAME OF THE PROFESSOR: Asha Arya

Paper: pedagogy of Biological Science

First Sem	Third Sem
<p>Unit 1.</p> <p>Science as a domain of enquiry dynamic body of knowledge and as a process of constructing knowledge Biology Science for environment and health peace equity History of biological Science.</p>	<p>Unit 1</p> <p>Planning for teaching learning of biological science identification and organisation of concept for teaching learning of biology instructional material beneficial garden zoo ICT laboratory</p>
<p>Unit2.</p> <p>Developing the scientific attitude and scientific temper nature the natural curiosity asymptotic sense and creativity in biology acquire the skill of understand a method and process that leads to Exploration solving problem of everyday life known the fact and principle of biology and its application consistent with the stage of cognitive development of learners</p>	<p>Unit 2</p> <p>learning resources in biological science science kit textbook audiovisual materials field visit observation collection of material</p>
<p>Unit 3</p> <p>exploring learner Motivational eating to bring his her previous knowledge in science biology again the classroom environment parents and peer group teacher's manual the habit of listening to child generating discuss involving in teacher learner process role of learner in catering and meditate learning in biology</p>	<p>Unit 3</p> <p>biological science lifelong learning discussion dramas to me the rising creativity science club science fair science exhibition visit to biological botanical garden</p>
<p>Unit 4</p> <p>school science curriculum biology science in science curriculum consider in developing learner centred curriculum in biology analysis of textbook and syllabus of NCERT and state UT of upper primary secondary and higher</p>	<p>Unit 4</p> <p>tools and techniques of assessment for learning biological science assessment of project work collaborating learning construction of desk item examination system</p>

<p>higher stage analysis of other and non print print material in the area of biological science used in various stage</p> <p>Unit 5</p> <p>Approach and strategy of learning biological science pedagogical shaped from science as fix of knowledge to process constructing knowledge specific method observation enquiry experimentation data collection generation communication in biological science problem solving investing concept mapping collaborating learning and tells earning in biological science facility learner for self study</p>	<p>Unit 5</p> <p>professional development of bio teacher professional development programme for science teacher as a research science centre</p> <ul style="list-style-type: none"> <li>• Micro Teaching: Black Board Skill</li> <li>• Lesson Plane</li> </ul>
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## First Sem

### Paper : Learner and Learning

#### Unit 4 Exceptional Children

- Concept of exceptional children: Types and characteristics of each type including Children with learning disabilities. - Individual differences: Nature; accommodating Individual differences in the classroom. Learner centered techniques for teaching exceptional children. - Personality: Definition, meaning and nature; development of personality; type and trait theories of personality. - Group Dynamics, Psycho-analysis

### Second Sem :

#### Paper : SOCIOLOGICAL PERSPECTIVES OF EDUCATION

Unit - II: Sociological Concepts Relating to Social Stratification Some key sociological concepts like life opportunities, discrimination, exclusion, stratification, etc. will be discussed to enable the student teachers to use them in different social contexts. - Life opportunities, class, status and power: frameworks of Marx and Max Weber. - Social discrimination, exclusion and exploitation. - Social capital, cultural capital and economic capital- the approach of P Bourdieu. - Equality of opportunities and capabilities- the approach of Amartya Sen

#### Paper: Curriculum and Knowledge.

Unit - I: Curriculum, Syllabi, Text books and Classroom - What is a curriculum? Why do we need a curriculum? Objectives behind framing/developing a curriculum. Aims and curriculum; the relationship

between the two. Relationship between these two and pedagogy. - Curriculum, syllabi and textbooks: What's the relationship between these? What are its implications for a teacher?

Unit - III: Moral Values - Nature of value and morality: Values are what make people consider life worthwhile. Values and morality involve choices which are arrived at by balancing diverse and often contradictory values. Even so, the choice made by one person may be very different from that made by another. Most educators agree that students need to engage seriously with the task of taking moral decisions, they also agree that preaching a set of values is tantamount to indoctrination at best or promoting hypocrisy at worst. - Morality in a multi-cultural, multi-religious and democratic society: Different cultures/religions have different value systems and preferences. Can any one of them become the basis of moral education in schools? Can there be democratic norms of dialogue between different value systems? - Objectives of moral education: Is it to impart information about what is valuable or to train the student how to take moral decisions or is it to instill in the student a desire to be a moral person? Should investigation into why it is difficult to be moral be a part of curriculum?

### **Elective paper: EDUCATIONAL TECHNOLOGY AND MANAGEMENT**

Unit - I: Concept of Educational Technology - Meaning - Nature - Scope - Functions - Need for educational technology in the schools of Chhattisgarh.

Unit - III: System Approach - Concept and characteristics. - System approach, System Analysis, System Design.

### **Third Sem**

#### **Paper :ASSESSMENT IN LEARNING**

Unit - IV: Teacher Competencies in Evolving Appropriate Assessment Tools - Visualising appropriate assessment tools for specific contexts, content, and student; - Formulating tasks and questions that engage the learner and demonstrate the process of thinking; Scope for original responses; - Evolving suitable criteria for assessment

### **Fourth Sem**

#### **Paper: GENDER, SCHOOL AND SOCIETY**

Unit - II: Gender and Schooling - Schooling of girls (literacy rate, dropout rate, completion rate, etc.) and reasons why girls are not able to complete schooling. - Why do girls feel uncomfortable in schools? - Can schools be different so that more girls can be educated? - Gender bias in curriculum, textbooks, analysis of hidden curriculum

#### **Paper: TEACHING OF VALUES**

Unit - I - Nature and sources of values, biological, psychological, social and ecological determinants of values- their bearing on education in varying degrees. Unit - II - Classification of values into various types: Material, social, moral and spiritual values; status of values; how can these be realized through







SEMESTER 4	<p>PAPER -10 GENDER ,SCHOOL AND SOCIETY</p> <p>PAPER -12 COMPUTER EDUCATION</p>	<p><i>UNIT -4 PSYCHOLOGICAL AND SOCIOLOGICAL PERSPECTIVE UNIT-5 STRAT- Importance of information technology.</i></p> <ul style="list-style-type: none"> <li>- <i>Classification of computers by technology, type and size.</i></li> <li>- <i>Uses and scope of computers.</i></li> <li>- <i>Fundamentals of computers.</i></li> <li>- <i>Input/output devices;</i></li> <li>- <i>Central processing unit storage devices;</i></li> <li>- <i>Operating systems;</i></li> <li>- <i>Application software.</i></li> </ul> <p><i>Unit - II</i></p> <ul style="list-style-type: none"> <li>- <i>Files and folders;</i></li> <li>- <i>Use of pointing devices;</i></li> <li>- <i>Cut and paste;</i></li> <li>- <i>Shortcuts to applications;</i></li> <li>- <i>Use and exploring the contents of storage devices- floppy disk, drives, hard discs, CD ROM etc.</i></li> <li>- <i>Running applications and exiting applications.</i></li> </ul> <p><i>Unit - III</i></p> <p><i>Modern word processing applications:</i></p> <ul style="list-style-type: none"> <li>- <i>Importance of word processing in education.</i></li> <li>- <i>Characteristics of modern word processing applications.</i></li> <li>- <i>Toolbars and menu.</i></li> <li>- <i>Text and objects.</i></li> <li>- <i>Text entry- Running text and paragraphs.</i></li> <li>- <i>Formatting text- Bold, Italics, Centre and right justification, changing font and font size, bullets and numbering.</i></li> <li>- <i>Editing text- select text, find and replace, cut, copy and paste.</i></li> <li>- <i>Editing document- Applying styles, spell check, headers and footers, footnotes, pagination, subscript and superscript.</i></li> <li>- <i>Insertion of objects, pictures, symbols, fields, page breaks and section.</i></li> <li>- <i>Page setup- Margins, paper size, and layout, printing and saving documents.</i></li> </ul> <p><i>Unit - IV</i></p> <p><i>Modern data base management applications:</i></p> <ul style="list-style-type: none"> <li>- <i>Importance of data base management in education.</i></li> <li>- <i>Characteristics of modern data base management applications.</i></li> </ul>
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BHILAI MAHILA MAHAVIDYALAYA, HOSPITAL SECTOR, BHILAI  
DEPARTMENT OF ENGLISH

NAME OF THE PROFESSOR: Dr Nidhi Tiwari  
SESSION: 2022 - 2023  
SUBJECT: English Language  
CLASS: B. Com/BSc Part I/BA I/BHSc I

S.No.	Module (Unit)	Topic/Title	Lectures Allocated (In Days/Class)
1.	Unit – I	Short answer questions based on the prescribed text	50
2.	Unit – II	(a) Reading comprehension of an unseen passage (b) Vocabulary	40
3.	Unit – III	Paragraph Writing	15
4.	Unit – IV	Letter Writing	25
5.	Unit – V	Grammar and Vocabulary based on the prescribed textbook	50



BHILAI MAHILA MAHAVIDYALAYA, HOSPITAL SECTOR, BHILAI  
DEPARTMENT OF ENGLISH

NAME OF THE PROFESSOR: Dr Nidhi Tiwari

SESSION: 2022 - 2023

SUBJECT: English Language

CLASS: B. Com/BSc Part II/BA II/BHSc II

S.No.	Module (Unit)	Topic/Title	Lectures Allocated (In Days/Class)
1.	Unit – I	Short answer questions based on the prescribed text.	50
2.	Unit – II	(a) Reading comprehension of an unseen passage (b) Vocabulary	40
3.	Unit – III	Report-Writing 10 Marks	15
4.	Unit – IV	Expansion of an idea 10 Marks	25
5.	Unit – V	Grammar and Vocabulary based on the prescribed textbook	50



BHILAI MAHILA MAHAVIDYALAYA, HOSPITAL SECTOR, BHILAI  
DEPARTMENT OF ENGLISH

NAME OF THE PROFESSOR: Dr Nidhi Tiwari

SESSION: 2022 - 2023

SUBJECT: English Language

CLASS: B. Com/BSc Part III/BA III/BHSc III

S.No.	Module (Unit)	Topic/Title	Lectures Allocated (In Days/Class)
1.	Unit – I	Essay-type questions based on the prescribed text.	55
2.	Unit – II	Essay writing	20
3.	Unit – III	Precise writing	15
4.	Unit – IV	(a)Reading comprehension of an unseen passage (b)Vocabulary	25
5.	Unit – V	Grammar and Vocabulary based on the prescribed textbook	50



BHILAI MAHILA MAHAVIDYALAYA, HOSPITAL SECTOR, BHILAI  
DEPARTMENT OF ENGLISH

NAME OF THE PROFESSOR: Dr Nidhi Tiwari

SESSION: 2022 - 2023

SUBJECT: English Literature

CLASS: B.A. I English Literature Paper I (1550-1750)

S.No.	Module (Unit)	Topic/Title	Lectures Allocated (In Days/Class)
1.	Unit – I	UNIT-2 POETRY a) Shakespeare - Sonnet No.1 From Fairest Creatures, SonnetNo.154, The Little Love God. b) Milton - How Soon Hath Time the Subtle Thief of Youth... c) John Donne - Sweetest Love I Don't Go, This is my play's Last Scene.	25
2.	Unit – II	UNIT-3 POETRY a) John Dryden -Portrait of Shadwell. b) Alexander-Pope-From An Essay on Criticism (True case in writing....) and the world's Victor Stood subdued by sound.	25
3.	Unit – III	UNIT-4 PROSE a) Bacon Of Studies, Of Health, Of friendship b) Addison-Sir Roger at Home c)Steele - Of the Club.	25
4.	Unit – IV	UNIT-5 DRAMA Shakespeare - The Merchant of Venice	25
5.	Unit – V	UNIT – 6 FICTION Swift – The Battle of the Books	25



BHILAI MAHILA MAHAVIDYALAYA, HOSPITAL SECTOR, BHILAI  
DEPARTMENT OF ENGLISH

NAME OF THE PROFESSOR: Dr Nidhi Tiwari

SESSION: 2022 - 2023

SUBJECT: English Literature

CLASS: B.A. II English Literature Paper I (Code - 0175)

S.No.	Module (Unit)	Topic/Title	Lectures Allocated (In Days/Class)
1.	Unit – I	UNIT-II (Poetry) W.B. Yeats - 'A Prayer for My Daughter, The Second Coming T.S. Eliot - 'Love Song of J. Alfred Prufrock'	25
2.	Unit – II	UNIT-III (Poetry) Dylan Thomas - 'Lament, 'A Refusal to Mourn the Death Larkin - 'Toads', At Grass'	25
3.	Unit – III	UNIT-IV (Prose) Bertrand Russell - On the Value of Scepticism Oscar Wilde - Happy Prince	25
4.	Unit – IV	UNIT-V (Drama) G.B. Shaw - Pygmalion	25
5.	Unit – V	UNIT-VI (Fiction and short stories) Rudyard Kipling-Kim Short-Stories Katherine Mansfield - A Cup of Tea	25





BHILAI MAHILA MAHAVIDYALAYA, HOSPITAL SECTOR, BHILAI  
DEPARTMENT OF ENGLISH

NAME OF THE PROFESSOR: Dr Nidhi Tiwari

SESSION: 2022 - 2023

SUBJECT: English Language

CLASS: B.A. III American Literature Paper II

S.No.	Module (Unit)	Topic/Title	Lectures Allocated (In Days/Class)
1.	Unit – I	UNIT – II POETRY a) Walt Whitman – O! Captain! My Captain! When The Lilacs Last in the Dooryard Bloomed b) Carl Sandberg - Who Am I? I am the People, The Mob	25
2.	Unit – II	UNIT-III a) Emily Dickinson - "Hope" is the thing with Feather, I felt a funeral in my Brain. b) E. E. Cummings - The Cambridge Ladies, As Freedom is a breakfast food.	25
3.	Unit – III	UNIT-IV Prose a) William Faulkner - Nobel Award Acceptance Speech. b) W. Carlos Williams - In the American Grain c) Walt Whitman - Preface to "Leaves of Grass".	25
4.	Unit – IV	UNIT-V Drama a) A. Miller - All My Sons. Or b) Eugene O' Neill - The Hairy Ape.	25
5.	Unit – V	UNIT-VI Fiction a) E. Hemingway - A Farewell to Arms. Or b) W. Faulkner - The Sound and the Fury.	25



BHILAI MAHILA MAHAVIDYALAYA, HOSPITAL  
SECTOR, BHILAI DEPARTMENT OF MATHEMATICS

NAME OF THE PROFESSOR: JYOTI SHARMA

SESSION: 2022- 2023

SUBJECT: CALCULUS(PAPER –II)

CLASS: B.Sc. I YEAR

S.NO.	MODULE (UNIT)	TOPIC	LECTURES ALLOCATED (in Days/Class)
1	UNIT-I	– definition of the limit of a function. Basic properties of limits. Continuous functions and classification of discontinuities. Differentiability. Successive differentiation. Leibnitz theorem. Maclaurin and Taylor series expansions.	15
2	UNIT- II	Asymptotes. Curvature. Tests for concavity and convexity. Points of inflexion. Multiple points. Tracing of curves in cartesian and polar coordinates.	12
3	UNIT-III	Integration of transcendental functions. Reduction formulae. Definite integrals. Quadrature. Rectification. Volumes and surfaces of solids of revolution.	10
4	UNIT -IV	Degree and order of a differential equation. Equations reducible to the linear form. Exact differential equations. First order higher degree equations solvable for x, y, p. Clairaut's form and singular solutions. Geometrical meaning of a differential equation. Orthogonal trajectories. Linear differential equations with constant coefficients. Homogeneous linear ordinary differential equations.	20
5	UNIT -V	Linear differential equations of second order. Transformation of the equation by changing the dependent variable/the independent variable. Method of variation of parameters. Ordinary simultaneous differential equations.	20

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BHILAI MAHILA MAHAVIDYALAYA, HOSPITAL  
SECTOR, BHILAI DEPARTMENT OF MATHEMATICS  
NAME OF THE PROFESSOR: Dr. REENA SHUKLA  
SESSION: 2022- 2023  
SUBJECT: VECTOR ANALYSIS AND GEOMETRY  
(PAPER –III)  
CLASS: B.Sc. I YEAR

S.NO.	MODULE (UNIT)	TOPIC	LECTURES ALLOCATED (in Days/Class)
1	UNIT-I	Scalar and vector product of three vectors. Product of four vectors. Reciprocal Vectors. Vector differentiation. Gradient, divergence and curl.	10
2	UNIT- II	Vector integration. Theorems of Gauss, Green, Stokes and problems based on these.	12
3	UNIT-III	General equation of second degree. Tracing of conics. System of conics. Confocal conics. Polar equation of a conic.	10
4	UNIT -IV	Sphere. Cone. Cylinder.	20
5	UNIT -V	Central Conicoids. Paraboloids. Plane sections of conicoids. Generating lines. Confocal Conicoids. Reduction of second degree equations.	20

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BHILAI MAHILA MAHAVIDYALAYA, HOSPITAL  
SECTOR, BHILAIDEPARTMENT OF MATHEMATICS

NAME OF THE PROFESSOR: Dr. ASHA RANI DAS

SESSION: 2022- 2023

SUBJECT: ADVANCED CALCULUS

(PAPER –I)

CLASS: B.Sc. II YEAR

S.NO.	MODULE (UNIT)	TOPIC	LECTURES ALLOCATED (in Days/Class)
1	UNIT-I	Definition of a sequence. Theorems on limits of sequences. Bounded and monotonic sequences. Cauchy's convergence criterion. Series of non-negative terms. Comparison tests, Cauchy's integral test, Ratio tests, Raabe's, Logarithmic, De Morgan and Bertrand's tests. Alternating series, Leibnitz's theorem. Absolute and conditional convergence.	10
2	UNIT- II	Continuity, Sequential continuity, Properties of continuous functions, Uniform continuity, Chain rule of differentiability, Mean value theorems and their geometrical interpretations. Darboux's intermediate value theorem for derivatives, Taylor's theorem with various forms of remainders.	15
3	UNIT-III	Limit and continuity of functions of two variables. Partial differentiation. Change of variables. Euler's theorem on homogeneous functions. Taylor's theorem for functions of two variables. Jacobians.	10
4	UNIT -IV	Envelopes, evolutes. Maxima, minima and saddle points of functions of two variables. Lagrange's multiplier method.	20
5	UNIT -V	Beta and Gamma functions, Double and triple integrals, Dirichlet's integrals, Change of order of integration in double integrals.	20

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BHILAI MAHILA MAHAVIDYALAYA, HOSPITAL  
SECTOR, BHILAIDEPARTMENT OF MATHEMATICS

NAME OF THE PROFESSOR: Dr. SAPNA THAKUR

SESSION: 2022- 2023

SUBJECT: DIFFERENTIAL EQUATIONS

(PAPER –II)

CLASS: B.Sc. II YEAR

S.NO.	MODULE (UNIT)	TOPIC	LECTURES ALLOCATED (in Days/Class)
1	UNIT-I	Series solutions of differential equations- Power series method, Bessel and Legendre functions and their properties-convergence, recurrence and generating relations, Orthogonality of functions, Sturm-Liouville problem, Orthogonality of eigen-functions, Reality of eigen values, Orthogonality of Bessel functions and Legendre polynomials.	10
2	UNIT- II	Laplace Transformation- Linearity of the Laplace transformation, Existence theorem for Laplace transforms, Laplace transforms of derivatives and integrals, Shifting theorems. Differentiation and integration of transforms. Convolution theorem. Solution of integral equations and systems of differential equations using the Laplace transformation.	15
3	UNIT-III	Partial differential equations of the first order. Lagrange's solution, Some special types of equations which can be solved easily by methods other than the general method, Charpit's general method of solution.	10
4	UNIT -IV	Partial differential equations of second and higher orders, Classification of linear partial differential equations of second order, Homogeneous and non-homogeneous equations with constant coefficients, Partial differential equations reducible to equations with constant coefficients, Monge's methods.	20
5	UNIT -V	Calculus of Variations- Variational problems with fixed boundaries- Euler's equation for functionals containing first order derivative and one independent variable, Extremals, Functionals dependent on higher order derivatives, Functionals dependent on more than one independent variable, Variational problems in parametric form, invariance of Euler's equation	20

		under coordinates transformation. Variational Problems with Moving Boundaries- Functionals dependent on one and two functions, One sided variations. Sufficient conditions for an Extremum- Jacobi and Legendre conditions, Second Variation. Variational principle of least action.	
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BHILAI MAHILA MAHAVIDYALAYA, HOSPITAL  
 SECTOR, BHILAI DEPARTMENT OF MATHEMATICS  
 NAME OF THE PROFESSOR: M.BHAGYALAXMI  
 SESSION: 2022- 2023  
 SUBJECT: MECHANICS  
 (PAPER –III)  
 CLASS: B.Sc. II YEAR

S.NO.	MODULE (UNIT)	TOPIC	LECTURES ALLOCATED (in Days/Class)
1	UNIT-I	Analytical conditions of Equilibrium, Stable and unstable equilibrium. Virtual work, Catenary.	12
2	UNIT- II	Forces in three dimensions, Poinsot's central axis, Null lines and planes.	12
3	UNIT-III	Simple harmonic motion. Elastic strings. Velocities and accelerations along radial and transverse directions, Projectile, Central orbits.	10
4	UNIT -IV	Kepler's laws of motion, velocities and acceleration in tangential and normal directions, motion on smooth and rough plane curves.	20
5	UNIT -V	Motion in a resisting medium, motion of particles of varying mass, motion of a particle in three dimensions, acceleration in terms of different co-ordinate systems.	20

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**BHILAI MAHILA MAHAVIDYALAYA, HOSPITAL**  
**SECTOR, BHILAIDEPARTMENT OF MATHEMATICS**  
**NAME OF THE PROFESSOR: Dr. SAPNA THAKUR**  
**SESSION: 2022- 2023**  
**SUBJECT: ANALYSIS**  
**(PAPER –I)**  
**CLASS: B.Sc. III YEAR**

S.NO.	MODULE (UNIT)	TOPIC	LECTURES ALLOCATED (in Days/Class)
1	UNIT-I	<b>METRIC SPACES</b> Definition and examples of metric spaces. Neighbourhoods, Limit points, Interior points, Open and Closed sets, Closure and interior. Boundary points, Subspace of a metric space. Cauchy sequences, Completeness, Cantor's intersection theorem. Contraction principle, construction of real numbers as the completion of the incomplete metric space of rationals. Real numbers as a complete ordered field.	12
2	UNIT- II	Dense subsets. Baire Category theorem. Separable, second countable and first countable spaces. Continuous functions. Extension theorem. Uniform continuity, isometry and homeomorphism. Equivalent metrics. Compactness, sequential compactness. Totally bounded spaces. Finite intersection property. Continuous functions and Compact sets, Connectedness, Components, Continuous functions and Connected sets.	12
3	UNIT-III	<b>COMPLEX ANALYSIS</b> Complex numbers as ordered pairs. Geometrical representation of complex numbers. Stereographic projection. Continuity and differentiability of complex functions. Analytic functions. Cauchy Riemann equations. Harmonic functions. Elementary functions. Mapping by elementary functions. Mobius transformations. Fixed points, Cross ratio. Inverse points and critical mappings. Conformal mappings.	10
4	UNIT -IV	<b>REAL ANALYSIS</b> Series of arbitrary terms. Convergence, divergence and oscillation. Abel's and Dirichlet's test. Multiplication of series. Double series. Partial derivation and differentiability of real-valued functions of two variables. Schwarz and Young's theorem. Implicit function theorem. Fourier series. Fourier expansion of piecewise monotonic functions.	20



5	UNIT -V	Riemann integral. Intergrability of continuous and monotonic functions. The fundamental theorem of integral calculus. Mean value theorems of integral calculus. Improper integrals and their convergence. Comparison tests. Abel's and Dirichlet' tests. Frullani's integral. Integral as a function of a parameter. Continuity, derivability and integrability of an integral of a function of a parameter.	20
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BHILAI MAHILA MAHAVIDYALAYA, HOSPITAL  
 SECTOR, BHILAIDEPARTMENT OF MATHEMATICS  
 NAME OF THE PROFESSOR: DR. ASHA RANI DAS  
 SESSION: 2022- 2023  
 SUBJECT: ABSTRACT ALGEBRA  
 (PAPER –II)  
 CLASS: B.Sc. III YEAR

S.NO.	MODULE (UNIT)	TOPIC	LECTURES ALLOCATED (in Days/Class)
1	UNIT-I	Group-Automorphisms, inner automorphism. Automorphism groups and their computations, Conjugacy relation, Normaliser, Counting principle and the class equation of a finite group. Center for Group of prime-order, Abelianizing of a group and its universal property. Sylow's theorems, Sylow subgroup, Structure theorem for finite Abelian groups.	10
2	UNIT- II	Ring theory-Ring homomorphism. Ideals and Quotient Rings. Field of Quotients of an Integral Domain, Euclidean Rings, Polynomial Rings, Polynomials over the Rational Field. The Eisenstien Criterion, Polynomial Rings over Commutative Rings, Unique factorization domain. R unique factorisation domain implies so is $R[x_1, x_2, \dots, x_n]$ Modules, Submodules, Quotient modules, Homomorphism and Isomorphism theorems.	12

3	UNIT-III	Definition and examples of vector spaces. Subspaces. Sum and direct sum of subspaces, Linear span. Linear dependence, independence and their basic properties. Basis. Finite dimensional vector spaces. Existence theorem for bases. Invariance of the number of elements of a basis set. Dimension. Existence of complementary subspace of a subspace of a finite dimensional vector space. Dimension of sums of subspaces. Quotient space and its dimension.	10
4	UNIT -IV	Linear transformations and their representation as matrices. The Algebra of linear transformations. The rank nullity theorem. Change of basis. Dual space. Bidual space and natural isomorphism. Adjoint of a linear transformation. Eigenvalues and eigenvectors of a linear transformation. Diagonalisation. Annihilator of a subspace. Bilinear, Quadratic and Hermitian forms.	20
5	UNIT -V	Inner Product Spaces-Cauchy-Schwarz inequality. Orthogonal vectors. Orthogonal Complements. Orthonormal sets and bases. Bessel's inequality for finite dimensional spaces. Gram-Schmidt Orthogonalization process	20

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**BHILAI MAHILA MAHAVIDYALAYA, HOSPITAL**  
**SECTOR, BHILAIDEPARTMENT OF MATHEMATICS**  
**NAME OF THE PROFESSOR: JYOTI SHARMA**  
**SESSION: 2022- 2023**  
**SUBJECT: (OPTIONAL) (II) DISCRETE MATHEMATICS**  
**(PAPER –III)**  
**CLASS: B.Sc. III YEAR**

S.NO.	MODULE (UNIT)	TOPIC	LECTURES ALLOCATED (in Days/Class)
1	UNIT-I	Sets and Propositions - Cardinality. Mathematical Induction, Principle of Inclusion and exclusion. Computability and Formal Languages - Ordered Sets. Languages. Phrase Structure Grammars. Types of Grammars and Languages. Permutations. Combinations and Discrete Probability.	10
2	UNIT- II	Relations and Functions - Binary Relations, Equivalence Relations and Partitions. Partial Order Relations and Lattices. Chains and Antichains. Pigeon Hole Principle. Graphs and Planar Graphs - Basic Terminology. Multigraphs. Weighted Graphs. Paths and Circuits. Shortest Paths. Eulerian Paths and Circuits. Travelling Salesman Problem. Planner Graphs. TREES.	10
3	UNIT-III	Finite State Machines - Equivalent Machines. Finite State Machines as Language Recognizers. Analysis of Algorithms - Time Complexity. Complexity of Problems. Discrete Numeric Functions and Generating Functions.	10
4	UNIT -IV	Recurrence Relations and Recursive Algorithms - Linear Recurrence Relations with Constant Coefficients. Homogeneous Solutions. Particular Solution. Total Solution. Solution by the Method of Generating Functions. Brief review of Groups and Rings.	20
5	UNIT -V	Boolean Algebras - Lattices and Algebraic Structures. Duality, Distributive and Complemented Lattices. Boolean Lattices and Boolean Algebras. Boolean Functions and Expressions. Propositional Calculus. Design and Implementation of Digital Networks. Switching Circuits.	20

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BHILAI MAHILA MAHAVIDYALAYA, HOSPITAL SECTOR,  
BHILAI DEPARTMENT OF MATHEMATICS

NAME OF THE PROFESSOR: DR. REENA SHUKLA

SESSION: 2022- 2023

SUBJECT: Advanced Abstract Algebra (I)  
(PAPER –I)

CLASS: M.SC. I & II SEMESTER

S.NO.	MODULE (UNIT)	TOPIC	LECTURES ALLOCATED (in Days/Class)
M.Sc. I SEMESTER			
1	UNIT-I	Groups - Normal and Subnormal series. Composition series. JordanHolder theorem. Solvable groups. Nilpotent groups.	10
2	UNIT- II	Field theory- Extension fields. Algebraic and transcendental extensions. Separable and inseparable extensions. Algebraically closed fields.	12
3	UNIT-III	Perfect fields. Finite fields. Primitive elements. Normal extensions, Splitting field.	10
4	UNIT -IV	Automorphisms of extensions. Galois extensions. Fundamental theorem of Galois theory.	18
5	UNIT -V	Solution of polynomial equations by radicals. Insolvability of the general equation of degree 5 by radicals.	20
M.Sc. II SEMESTER			

1	UNIT -I	Modules - Cyclic modules. Simple modules. Semi-simple modules. Schuler's Lemma. Free modules. Noetherian and Artinian modules and rings-Hilbert basis theorem. Wedderburn Artin theorem. Uniform modules, primary modules, and Noether-Lasker theorem.	20
2	UNIT -II	Linear Transformations - Algebra of linear transformation, Singular and non singular transformation, characteristic roots and vectors, matrices and linear transformations.	20
3	UNIT -III	Canonical Forms - Similarity of linear transformations. Invariant subspaces. Reduction to triangular forms. Nilpotent transformations. Index of nilpotency. Invariants of a nilpotent transformation. The primary decomposition theorem. Jordan blocks and Jordan forms.	25
4	UNIT -IV	Smith normal form over a principal ideal domain and rank. Fundamental structure theorem for finitely generated modules over a Principal ideal domain and its applications to finitely generated abelian groups.	15
5	UNIT-V	Rational canonical form. Generalised Jordan form over any field.	10

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BHILAI MAHILA MAHAVIDYALAYA, HOSPITAL  
SECTOR, BHILAI DEPARTMENT OF MATHEMATICS

NAME OF THE PROFESSOR: DR. SAPNA THAKUR

SESSION: 2022- 2023

SUBJECT: Real Analysis

(PAPER –II)

CLASS: M.SC. I & II SEMESTER

S.NO.	MODULE (UNIT)	TOPIC	LECTURES ALLOCATED (in Days/Class)
<b>M.Sc. I SEMESTER</b>			
1	UNIT-I	Sequences and series of functions, pointwise and uniform convergence, Cauchy criterion for uniform convergence, Weierstrass M-test, Abel's and Dirichlet's tests for uniform convergence, uniform convergence and continuity, definition and simple properties of Riemann-Stieltjes integral, uniform convergence and Riemann-Stieltjes integration, uniform convergence and differentiation, Weierstrass approximation theorem.	10
2	UNIT- II	Power series, uniqueness theorem for power series, Abel's and Tauber's theorems. Rearrangements of terms of a series, Riemann's theorem.	12
3	UNIT-III	Functions of several variables, linear transformations, Derivatives in an open subset of $\mathbb{R}^n$ , Chain rule, Partial derivatives, interchange of the order of differentiation, Derivatives of higher orders, Taylor's theorem, Inverse function theorem, Implicit function theorem.	10
4	UNIT -IV	Jacobians, extremum problems with constraints, Lagrange's multiplier method, Differentiation of integrals.	10
5	UNIT -V	Partitions of unity, Differential forms, Stoke's theorem.	10
<b>M.Sc. II SEMESTER</b>			

1	UNIT –I	Definition and existence of Riemann-Stieltjes integral, Properties of the Integral, integration and differentiation, the fundamental theorem of Calculus, integration of vector-valued functions, Rectifiable curves.	20
2	UNIT -II	Lebesgue outer measure. Measurable sets. Regularity. Measurable functions. Borel and Lebesgue measurability. Non-measurable sets. Integration of Non-negative functions. The General integral. Integration of Series.	20
3	UNIT -III	Measures and outer measures, Extension of a measure. Uniqueness of Extension. Completion of a measure. Measure spaces. Integration with respect to a measure. Riemann and Lebesgue Integrals.	12
4	UNIT -IV	The Four derivatives. Lebesgue Differentiation Theorem. Differentiation and Integration. $p$	10
5	UNIT-V	Functions of Bounded variation. The $L^p$ -spaces. Convex functions. Jensen's inequality. Holder and Minkowski inequalities. Completeness of $L^p$ , Convergence in Measure, Almost uniform convergence.	15

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BHILAI MAHILA MAHAVIDYALAYA, HOSPITAL SECTOR,  
BHILAI DEPARTMENT OF MATHEMATICS

NAME OF THE PROFESSOR: Ms. JYOTI SHARMA

SESSION: 2022- 2023

SUBJECT: General and Algebraic Topology (PAPER –III)

CLASS: M.SC. I & II SEMESTER

S.NO.	MODULE (UNIT)	TOPIC	LECTURES ALLOCATED (in Days/Class)
<b>M.Sc. I SEMESTER</b>			
1	UNIT-I	Countable and uncountable sets. Infinite sets and the Axiom of Choice. Cardinal numbers and its arithmetic. Schroeder-Bernstein theorem. Cantor's theorem and the continuum hypothesis. Zorn's lemma, well-ordering theorem. Definition and examples of topological spaces. Closed sets. Closure. Dense subsets. Neighbourhoods. Interior, exterior and boundary. Accumulation points and derived sets. Bases and sub-bases. Subspaces and relative topology.	10
2	UNIT- II	Alternate methods of defining a topology in terms of Kuratowski Closure Operator and Neighborhood Systems. Continuous functions and homeomorphism. First and Second Countable spaces. Lindelof's theorems. Separable spaces. Second countability and separability.	10
3	UNIT-III	Separation axioms; their Characterizations and basic properties. Urysohn's lemma, Tietze extension theorem.	15
4	UNIT -IV	Compactness. Continuous functions and compact sets. Basic properties of Compactness. Compactness and finite intersection property. Sequentially and countably compact sets. Local compactness and one point compactification. Stone-Cech compactification.	15
5	UNIT -V	Compactness in metric spaces. Equivalence of compactness, countable compactness and sequential compactness in metric space. Connected spaces. Connectedness on the real line. Components. Locally connected spaces.	12
<b>M.Sc. II SEMESTER</b>			

1	UNIT -I	Tychonoff product topology in terms of standard sub-base and its characterizations. Projection maps.	10
2	UNIT -II	Product spaces, separation axioms connectedness (Tychonoff's theorem). Compactness , product spaces Countability in product spaces.	15
3	UNIT -III	Embedding and metrization. Embedding lemma and Tychonoff embedding. The Urysohn metrization theorem. Metrization theorems and Paracompactness-Local finiteness. The Nagata-Smirnov metrization theorem. Paracompactness. The Smirnov metrization theorem.	12
4	UNIT -IV	Nets and filter. Topology and convergence of nets. Hausdorffness and nets. Compactness and nets. Filters and their convergence. Canonical way of converting nets to filters and vice-versa.	20
5	UNIT-V	Ultra-filters and Compactness.  The fundamental group and covering spaces- Homotopy of paths. The fundamental group. Covering spaces. The fundamental group of the circle and the fundamental theorem of algebra.	20

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BHILAI MAHILA MAHAVIDYALAYA, HOSPITAL SECTOR,  
 BHILAI DEPARTMENT OF MATHEMATICS  
 NAME OF THE PROFESSOR: Dr. ASHA RANI DAS  
 SESSION: 2022- 2023  
 SUBJECT: Complex Analysis (I)(PAPER –IV)  
 CLASS: M.SC. I & II SEMESTER

S.NO.	MODULE (UNIT)	TOPIC	LECTURES ALLOCATED (in Days/Class)
<b>M.Sc. I SEMESTER</b>			
1	UNIT-I	Complex integration, Cauchy-Goursat Theorem. Cauchy's integral formula. Higher order derivatives. Morera's Theorem. Cauchy's inequality and Liouville's theorem. The fundamental theorem of algebra. Taylor's theorem. Laurent's series. Isolated singularities. Meromorphic functions.	10  12
2	UNIT- II	Maximum modulus principle. Schwarz lemma. The argument principle. Rouché's theorem Inverse function theorem.	10
3	UNIT-III	Residues. Cauchy's residue theorem. Evaluation of integrals. Branches of many valued functions with special reference to $\arg z$ , $\log z$ and $z^a$ .	
4	UNIT -IV	Definitions and examples of conformal mapping Bilinear transformations, their properties and classifications.	20
5	UNIT -V	Spaces of analytic functions. Hurwitz's theorem. Montel's theorem Riemann mapping theorem.	20
<b>M.Sc. II SEMESTER</b>			

1	UNIT -I	Weierstrass' factorisation theorem. Gamma function and its properties. Riemann Zeta function. Riemann's functional equation. Runge's theorem. Mittag-Leffler's theorem.	12
2	UNIT -II	Analytic Continuation. Uniqueness of direct analytic continuation. Uniqueness of analytic continuation along a curve. Power series method of analytic continuation Schwarz Reflection Principle. Monodromy theorem and its consequences.	14
3	UNIT -III	Harmonic functions on a disk. Harnack's inequality and theorem. Dirichlet Problem. Green's function.	17
4	UNIT -IV	Canonical products. Jensen's formula. Poisson-Jensen formula. Hadamard's three circles theorem. Order of an entire function. Exponent of Convergence. Borel's theorem. Hadamard's factorization theorem.	17
5	UNIT-V	The range of an analytic function. Bloch's theorem. The Little Picard theorem. Schottky's theorem. Montel Caratheodory and The Great Picard theorem. Univalent functions. Bieberbach's conjecture (Statement only) and the "1/4-theorem.	12
			15
			10
			15
			12



BHILAI MAHILA MAHAVIDYALAYA, HOSPITAL SECTOR,  
BHILAI DEPARTMENT OF MATHEMATICS

NAME OF THE PROFESSOR: M. BHAGYALAXMI

SESSION: 2022- 2023

SUBJECT: Advanced Discrete Mathematics (I)(PAPER –V)

CLASS: M.SC. I & II SEMESTER

S.NO.	MODULE (UNIT)	TOPIC	LECTURES ALLOCATED Days/Class)
M.Sc. I SEMESTER			
1	UNIT-I	Formal Logic-Statements. Symbolic Representation and Tautologies. Quantifiers, Predicates and Validity. Propositional Logic. Semigroups & Monoids-Definitions and Examples of Semigroups and monoids (including those pertaining to concatenation operation).	10
2	UNIT- II	Homomorphism of semigroups and monoids. Congruence relation and Quotient Semigroups. Subsemigroup and submonoids. Direct Products. Basic Homomorphism Theorem.	12
3	UNIT-III	Lattices-Lattices as partially ordered sets. Their properties. Lattices as Algebraic Systems.	10

4	UNIT -IV	<p>Sublattices, Direct products, and Homomorphisms. Some Special Lattices e.g., Complete, Complemented and Distributive Lattices. Boolean Algebras-Boolean Algebras as Lattices. Various Boolean Identities. The Switching Algebra example. Subalgebras,</p> <p>Direct Products and Homomorphisms. Join-Irreducible elements, Atoms and Minterms. Boolean Forms and Their Equivalence. Minterm Boolean Forms, Sum of Products Canonical Forms. Minimization of Boolean Functions. Applications of Boolean Algebra to Switching Theory (using AND,OR &amp; NOT gates). The Karnaugh Map Method.</p>	20
5	UNIT -V	<p>Grammars and Languages-Phrase-Structure Grammars. Rewriting Rules. Derivations. Sentential Forms. Language generated by a Grammar. Regular, Context-Free, and Context Sensitive Grammars and Languages. Regular sets, Regular Expressions and the Pumping Lemma. Kleene's Theorem. Notions of Syntax Analysis, Polish Notations. Conversion of Infix Expressions to Polish Notations. The Reverse Polish Notation</p>	20

M.Sc. II SEMESTER

1	UNIT -I	<p>Graph Theory-Definition of (Undirected) Graphs, Paths, Circuits, Cycles, &amp; Subgraphs. Induced Subgraphs. Degree of a vertex. Connectivity. Planar Graphs and their properties. Trees. Euler's Formula for connected planar Graphs. Complete &amp; Complete Bipartite Graphs. Kuratowski's Theorem (statement only) and its use.</p>	12
2	UNIT -II	<p>Spanning Trees, Cut-sets, Fundamental Cut - sets, and Cycle. Minimal Spanning Trees and Kruskal's Algorithm. Matrix Representations of Graphs. Euler's Theorem on the Existence of Eulerian Paths and Circuits.</p>	14
3	UNIT -III	<p>Directed Graphs. In degree and Out degree of a Vertex. Weighted undirected Graphs. Dijkstra's Algorithm.. strong Connectivity &amp; Warshall's Algorithm. Directed Trees. Search Trees. Tree Traversals.</p>	17
4	UNIT -IV	<p>Unit-IV Introductory Computability Theory- Finite State Machines and their Transition Table Diagrams. Equivalence of finite State Machines. Reduced Machines. Homomorphism.</p>	17
5	UNIT-V		

		Unit-V Finite Automata. Acceptors. Non-deterministic Finite Automata and equivalence of its power to that of Deterministic Finite Automata. Moore and mealy Machines. Turing Machine and Partial Recursive Functions	16
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BHILAI MAHILA MAHAVIDYALAYA, HOSPITAL SECTOR,  
BHILAI

DEPARTMENT OF MATHEMATICS

NAME OF THE PROFESSOR: Dr. REENA SHUKLA

SESSION: 2022- 2023

SUBJECT: INTEGRATION THEORY AND FUNCTIONAL ANALYSIS  
(PAPER –I)

CLASS: M.Sc. III(SEMESTER)

S.NO.	MODULE (UNIT)	TOPIC	LECTURES ALLOCATED (in Days/Class)
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		INTEGRATION THEORY	
1	UNIT-I	Signed measure. Hahn decomposition theorem, mutually singular measures. Radon-Nikodym theorem. Lebesgue decomposition. Riesz representation theorem. Extension theorem (Caratheodory).	12
2	UNIT- II	Lebesgue-Stieltjes integral, product measures, Fubini's theorem. Differentiation and Integration. Decomposition into absolutely continuous and singular parts.	12
		FUNCTIONAL ANALYSIS	
3	UNIT-III	Normed linear spaces. Banach spaces and examples. Quotient space of normed linear spaces and its completeness, equivalent norms. Riesz Lemma, basic properties of finite dimensional normed linear spaces and compactness	15
4	UNIT -IV	Weak convergence and bounded linear transformations, normed linear spaces of bounded linear transformations, dual spaces with examples.	15
5	UNIT -V	Contraction mapping theorem and its application, Banach fixed point theorem, Picard's theorem, Banach fixed point theorem as a source of existence and uniqueness theorem for integral equations, Nonlinear operator, examples convex function, epigraph,	10



		monotone mapping, -monotone, coercive mapping duality maps.	
M.Sc. IV SEMESTER			
		<b>FUNCTIONAL ANALYSIS</b>	
1	UNIT-I	Uniform boundedness theorem and some its consequences. Open mapping and closed graph theorems	10
2	UNIT-II	Hahn-Banach theorem for real linear spaces, complex linear spaces and normed linear spaces. Reflexive spaces. Weak Sequential Compactness. Compact Operators. Solvability of linear equations in Banach spaces. The closed Range Theorem	12
3	UNIT-III	Inner product spaces. Hilbert spaces. Orthonormal Sets. Bessel's inequality. Complete orthonormal sets and Parseval's identity.	12
4	UNIT-IV	Structure of Hilbert spaces. Projection theorem. Riesz representation theorem. Adjoint of an operator on a Hilbert space. Reflexivity of Hilbert spaces.	10

5	UNIT-V	Structure of Hilbert spaces. Projection theorem. Riesz representation theorem. Adjoint of an operator on a Hilbert space. Reflexivity of Hilbert spaces	12
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BHILAI MAHILA MAHAVIDYALAYA, HOSPITAL SECTOR,  
BHILAI

DEPARTMENT OF MATHEMATICS

NAME OF THE PROFESSOR: Dr. SAPNA THAKUR

SESSION: 2022- 2023

SUBJECT: PARTIAL DIFFERENTIAL EQUATION

(PAPER –II)

CLASS: M.Sc. III (SEMESTER)

S.NO.	MODULE (UNIT)	TOPIC	LECTURES ALLOCATED (in Days/Class)
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1	UNIT-I	<p>Examples of PDE. Classification. Transport Equation-Initial value Problem. Non homogeneous Equation, Laplace's Equation- Fundamental Solution, Mean Value Formulas, Properties of Harmonic Functions, Green's Function, Energy Methods.</p>	10
2	UNIT- II	<p>Heat Equation-Fundamental Solution, Mean Value Formula, Properties of Solutions, Energy Methods. Wave Equation-Solution by Spherical Means, Non-homogeneous Equations, Energy Methods.</p>	12
3	UNIT-III	<p>Non-linear First Order PDE- Complete Integrals, Envelopes, Characteristics, Hamilton Jacobi Equations (Calculus of Variations, Hamilton's ODE, Legendre Transform, Hopf-Lax Formula, Weak Solutions, Uniqueness), Conservation Laws (Shocks, Entropy Condition, Lax Oleinik formula, Weak Solutions, Uniqueness, Riemann's Problem, Long Time Behaviour)</p>	15
4	UNIT -IV	<p>Representation of Solutions- Separation of Variables, Similarity Solutions (Plane and Travelling Waves, Solitons, Similarity under Scaling), Fourier and Laplace Transform, Hopf-Cole Transform, Hodograph and Legendre Transforms, Potential Functions</p>	10

5	UNIT -V	Asymptotic (Singular Perturbations, Laplace's Method, Geometric Optics, Stationary Phase, Homogenization), Power Series (Non- characteristic Surfaces, Real Analytic Functions, Cauchy- Kovalevskaya Theorem).	12
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M.Sc. IV SEMESTER

1	UNIT-I	ANALYTICAL DYNAMIC: Generalized coordinates. Holonomic and Non-holonomic systems. Scleronomic and Rheonomic systems. Generalized potential. Lagrange's equations of first kind. Lagrange's equations of second kind. Uniqueness of solution. Energy equation for conservative fields. Hamilton's variables. Donkin's theorem. Hamilton canonical equations. Cyclic coordinates. Routh's equations.	12
2	UNIT-II	Poisson's Bracket. Poisson's Identity. Jacobi-Poisson Theorem. Motivating problems of calculus of variations, shortest distance. Minimum surface of revolution. Brachistochrone problem. Isoperimetric problem. Geodesic. Fundamental lemma of calculus of variations. Euler's equation for one dependent function and its generalization to (i) 'n' dependent functions, (ii) higher order derivatives. Conditional extremum under geometric constraints and under integral constraints	15
3	UNIT-III	Hamilton's Principle. Principle of least action. Poincare Cartan	15

4	UNIT-IV	<p>Integral invariant. Whittaker's equations. Jacobi's equations. Lee Hwa Chung's theorem, canonical transformations and properties of generating functions</p> <p>Hamilton-Jacobi equation. Jacobi theorem. Method of separation of variables. Lagrange Brackets. Condition of canonical character of a transformation in terms of Lagrange brackets and Poisson brackets, Invariance of Lagrange brackets and Poisson brackets under canonical transformations</p>	12
5	UNIT-V	<p>GRAVITATION: Attraction and potential of rod, disc, spherical shells and sphere. Surface integral of normal attraction (Application &amp; Gauss' theorem). Laplace and Poisson equations. Work done by self-attracting systems. Distributions for a given potential. Equipotential surfaces. Surface and solid harmonics. Surface density in terms of surface harmonics</p>	15

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**BHILAI MAHILA MAHAVIDYALAYA, HOSPITAL**  
**SECTOR, BHILAIDEPARTMENT OF MATHEMATICS**  
**NAME OF THE PROFESSOR: Dr. ASHA RANI DAS**  
**SESSION: 2022- 2023**  
**SUBJECT: General Relativity & Cosmology (I) (PAPER –III)**  
**CLASS: M.SC.III & IV SEMESTER**

S.NO.	MODULE (UNIT)	TOPIC	LECTURES ALLOCATED (in Days/Class)
<b>M.Sc. III SEMESTER</b>			
1	UNIT-I	General Relativity-Transformation of coordinates. Tensors. Algebra of Tensors. Symmetric and skew symmetric Tensors. Contraction of tensors and quotient law.	10
2		Reimannian metric. Parallel transport. Christoffel Symbols. Covariant derivatives, intrinsic derivatives and geodesies.	12
3	UNIT- II	Unit-II Riemann Christoffel curvature tensor and its symmetry properties. Bianchi identities and Einstein tensor. Review of the special theory of relativity and the Newtonian Theory of gravitation.	10
4	UNIT-III	Unit-III Principle of equivalence and general covariance, geodesic principle, Newtonian approximation of relativistic equations of motion. Einstein's field equations and its Newtonian approximation.	
5	UNIT -IV	Unit-IV Schwarzschild external solution and its isotropic form. Planetary orbits and analogues of Kepler's Laws in general relativity. Advance of perihelion of a planet. Bending of light rays in a gravitational field, vitational redshift of spectral lines. Radar echo delay.	20
	UNIT -V	Unit-V Energy-momentum tensor of a perfect fluid. Schwarzschild internal solution. Boundary conditions. Energy momentum tensor of an electromagnetic field. Einstein-Maxwell equations. ReissnerNordstrfm solution.	20
<b>M.Sc. IV SEMESTER</b>			

1	UNIT –I	Cosmology-physical universe, Mach's principle, Einstein modified field equations with cosmological term.	12
2	UNIT -II	Static Cosmological models of Einstein and De-Sitter, their derivation, properties and comparison with the actual universe.	14
3	UNIT -III	Hubble's law. Cosmological principles. Weyl's postulate. Derivation of Robertson-Walker metric. Hubble and deceleration parameters. Redshift. Redshift versus distance relation. Angular size versus redshift relation and source counts in Robertson-Walker spacetime.	17
4	UNIT -IV	Friedmann models. Fundamental equations of dynamical cosmology. Critical density. Closed and open Universes. Age of the Universe. Matter dominated era of the Universe.	17
5	UNIT-V	Einstein-deSitter model. Particle and event horizons. EddingtonLamaitre models with I-term. Perfect cosmological principle. Steady state cosmology.	16

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BHILAI MAHILA MAHAVIDYALAYA, HOSPITAL SECTOR,  
BHILAI

DEPARTMENT OF MATHEMATICS

NAME OF THE PROFESSOR: M. BHAGYALAXMI

SESSION: 2022- 2023

SUBJECT: OPERATIONS RESEARCH  
(PAPER –IV)

CLASS: M.Sc. III YEAR

S.NO.	MODULE (UNIT)	TOPIC	LECTURES ALLOCATED (in Days/Class)
1	UNIT-I	Operations Research and its Scope. Necessity of Operations Research in Industry. Linear Programming-Simplex Method. Theory of the	10

2	UNIT- II	Simplex Method. Duality and Sensitivity Analysis.  Other Algorithms for Linear Programmng-Dual Simplex Method.	12
3	UNIT-III	Parametric Linear Programming. Upper Bound Technique. Interior Point Algorithm. Linear Goal Programming	15
4	UNIT -IV	Transportation and Assignment Problems.	15
5	UNIT -V	Network Analysis-Shortest Path Problem. Minimum Spanning Tree Problem. Maximum Flow I Problem. Minimum Cost Flow Problem. Network Simplex Method. Project Planning and Control I with PERT CPM.	20

M.Sc. IV SEMESTER

1	UNIT -I	Dynamic Programming - Deterministic and Probabilistic Dynamic programming. Integer Programming- Branch and Bound Technique.	10
2	UNIT-II	Game Theory-Two-Person, Zero-Sum Games. Games with Mixed Strategies. Graphical, Solution. Solution by Linear Programming.	15



3	UNIT-III	Integer Programming-Branch and Bound Technique.	10
4	UNIT-IV	<p>Queuing system: Deterministic Queuing system, probability distribution in</p> <p>Queuing, classification of Queuing models, Poission Queuing system ((M/M/I):( /FIFO), (M/M/I): (SIRO), (M/M/I): (N/FIFO).</p> <p>Inventory control: The concept of EOQ, Deterministic inventory problem with no shortages.</p>	15
5	UNIT-V	<p>Nonlinear Programming-One and Multi-Variable Unconstrained Optimization.</p> <p>Kuhn-Tucker Conditions for Constrained Optimization.</p> <p>Quadratic Programming</p>	15

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BHILAI MAHILA MAHAVIDYALAYA, HOSPITAL  
SECTOR, BHILAIDEPARTMENT OF MATHEMATICS  
NAME OF THE PROFESSOR: JYOTI SHARMA  
SESSION: 2022- 2023  
SUBJECT: Graph Theory (I) (PAPER –V)  
CLASS: M.SC.III & IV SEMESTER

S.NO.	MODULE (UNIT)	TOPIC	LECTURES ALLOCATED (in Days/Class)
<b>M.Sc. III SEMESTER</b>			
1	UNIT-I	Operations on graphs, matrices and vector spaces: Topological operations, Homeomorphism, homomorphism, contractions, derived graphs, Binary operations.	10
2	UNIT- II	Matrices and vector spaces: Matrices and vector spaces: The adjacency matrix, The determinant and the spectrum, Spectrum properties, The incidence matrix, cycle space and Bond space, Cycle bases and cycle graphs.	15
3	UNIT-III	Colouring packing and covering: Vertex coverings, critical graphs, Girth and chromatic number, uniquely colourable graphs, edgecolourings, Face colourings and Beyond, The achromatic and the Adjoint Numbers.	12
4	UNIT -IV	Combinational formulations: Setting up of combinational formulations, the classic pair of duals, Gallai, Norman-Rabin Theorems, Clique parameters, The Rosenfeld Numbers.	10
5	UNIT -V	Perfect Graphs: Introduction to the “SPGC”, Triangulated (Chordal) graphs, Comparability graphs, Interval graphs, permutation graphs, circular arc graphs, split graphs, weakly triangulated graphs.	15
<b>M.Sc. IV SEMESTER</b>			

1	UNIT –I	Ramsey Theory: Perfectness-preserving operations, Forbidden Subgraph orientations, Ramsey numbers and Ramsey graphs.	10
2	UNIT -II	Groups: Permutation groups, The automorphism group, graphs with given group, symmetry concepts, pseudo-similarity and stability, spectral studies of the Automorphism group.	12
3	UNIT -III	Polynomials and Graph Enumeration: The colour polynomials, The chromatic polynomial, The bivariate colouring polynomials.	15
4	UNIT -IV	Graph Enumeration: Co-chromatic (co-dichromatic) graphs and chromatically unique graphs, Graph Enumeration.	10
5	UNIT-V	Digraphs & Networks: Digraphs, Types of connectedness, Flows in Networks, Menger's and Konig's Theorem, Degree sequences	10

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1.1.1- The Institution ensures effective curriculum delivery through a well planned and documented process

2-Teaching Plan –

1) Dr. Anupama Shrivastava-(Teaching plane)



SESSION 2022-23

BHILAI MAHILA MAHAVIDYALAYA, HOSPITAL SECTOR, BHILAI

DEPARTMENT OF ZOOLOGY

NAME OF THE PROFESSOR: Dr Anupama Shrivastava

SESSION: 2022\_- 23

SUBJECT:ZOOLOGY

CLASS: B.Sc.I Paper-II(Chordata and Embryology)

S.NO.	MODULE (UNIT)	TOPIC	LECTURES ALLOCATED (in Days/Class)
1	Unit-I	<ul style="list-style-type: none"> <li>• Classification of Hemichordata</li> <li>• Hemichordata- Type study-Balanoglossus</li> <li>• Classification of Chordates upto orders..</li> <li>• Protochordata-Type study - Amphioxus.</li> <li>• A comparative account of Petromyzon and Myxine</li> </ul>	04 05 06 07 05
2	Unit-II	<ul style="list-style-type: none"> <li>• Fishes-Skin &amp; Scales, migration in fishes, Parental care in fish.</li> <li>• Amphibia-Parental care and Neoteny.</li> <li>• Reptilia- Poisonous &amp; Non-poisonous Snakes, Poison apparatus, snake venom and Extinct Reptiles</li> </ul>	10 09 08
3	Unit:-III	<ul style="list-style-type: none"> <li>• Birds- Flight Adaptation, Migration, and Perching mechanism, Discuss-Birds are glorified reptiles.</li> <li>• Mammals-Comparative account of Prototheria, Metatheria, Eutheria and Affinities.</li> <li>• Aquatic Mammals and their adaptations.</li> </ul>	10 09 08
4	Unit:IV	<ol style="list-style-type: none"> <li>1. Fertilization</li> <li>2. Gametogenesis, Structure of gamete and Types of eggs</li> <li>3. Cleavage</li> <li>4. Development of Frog up to formation of three germ layers.</li> <li>5. Parthenogenesis</li> </ol>	04 05 06 07 05
5	Unit :V	<ol style="list-style-type: none"> <li>1. Embryonic induction, Differentiation and Regeneration.</li> <li>2. Development of Chick (a) up to formation of three germ layers, (2) Extra-embryonic membranes.</li> <li>3. Placenta in mammals.</li> </ol>	10 09 08

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BHILAI MAHILA MAHAVIDYALAYA, HOSPITAL SECTOR,

BHILAI DEPARTMENT OF ZOOLOGY

NAME OF THE PROFESSOR: Dr. Anupama Shrivastava

SESSION: 2022- 2023

SUBJECT:ZOOLOGY

CLASS: M. Sc. ZOOLOGY SEMESTER - III PAPER-I COMPARATIVE ANATOMY OF VERTEBRATES

S.NO.	MODULE (UNIT)	TOPIC	LECTURES ALLOCATED (in Days/Class)
1	UNIT-I	Origin of vertebrates • Origin of fish & Amphibian. • Origin of reptiles, Birds and Mammals. • Classification of Vertebrates and specialty of respective classes • Amphibians, Gymnophiona, Neotony, Parental case • Reptiles – Extinct reptiles • Birds – Palate in Birds • Mammals. – New world and old-world Monkeys	15
2	UNIT-II	Comparative studies of Integument system in vertebrates • Comparative study of derivatives of integuments in vertebrates • Skeletal system in vertebrates. • Comparative study of Jaw suspensorium, • Comparative study of Limbs and Girdles in vertebrates	15
3	UNIT-III	Comparative study of Respiratory system among vertebrates. • Comparative study of respiratory pigments among vertebrates • Comparative study of heart in vertebrates • Comparative study of Aortic arch in vertebrates	15
4	UNIT-IV	Comparative studies of digestive system in vertebrates • Comparative study of brain among vertebrates. • Comparative study of sense organs among vertebrates • Comparative study of urinogenital system among vertebrates	15

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BHILAI MAHILA MAHAVIDYALAYA, HOSPITAL SECTOR,

BHILAI DEPARTMENT OF ZOOLOGY

NAME OF THE PROFESSOR: Dr. Anupama Shrivastava

SESSION: 2022- 2023

SUBJECT:ZOOLOGY

CLASS: M. Sc. ZOOLOGY SEMESTER - I PAPER-I Tools and Techniques in Biology

S.NO.	MODULE (UNIT)	TOPIC	LECTURES ALLOCATED (in Days/Class)
	UNIT-I	<b>UNIT-I</b> <ul style="list-style-type: none"> <li>• Principles and Application of : -               <ul style="list-style-type: none"> <li>• Ultracentrifugation</li> <li>• Electrophoresis</li> <li>• Chromatography (various types)</li> <li>• Colorimetry and spectrophotometry</li> <li>• Flow cytometry.</li> </ul> </li> </ul>	15
2	UNIT-II	<b>UNIT-II</b> <ul style="list-style-type: none"> <li>• Principles and Application of : -               <ul style="list-style-type: none"> <li>• Light Microscopy and micrometry</li> <li>• Phase Contrast microscopy</li> <li>• Interference microscopy</li> <li>• Fluorescence microscopy</li> <li>• Transmission Electron microscopy.</li> <li>• Scanning Electron microscopy.</li> </ul> </li> </ul>	15
3	UNIT-III	<b>UNIT-III</b> <ul style="list-style-type: none"> <li>• ELISA</li> <li>• PCR</li> <li>• Biological assays-<i>in vivo</i> and <i>in vitro</i></li> <li>• Principles of cytological and cytochemical techniques</li> <li>• Fixation: chemical basis of fixation by formaldehyde, gluteraldehyde, chromium salts, mercury salts, osmium salts, alcohol and acetone</li> <li>• Chemical basis of staining of carbohydrate, protein lipids and nucleic acids.</li> </ul>	15
4	UNIT-IV	<b>UNIT-IV</b> <ul style="list-style-type: none"> <li>• Principle and techniques of               <ul style="list-style-type: none"> <li>• Nucleic acid hybridization</li> <li>• Sequencing of proteins and nucleic acids</li> </ul> </li> <li>• Cryopreservation</li> <li>• Chromosomal isolation and preparation of Cladogram</li> <li>• Separation of DNA from animal/human sample</li> </ul>	15

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2) Dr. Nishtaha Vaidya-(Teaching plane)



**BHILAI MAHILA MAHAVIDYALAYA, HOSPITAL SECTOR, BHILAI**

DEPARTMENT OF Zoology  
NAME OF THE PROFESSOR Dr. Nishtha Vaidya  
SESSION 2022 -2023  
SUBJECT Paper II (STRUCTURE & FUNCTION OF INVERTEBRATES)  
CLASS MSc I Semester Zoology

S.No.	Module (Unit)	Topics	Lecture allocated	
			Theory	Practical
1.	Unit I	Organization of coelom • Acoelomates and Pseudocoelomates • Coelomates: Protostomia and Deuterostomia. Locomotion • Flagellar and cilliary movement in Protozoa. • Hydrostatic movement in Coelenterata, Annelida and Echinodermata	10	06
2.	Unit II	Nutrition and Digestion • Patterns of feeding and digestion in Protozoa • Filter feeding in polychaeta. Respiration • Organs of respiration: Gills, lungs and trachea. • Respiratory pigments.	09	06
3.	Unit III	Excretion • Organs of excretion. • Excretion and osmoregulation Nervous System • Primitive nervous system: Coelenterata and Echinodermata. • Advanced Nervous system: Arthropoda (Crustacea and insecta) and Mollusca (Cephalopoda)	12	06
4.	Unit IV	Invertebrate larvae • Larval forms of free-living and parasitic invertebrates • Minor Phyla • Organization and general characters of (Ctenophore, Rotifera, Ectoprocta)	12	06

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BHILAI MAHILA MAHAVIDYALAYA, HOSPITAL  
SECTOR, BHILAI DEPARTMENT OF ZOOLOGY

NAME OF THE PROFESSOR: Dr. Nishtha Vaidya

SESSION: 2022- 23

SUBJECT: ZOOLOGY

CLASS: B.Sc.I- Practical

Zoology B.Sc. Part I (2019-20) Practical

- Dissection of Earthworm, Cockroach, Palaemon and Pila
- Minor dissection—appendages of Prawn & hastate plate, mouth parts of insects, redulla of Pila. (Alternative methods: By Clay/Thermacol/drawing/Model etc.)
- Adaptive characters of Aquatic, terrestrial, aerial and desert animals.
- Museum specimen invertebrate • Slides- Invertebrates, frog embryology, Chick embryology and cytology.

All Practical work Completed in time duration.

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3) Renuka Yadav (Teaching plane)



BHILAI MAHILA MAHAVIDYALAYA, HOSPITAL SECTOR,  
BHILAI DEPARTMENT OF ZOOLOGY

NAME OF THE PROFESSOR: MS. Renuka Yadav

SESSION: 2022- 23

SUBJECT: ZOOLOGY

CLASS: B.Sc.II- Theory- Paper-I- Anatomy and Physiology

S.NO.	MODULE (UNIT)	TOPIC	LECTURES ALLOTTED (in Days/Class)
1	Unit-1	• Integument and its derivatives: structure of scales, hair and feathers	10
		• Alimentary canal and digestive gland in vertebrates	09
		• Respiratory organs: Gills and lung, air-sac in birds	08
2	Unit-II	• Endoskeleton: a) Axial Skeleton- Skull and vertebrae, b) Appendicular Skeleton Limbs and girdles	10
		• Circulatory System: Evolution of heart and aortic arches	09
		• Urinogenital System: Kidney and excretory ducts	08
		• Nervous System: General plan of brain and spinal cord	10
3	Unit-:III	• Ear and Eye: Structure and function	09
		• Gonads and genital ducts	08
		• Digestion and absorption of dietary components	09
4	Unit: IV	• Physiology of heart, cardiac cycle and ECG	08
		• Blood coagulation	03
		• Respiration: mechanism and control of Breathing	07
5	Unit: V	• Excretion : Physiology of Excretion, Osmoregulation • Physiology of Muscle contraction • Physiology of nerve impulse, Synaptic transmission	10 08 09

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BHILAI MAHILA MAHAVIDYALAYA, HOSPITAL  
SECTOR, BHILAI DEPARTMENT OF ZOOLOGY

NAME OF THE PROFESSOR: Ms. Renuka Yadav

SESSION: 2022- 23

SUBJECT: ZOOLOGY

CLASS: B.Sc.II- Practical

### PRACTICAL WORK –

The practical work in general shall be based on the syllabus prescribed in theory.  
The students will be required to show the knowledge of the following.

- Ø Study of the representative examples of the different chordates (Classification and character).
- Ø Dissection of various systems of scoliodon-Afferent and Efferent branchial vessels, cranial nerves, internal ear.
- Ø Simple microscopic technique through unstained or stained permanent mounts.
- Ø Study of prepared slides histological, as per theory papers.
- Ø Study of limb girdles and vertebrae of frog, varanus, fowl and Rabbit.
- Ø Identification of species and individuals of honey bee.
- Ø Life cycle of honey bee and silkworm.

All Practical work Completed in time duration.

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## BHILAI MAHILA MAHAVIDYALAYA, HOSPITAL SECTOR, BHILAI

DEPARTMENT OF Zoology  
NAME OF THE PROFESSOR Renuka Yadav  
SESSION 2022 to 2023  
SUBJECT Environmental Studies  
CLASS BSc I Year BIO Group I  
BSc I Year CS and Maths

S. No.	Module (Unit)	Topics	Lecture allotted
1.	BSc I Year (BIO, CS, Maths) Environmental Studies		
	Unit II	<p><b>ECOSYSTEM</b></p> <p>(a) Concept, Structure and Function of and ecosystem - Producers, consumers and decomposers. –</p> <ul style="list-style-type: none"><li>• Energy flow in the ecosystem –</li><li>• Ecological succession</li><li>• Food chains, food webs and ecological pyramids.</li><li>• Introduction, Types, Characteristics Features, Structure and Function of Forest, Grass, Desert and Aquatic Ecosystem.</li></ul> <p>(b) Biodiversity and its Conservation –</p> <ul style="list-style-type: none"><li>• Introduction - Definition: genetic, species and ecosystem diversity</li><li>• Bio-geographical classification of India. - Value of biodiversity: Consumptive use, Productive use, social ethics, aesthetic and option values.</li><li>• Biodiversity at global, National and local levels.</li><li>• India as mega-diversity nation.</li><li>• Hot spots of biodiversity. –</li><li>• Threats to biodiversity: habitat loss, poaching of wildlife, man-wild life conflict.</li><li>• Endangered and endemic species of India.</li><li>• Conservation of biodiversity: In situ and Ex-situ conservation of biodiversity</li></ul>	12

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BHILAI MAHILA MAHAVIDYALAYA, HOSPITAL  
SECTOR, BHILAI DEPARTMENT OF ZOOLOGY  
NAME OF THE PROFESSOR: Ms. Renuka Yadav  
SESSION: 2022- 23  
SUBJECT: ZOOLOGY  
CLASS - M. Sc. ZOOLOGY FIRST SEMESTER PAPER – I  
BIOSYSTEMATICS AND BIODIVERSITY

S.NO.	MODULE (UNIT)	TOPIC	LECTURES ALLOTTED (in Days/Class)
1	UNIT-I	Definition and basic concepts of biosystematics and taxonomy <ul style="list-style-type: none"><li>• Concept of taxonomy</li><li>• Chemotaxonomy</li><li>• Cytotaxonomy</li><li>• Molecular taxonomy and mapping of phylogenetic tree</li></ul>	15
2	UNIT-II	Dimensions of speciation and taxonomic characters <ul style="list-style-type: none"><li>• Species, types of species and mechanism of speciation.</li><li>• Species concepts and species category.</li><li>• Theories of biological classification.</li><li>• Taxonomic characters and different kinds.</li></ul>	15
3	UNIT-III	Procedure keys in taxonomy <ul style="list-style-type: none"><li>• Taxonomic procedures-taxonomic collections, preservation, curation</li><li>• Taxonomic keys-different kinds of taxonomic keys, their merits and demerits.</li><li>• Process of typification and different Zoological types.</li><li>• International code of Zoological Nomenclature (ICZN)</li></ul>	15
4	UNIT-IV	Biodiversity <ul style="list-style-type: none"><li>• Concept and types of Biodiversity</li><li>• Methods of study of terrestrial, aquatic and aerial biodiversity</li><li>• Significance of wetland biodiversity</li><li>• Conservation methods of biodiversity</li><li>• Climate change and biodiversity</li><li>• Biosphere reserves</li><li>• Threat to biodiversity and IUCN Red list</li><li>• Hot spots of Biodiversity- Biodiversity legislation of India, USA,UK,Canada</li></ul>	15

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BHILAI MAHILA MAHAVIDYALAYA, HOSPITAL  
SECTOR, BHILAI DEPARTMENT OF ZOOLOGY

NAME OF THE PROFESSOR: Ms. Renuka Yadav

SESSION: 2019\_- 20

SUBJECT:ZOOLOGY

CLASS --- M. Sc. ZOOLOGY SEMESTER – III PAPER – IV IMMUNOLOGY AND PARASITISM

S.NO.	MODULE (UNIT)	TOPIC	LECTURES ALLOCATED (in Days/Class)
1	UNIT-I	Cells and organs of immune system <ul style="list-style-type: none"><li>• Antigen and antibody structure</li><li>• Antigen-Antibody interaction</li><li>• Monoclonal antibody</li><li>• Primary and Secondary lymphoid organs</li></ul>	15
2	UNIT-II	B-cell generation, activation and differentiation <ul style="list-style-type: none"><li>• T-cell maturation, activation and differentiation</li><li>• T-cell receptors</li><li>• Complement system</li><li>• Cytokines</li></ul>	15
3	UNIT-III	Major histocompatibility organ <ul style="list-style-type: none"><li>• Cell mediated cytotoxic response</li><li>• Hypersensitivity reaction</li><li>• Autoimmune diseases</li><li>• Transplantation immunology</li><li>• Vaccine development</li></ul>	15
4	UNIT-IV	Immune response in cancer, AIDS, SARS-Cov2 <ul style="list-style-type: none"><li>• Immune response to helminth parasite infection</li><li>• Immune response to protozoan parasite infection</li><li>• Immune response to bacterial infection</li><li>• Immune response to viral infection</li></ul>	15

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Geetanjali mishra (Teaching plane)-



BHILAI MAHILA MAHAVIDYALAYA, HOSPITAL

SECTOR, BHILAI DEPARTMENT OF ZOOLOGY

NAME OF THE PROFESSOR:

Mrs.Geetanjali Mishra

SESSION: 2022- 23

SUBJECT:ZOOLOGY

CLASS: B.Sc.II Theory –\_Paper-2 VERTEBRATE ENDOCRINOLOGY,  
REPRODUCTIVE BIOLOGY BEHAVIOUR, EVOLUTION AND APPLIED  
ZOOLOGY

S.NO.	MODULE (UNIT)	TOPIC	LECTURES ALLOCATED (in Days/Class)
1	Unit-1	<ul style="list-style-type: none"> <li>• General Characters of Hormones.</li> <li>• Hormone Receptor</li> <li>• Biosynthesis and secretion of thyroid, Adrenal ; Ovarian and testicular hormones.</li> <li>• Endocrine disorder due to hormones and other gland.</li> <li>• Reproductive cycle in vertebrate.</li> </ul>	09 03 08 07 04
2	Unit-II	<ul style="list-style-type: none"> <li>• Menstruation, Lactation and pregnancy.</li> <li>• Mechanism of parturition.</li> <li>• Hormonal regulation of gametogenesis</li> <li>• Extra embryonic membrane</li> <li>• Evidences of organic evolution.</li> </ul>	05 06 07 05
3	Unit-:III	<ul style="list-style-type: none"> <li>• Theories of organic evolution.</li> <li>• Variation, Mutation, Isolation and Natural selection.</li> <li>• Evolution of Horse</li> </ul>	09 08 07 03
4	Unit:IV	<ul style="list-style-type: none"> <li>• Introduction to Ethology.</li> <li>• Patterns of Behaviour Taxes, Reflexes, Drives and Stereotyped Behaviour.</li> <li>• Reproductive Behavioural Patterns.</li> <li>• Hormones, Drugs and Behaviour</li> </ul>	03 09 08 07
5	Unit :V	<ul style="list-style-type: none"> <li>• Aquaculture</li> <li>• Sericultural</li> <li>• Apiculture</li> <li>• Pisciculture</li> <li>• Poultry keeping</li> <li>• Elements of Pest Control – 1. Chemical control 2. Biological Control</li> </ul>	03 03 03 05 06 07

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BHILAI MAHILA MAHAVIDYALAYA, HOSPITAL  
SECTOR, BHILAI DEPARTMENT OF ZOOLOGY

NAME OF THE PROFESSOR: Mrs. Geetanjali Mishra, Dr. Anupama shrivastava

SESSION: 2022- 23

SUBJECT: ZOOLOGY

CLASS: B.Sc.III- Practical

PRACTICAL WORK –

The Practical work in general shall be based on syllabus prescribed in theory. The candidates will be required to show knowledge of the following :

- Ø Estimation of population density, Percentage frequency, Relative density.
- Ø Analysis of Producers and consumers in grassland.
- Ø Detection of gram-negative and gram-positive bacteria.
- Ø Blood group detection (A,B, AB & O).
- Ø R.B.C., W.B.C. count.
- Ø Blood coagulation time.
- Ø Preparation of Hematin crystals from blood of rat.
- Ø Observation of Drosophila, wild and mutant.
- Ø Chromatography-Paper or gel.
- Ø Colorimetric estimation of hemoglobin.
- Ø Mitosis in onion root tip.
- Ø Biochemical detection of Carbohydrate, Protein and Lipid.
- Ø Study of Permanent slides of Parasites, based on theory paper.
- Ø Working Principles of pH meter, Colorimeter, centrifuge and microscopes.

All Practical work Completed in time duration.

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SECTOR, BHILAI DEPARTMENT OF Zoology

NAME OF THE PROFESSOR: Geetanjali Mishra

SESSION: 2022-23

SUBJECT: Zoology

CLASS: M.Sc.Ist sem PAPER – I

S.NO.	MODULE (UNIT)	TOPIC	LECTURES ALLOCATED (in Days/Class)
	UNIT-I	BIOSYSTEMATICS AND BIODIVERSITY Definition and basic concepts of biosystematics and taxonomy <ul style="list-style-type: none"> <li>• Concept of taxonomy</li> <li>• Chemotaxonomy</li> <li>• Cytotaxonomy</li> <li>• Molecular taxonomy and mapping of phylogenetic tree</li> </ul>	15
	UNIT-II	Dimensions of speciation and taxonomic characters <ul style="list-style-type: none"> <li>• Species, types of species and mechanism of speciation.</li> <li>• Species concepts and species category.</li> <li>• Theories of biological classification.</li> <li>• Taxonomic characters and different kinds.</li> </ul>	15
	UNIT-III	Procedure keys in taxonomy <ul style="list-style-type: none"> <li>• Taxonomic procedures-taxonomic collections, preservation, curation</li> <li>• Taxonomic keys-different kinds of taxonomic keys, their merits and demerits.</li> <li>• Process of typification and different Zoological types.</li> <li>• International code of Zoological Nomenclature (ICZN)</li> </ul>	15
	UNIT-IV	Biodiversity <ul style="list-style-type: none"> <li>• Concept and types of Biodiversity</li> <li>• Methods of study of terrestrial, aquatic and aerial biodiversity</li> <li>• Significance of wetland biodiversity</li> <li>• Conservation methods of biodiversity</li> <li>• Climate change and biodiversity</li> <li>• Biosphere reserves</li> <li>• Threat to biodiversity and IUCN Red list</li> <li>• Hot spots of Biodiversity- Biodiversity legislation of India, USA, UK, Canada</li> </ul>	15

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BHILAI MAHILA MAHAVIDYALAYA, HOSPITAL  
SECTOR, BHILAI DEPARTMENT OF ZOOLOGY

NAME OF THE PROFESSOR: Mrs.Geetanjali Mishra

SESSION: 2022- 23

SUBJECT:ZOOLOGY

CLASS: \_M. Sc. ZOOLOGY SEMESTER – III PAPER

ENVIRONMENT PHYSIOLOGY AND POPULATION ECOLOGY

S.NO.	MODULE (UNIT)	TOPIC	LECTURES ALLOCATED (in Days/Class)
1	UNIT – I	Population dynamics: <ul style="list-style-type: none"><li>• Demography, life table, reproductive rates, reproductive values</li><li>• Population growth, exponential, non-overlapping</li><li>• Stochastic and time lag models of population growth</li><li>• Population density</li><li>• Population evolution</li><li>• Community dynamics: Characteristics, development and classification</li></ul>	15
2	Unit-II	Terrestrial Adaptation in vertebrates <ul style="list-style-type: none"><li>• Aquatic adaptation in vertebrates</li><li>• Aerial adaptation in vertebrates</li><li>• Cave adaptations in vertebrates</li></ul>	15
3	UNIT-III	Stress Physiology <ul style="list-style-type: none"><li>• Basic concepts of environmental stress and strain, Concept of elastic and plastic strain.</li><li>• Stress avoidance, stress tolerance and stress resistance.</li><li>• Acclimatization, acclimation and adaptation.</li><li>• Endothermic and physiological mechanism of regulation of body temperature</li></ul>	15
4	UNIT -IV	Stress physiology in different conditions <ul style="list-style-type: none"><li>• Osmoregulation in aqueous and terrestrial habitats.</li><li>• Physiological response to oxygen deficient stress.</li><li>• Physiological response to body exercise.</li><li>• Effect of meditation and yoga</li></ul>	15

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