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Supporting Documents
1.1.1

Course Plans

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Biotechnology

Course Plan

CELL BIOLOGY

BIOTECH1GE02TH

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GE-2
COURSE: BIOTECH1GE02TH
CELL BIOLOGY (THEORY)

Year end examination: 50 marks
Practical examination: 20 marks
Internal Assessment: 30 marks

Note: The Examiner will set a total of nine (9) questions covering all topics/ units of the prescribed course by setting at least two questions from each unit. Out of the nine questions, one question containing ten (10) short-answer type questions that will cover entire course will be compulsory. The candidate will attempt a total of five questions (one from each unit) including the compulsory question. All questions will carry equal marks.

Unit 1 Structure and organization of Cell **(20 Periods)**

Cell Organization – Eukaryotic (Plant and animal cells) and prokaryotic Plasma membrane: Structure and transport of small molecules
Cell Wall: Eukaryotic cell wall, Extra cellular matrix and cell matrix interactions, Cell-Cell Interactions - adhesion junctions, tight junctions, gap junctions, and plasmodesmata (only structural aspects)
Mitochondria, chloroplasts and peroxisomes
Cytoskeleton: Structure and organization of actin filaments, association of actin filaments with plasma membrane, cell surface protrusions, intermediate filaments, microtubules
Nucleus :Nuclear envelope, nuclear pore complex and nuclear lamina Chromatin – Molecular organization Nucleolus

Unit 2 Protein Sorting and Transport **(15 Periods)**

Ribosomes, Endoplasmic Reticulum – Structure, targeting and insertion of proteins in the ER, protein folding, processing and quality control in ER, smooth ER and lipid synthesis, export of proteins and lipids
Golgi Apparatus – Organization, protein glycosylation, protein sorting and export from Golgi Apparatus
Lysosomes

Unit 3 Cell Signalling **(10 Periods)**

Signalling molecules and their receptors Function of cell surface receptors
Pathways of intra-cellular receptors – Cyclic AMP pathway, cyclic GMP and MAP kinase pathway

Unit 4 Cell Cycle, Cell Death and Cell Renewal **(15 Periods)**

Eukaryotic cell cycle and its regulation, Mitosis and Meiosis
Development of cancer, causes and types
Programmed cell death
Stem cells
Embryonic stem cell, induced pleuripotent stem cells

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COURSE: BIOTECH1GE02PR CELL BIOLOGY

(PRACTICAL)

Practicals

1. Study a representative plant and animal cell bymicroscopy.
2. Study of the structure of cell organelles through electronmicrographs
3. Cytochemical staining of DNA – Feulgen
4. Demonstration of the presence of mitochondria in striated muscle cells/ cheek epithelial cell using vital stain Janus Green B
5. Study of polyploidy in Onion root tip by colchicine treatment.
6. Identification and study of cancer cells by photomicrographs.
7. Study of different stages of Mitosis.
8. Study of different stages of Meiosis.

Suggested Readings

1. Hardin J, Bertoni G and Kleinsmith LJ. (2010). Becker's World of the Cell. 8th edition. Pearson.
2. Karp G. (2010) Cell and Molecular Biology: Concepts and Experiments. 6th edition. John Wiley & Sons. Inc.
3. De Robertis, EDP and De Robertis EMF. (2006). Cell and Molecular Biology. 8th edition. Lipincott Williams and Wilkins, Philadelphia.
4. Cooper, G.M. and Hausman, R.E. (2009). The Cell: A Molecular Approach. 5th Edition. ASM Press & Sunderland, Washington, D.C.; Sinauer Associates, MA.

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Course Plan

Unit 1: Structure and organization of Cell

Cell Organization – Eukaryotic (Plant and animal cells) and prokaryotic Plasma membrane: Structure and transport of small molecules

Cell Wall: Eukaryotic cell wall, Extra cellular matrix and cell matrix interactions, Cell-Cell Interactions - adhesion junctions, tight junctions, gap junctions, and plasmodesmata (only structural aspects)

Mitochondria, chloroplasts and peroxisomes

Cytoskeleton: Strcture and organization of actin filaments, association of actin filaments with plasma membrane, cell surface protrusions, intermediate filaments, microtubules

Nucleus :Nuclear envelope, nuclear pore complex and nuclear lamina Chromatin – Molecular organization Nucleolus

Contents	No of Lectures Required	Lesson Outcome
Cell Organization – Eukaryotic (Plant and animal cells) and prokaryotic	2	Students will learn about the different types of cells such as eukaryotic, prokaryotic, plant cells and animal cells, their organization and function
Plasma membrane: Structure and transport of small molecules	4	Students are given an understanding of the bilayer structure of the cell membrane, the fluid mosaic model and the various other models proposed to describe the structure of the cell membrane. An illustration of the range of transport mechanisms through the cells, cell permeability as well their importance.is given to the students.
Cell wall, extracellular matrix, cell cell interaction and cell adhesion	4	The detailed structure of the different types of cell walls and their role in cell protection will be taught to the students. An insight into an intricate network composed of an array of multidomain macromolecules organized in a cell/tissue-specific manner that compose the extracellular matrix, as well as the various molecules involved in cell adhesion and cell-cell interaction is given to the students.
Mitochondria	2	Students are taught about the detailed structure and the functions of mitochondria, its biogenesis, energy generation from F_0-F_1 particles
Chloroplast and Peroxisomes	2	Students are taught about the detailed structure and the

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		functions of chloroplast and peroxisomes, role in energy generation and biogenesis.
Cytoskeleton: Structure and organization of actin filaments, association of actin filaments with plasma membrane, cell surface protrusions, intermediate filaments, microtubules	3	Students are taught about the complex interlinking form of the proteins i.e. the cytoskeleton that provides mechanical support and shape to the cell to carry out essential functions like movement and division.
Nucleus :Nuclear envelope, nuclear pore complex and nuclear lamina Chromatin – Molecular organization Nucleolus	3	Students are taught about the detailed structure and the functions of nucleus, nucleolus and chromosomes.

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Unit 2 Protein Sorting and Transport

Ribosomes, Endoplasmic Reticulum – Structure, targeting and insertion of proteins in the ER, protein folding, processing and quality control in ER, smooth ER and lipid synthesis, export of proteins and lipids

Golgi Apparatus – Organization, protein glycosylation, protein sorting and export from Golgi Apparatus Lysosomes

Contents	**No of Lectures required**	**Lesson Outcome**
Ribosomes	4	Students are taught about the detailed structure and the functions of ribosomes specifically its role in protein synthesis
Structure and Functions of Endoplasmic Reticulum	4	Students will be educated about the in-depth structure of the endoplasmic reticulum, its types as well as the various functions performed by the endoplasmic reticulum required for the normal functioning of the cell.
Export of proteins and lipids from ER	2	Students will be taught the detailed mechanism of modification and transport of proteins and lipids from the ER.
Golgi Apparatus – Organization, protein glycosylation, protein sorting and export from Golgi Apparatus Lysosomes	5	Students will be educated about the in-depth structure of the Golgi apparatus as well as the various functions performed by the Golgi apparatus required for the normal functioning of the cell including protein secretion.

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Botany

Course Plan

B. Sc III Botany

Economic Botany and Biotechnology (BOTA 301)

1.	MOTIVATION P.K Testing	1. What are cultivated plants. 2. What are the uses of Wheat and Rice. 3. Name a few species used in daily life. 4. How tea leaves are processed. 5. Give some examples of plants used to yield sugar. 6. Which part of cotton plant is used to obtain fibre. 7. Name some edible oil yielding plants. 8. What are the important Indian medicinal plants. 9. Define tissue culture. 10. What are transgenic plants. 11. What do you understand by genetic engineering.
2.	LEARNING OBJECTIVES	1. To familiarize students with the concept of cultivated plants and their centres of origin. 2. To aware students about cultivation, morphology and uses of the economically important plants & plant products useful in everyday life. 3. To develop appreciation among students for the diversity of plants and their products in human use. 4. To develop knowledge of different types of plant tissue culture and its applications in different branches of Botany. 5. To enable students to understand the core concepts of plant biotechnology and recombinant DNA technology. 6. To familiarize students with various modern techniques used in plant biotechnology and their applications.
3.	CONTENTS	**Unit I** (3 Lectures) **Cultivated Plants** Introduction, Research centres, Concept of centres of origin, their importance with reference to

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		Vavilov's work **Unit II** (5 Lectures) **Cereals** Wheat and Rice -Origin, morphology, uses **Unit III** **Pulses & Vegetables** (4 Lectures) General account with special reference to Gram , soybean and Potato **Unit IV** **Spices** (3 Lectures) General account with special reference to clove, black pepper, cinnamon, Ginger and Turmeric (Botanical name, family, part used, morphology and uses) **Unit V** **Beverages** (4 Lectures) Tea and Coffee (morphology, processing, uses) **Unit VI** **Oils and Sugar** (4 Lectures) General description with special reference to groundnut and sugarcane **Unit VII** **Fibre Yielding Plants** (4 Lectures) General description with special reference to Cotton (Botanical name, family, part used, morphology and uses) **Unit VIII** **Medicinal Plants** (3 Lecture) Brief account of Ocimum, Tinospora, Aloe, Rauvolfia, Emblica and Cathranthus **Unit IX** **Introduction to Biotechnology** (15 Lectures) Tissue culture techniques, Micropropagation; haploid production through androgenesis and gynogenesis; brief account of embryo & endosperm culture; Applications of plant tissue culture in agriculture, horticulture and forestry **Unit X** **Biotechnological Techniques** (15 Lectures) Introduction to r-DNA, Cloning vehicles, Gene transfer techniques in plants, Transgenic plants, Agarose electrophoresis, Blotting techniques: Northern, Southern and Western Blotting, DNA Fingerprinting; Molecular DNA markers i.e. RAPD, RFLP, SNPs; DNA sequencing, PCR and Reverse Transcriptase-PCR. ELISA, Hybridoma and monoclonal an tibodies, ELISA and Immunodetection. Molecular diagnosis of human disease, Human gene Therapy.
4.	METHODOLOGY	1. Class lectures

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		2. Discussion 3. Power point presentation on various economically important plants
5.	TEACHING AIDS	1. Power point presentation 2. Charts 3. Field explorations
8.	REFERENCES	1. Kochhar, S.L. (2017). Economic Botany, Cambridge University Press. 2. Bhojwani, S.S. and Razdan, M.K., (1996). Plant Tissue Culture: Theory and Practice. Elsevier Science Amsterdam. The Netherlands. 3. Glick, B.R., Pasternak, J.J. (2003). Molecular Biotechnology- Principles and Applications of recombinant DNA. ASM Press, Washington.
9.	ASSIGNMENTS	1. Projects on economically important plants. 2. Power point presentation by students on biotechnological techniques.

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Unit 3 Cell Signalling

Signalling molecules and their receptors Function of cell surface receptors

Pathways of intra-cellular receptors – Cyclic AMP pathway, cyclic GMP and MAP kinase pathway

Contents	**No of lecture required**	**Lesson Outcome**
Types of signaling molecules and receptors	2	Students are educated about the various types of cell signaling molecules and the receptors involved.
Cell surface receptors and signaling pathways	4	The mechanism of action of cell surface receptors and their functions in cell signaling are described to the students. Various signaling pathways such as MAP kinase, cyclic AMP, cyclic GMP and GPCRs are taught to the students.
Intra-cellular receptors and signaling pathways	4	Students will get an understanding of the various intra-cellular signaling receptors and signaling pathways.

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Unit 4 Cell Cycle, Cell Death and Cell Renewal

Eukaryotic cell cycle and its regulation, Mitosis and Meiosis Development of cancer, causes and types.
Programmed cell death Stem cells Embryonic stem cell, induced pleuripotent stem cells

Contents	No of lecture required	Lesson Outcome
Cell cycle and its regulation	5	An in-depth mechanism-based understanding of the cell division cycles mitosis and meiosis and their regulatory mechanisms is given to the students.
Cancer	4	Students are educated about what is cancer, its types, causes, agents involved and the molecular basis of cancer such as oncogenes and proto-oncogenes
Programmed cell death	3	Students will learn about the mechanism of programmed cell death i.e. apoptosis and the various components involved
Stem cells Embryonic stem cell, induced pleuripotent stem cells	3	An illustration of the stem cells, their types and mechanism of their differentiation into different cell types is given to the students,

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Chemistry

CHEMISTRY DEPARTMENT

COURSE PLAN

Mr. Nishant

First Year

CHEM 101TH

ATOMIC STRUCTURE, BONDING, GENERAL ORGANIC Chemistry

Atomic Structure (14 Classes)
Review of Bohr's theory and its limitations, dual behavior of matter and radiation, de Broglie's relation, Heisenberg Uncertainty principle. Hydrogen atom spectra. Need of a new approach to Atomic structure. Schrodinger wave equation and meaning of various terms in it. Significance of ψ and ψ^2. Radial and angular nodes and their significance. Radial distribution functions and the concept of the most probable distance with special reference to 1s and 2s atomic orbitals. Significance of quantum numbers, Shapes of s, p and d atomic orbitals, nodal planes. Rules for filling electrons in various orbitals, Electronic configurations of the atoms. Stability of half-filled and completely filled orbitals, concept of exchange energy. Relative energies of atomic orbitals, Anomalous electronic configurations. Slater rules and applications.

Fundamentals of Organic Chemistry (8 Classes)
Physical Effects, Electronic Displacements: Inductive Effect, Electromeric Effect, Resonance and Hyperconjugation. Cleavage of Bonds: Homolysis and Heterolysis.
Structure, shape and reactivity of organic molecules: Nucleophiles and electrophiles. Reactive Intermediates: Carbocations, Carbanions and free radicals.
Strength of organic acids and bases: Comparative study with emphasis on factors affecting pK values. Aromaticity: Benzenoids and Hückel's rule.

Chemical Bonding and Molecular Structure (16 classes)
Ionic Bonding: General characteristics of ionic bonding. Energy considerations in ionic bonding, lattice energy and solvation energy and their importance in the context of stability and solubility of ionic compounds. Statement of Born-Landé equation for calculation of lattice energy, Born-Haber cycle and its applications, polarizing power and polarizability. Fajan's rules, ionic character in covalent compounds, bond moment, dipole moment and percentage ionic character.
Covalent bonding- VB Approach: Shapes of some inorganic molecules and ions on the basis of VSEPR and hybridization with suitable examples of linear, trigonal planar, square planar, tetrahedral, trigonal bipyramidal and octahedral arrangements. Concept of resonance and resonating structures in various inorganic and organic compounds. MO Approach: Rules for the LCAO method, bonding and antibonding MOs and their characteristics for s-s, s-p and p-p combinations of atomic orbitals, nonbonding combination of orbitals, MO treatment of homonuclear diatomic molecules up to Ne (including idea of s-p mixing) and heteronuclear diatomic molecules such as CO, NO and NO+. Comparison of VB and MO approaches.

Stereochemistry (10 Classes)
Conformations with respect to ethane, butane and cyclohexane. Interconversion of Wedge Formula, Newman, Sawhorse and Fischer projections. Concept of chirality (upto two carbon atoms). Configuration: Geometrical and Optical isomerism; Enantiomerism, Diastereomerism and Meso compounds). Threo and erythro; D and L; cis - trans nomenclature; CIP Rules: R/ S (for upto 2 chiral carbon atoms) and E / Z Nomenclature (for upto two C=C systems).

Aliphatic Hydrocarbons (12 Classes)
Functional group approach for the following reactions (preparations & reactions) to be studied in context to their structure.
Alkanes: (Upto 5 Carbons). Preparation: Catalytic hydrogenation, Wurtz reaction, Kolbe's synthesis, from Grignard reagent. Reactions: Free radical Substitution: Halogenation.
Alkenes: (Upto 5 Carbons) Preparation: Elimination reactions: Dehydration of alkenes and dehydrohalogenation of alkyl halides (Saytzeff's rule); cis alkenes (Partial catalytic hydrogenation) and trans alkenes (Birch reduction).

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Reactions: cis-addition (alk. $KMnO_4$) and trans-addition (bromine), Addition of HX (Markownikoff's and anti-Markownikoff's addition), Hydration, Ozonolysis, oxymecuration-demercuration, Hydroboration-oxidation.
Alkynes: (Upto 5 Carbons) Preparation: Acetylene from CaC_2 and conversion into higher alkynes; by dehalogenation of tetra halides and dehydrohalogenation of vicinal-dihalides.
Reactions: Formation of metal acetylides, addition of bromine and alkaline $KMnO_4$, ozonolysis and oxidation with hot alkaline $KMnO_4$.

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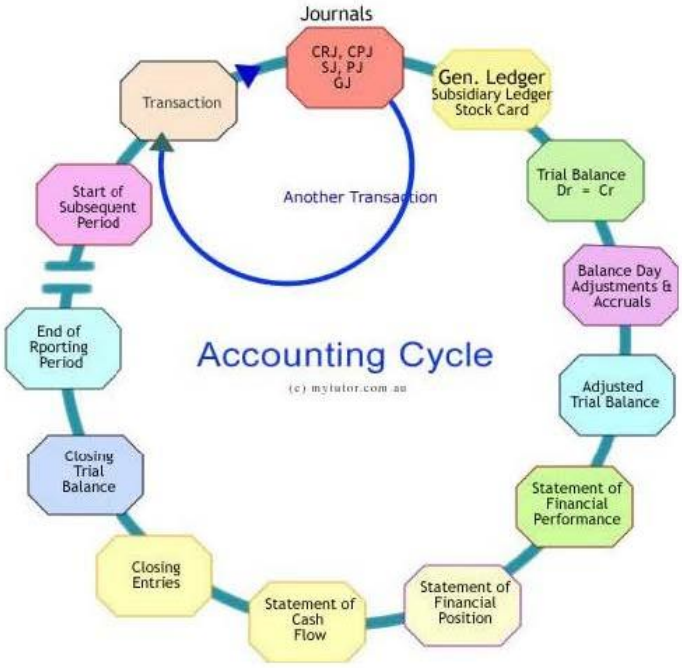
Commerce

Course Plan

B.Com: Year I
Paper BC 1.1
FINANCIAL ACCOUNTING



Faculty:
Ms. Raman Bassi
Department of Commerce and Management
St. Bede's College, Shimla

COURSE OBJECTIVE:

The objective of this paper is

- To help students to acquire conceptual knowledge of the financial accounting
- To impart skills for recording various kinds of business transactions.

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UNIT-1	
LEARNING OBJECTIVE: To enable students : • To familiarize with concepts of Accounting. • To understand various Accounting standards. • To understanding the concept of financial accounting • To learn about the basics and concepts of Financial Accounting • To understand the nature and scope of Accounting	
Name of the Topic	**No. of Lectures**
(a) Theoretical Framework	
i. Accounting as an information system, the users of financial accounting information and their needs. Qualitative characteristics of accounting, information. Functions, advantages and limitations of accounting. Branches of accounting. Bases of accounting; cash basis and accrual basis.	2
ii. The nature of financial accounting principles – Basic concepts and conventions: entity, money measurement, going concern, cost, realization, accruals, periodicity, consistency, prudence (conservatism), materiality and full disclosures.	1
iii. Financial accounting standards: Concept, benefits, procedure for issuing accounting standards in India. Salient features of First-Time Adoption of Indian Accounting Standard (Ind-AS) 101. International Financial Reporting Standards (IFRS): - Need and procedures.	2
(b) Accounting Process	
i. From recording of a business transaction to preparation of trial balance.	6
LEARNING OUTCOME: Students will be able to: • Understand the concepts of Accounting. • Understand various Accounting standards. • Understanding the concept of financial accounting • Pass journal entries, prepare ledgers and trial balance. • Understand the nature and scope of Accounting	
UNIT-2	
LEARNING OBJECTIVE:	

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To enable students :

- To familiarize with concepts of business income, Revenue recognition.
- To understand various methods of depreciation.
- To understand various methods of inventory valuation.
- To prepare various financial statements

Name of the Topic	No. of Lectures
(a) Business Income	
i. Measurement of business income-Net income: the accounting period, the continuity doctrine and matching concept. Objectives of measurement.	1
ii. Revenue recognition: Recognition of expenses.	1
iii. The nature of depreciation. The accounting concept of depreciation. Factors in the measurement of depreciation. Methods of computing depreciation: straight line method and diminishing balance method; Disposal of depreciable assets-change of method.	5
iv. Inventories: Meaning. Significance of inventory valuation. Inventory Record Systems: periodic and perpetual. Methods: FIFO, LIFO and Weighted Average. Salient features of Indian Accounting Standard (IND-AS): 2 (Theory only)	4
(b) Final Accounts	
i. Capital and revenue expenditures and receipts: general introduction only. Preparation of financial statements of non-corporate business 6 entities	6

LEARNING OUTCOME:
Students will be able to:

- Understand the concepts of business income, Revenue recognition.
- Understand various methods of depreciation.
- Understand various methods of inventory valuation.
- Prepare various financial statements.

UNIT-3

LEARNING OBJECTIVE:
To enable students :

- To familiarize with concepts of Hire Purchase and Installment Systems, Consignment, and Joint Venture Accounting.
- To understand the difference between Hire Purchase and Installment Systems.
- To understand various methods of accounting from different parties point of view.

Name of the Topic	No. of Lectures
Accounting for Hire Purchase and Installment Systems, Consignment, and Joint Venture	
i. Accounting for Hire-Purchase Transactions, Journal entries and ledger accounts in the books of Hire Vendors and Hire purchaser for large value items including	4

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Default and repossession. ii. Consignment: Features, Accounting treatment in the books of the consignor and consignee. iii. Joint Venture: Accounting procedures: Joint Bank Account, Records Maintained by Co-venturer of (a) all transactions (b) only his own transactions. (Memorandum joint venture account).	3 4
LEARNING OUTCOME: Students will be able to: • Understand the concepts of Hire Purchase and Installment Systems, Consignment, and Joint Venture Accounting. • Understand the difference between Hire Purchase and Installment Systems. • Understand various methods of accounting from different parties point of view.	
UNIT-4	
LEARNING OBJECTIVE: To enable students : • To familiarize with concepts of Inland Branches and Accounting for Dissolution of Partnership Firm. • To understanding the different methods of recording of inland Branch accounts. • To learn about the basics for Dissolution of Partnership Firm. • To understand the methods of dissolution.	
Name of the Topic	**No. of Lectures**
Accounting for Inland Branches and Accounting for Dissolution of Partnership Firm **Accounting for Inland Branches** Concept of dependent branches; accounting aspects; debtors system, stock and debtors system, branch final accounts system and whole sale basis system. Independent branches: concept accounting treatment: important adjustment entries and preparation of consolidated profit and loss account and balance sheet. **Accounting for Dissolution of Partnership Firm** Accounting of Dissolution of the Partnership Firm Including Insolvency of partners, sale to a limited company and piecemeal distribution	7 **5**
LEARNING OUTCOME: Students will be able to: • Understand the concepts of Inland Branches and Accounting for Dissolution of Partnership Firm. • Understanding the different methods of recording of inland Branch accounts. • Learn about the basics for Dissolution of Partnership Firm. • Understand the methods of dissolution.	

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MINOR TEST	
METHODOLOGY:	• Interactive Lecture • Discussions • Chalk and talk method • Assignments • Presentations
TEACHING AIDS:	• Black Board • Smart Board
REFERENCES	• M.C.Shukla, T.S. Grewal and S.C.Gupta. Advanced Accounts. Vol.-I. S. Chand & Co., New Delhi. • S.N. Maheshwari, and. S. K. Maheshwari. Financial Accounting. Vikas Publishing House, New Delhi. • Deepak Sehgal. Financial Accounting. Vikas Publishing H House, New Delhi.

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Computer Science

Course Plan

Session 2020-2021

Madhu pahwa

Department Of Computer Science

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LESSON PLAN
ASP.Net Technologies: BCA0504

Paper Title: ASP.Net Technologies **L T P**
Paper Code: BCA0504 **4 0 0**

OBJECTIVES:

After covering the ASP.Net in about 48 lectures, the course shall aim to acquaint the students about the basic features of the ASP. Technology including:

- .NET Microsoft web development.
- Move from workstation to distributed computing.
- .NET framework.
- Common language runtime (CLR).
- Code management and execution.
- Security support, error handling and garbage Collection.
- ASP.NET web forms and web services
- Namespace and assemblies, Relating namespaces
- CompareValidator,RangeValidator,RegularExpressionValidator
- CustomValidator, ValidationSummary

Unit -1

Introducing .NET: Microsoft web development, Move from workstation to distributed computing, Internet factor, importance of.net platform0 OS neutral environment, device independence, wide language support,internet based component services.
.NET framework: Common language runtime(CLR), code management and execution, security support, error handling and garbage collection,.net framework class libraries0System classes, data and XML classes, windows form and drawing classes, web classes.
Features of .NET framework: ASP.NET web forms and web services0 Web page authoring & server controls, ASP.NET infrastructure.

UNIT - II

VB.NET : Introduction, statement, lines, comments, operators, procedures, variables0 implicit, explicit, constants, parameters, arrays, branching, looping, objects, classes, inheritance, accessibility of inherited properties and methods, overriding methods.
System class, working with numbers, manipulating strings, Date Time arithmetic, converting values, formatting values, managing arrays.
Namespace and assemblies, Relating namespaces and DLL assemblies, creating assemblies, importing assemblies, using imported assemblies, compiling with imported namespace.

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UNIT - III

ASP.NET Web Forms: Web forms code model, In-page vs. Code0behind format, web form object life cycle, handling client side events on the server, web form event handling, define and respond web form control events, AutoPostBack property, automatic state management with web forms.

HTML sever control: definition, RunAt sever attribute, HTML control class, General controls-Anchor, image, form, division, span, Table control, Input Control.

Web server Control: Web Control class, General control- Hyperlink, link button, image, label, Panel, Form Controls, Table controls.

UNIT - IV

Web form List Control: Simple List controls, Template List controls. Validation Controls: Definition, properties and methods of validation controls,validationcontrolsRequiredFieldValidator, mpareValidator, RangeValidator, RegularExpressionValidator, CustomValidator, ValidationSummary.

UserControls: Definition, Markup0Only User Control, Custom properties, handling events and loading user controls dynamically.

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LESSON PLAN
ASP.Net Technologies: BCA0504

Number of hours per week	**LTP**
	201

Reference Books:-

1. "Professional ASP.Net 2.0", Wiley India Edition. 3. Joe Duffy, "Professional .Net Framework 2.0", Wiley India Edition.

2. Bill Evjen, Scott Hanselman, Devin Rader, Farhan Muhammad, S. Srinivas Sivakumar, "Professional ASP.Net 2.0", Wiley India Edition.

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	Topic	Lectures	practical
1	Introducing .NET: Microsoft web development, Move from workstation to distributed computing, Internet factor, importance of.net platform0	4	
2	OS neutral environment, device independence, wide language support, internet based component services. .NET framework: Common language runtime(CLR), code management and execution, security support, error handling and garbage	6	1
4	net framework class libraries0System classes, data and XML classes, windows form and drawing classes, web classes. Features of .NET framework: ASP.NET web forms and web services0 Web page authoring & server controls, ASP.NET infrastructure.	4	2
5	VB.NET : Introduction, statement, lines, comments, operators, procedures, variables0 implicit, explicit, constants, parameters,	4	4
6	arrays, branching, looping, objects, classes, inheritance, accessibility of inherited properties and methods, overriding methods. System class, working with numbers, manipulating strings, DateTime arithmetic, converting values, formatting values, managing arrays.	4	4
7	Namespace and assemblies, Relating namespaces and DLL assemblies, creating assemblies, importing assemblies, using imported assemblies, compiling with imported namespace.	4	3
8	ASP.NET Web Forms: Web forms code model, In-page vs. Code0behind format, web form object life cycle, handling	6	8

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	client side events on the server, web form event handling, define and respond web form control		
9	events, AutoPostBack property, automatic state management with web forms. HTML sever control: definition, RunAt sever attribute, HTML control	4	2
10	class, General controls-Anchor, image, form, division, span, Table control, Input Control. Web server Control: Web Control class, General control-Hyperlink, link button, image, label, Panel, Form Controls, Table controls.	4	1
11	Web form List Control: Simple List controls, Template List controls. Validation Controls: Definition, properties and methods of validation controls, validation controls 0 RequiredFieldValidator,	4	2
12	CompareValidator, RangeValidator, RegularExpressionValidator, CustomValidator, ValidationSummary. User Controls: Definition, Markup0Only User Control, Custom properties, handling events and loading user controls dynamically.	4	2

Teaching aids used:

- Online classes through MS Teams
- Practical implementations
- PowerPoint presentations

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LESSON PLAN
IT Tools IN MANAGEMENT

Paper Title : IT TOOLS IN BUSINESS **L T P**
Paper Code : 405 **2 0 1**

OBJECTIVES:

The objective of this course is to acquaint the students with Information Technology tools which includes various Office Automation Tools for individuals and corporate.

- Practical Knowledge of MS Word.
- Formatting and inserting objects in Ms. Word.
- MS Excel & Manipulation of data
- Working on Presentations through MS PowerPoint
- Computer Networking
- Internet and its use
- Viruses

Unit 1:-

Spreadsheets
Introduction: Concept of worksheets and workbooks, creating, opening, closing and saving workbooks, moving, copying, inserting, deleting and renaming worksheets, working with multiple worksheets and multiple workbooks, controlling worksheet views, naming cells using name box, name create and name define. Using formulae and functions: Understanding absolute, relative and mixed referencing in formulas, referencing cells in other worksheets and workbooks, correcting common formula errors, working with inbuilt function categories like mathematical, statistical, text, lookup, information, logical, database, date and time and basic financial functions. Consolidating worksheets and workbooks using formulae and dataconsolidate command Printing and Protecting worksheets: Adjusting margins, creating headers and footers, setting page breaks, changing orientation, creating portable documents and printing data and formulae. Implementing file level security and protecting data within the worksheet Creating charts and graphics: Choosing a chart type, understanding data points and data series, editing and formatting chart elements, and creating sparkline graphics. Analysing data using pivot tables: Creating, formatting and modifying a pivot table, sorting, filtering and grouping items, creating calculated field and calculated item, creating pivot tablecharts, producing a report with pivot tables. Performing what-if analysis: Types of what if analysis (manual, data tables, scenario manager), what-if analysis in reverse (goal-seek,solver)Exchanging data using clipboard, object linking and embedding.

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UNIT-II
Word-processing

Introduction: Creating and saving your document, displaying different views, working with styles and character formatting, working with paragraph formatting techniques using indents, tabs, alignment, spacing, bullets and numbering and creating borders.
Page setup and sections: Setting page margins, orientation, headers and footers, end notes andfoot notes, creating section breaks and page borders. Working with tables: Creating tables, modifying table layout and design, sorting, inserting graphics in a table, table math, converting text to table and vice versa. Create newspaper columns, indexes and table of contents. Spellcheck your document using inbuilt and custom dictionaries, checking grammar and style ,using thesaurus and finding and replacing text. Create bookmarks, captions and cross referencing, adding hyperlinks, adding sources and compiling and bibliography. Mail merge: Creating and editing your main document and data source, sorting and filteringmerged documents and using merge instructions like ask, fill-in and if-then-else. Linking and embedding to keep things together.

UNIT-III
PowerPoint presentation

Introduction: Creating a blank presentation using a design template, basing a new presentation on an existing one, creating and managing slides, using content place holders, creating graphs, tables, diagrams, organization charts, inserting clip art and images. Viewing and navigating a presentation: Organising ideas in outline view, using slide sorter to rearrange a presentation, previewing presentation in slide show, understanding master views, using title master, slide master, handout master and notes master, working with headers and footers, using hyperlinks, advanced navigation with action settings, navigation short hand with action buttons. Animation and multimedia: Using and applying animation schemes, custom animation, understanding sound file formats and video types, adding music, sound and video clips. Final presentation: Applying transition to slides, controlling transition speed, using hidden slides, using custom shows, using on screen pen and adding and accessing notes during a presentation.

UNIT-IV
Databases

Introduction to Database Development: Database Terminology, Objects, Creating Tables, working with fields, understanding Data types , Changing table design, Assigning Field Properties, Setting Primary Keys, using field validation and record validation rules, Indexing,working with multiple tables, Relationships & Integrity Rules, Join Properties, Record

manipulation, Sorting & Filtering.

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Select data with queries: Creating Query by design & by wizard (Select, Make Table, Append, Delete, Cross Tab, Update, Parameterized Query, Find Duplicate and Find Unmatched), Creating multi table queries, creating & working with table joins. Using operators & expressions: Creating simple & advance criteria.

Working with forms: Creating Basic forms, working with bound, unbound and calculated controls, understanding property sheet, Working with Data on Forms: Changing Layout, creating Sub Forms, creating list box, combo box and option groups.

Working with Reports: Creating Basic Reports, Creating Header & Footer, Placing Controls on reports, sorting & grouping, Creating Sub reports.

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LESSON PLAN
IT IN MANAGEMENT:

Number of hours per week **3 hours**

Primary Books:
1. Introduction to Information Technology by: V. Rajaraman Prentice Hall of India.
2. Computer Fundamentals , by: P.K. Sinha

Reference Books:
1. PC Software for Windows by R.K.Taxali
2. Fundamentals of Information Technology by Hardeep Singh

Topic Wise Schedule	
Topic	**Duration**
Introduction: Concept of worksheets and workbooks, creating, opening, closing and saving workbooks, moving, copying, inserting, deleting and renaming worksheets, working with multiple worksheets and multiple workbooks	2 hours theory,4 hours practical
controlling worksheet views, naming cells using name box, name create and name define. Using formulae and functions: Understanding absolute, relative and mixed referencing in formulas, referencing cells in other worksheets.	2 hours theory,6 hours practical
correcting common formula errors, working with inbuilt function categories like mathematical, statistical, text, lookup, information, logical, database, date and time and basic financial functions	2 hours theory,4 hours practical
Consolidating worksheets and workbooks using formulae and dataconsolidate command Printing and Protecting worksheets: Adjusting margins, creating headers and footers, setting page breaks, changing orientation, creating portable documents and printing data and formulae	2 hour theory, 6 hour practical
Implementing file level security and protecting data within the worksheet Creating charts and graphics: Choosing a chart type, understanding data points and data series, editing and formatting chart elements, and creating sparkline graphics. Analysing data using pivot tables: Creating, formatting and modifying a pivot table, sorting	2 hour theory, 4 hour practical
Performing what-if analysis: Types of what if analysis (manual, data tables, scenario manager), what-if analysis in reverse (goal-seek, solver)Exchanging data using clipboard, object linking and embedding.	1 hour theory,4 hours practical
Introduction: Creating and saving your document, displaying different views, working with styles and	1 hour theory,4 hours practical

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character formatting, working with paragraph formatting techniques using indents, tabs, alignment, spacing, bullets and numbering and creating borders.	
Page setup and sections: Setting page margins, orientation, headers and footers, end notes and foot notes, creating section breaks and page borders. Working with tables: Creating tables, modifying table layout and design	2 hours theory,4 hours practical
sorting, inserting graphics in a table, table math, converting text to table and vice versa. Create newspaper columns, indexes and table of contents. Spellcheck your document using inbuilt and custom dictionaries, checking grammarand style ,using thesaurus and finding and replacing tex	2 hours theory,4 hours practical
Create bookmarks, captions and cross referencing, adding hyperlinks, adding sources and compiling and bibliography. Mail merge: Creating and editing your main document and data source, sorting and filtering merged documents and using merge instructions like ask, fill-in and if-then-else. Linking and embedding to keep things together.	2 hour theory, 6 hour practical
Introduction: Creating a blank presentation using a design template, basing a new presentation on an existing one, creating and managing slides, using content place holders, creating graphs, tables, diagrams, organization charts, inserting clip art and images.	2 hour theory, 6 hour practical
Viewing and navigating a presentation: Organising ideas in outline view, using slide sorter to rearrange a presentation, previewing presentation in slide show, understanding master views, using title master, slide master, handout master and notes master, working with headers and footers,	2 hour theory, 6 hour practical
advanced navigation with action settings, navigation short handwith action buttons. Animation and multimedia: Using and applying animation schemes, custom animation, understanding sound file formats and video types, adding music, soundand video clips	2 hour theory, 4 hour practical
Final presentation: Applying transition to slides, controlling transition speed, using hidden slides, using custom shows, using on screen pen and adding and accessing notesduring a presentation.	1 hour theory,4 hours practical
Introduction to Database Development: Database Terminology, Objects, Creating Tables, working with fields, understanding Data types , Changing table design, Assigning Field Properties, Setting Primary Keys	1 hour theory,4 hours practical

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using field validation and record validation rules, Indexing, working with multiple tables, Relationships & Integrity Rules, Join Properties, Record manipulation, Sorting & Filtering.	1 hour theory,4 hours practical
Select data with queries: Creating Query by design & by wizard (Select, Make Table, Append, Delete, Cross Tab, Update, Parameterized Query, Find Duplicate and Find Unmatched), Creating multi table queries, creating & working with table joins	1 hour theory,4 hours practical
Working with forms: Creating Basic forms, working with bound, unbound and calculated controls, understanding property sheet, Working with Data on Forms: Changing Layout, creating Sub Forms, creating list box, combo box and option groups	1 hour theory,4 hours practical
Working with Reports: Creating Basic Reports, Creating Header & Footer, Placing Controls on reports, sorting & grouping, Creating Sub reports.	1 hour theory,4 hours practical

Teaching aids used:

- Online classes through MS teams
- Practical implementations
- PowerPoint presentations

Methodology

- Discussions
- Lectures
- Case studies
- Online tutorial

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LESSON PLAN
C PROGRAMMING: BCA0104

Paper Title : COMPUTER APPLICATIONS IN BUSINESS **L T P**
Paper Code : BC 2.3

2 0 1

OBJECTIVES:
The objective of this paper is to provide computer skills and knowledge for commerce students and to enhance the student understands of usefulness of information technology tools for business operations. After covering the IT in management, the course shall aim to acquaint the students about the basic features including:

- Basic Organization of Computer System
- Hardware & Software
- Secondary Storage Devices
- Dos & Windows operating system
- Practical Knowledge of MS Word.
- Formatting and inserting objects in Ms. Word.
- MS Excel & Manipulation of data
- Working on Presentations through MS PowerPoint
- Computer Networking
- Internet and its use
- Viruses

CONTENTS

UNIT	TOPIC	DETAILS
1	**Word Processing**	Introduction to word Processing, Word processing concepts, Use of Templates, Working with word document: Editing text, Find and replace text, Formatting, spell check, Autocorrect, Auto text; Bullets and numbering, Tabs, Paragraph Formatting, Indent, Page Formatting, Header and footer, Tables: Inserting, filling and formatting a table; Inserting Pictures and Video; Mail Merge: including linking with Database; Printing documents **Creating Business Documents using the above facilities**
2	**Preparing Presentations**	Basics of presentations: Slides, Fonts, Drawing, Editing; Inserting: Tables, Images, texts, Symbols, Media; Design; Transition; Animation; and Slideshow. **Creating Business Presentations using above facilities**

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3	**Spreadsheet and its Business Applications**	**Spreadsheet concepts**, Managing worksheets; Formatting, Entering data, Editing, and Printing a worksheet; Handling operators in formula, Project involving multiple spreadsheets, Organizing Charts and graphs **Generally used Spreadsheet functions:** Mathematical, Statistical, Financial, Logical, Date and Time, Lookup and reference, Database, and Text functions
4	**Creating Business Spreadsheet**	**Creating spreadsheet in the area of:** Loan and Lease statement; Ratio Analysis; Payroll statements; Capital Budgeting; Depreciation Accounting; Graphical representation of data; Frequency distribution and its statistical parameters; Correlation and Regression

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LESSON PLAN
COMPUTER APPLICATIONS IN BUSINESS BC 2.3

Number of hours per week **3 hours**

Primary Books:

1. Introduction to Information Technology by: V. Rajaraman Prentice Hall of India.
2. Computer Fundamentals , by: P.K. Sinha

Reference Books:

1. PC Software for Windows by R.K.Taxali
2. Fundamentals of Information Technology by Hardeep Singh

Topic Wise Schedule	
Topic	**Duration**
Word Processing Introduction to word Processing, Word processing concepts, Use of Templates, Working with word document: Editing text, Find and replace text	2 hours theory,4 hour practical
Formatting, spell check, Autocorrect, Auto text; Bullets and numbering, Tabs, Paragraph Formatting, Indent, Page Formatting	1 hours theory,4 hour practical
Header and footer, Tables: Inserting, filling and formatting a table; Inserting Pictures and Video; Mail Merge: including linking with Database; Printing documents.	2 hours theory,4 hour practical
Preparing Presentations Basics of presentations: Slides, Fonts, Drawing, Editing; Inserting:	1 hour theory, 2 hour practical
Tables, Images, texts, Symbols, Media; Design; Transition; Animation;and Slideshow.	1 hour theory, 4 hour practical
Spreadsheet and its Business Applications Spreadsheet concepts, Managing worksheets; Formatting, Entering data, Editing, and Printing a worksheet	2 hours theory,4 hour practical
Handling operators in formula, Project involving multiple spreadsheets, Organizing Charts and graphs	2 hours theory,4 hour practical
Generally used Spreadsheet functions: Mathematical, Statistical,Financial, Logical, Date and Time, Lookup and reference, Database,and Text functions	2 hours theory,4 hour practical
Creating BusinessSpreadsheet Creating spreadsheet in the area of: Loan and Lease statement; Ratio Analysis; Payroll statements	2 hours theory,4 hour practical
Capital Budgeting; Depreciation Accounting; Graphical representation of data	4 hour practical
	5 hour practical

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Frequency distribution and its statistical parameters; Correlation and Regression	

Teaching aids used:

- Online classes through MS Teams
- Practical implementations
- PowerPoint presentations

Methodology

- Discussions
- Lectures
- Case studies
- Online tutorials

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LESSON PLAN

Paper Title : Computer System Architecture **L T P**
Paper Code : COMP201TH

2 0 0

OBJECTIVES:

After covering the Computer System Architecture, the course shall aim to acquaint the students about the features including:

- Basic Organization of Computer System
- Logic gates, Boolean algebra
- Number systems, complements
- Computer registers, bus system
- Register organization, arithmetic and logical micro-operations
- Register organization.
- Instruction formats, addressing modes
- Peripheral devices, I/O interface

COMP201TH: Computer System Architecture

Unit-I

Introduction: Logic gates, Boolean algebra, combinational circuits, circuit simplification, flip-flops and sequential circuits, decoders, multiplexors, registers, counters and memory units.

Data Representation and basic Computer Arithmetic: Number systems, complements, fixed and floating point representation, character representation, addition, subtraction, magnitude comparison.

Unit-II

Basic Computer Organization and Design: Computer registers, bus system, instructionset, timing and control, instruction cycle, memory reference, input-output and interrupt.

Central Processing Unit: Register organization, arithmetic and logical micro-operations,stack organization, micro programmed control.

Unit-III

Programming the Basic Computer: Instruction formats, addressing modes, instructioncodes, machine language, assembly language, input output programming.

Unit-IV

Input-output Organization: Peripheral devices, I/O interface, Modes of data transfer, direct memory access.

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Books Recommended:

1. M. Mano, Computer System Architecture, Pearson Education 1992.
2. A. J. Dos Reis, Assembly Language and Computer Architecture using C++ andJAVA, Course Technology, 2004
3. W. Stallings, Computer Organization and Architecture Designing for Performance,8th Edition, Prentice Hall of India ,2009
4. Digital Design, M.M. Mano, Pearson Education Asia, 1979

LESSON PLAN

Computer System Architecture COMP201TH

Number of hours per week 2 hours

Topic Wise Schedule	
Topic	**Duration**
Introduction: Logic gates, Boolean algebra, combinational circuits, circuit simplification, flip-flops	4 hours
sequential circuits, decoders, multiplexors, registers, counters and memory units.	10 hours
Data Representation and basic Computer Arithmetic: Number systems, complements	4 hours
fixed and floating point representation, character representation, addition, subtraction, magnitude comparison	4 hours
Basic Computer Organization and Design: Computer registers, bus system, instructionset	4 hours
timing and control, instruction cycle, memory reference, input-output and interrupt.	6 hours
Programming the Basic Computer: Instruction formats, addressing modes, instructioncodes	6 hours
machine language, assembly language, input output programming.	4 hours
Input-output Organization: Peripheral devices, I/O interface, Modes of data transfer,direct memory access.	4 hours

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LESSON PLAN
DATA STRUCTURES

Paper Title : Data Structures **L T P**
Paper Code : BCA0204 **4 0 3**

OBJECTIVES:

After covering the Data structures, the course shall aim to acquaint the students about the advanced features of C Language including:

- Algorithm concepts
- Time complexity
- Arrays
- Pointers
- Implementation of linked lists
- Implementation of stacks
- Implementation of queue
- Sorting and searching algorithms
- Implementation of trees and graphs

UNIT-I
Preliminaries: Concept & notation, common operation on data structures, algorithm complexity, time -space trade off between algorithm, physical & logical representation of different data structures.

Arrays: Arrays defined, representing arrays in memory, various operation (traversal, insertion, deletion), Multidimensional arrays, Sequential allocation, and Address calculation.

[No. of Hours : 12 hours]

UNIT-II
Linked List: Definition, type (linear, circular, doubly linked, inverted), representing linked lists in memory, advantages of using linked list over arrays, various operations on Linked list (traversal, insertion, deletion).

[No. of Hours : 12 hours]

UNIT-III
Stacks: Definition & concepts of stack structure,Implementation of stacks, Operation on stacks (push & pop), Application of stacks (converting arithmetic expression from infix notation to polish and their subsequent evaluation), quick sort technique to sort an array, recursion).
Queue: Definition & concept of queues, implementation of queue, operation on queues (insert & del ete), circular queue.

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[No. of Hours : 10 hours]

UNIT-IV

Trees Structures: Tree, Binary Trees, Tree Traversal Algorithms (Pre-Order, In-Order, Post-Order), Threaded Trees, Binary Search Trees.

Sorting & Searching: Selection sort, Bubble sort, Merge sort, Radix sort, Quick sort, Sequential search, Linear search and their complexity.

[No. of Hours : 10 hours]

Text & Reference Books:

1.Jean Paul Tremblay & Paul G. Sorenson, "An Introduction to Data Structures with Applications", Tata McGraw Hill.
2.Aaron M. Tenenbaum, Yedidyah Langsam, Moshe J. Augenstein, " Data Structures using C",PHI.

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LESSON PLAN
DATA STRUCTURES: BCA0204

Number of hours per week **3 hours**

Primary Books:

1. Jean Paul Tremblay & Paul G. Sorenson, "An Introduction to Data Structures with Applications",Tata McGraw Hill.
2. Sharma Anshuman , Fundamental of Data Structures, Lakhanpal Publishers

Reference Books:

1. Aaron M. Tenenbaum, Yedidyah Langsam, Moshe J. Augenstein, " Data Structures using C",PHI.

Topic Wise Schedule	
Topic	**Duration**
Concept & notation, common operation on data structures, , physical & logical representation of different data structures.	3 hours theory
Algorithm complexity, time-space trade off between algorithms.	3 hours theory
Physical & logical representation of different data structures.	3 hours theory
Arrays: Arrays defined, representing arrays in memory, various operation (traversal, insertion, deletion), Multidimensional arrays, Sequential allocation, and Address calculation.	3 hours theory,6 hours practical
Linked List: Definition, type (linear, circular, doubly linked, inverted), representing linked lists in memory, advantages of using linked list over arrays.	4 hours theory,6 hours practical
various operations on Linked list (traversal, insertion, deletion).	4 hours theory,4 hours practical
Stacks: Definition & concepts of stack structure,Implementation of stacks,. , Operation on stacks (push & pop)	2 hours, 4 hours practical
Application of stacks (converting arithmetic expression from infix notation to polish and their subsequent evaluation)	4 hours theory
quick sort technique to sort an array, recursion)	1 hours theory,2 hours practical
Queue: Definition & concept of queues, implementation of queue, operation on queues (insert & delete), circular queue	2 hours, 4 hours practical
Trees Structures: Tree, Binary Trees, Tree Traversal Algorithms (Pre-Order, In-Order, Post-Order), Threaded Trees, Binary Search Trees.	4 hours theory

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Sorting & Searching: Selection sort Bubble sort, Merge sort, Radix sort, Quick sort, Sequential search, Linear search and their complexity	6 hours theory, 6 hours practical

Teaching aids used:

- Online classes through MS Teams
- Practical implementations
- PowerPoint presentations

Methodology

- Discussions
- Lectures
- Case studies
- Online tutorials

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LESSON PLAN

Paper Title: Multimedia and Applications **L T P**
Paper Code: COMP307TH **2 0 0**

OBJECTIVES:
After covering the Multimedia and Applications, the course shall aim to acquaint the students about the features including:

- Introduction to multimedia, Components
- Stages of a multimedia project, Requirements to make good multimedia
- Multimedia Hardware
- Multimedia software and authoring tools.
- Still Images – Bitmaps, Vector Drawing
- Principle of Animations. Animation Techniques

Unit-I

Multimedia: Introduction to multimedia, Components, Uses of multimedia.
Making Multimedia: Stages of a multimedia project, Requirements to make good multimedia, Multimedia Hardware - Macintosh and Windows production Platforms, Hardware peripherals – Connections, Memory and storage devices, Multimedia software and Authoring tools.

Unit-II

Text: Fonts & Faces, Using Text in Multimedia, Font Editing & Design Tools, Hypermedia &Hypertext.
Images: Still Images – Bitmaps, Vector Drawing, 3D Drawing & rendering, Natural Light & Colors, Computerized Colors, Color Palletes, Image File Formats.

Unit-III

Sound: Digital Audio, MIDI Audio, MIDI vs Digital Audio, Audio File Formats
Video: How Video Works, Analog Video, Digital Video, Video File Formats, Video Shooting andEditing

Unit-IV

Animation: Principle of Animations. Animation Techniques, Animation File Formats.

Books Recommended

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1. Tay Vaughan, "Multimedia: Making it work", TMH, Eighth edition. 2006
2. Ralf Steinmetz and Klara Naharstedt, "Multimedia: Computing, CommunicationsApplications", Pearson,1995.
3. Keyes, "Multimedia Handbook", TMH. 2000.
4. K. Andleigh and K. Thakkar, "Multimedia System Design", PHI, 2000.

LESSON PLAN

Multimedia and Applications COMP307TH
Number of hours per week 2 hours

Topic Wise Schedule	
Topic	**Duration**
Introduction to multimedia, Components, Uses of multimedia	6 hours
Stages of a multimedia project, Requirements to make good multimedia, Multimedia Hardware	8 hours
Macintosh and Windows production Platforms, Hardware peripherals – Connections, Memory and storage devices, Multimedia software and Authoring tools.	6 hours
Fonts & Faces, Using Text in Multimedia, Font Editing & Design Tools, Hypermedia &Hypertext.	6 hours
Still Images – Bitmaps, Vector Drawing, 3D Drawing & rendering, Natural Light & Colors, Computerized Colors, Color Palletes, Image File Formats.	8 hours
timing and control, instruction cycle, memory reference, input-output and interrupt.	6 hours
Digital Audio, MIDI Audio, MIDI vs Digital Audio, Audio File Formats	6 hours
How Video Works, Analog Video, Digital Video, Video File Formats, Video Shooting andEditing	6 hours
Principle of Animations. Animation Techniques, Animation File Formats.	6 hours

Teaching aids used:

- Online classes with ms teams
- Practical implementations

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LESSON PLAN
C PROGRAMMING: BCA0104

Paper Title : C Programming **L T P**
Paper Code : BCA0104
Semester: 1st **4 0 0**

OBJECTIVES:

After covering the core C in about 66 lectures, the course shall aim to acquaint the students about the basic features of the C language including:

- Desirable program characteristics
- Simple C program
- Data types
- Operators and expressions
- Control statements
- Arrays
- Multidimensional arrays
- Functions
- Call by value and reference
- Strings
- Pointers
- Dynamic memory allocation

UNIT-I
Introductory Concepts: Types of programming languages, Introduction to C, some simple C programs, Desirable program characteristics.
C Fundamentals: C character Set, Identifiers and keywords, data types, constants, variables and arrays, Declarations, expressions, statements, Symbolic constants. **[No. of Hours : 12 hours]**
UNIT –II
Operators and expressions: Arithmetic operators, unary operator, Relational and logical operators, Assignment operators, conditional operators, Library Functions.
Data Input and Output: Preliminaries, singe character input, singe character output, Entering input data, writing output data, the gets() and puts() function. **[No. of Hours : 16 hours]**
UNIT-III
Control Statements: Preliminaries, Branching, Looping, Nested control statements, switch statement, break statement, The continue statement, The goto statement, The comma operator.
Arrays: Defining an array, processing an array, passing arrays to functions, Multidimensional arrays, Arrays and strings. **[No. of Hours : 20 hours]**

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UNIT -IV

Functions: A brief overview, Defining a function, accessing a function, function prototypes, passing arguments to a function, recursion.

Pointers: Fundamentals, Pointer declarations, Passing pointers to the functions, pointers and one dimensional array, dynamic memory allocation, Operations on pointers, arrays of pointers.

[No. of Hours : 18 hours]

Text & Reference Books:

1.Byron Gottfried,"Programming with C", Schaum's Outlines, Tata McGraw Hill.
2.Mullis Cooper,"Spirit of C": Jacob Publications.
3.Yashwant Kanetkar, "Let us C": BPB.
4.Kerninghan B.W. & Ritchie D. M.,"The C Programming Language": PHI.

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LESSON PLAN
C PROGRAMMING: BCA0104

Number of hours per week **4 hours**

Primary Books:

1. Yashwant Kanetkar, "Let us C": BPB.
2. Byron Gottfried,"Programming with C", Schaum's Outlines, Tata McGraw Hill.

Reference Books:

1. Kerninghan B.W. & Ritchie D. M.,"The C Programming Language": PHI.
2. Mullis Cooper,"Spirit of C": Jacob Publications.

Topic Wise Schedule	
Topic	**Duration**
Introductory Concepts: Types of programming languages, Introduction to C, some simple C programs, Desirable program characteristics	3 hours
C Fundamentals: C character Set, Identifiers and keywords, data types, constants, variables and arrays, Declarations, expressions, statements, Symbolic constants.	3 hours
data types	3 hours
constants, variables and arrays, Declarations, expressions, statements, Symbolic constants.	3 hours
Operators and expressions: Arithmetic operators, unary operator, Relational and logical operators,. Assignment operators, conditional operators, Library Functions.	10 hours
Data Input and Output: Preliminaries, singe character input, singe character output, Entering input data, writing output data, the gets() and puts() function.	6 hours
Control Statements: Preliminaries, Branching, Looping, Nested control statements, switch statement, break statement, The continue statement, The goto statement, The comma operator.	8 hours
Arrays: Defining an array, processing an array, passing arrays to functions, Multidimensional arrays,	8 hours
Arrays and strings	4 hours
Functions: A brief overview, Defining a function, accessing a function, function prototypes, passing arguments to a function	8 hours
Recursion	3 hours
Pointers: Fundamentals, Pointer declarations, Passing pointers to the functions, pointers and one dimensional array, dynamic memory allocation, Operations on pointers, arrays of pointers	5 hours

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LESSON PLAN
C PROGRAMMING: BCA0104(P)

Paper Title : C Programming Lab 1 **L T P**
Paper Code : BCA0104(P) **0 0 1**

OBJECTIVES:

After covering the core C in about 42 lectures, the course shall aim to acquaint the students about the basic features of the C language including:

- Flowcharts
- Implementation of flowcharts
- Simple programs
- Programs using control structures
- Programs using arrays
- Programs using functions
- Programs using recursion
- Programs using strings
- Programs using pointers

Number of hours per week **1 hour**

Primary Books:

1. Yashwant Kanetkar, "Let us C": BPB.
2. Byron Gottfried,"Programming with C", Schaum's Outlines, Tata McGraw Hill.

Reference Books:

1. Kerninghan B.W. & Ritchie D. M.,"The C Programming Language": PHI.
2. Mullis Cooper,"Spirit of C": Jacob Publications.

LESSON PLAN
C PROGRAMMING: BCA0104(P)

Lecture No	Unit no.	Concept on which practical is based	Problem statements	Duration
1-8	1	Flowcharts	Use and implementation of flowcharts	8 hours
9-16	1 &2	Simple programs	• Write a program to print hello world • Write a program to sum 2 numbers • Write a program to sum 2 numbers by accepting values from the keyboard • Write a program to swap 2 numbers using intermediate variable and without using intermediate variable	8 hours

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			• Write a program to print area and circumference of circle • Write a program to print area and perimeter of rectangle • Write a program to implement the use of operators	
17-27	3	Implementation of control structures	• Write a program to find whether the number is odd or even using if-else statement. • Write a program to calculate the net salary of a employee using if-else statement . • Write a program to print the days of the week using ladder if statement • Write a program to print the days of the week using switch statement • Write a program to find the sum and average of number using loop • Write a program to print the factorial of a number using loop	10 hours
28-36	3	Implementation of arrays	• Write a program to calculate the average of marks using array • Write a program to calculate the greatest number and the position of the number in a list of n numbers using array • Write a program to find whether the element is even or odd in a list of n numbers using array • Write a program for passing 1 dimensional array using function • Write a program to calculate the product of 2 matrixes • Write a program find the transpose of the matrix	8 hours
37-42	4	Implementation of functions , recursion & pointers	• Write a program to sum 2 numbers using functions • Write a program to calculate product of 2 numbers using functions • Write a program to print the factorial of a number using functions • Write a program to print the Fibonacci series using functions • Write a program to show the use of	6 hours

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			call by value and call by reference using functions • Write a program to print the factorial of a number using recursion • Write a program to print the Fibonacci series using recursion •	

LESSON PLAN
BCA0403

Paper Title: System Analysis and Design
Paper Code: BCA0403
Semester: 4th

OBJECTIVES:

After covering the core C in about 35 lectures, the course shall aim to acquaint the students about the basic features of the C language including:

- Overview of System Analysis and Design
- System concepts, System development life cycle,
- Feasibility studies
- System requirement specification and analysis
- Detail Design: Modularization
- Software design and documentation tools

UNIT –I

Overview of System Analysis and Design: Business System concepts, System development life cycle, Project Selection, Feasibility Analysis, Design, Limitation, testing and evaluation.
Initial Investigation: Sources of Requests, User / Analyst interaction, Qualities of a System Analyst.

UNIT –II

Feasibility studies: Technical, Operational, Behavioral and economic feasibilities, cost and benefit analysis.

UNIT –III

System requirement specification and analysis: Fact finding techniques, Data Flow Diagrams, Data Dictionaries, process organization and interaction, Decision Analysis, Decision Trees and Tables. Top down and bottom up variance, Audit trails.

UNIT –IV

Detail Design: Modularization, module specification, file design, system development involving databases.System control and quality assurance: Design objectives reliability and maintenance, software design and documentation tools, unit and integration testing, testing practice and plans, system control.

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Text & Reference Books:

Awad, "System Analysis Design", Galgotia Publishing, Delhi.
Jamas, A.S., "Analysis and design of information systems", Mc Graw Hill.
Samprive, P.C., "System analysis: Definition Process and Design".

Topic	Number of lectures
Overview of System Analysis and Design: Business System concepts,	2
System development life cycle, Project Selection, Feasibility Analysis, Design,	2
Limitation, testing and evaluation.	1
Initial Investigation: Sources of Requests, User / Analyst interaction,	2
Qualities of a System Analyst	1
Feasibility studies: Introduction, Technical, Operational, Behavioral and	3
Economic feasibilities, cost and benefit analysis.	2
System requirement specification and analysis: Fact finding techniques,	2
Data Flow Diagrams	2
Data Dictionaries,	2
process organization and interaction,	1
Decision Analysis, Decision Trees and Tables,	2
Top down and bottom up variance, Audit trails.	1
Detail Design: Modularization, module specification	2

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file design, system development involving databases.	2
System Control and Quality Assurance	1
software design and documentation tools,	2
Design objectives reliability and maintenance	2
unit and integration testing, testing practice and plans, system control.	2

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Economics

Department of Economics
St. Bede's College, Shimla

Course File
B.A I Honours 2020-21
SYLLABUS

Course No. ECONHA101
Course title: Introductory Microeconomics
Nature of Course: DSC – 1
Number of credits: 6
Number of Lectures (L): Practical (P): Tutorial (T): 74:0:16
Course Description This course is designed to expose the students to the basic principles of microeconomic theory. The emphasis will be on thinking like an economist and the course will illustrate how microeconomic concepts can be applied to analyse real-life situations.

Sr. No	Contents	Allotted time (hours)	
		L	T
I	Exploring the subject matter of Economics Nature, scope and method of economics; the economic problem: scarcity and choice; Opportunity Cost; PPF; the question of what to produce, how to produce and how to distribute output; economic systems; reading and working with graphs. Slope: nature and measurement	18	4
II	Supply and Demand: How Markets Work, Markets and Welfare Markets and competition; determinants of individual demand/supply; demand/supply schedule and demand/supply curve; market versus individual demand/supply; shifts in the demand/supply curve, demand and supply together; elasticities of demand and supply; application of market laws and elasticities: effects of government intervention-price controls; how prices allocate resources.	20	4
III	Household Behaviour and Consumer Choice The consumption decisions –Cardinal Utility; Indifference Curves; Properties of Indifference Curve; Marginal rate of substitution and convexity of indifference curves; budget constraint; consumer's equilibrium; derivation of demand curve from ICs; Price consumption curve; Price effect-income and substitution effects (Hicks and Slutsky).	18	4
IV	Production and Costs Production functions and isoquants; MRTS; short run and long run; production with one and two variable inputs; total, average and marginal products; returns to scale; economies of scale: Cost structure- cost curves in the short run and long run; Modern approach to the theory of cost; Optimum combination of inputs; least cost combination; choice of optimal expansion path.	18	4
Suggested Readings: 1. Karl E. Case and Ray C. Fair, Principles of Economics, Pearson Education Inc., 8th Edition, 2007. 2. N. Gregory Mankiw, Economics: Principles and Applications, India edition by South Western, a part of Cengage Learning, Cengage Learning India Private Limited, 4th edition, 2007. 3. Joseph E. Stiglitz and Carl E. Walsh, Economics, W.W. Norton & Company, Inc., New York, International Student Edition, 4th Edition, 2007.			

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Department of Economics
St. Bede's College, Shimla

LESSON PLAN
B.A I 2020-21

No. of Students 7

UNIT I		**Theory of Demand and Supply**		
Day	**Allotted Time**	**Lectures**	**Tutorials**	**Practicals**
1st & 7th Sept	**2 hrs**	**Bridge class** These bridge classes will be utilised to introduce the subject to the students from medical and non-medical stream at +2 level with no background in economics. Students will be introduced to the concept of economics by giving simple examples.		
8th & 14th Sept	**2 hrs**	**Definition, nature and scope of economics** Students will study various definitions of economics. They will learn about the problem of scarcity, choice and opportunity cost. They will be introduced to the concept of production possibility frontier. Under scope of economics students will be taught about the subject matter of economics which includes economic activities, economic systems, economic policies, micro and macroeconomics. Limitations of economics will also be discussed in these classes.		
15th Sept	**1 hr**			**Bridge class** Another bridge class will be taken for students from medical and non-medical stream at +2 level with no background in economics. Students will be introduced to the concept of economics by giving simple examples.
28th Sept	**1 hr**	**Meaning of demand, law of demand Determinants of demand** Meaning of economics will be explained in this class by giving differences between desire, want and demand. Before explaining the law of demand		

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		method will be explained through numericals and graphic methods i.e. point elasticity and arc elasticity will be explained through graphs. Students will be asked to draw graphs in their note books. Revenue method will not be discussed in this class.		
19th Oct	**1 hr**	**Factors and importance of price elasticity of demand** In this class, methods of measuring price elasticity will be revised followed by a discussion on the factors influencing price elasticity of demand. Students will understand the difference between elasticity and slope. They will understand how slope remains constant and elasticity varies on the demand curve. They will also identify that the slope and elasticity are different concepts. The class will conclude by explaining the importance of price elasticity.		
20th Oct	**1 hr**	**Income and Cross elasticity of demand** Students will learn about income elasticity its degrees, cross elasticity its degrees and formulae to measure these elasticities through diagrams and illustrations. Students will be given numericals to measure income and cross elasticity of demand.		
26th Oct	**1 hr**			Objective, short and long questions will be discussed and doubts pertaining to these will be cleared in class. Students will draw diagrams of degrees of price elasticity of supply and will write their mathematical proofs in their notebooks.
UNIT II		**Consumer Theory**		
27th Oct	**1 hr**	**Cardinal utility analysis** In this class students will learn how a consumer spends his/her limited income on different goods and services to get maximum satisfaction. This will be explained through cardinal utility analysis. This concept will be introduced to the students by giving assumptions and various concepts of		

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		utility. Relation and significance of total and marginal utility will be discussed with the help of schedules and diagrams.		
2nd Nov	**1 hr**	**Law of Diminishing Marginal Utility** The law of diminishing marginal utility which is the foundation stone of utility will be explained in class through schedules and diagrams. The law will be discussed along with its exceptions and causes of its application. Students will learn how to derive the demand curve with the help of this law. he class will conclude by discussing the points of criticism of this law.		
3rd Nov	**1 hr**	**Law of Equi- Marginal Utility** The law of equi-marginal utility will be explained in class through schedules and diagrams. The law will be discussed along with its importance. Students will learn how to derive the demand curve with the help of this law. The class will conclude by discussing the modern view of this law.		
4th Nov	**1 hr**	**Consumer Equilibrium** After explaining the meaning of consumer equilibrium students will learn about the determination of equilibrium of the consumer for a single commodity with one use, single commodity with several uses and several commodities with the help of schedules and diagrams. The class will finish with the criticism of cardinal utility analysis.		
9th Nov	**1 hr**			Students will clear their doubts related to utility analysis and exercise related to this chapter will be discussed in class.
1st Dec	**1 hr**	**Ordinal Utility Analysis** This class will introduce the students to the concept of ordinal utility analysis. The meaning of indifference curves will be explained with the help of simple examples, schedules and diagrams. Students will learn about the indifference map in this class. The concept of marginal rate of substitution will be explained to the students. They will make out why indifference curves slope downwards and are convex to the point of origin. The meaning of diminishing marginal rate of		

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		substitution will be explained with the help of schedules and diagrams.		
2nd Dec	**1 hr**			In this class students will revise the concept of indifference curves and marginal rate of substitution with the help of diagrams and equations.
7th Dec	**1 hr**	**Properties of Indifference curves, Budget Line** After discussing the assumptions of indifference curves, properties of indifference curves will be discussed at length with the help of diagrams. Students will learn about the budget line, its equation and slope. They will also learn to derive the budget line with help of schedule and diagrams. Properties and shifting of the budget line will be explained in these classes with the help of diagrams.		
8th Dec	**1 hr**	**Consumer Equilibrium, Price Effect** Students will gain knowledge of the derivation of consumer's equilibrium with the help of indifference curve analysis. The equilibrium point will be explained with the help of equations and diagrams. Effect of change in commodity price on consumer's equilibrium will be taught through price effect. Students will find out how price effect is a combination of income effect and substitution effect. The students will study how price effect can be broken into substitution effect and income effect with the help of diagrams using Slutsky's and Hicksian approaches. This will be done for normal, inferior and giffen goods and for fall and rise in price separately. The diagrams and their derivations will be demonstrated using different colours.		
9th Dec Dec	**1 hr**	**Price and Income consumption curve and derivation of demand curve** During this class students will be acquainted with the concepts of price and income consumption curves with the help of diagrams. They will learn why the slopes differ for normal, inferior and giffen goods. They will also learn to derive the demand curve through price consumption curve. They will also find out that there is a difference		

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		between price consumption curve and demand curve.		
14th Dec	**1 hr**	**Engel's Curve and comparison of cardinal utility and ordinal utility** In this class students will be taught about the derivation of Engel's curve with the help of income consumption curve. They will learn the basic difference between Engel's curve and income consumption curve. They will be asked to draw diagrams in their note books using different schedules. The class will conclude by comparing cardinal utility analysis with ordinal utility analysis.		
15th Dec	**1 hr**			Students will practice diagrams of break-up of price effect into substitution effect and income effect, derivation of demand curve and Engel's curve.
17th Dec	**1 hr**	**Uses and criticism of utility analysis** After discussing uses and criticism of ordinal utility analysis, this class will be used to clear doubts and answer questions related to the chapter.		
UNIT III Production and Costs				
21st Dec	**1 hr**	**Factors of Production, Production Function** Students will be familiarised with the concept of producer's equilibrium. They will study about the four factors of production, their characteristics, production decisions, and production function. Types of production function will be discussed and the class will conclude with the discussion of importance of time element in production.		
22nd Dec	**1 hr**	**Law of variable Proportion** After a brief revision of the theory of production, students will be acquainted with the laws of production. The law of variable proportions will be explained in this class with the help of schedules and diagrams. Students will identify the three stages of production and will learn about the stage of rational decision. The law will be discussed in detail under different cost conditions. Applications of this law to agriculture and industry will be explained in this class. The class		

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		will conclude with the discussion of importance and conditions of postponement of the law.		
23rd Dec	**1 hr**			Students will revise the law of variable proportion in class. They will be asked objective and short questions and their difficulties will be solved in class.
28th Dec	**1 hr**	**Law of returns to scale** The long run concept in the form of law of returns to scale will be introduced to the students. They will learn that in long period all factors are variable and can be used in various proportions. They will study about increasing, constant and decreasing returns to scale with the help of schedules and diagrams.		
29th Dec	**1 hr**			Students will draw diagrams related to law of returns to scale in their note books. They will be asked questions and difficult points will be revised in this class.
30th Dec	**1 hr**	**Economies and diseconomies of scale** Reasons of laws of returns to scale will be explained with the help of economies and diseconomies of scale. Internal and external economies and external and internal diseconomies will be explained at length with the help of simple examples. Students will be asked to differentiate between economies and diseconomies of scale one by one.		
4th Jan	**1 hr**	**Iso-quant curve, Marginal rate of technical substitution** Students will be introduced to another concept of production i.e. iso-quants. They will identify that iso-quants are similar to indifference curves. They will study the assumptions, slope and marginal		

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		rate of technical substitution in this class. They will learn about the slope and convexity of iso-quants with the help of equations, schedule and diagrams.		
5th Jan	**1 hr**	**Properties of iso-quants** The properties of iso-quants will be explained with the help of diagrams. Along with the properties of iso-quants, properties of indifference curves will also be discussed. A new concept of ridge lines will be introduced to explain the limits of economic region of production.		
11th Jan	**1 hr**	**Iso-cost line, Expansion path** Students will study the iso-cost line with the help of schedules and diagrams. They will be taught to derive the slope of iso-cost line. They will identify the differences between indifference curves and iso-quant curves. The class will conclude by introducing the concept of expansion path.		
12th Jan	**1 hr**	**Least cost combination** Students will learn how to derive the least cost combination which is also called producer's equilibrium with the help of equations and diagrams. They will recognise that least cost combination is a point where slope of iso-quant curve is equal to the slope of iso-cost line. Students will study returns to scale with the help of iso-quants. They will study increasing, constant and diminishing returns to scale with the help of diagrams.		
18th Jan	**1 hr**	**Iso-costs and returns to factor** Students will study returns to factor with the help of iso-quants. They will study increasing, constant and diminishing returns to a factor with the help of diagrams of iso-quant analysis. Differences between returns to a factor and returns to scale will also be discussed through interaction in class.		
19th Jan	**1 hr**	**Concept of costs** Students will understand the concepts of costs in this class. Various types of costs like money, real cost opportunity cost, economic, social, private explicit, implicit costs will be explained with the help of simple examples and diagrams. The difference between short run and long run costs will be discussed in the class.		
9th Feb	**1 hr**	**Traditional theory-short run cost curves** Students will study about different types of short run costs. They will be acquainted with the concept of total cost, average cost and marginal cost. They will learn that in short period, total		

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		costs are divided into fixed costs and variable costs. Average costs are also divided into average fixed costs and average variable costs. All these concepts of costs will be discussed with the help of schedules and diagrams.		
15th Feb	**1 hr**	**Relation between short run cost curves** Students will learn why short run average cost curve is U shaped. They will identify the importance of the law of variable proportions in the U shape of average cost curves. Another concept of marginal cost will be introduced to the students. They will learn how to derive marginal cost from total cost. Relation between short run cost curves will be discussed with the help of schedules and diagrams. The class will conclude with the comparison of productivity curves and cost curves.		
16th Feb	**1 hr**	**Long run cost curves** Students will study about long run cost curves in this class. They will learn that all costs are variable costs in long run. They will learn how to derive long run total cost and long run average cost curves from short run total and short run average cost curves. The U shape of long run average cost curve will be discussed and students will identify that returns to scale in the form of economies and diseconomies are responsible for the U shape of long run average cost curve. The class will conclude with the explanation of long run marginal cost curve.		
22nd Feb	**1 hr**	**Modern theory of costs** Students will learn that according to modern economists long run average cost curves are not U shaped. In fact they are L shaped or J shaped. Students will learn that according to modern theory, large scale production is not accompanied with diseconomies of scale. The class will end with the discussion of importance of cost curves.		
23rd Feb	**1 hr**	**Concepts of Revenue** The concept of revenue will be introduced to the students in this class. Students will study the meaning of total revenue, marginal revenue and average revenue. These concepts will be explained with the help of schedules and diagrams. Students will study various shapes of revenue curves under different market conditions. Concepts of revenue under perfect competition, monopolistic competition and monopoly will be explained with the help of schedules and diagrams. The concept		

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		of rectangular hyperbola will be introduced to the students in this class.		
26th Feb	**1 hr**	**Relation between different concepts of revenue, Revenue and elasticity** With the help of diagrams students will learn the relation between total revenue, marginal revenue and average revenue. Mutual determination of elasticity of demand, average and marginal revenue will be explained to the students with the help of equations and geometrical proof. The last method of price elasticity not discussed in unit one will be explained in this class.		
1st March	**1 hr**			Students will revise the diagrams of revenue curves and numericals related to elasticity and revenue will be solved by the students in this class.
2nd March	**1 hr**	**Minor Test**		
UNIT IV Market Structure and Perfect Competition				
8th March	**1 hr**	**Market** Students will understand the meaning of market, market structure, definition and different types and features of markets.		
9th March	**1 hr**	**Perfect Competition** Students will learn the meaning of perfect competition, definition of perfect competition, characteristics of perfect competition, difference between pure and perfect competition and importance of time element in the determination of price.		
16th March	**1 hr**	**Price determination under perfect competition** Students will learn the difference between short period and long period. They will learn price determination in short period and long period with the help of diagrams. Students will understand the meaning of the firm, definition and conditions of the equilibrium of the firm using total cost and total revenue approach and marginal cost and marginal revenue approach.		
23rd March	**1 hr**	**Equilibrium of the firm under perfect competition**		

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		Determination of short run equilibrium of the firm will be explained to the students with the help of diagrams. Determination of long run equilibrium of the firm will be explained to the students with the help of diagrams. Determination of short run equilibrium of the industry will be explained to the students with the help of diagrams.		
24th March	**1 hr**	**Equilibrium of the industry under perfect competition** Determination of long run equilibrium of the industry and law of costs will be explained to the students with the help of diagrams. They will also study about the supply curve of the firm and industry. Students will study the long run supply curve of an industry under different cost conditions.		
30th March	**1 hr**			Students will revise the diagrams of perfect competition in this class.
5th April	**1 hr**	**Revision**		
Total Periods		**Lectures - 44**	**Tutorials-**	**Practicals 10**

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English

Course Plan

Department of English

ENG DSC
103/
ENG HONS
GE 102

UNIT-I (8 classes)
Linguistic Plurality within Sufi and Bhakti Traditions:
i. Excerpts from "The Mad Lover" by Sisir Kumar Das
ii. —Kafi 7| by Bulla Shah
iii. —Vachana| by Mahadeviyakka
iv. —Baul Song| (Anonymous)

UNIT-II (6 Classes)
Language Politics: Hindi and Urdu:
i. Excerpts from "Introduction: A Conspectus" in *A House Divided* by Amrit Rai
ii. —Ghazal| by Amir Khusrau
iii. —Lajwanti| by Rajinder Singh Bedi
iv. —Hindi| by Raghuveer Sahai

UNIT-III (7 Classes)
Tribal Verse:
i. Excerpts from "Introduction| to *Painted Words: An Anthology of Tribal Verse* by G. N. Devy
ii. *Songs of Birth and Death*
—A Munda Song|
—A Kondh Song|
iii. —Adi Song for the Recovery of Lost Health|

UNIT-IV (10 Classes)
Dalit Voices:
i. Excerpts from _'Dalit Sahitya: The Historical Background" by Eleanor Zelliot
ii. —Habit| by F.M. Shinde
—An Untitled Poem| by N.T. Rajkumar
—Excerpts from *Karukku*| by Bama

Non-Detailed Study
UNIT-V (5 Classes)
Writing in English:
i. "Mother Tongue" by Padma Sachdev
ii. —Excerpts from *Kanthapura*| by Raja Rao

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UNIT-VI (5 Classes)
Woman Speak: Examples from Kannada and Bangla:
i. Excerpts from —A Flowering Tree: A Woman's Tale'| by A. K. Ramanujan
ii. Excerpts from —A Woman's Retelling of the Rama Tale'| by Nabaneeta Deb Sen
UNIT-VII (4 Classes)
Literary Cultures: Gujarati and Sindhi:
i. Excerpts from —At the Crossroads of Indic and Iranian Civilizations' | by Ali S. Asani
Units I-VII are from *Cultural Diversity, Linguistic Plurality and Literary Traditions in India* by Sukrita Paul Kumar, et.al. Macmillan India, 2005.
UNIT-VIII (7 Classes)
Nationalism:
i. —Nationalism in West|
ii. —Nationalism in India|
From ***Nationalism*** by Rabindranath Tagore. Macmillan, 1995.
UNIT-IX (7 Classes)
Aspects of Civilization:
i. —What is True Civilization| (52-54)
ii. —Civilization| (30-32)
From *Hind Swaraj* by M. K.

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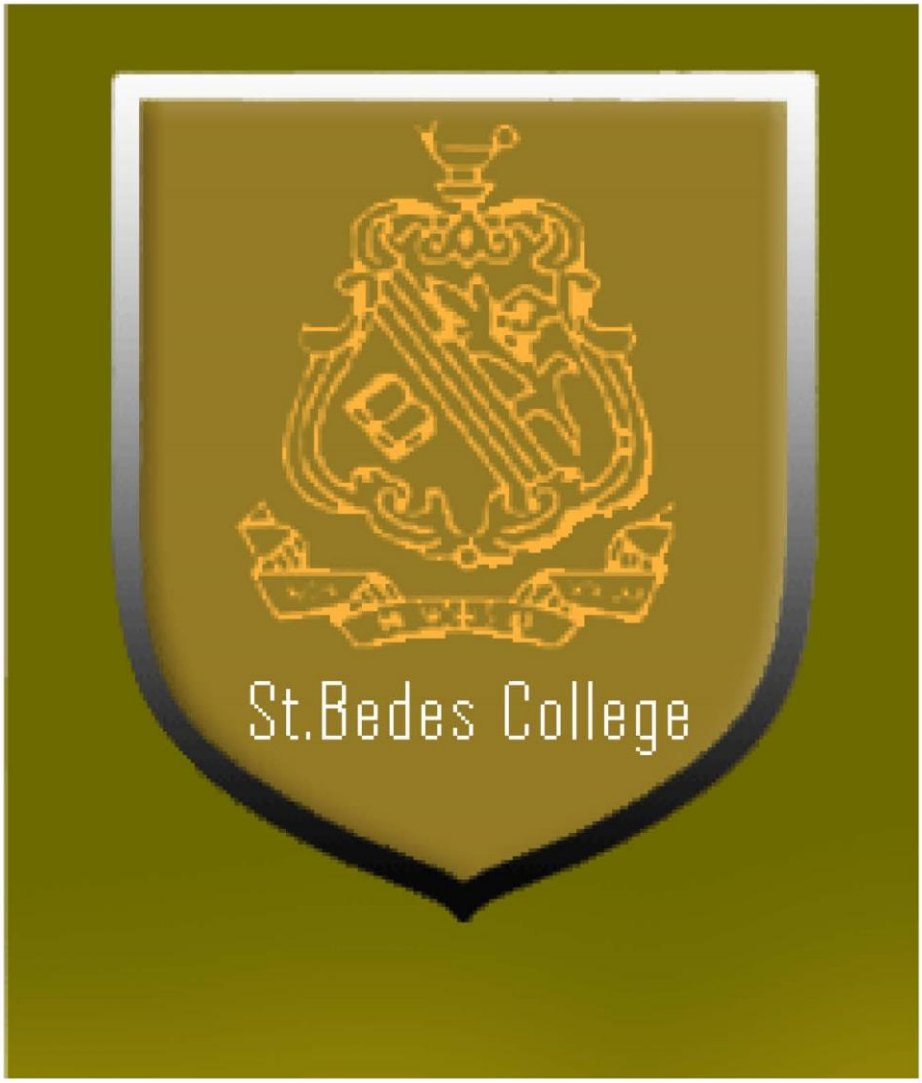
Geography

St. Bede's College Shimla



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Course Plan BA 3rd Year (Honours)

2020-2021

Subject: Hydrology and Oceanography – GEOGH311EDS4

UNIT- 1	No. of Lectures
Introduction Hydrological Cycle, Human Impacts on Hydrological Cycle, Hydrological Input and Output, Precipitation, interception, evaporation, transpiration, infiltration underground and overland flow	**20**
UNIT - II	
River Basins and their Problems Characteristics of rivers basins, basins surface run-off, measurement of river discharge, floods	**15**
UNIT-III	
Ocean Floor Topography and Oceans Movements Waves, Currents, and Tides, Ocean Salinity, Temperature, Distribution and Determinants	**15**
UNIT- IV	
Ocean Resources Coral Reefs, their Types, Theories of their origins, Marine Deposits and its Classifications	**15**
Total Lectures	**65**

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Learning Objectives and Learning Outcomes

Subject: Hydrology and Oceanography

BA- 3rd Year (Honours)

LEARNING OBJECTIVES

- To understand Hydrological cycle at global and Regional level.
- To understand hydrological input and output.
- To differentiate between different forms and types of precipitation.
- To differentiate between interception evaporation.
- To understand the importance of evaporation and then the condensation into the hydrological cycle.
- To differentiate between underground and surface run-off.
- To understand the working of interception and transpiration.
- To understand the river discharge and the problems of river basins.
- To understand the problems of floods and other river related disasters.
- To understand the difference between Tides and waves and their mode of origin.
- To study different oceanic deposited.
- To understand the origin of Coral and their importance.

LEARNING OUTCOME

- The students are able to understand the importance and the working of Hydrological cycle.
- The hydrological input and output is understood.

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- The students are able to differentiate between transpiration, evaporation and evapotranspiration.
- The difference between evaporation and condensation is clarified.
- The pre-requisite conditions for precipitation are understood.
- The importance of infiltration and seepage in the generation of underground water is cleared.
- The origin of coral reefs is understood.
- The importance of marine resources is clarified.
- The mode of origin of tidal and surface waves is clarified.

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Hindi

2018 -2019 के पाठ्यक्रम के आधार पर पाठ्यक्रम योजना

बी. ए. द्वितीय वर्ष 2020 -2021

प्रश्न पत्र : SKILL ENHANCEMENT COURSE

SEC – 2

HIND 206

विषय : अनुवाद विज्ञान

डॉ मिनाक्षी शर्मा

हिंदी विभाग

सेंट बीड्स कॉलेज

13.09.20

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कक्षा : बी.ए. द्वितीय वर्ष

विषय : अनुवाद विज्ञान

क्रेडिट : 04

पूर्णांक : 100 (आई.सी.डी.ई.ओ.एल एवं प्रायवेट परीक्षार्थी)

पूर्णांक : 70 (रेगुलर परीक्षार्थी)

आतंरिक मूल्यांकन : 30

समय : तीन घंटे

सहायक पुस्तक : 'अनुवाद विज्ञान', डॉ नगेंद्र

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शिक्षण - उद्देश्य :

1. छात्राओं को हिंदी भाषा तथा साहित्य के क्षेत्र में ज्ञान अर्जित करने के अतिरिक्त, उनके भाषिक कौशल में वृद्धि करना।
2. साहित्य की गहरी समझ के लिए अनुवाद की उपयोगिता पर ज्ञान बढ़ाना।
3. तुलनात्मक साहित्य के क्षेत्र में निपुण होने के लिए उनकी योग्यता को निखारना।

पाठन - प्रक्रिया

इकाई 1

1.1 अनुवाद का तात्पर्य, अनुवाद के विभिन्न प्रकार - भाषांतरण, सारानुवाद तथा रूपांतरण में साम्य-वैषम्य। अनुवाद के प्रमुख प्रकार- कार्यालयी, साहित्यिक, ज्ञान-विज्ञानपरक, विधिक, वाणिज्यिक।

1.2 अनुवाद के शिल्पगत भेद , अविकल अनुवाद (लिटरल), भावानुवाद/छायानुवाद, आशु अनुवाद, डबिंग, कंप्यूटर अनुवाद।

इकाई 1 में छात्राओं को अनुवाद का अर्थ एवं उसकी परिभाषा बताते हुए उसके प्रकार पर भी समझाया जाएगा। भाषांतरण, सारानुवाद तथा रूपांतरण में समानताएं एवं असमानताओं के बारे में भी समझाया जाएगा। अनुवाद के शिल्पगत भेदों पर भी उनका ज्ञानवर्धन किया जाएगा।

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इकाई 1 के अंतर्गत पाठों को पूरा करने के लिए निर्धारित समय - 31 अगस्त से 30 सितम्बर तक।

इकाई 2

2.1 साहित्यिक अनुवाद के प्रमुख रूप- काव्यानुवाद, कथानुवाद, नाट्यानुवाद

2.2 अनुवाद में पर्यवेक्षण (वेटिंग) की भूमिका

साहित्यिक अनुवाद का अर्थ तथा उसके भेदों के बारे में छात्राओं को समझाया जाएगा। अनुवाद के क्षेत्र में पर्यवेक्षण का तात्पर्य क्या है, इस विषय से भी छात्राओं को परिचित किया जाएगा।

इकाई 2 के अंतर्गत पाठों को पूरा करने के लिए निर्धारित समय – 1 अक्टूबर से 31 अक्टूबर तक।

इकाई 3

3.1 वैज्ञानिक तकनीकी शब्दावली का अनुवाद, मुहावरों/ लोकोक्तियों का अनुवाद, संक्षिप्ताक्षरों तथा कूटपदों का अनुवाद, आंचलिक शब्दावली का अनुवाद, व्यंजनापरक, लाक्षणिक पद प्रयोगों का अनुवाद

3.2 अनुवाद की सम्पादन प्रविधि

3.3 अनुवादक की अर्हता और सफ़ल अनुवाद के अभिलक्षण

इकाई 3 में वैज्ञानिक तकनीकी शब्दावली का अनुवाद किस प्रकार किया जाता है, इसका ज्ञान छात्राओं को दिया जाएगा। मुहावरों एवं लोकोक्तियों के शाब्दिक

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अनुवाद से जुड़ीं समस्याएँ, संक्षिप्ताक्षरों एवं कूटपदों के अनुवाद की विधि, आंचलिक शब्दावली का अनुवाद, व्यंजनापरक, लाक्षणिक शब्दों आदि के अनुवाद को लेकर संभावनाओं एवं चुनौतियों के बारे में छात्राओं को अवगत कराया जाएगा। अनुवाद की सम्पादन प्रविधि, अनुवादक की अर्हता तथा एक सफ़ल और कुशल अनुवादक के गुणों आदि विषयों पर भी छात्राओं का ज्ञान बढ़ाया जाएगा। चूंकि यह विषय उनके लिए नया है, इसलिए कई तकनिकी शब्दावलियों को श्यामपट पर लिखकर उनके अर्थ बताए जाएँगे।

इकाई 3 के अंतर्गत पाठों को पूरा करने के लिए निर्धारित समय - 1 नवम्बर से 30 नवम्बर तक।

इकाई 4

4.1 विश्व भाषाओं की प्रमुख कृतियों के हिंदी अनुवाद एवं हिंदी की प्रमुख कृतियों के विश्व भाषाओं में किये गए अनुवाद

4.2 भारत में अनुवाद प्रशिक्षण के प्रमुख केंद्र, अनुवाद के राष्ट्रीय प्राधिकरण के गठन की आवश्यकता

4.3 हिंदी अनुवाद का भविष्य

इकाई 4 में छात्राओं को विश्व की अनेक भाषाओं में हिंदी की साहित्यिक कृतियों के किये गए अनुवादों तथा हिंदी भाषा में विश्व के विभिन्न देशों में बोली जाने

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वाली भाषाओं की श्रेष्ठ अनूदित कृतियों के बारे में समझाया जाएगा, इस प्रकार विश्व भर की उम्दा साहित्यक कृतियों को सुपाठ्य बनाने में अनुवाद की क्या भूमिका है, इस पर उन्हें समझाया जाएगा। अनुवाद के क्षेत्र में छात्राओं की रुचि बढ़ाने एवं इस विषय को गंभीरता से लेने के उद्देश्य से उन्हें उन समस्त प्रमुख संस्थाओं के बारे में समझाया जाएगा, जो कुशल अनुवादक बनने के लिए प्रशिक्षण देती हैं, साथ ही भारत में अनुवाद के राष्ट्रीय प्राधिकरण गठित करना क्यों आवश्यक है, इस पर भी उन्हें समझाया जाएगा। इन सभी तत्वों के आधार पर हिंदी अनुवाद के भविष्य पर सोचने-विचारने के लिए छात्राओं को प्रेरित किया जाएगा।

इकाई 4 के अंतर्गत पाठों को पूरा करने के लिए निर्धारित समय - 1 दिसम्बर से 28 फरवरी तक।

प्रथम सत्र (सितम्बर -दिसम्बर) के बीच छात्राओं के ज्ञानवर्धन तथा पढ़ाए गए पाठों की आवृत्ति के लिए उन्हें गृह कार्य, असाइनमेंट तथा क्लास टेस्ट(10 अंकों पर) दिए जाएँगे, उनकी लघु-परीक्षा ली जाएगी और उनका आतंरिक मूल्यांकन 15 अंकों पर किया जाएगा ।

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द्वितीय सत्र (फरवरी - मार्च) के बीच वार्षिक परीक्षा की दृष्टि से सभी विषयों की आवृत्ति तथा विगत परीक्षाओं के प्रश्न-पत्रों पर उन्हें कक्षा में लेखन - कार्य दिए जाएँगे।

पाठन - प्रविधि

निर्धारित पाठ्य पुस्तक के आधार पर लिखित एवं मौखिक पाठ्य-सामग्री प्रदान की जाएगी।

श्यामपट्ट/श्वेतपट्ट का प्रयोग करते हुए छात्राओं की सुविधा हेतु कठिन शब्दों को लिखा जाएगा।

प्राध्यापिका के अतिरिक्त किसी अन्य विशेषज्ञ के लेक्चर पाठ्य सामग्री या फिर विडिओ के रूप छात्राओं के साथ साझा किये जाएँगे।

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Home Science

SEMESTER – I
LESSON PLAN
BANHE101: FUNDAMENTALS OF NUTRITION AND FOOD SCIENCE (DSE)

Credits 4 (Theory) Credits 2 (Practical)	L	T	P
	60		
Name of the course	Discipline Specific		
Lectures to be delivered	60		

Course Objectives

The course will provide knowledge pertaining to the relationship between food, nutrition and health, nutrients, preparation of dishes. It will familiarize students with fundamentals of food, nutrients and their relationship to health. It will create awareness with respect to deriving maximum benefit from available food resources

Learning Objectives

The student is expected to understand the relationship between food, nutrition, nutrients, their sources, learn about the various food groups with respect to their nutritive value, properties, selection and various methods of preparing food.

Total number of students: 16
Seminar to be conducted: 1

UNIT	TOPIC	ALLOTTED TIME IN HOURS (L+T)	
UNIT I	BASIC CONCEPTS IN FOODS AND NUTRITION	5	
	• Basic concepts in food and nutrition • Basic terms used in the study of food & nutrition • Understanding relationship between food, nutrition and health • Functions of food – physiological, psychological, and social	A Bridge class will be organized before starting of the course to familiarize the students with the various units to be covered. Basic terms like food, nutrition, nutrients etc. will be explained. The brain storming will result in a number of definitions. They will refer to their text books and the exact definition of Food & Nutrition will be discussed. The various aspects of food, nutrition and health will then be discussed by the teacher. The teacher will explain to the students the meaning and concept of balanced diet, the factors affecting the person's health. The students will then study	The questions of the students pertaining to food will be answered. They will be asked to refer to the books related to Nutrition in the library. An Assignment will be given to them pertaining to definitions, functions of food.

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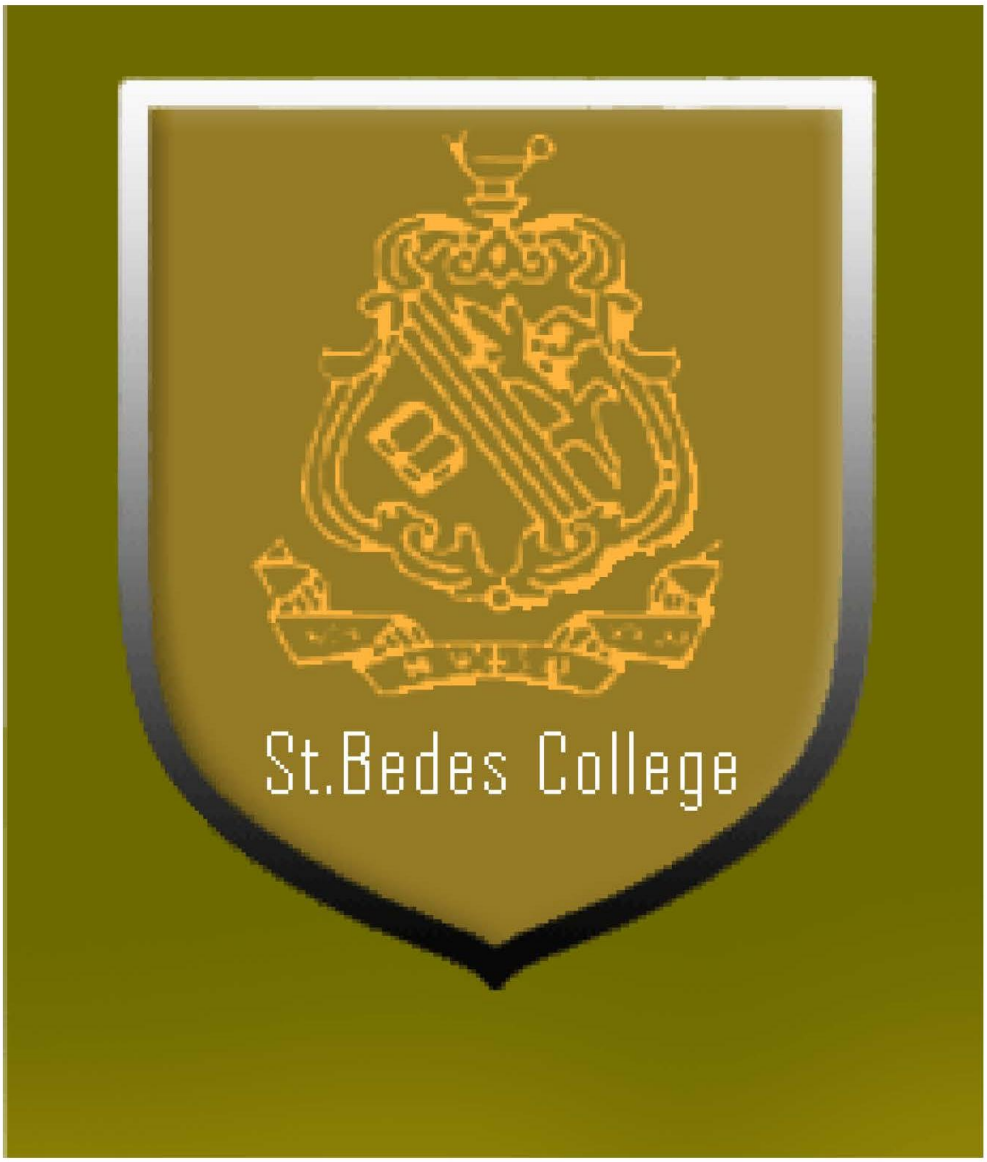
History

HISTORY (PASS COURSE)

2020-2021



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The B.A. History Programme is organised to provide the greatest flexibility to its students. There are Core Disciplinary papers that provide the fundamental knowledge in the discipline of history and in the study of the History of India and the World. The programme is otherwise envisaged to provide a large amount of choice so that students can tailor their education on the basis of their interests. These provide not just skills in history but also a vital skill in other disciplines as well.

The duration of the BA History Programme is three academic years. History Programme will involve theory classes (lectures) of one hour each. The curriculum will be taught through formal lectures with the aid, wherever the teacher feels the need, of power-point presentations, audio and video tools. There are additional requirements in certain courses for documentaries, cinema, field and archival work, visits to museums, class reports, discussions and project work. The curriculum includes majors in Core Courses (CCs), of which four Core Courses are in the discipline of History while the remaining are from other subjects in which the B.A. Programme student is enrolled. A student of B.A. History Programme would also need to complete two Discipline Specific Elective Courses (DSEs) in History, and two Inter-disciplinary Generic Electives offered by cognate disciplines. Each of the Core Courses, Discipline Specific Elective Courses and Generic Elective Courses are of six credits each. The B.A. History Programme also includes minors in four discipline-centred Skill Enhancement Courses, with each of these four courses carrying four credits.

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Course plan BA I YEAR
2020-2021

Learning Objectives

- **Appreciate the importance and relevance of studying history.**
- **Understand historical construction of India's ancient past.**
- **Know about various types of source materials used by ancient historians.**
- **Identify changing traditions of history writings.**
- **Recognize the Harappan cultures as the first known urban cultures of India.**
- **Examine the nature of Vedic society, religion and philosophy.**
- **Rise of renunciatory traditions and their social roots: Buddhism and Jainism**
- **Review significant socio- cultural developments during post Mauryan period**
- **Trace the early history of south India during this period**
- **Examine the general dynamism of cultural developments in ancient India**
- **Review significant socio- cultural pollical, religious developments during Gupta period**

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- **Trace the history of south India towards early medieval IndiaExamine the general dynamism of cultural developments in ancient India**

LEARNING OUTCOME

- **To earn a basic narrative of historical events in a specific region of the world in a specific time frame.**
- **To articulate factual & contextual knowledge of specific places & times, to make careful comparisons (across time, space & culture).**
- **The ability to use bibliographical tools for the advanced study of history.**
- **To understand & evaluate different historical ideas, various arguments and point of view.**
- **To develop an appreciation of themselves & of other through the study of the past in local, regional, national and global context.**
- **To instils an appreciation of the uniqueness of visual evidence and cultivate the particular skill of using visual evidence to understand human activity of the recent and distant past.**

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Name of Department: History
Faculty Name: Ms Punam Chauhan
Course Name: History of India from the Earliest Times up to 300 CE

Course Code: HIST (A)101
Course Type: DSC 1

UNIT- 1	No. of Lectures
Introduction to the subject and Syllabus	1
a. Sources and interpretation	6
b. Changing interpretation of early Indian History	2
c. Survey of Palaeolithic, Mesolithic and Neolithic cultures	6
UNIT - II	
a. Harappa Civilization: origin, extent urban features-town planning, economy, society and religion: decline, Chalcolithic culture	4
b. Vedic culture: polity, economy society and religion	4
c. Beginning of the iron age and Megalithics	1
UNIT-III	
a. Emergence of Mahajanapadas: *rajayas and ganas/sanghas*	3 l
b. Magadhan Expansion	1

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c. Buddhism & Jainism: doctrine, spread	3
UNIT- IV	
a. The Mauryan Empire: state and administration, economy, Ashoka's Dhamma, art and architecture	8
b. Post Mauryan Age with special reference to Shunga, Satavahanas, Kushanas; polity, economy society art	8
c. Sangam Age; polity, economy and society	3
Assignment: Rise of Jainism& Buddhiam in India	
Minor Test : March6.2021	

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Name of Department: History
Faculty Name: Punam Chauhan
Course: History of India, c.300-1206
Course Code: HIST(A)102
Course Type: DSC -1B

UNIT -I	No. of lectures
a. The Guptas and Vakatakas: state and administration	4
b. Economy, society, religion, art, literature, science and technology during the Gupta period	3
UNIT -II	
a. Towards the early medieval: changes in society, polity, economy and culture with special reference to Pallavas and Chaulkyas	4
b. Evolution of political structures of Rashtrakutas ,Palas and Pratiharas ;economic; religious and cultural developments.	3
UNIT-III	
a. Harsha and his times: Harsha's kingdom, administration, Buddhism & Nalanda	3
b. The Cholas: state and administration, economy and culture	2
UNIT-IV	
a. Emergence of Rajput's states in North India: socio-economic foundations	2
b The Arabs; the Ghaznavids in the Northwest; establishment of the Delhi Sultanate; overland and maritime trade	3
ASSIGNMENT: Arab Invasion on Sindh	
MINOR TEST : March 8,2021	

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Home Science

Course plan

B.A./B.Sc. 1st year

Session :2020-2021

Paper: Differential Equations

Paper Code: MATH102TH

Department of Mathematics
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Course plan

B.A. /B.Sc.: Mathematics

MATH102TH: Differential Equations

Unit-I

Basic theory of linear differential equations, Wronskian, and its properties. First order exact differential equations. Integrating factors, rules to find an integrating factor. First order higher degree equations solvable for x, y, p. Clairut's form

Unit-II

Methods for solving higher-order differential equations. Solving a differential equation by reducing its order. Linear homogenous equations with constant coefficients, Linear nonhomogenous equations.

Unit-III

The method of variation of parameters with constant coefficients. The Cauchy-Euler equation and Legendre equation. Simultaneous differential equations, Total differential equations.

Unit-IV

Order and degree of partial differential equations, Concept of linear and non-linear partial differential equations.Formation of first order partial differential equations(PDE). Linear partial differential equation of first order, Lagrange's method. Classification of second order partial differential equations into elliptic, parabolic and hyperbolic through illustrations only.

Books Recommended

1. Shepley L. Ross, Differential Equations, 3rd Ed., John Wiley and Sons, 1984.

2. I. Sneddon, Elements of Partial Differential Equations, McGraw-Hill, International Edition,

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Paper Title::Differential Equations

Paper Code: MATH102TH

Objectives:

COURSE OBJECTIVE:

- **To familiarize the students with basic concept of Differential Equations.**
- **To understand Wronskian and its properties.**
- **To solve first order higher degree equations.**
- **To make students aware ofLinear homogenous equations of higher order and methods to solve.**
- **To make students aware of partial differential equations and its solutions.**

Teaching aids used:

- **Blackboard and chalk**

Methodology:

- **Discussions**
- **Interactive Lectures**
- **Assignments**

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Topic Wise Schedule and Duration	
Topic	Lectures
Basic theory of linear differential equations, Wronskian, and its properties.	4
First order exact differential equations. Integrating factors, rules to find an integrating factor.	9
First order higher degree equations solvable for x, y, p. Clairut's form	6
Methods for solving higher-order differential equations	3
Solving a differential equation by reducing its order.	3
Linear homogenous equations with constant coefficients	10
Linear nonhomogenous equations	3
The method of variation of parameters with constant coefficients..	5
The Cauchy-Euler equation and Legendre equation.	4
Simultaneous differential equations	4
Total differential equations	4
Order and degree of partial differential equations	2
Concept of linear and non-linear partial differential equations.	2
Formation of first order partial differential equations(PDE).	4

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Linear partial differential equation of first order, Lagrange's method.	6
Classification of second order partial differential equations into elliptic, parabolic and hyperbolic through illustrations only.	4

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Microbiology

COURSE PLAN

Introduction to Microbiology and Microbial World

Paper code- **MICRO1C01**

Unit 1 History of Development of Microbiology (14 Periods)
A. Development of microbiology as a discipline, Spontaneous generation *vs.* biogenesis. Contributions of Anton von Leeuwenhoek, Louis Pasteur, Robert Koch, Joseph Lister, Alexander Fleming .Role of microorganisms in fermentation, Germ theory of disease, Development of various microbiological techniques and golden era of microbiology, Development of the field of soil microbiology: Contributions of Martinus W. Beijerinck, Sergei N. Winogradsky, Selman A. Waksman Establishment of fields of medical microbiology and immunology through the work of Paul Ehrlich, Elie Metchnikoff, Edward Jenner
B. An overview of Scope of Microbiology

Contents	**No. of lectures required**	**Learning outcomes**
Development of microbiology as a discipline, Spontaneous generation *vs.* biogenesis.	02	Students will be given introduction to microbiology as a field of science, different events that led to establishment of microbiology as science and controversary between Spontaneous generation *vs.* biogenesis.
Contributions of Anton von Leeuwenhoek, Louis Pasteur, Robert Koch, Joseph Lister, Alexander Fleming .Role of microorganisms in fermentation, Germ theory of disease, Development of various microbiological techniques and golden era of microbiology,	05	Students will be made aware about the contributions of different scientists who contributed towards this field through their works and experiments.
Development of the field of soil microbiology: Contributions of Martinus W. Beijerinck, Sergei N. Winogradsky, Selman A. Waksman Establishment of fields of medical microbiology and immunology through the work of Paul Ehrlich, Elie Metchnikoff, Edward Jenner	05	Students were made to understand the role of microbes in different Geochemical cycles, their role in dis ease causation and development of immunity by discussing the work done by different scientists.
An overview of Scope of Microbiology	02	Students will be given a detailed explanation about the scope of studying microbiology By discussing the role of microbiologists in different fields such as in environment,

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		disease control, soil, food industry ,bioremediation, etc

Unit 2 Diversity of Microbial World (14 Periods)

Systems of classification: Binomial Nomenclature, Whittaker's five kingdom and Carl Woese's three kingdom classification systems and their utility. Difference between prokaryotic and eukaryotic microorganisms

A. **General characteristics** of different groups: **Acellular** microorganisms (Viruses, Viroids & Prions) and **Cellular** microorganisms (Bacteria, Protozoa Algae and Fungi) with emphasis on distribution and occurrence, morphology, mode of reproduction and economic importance.

B. **Protozoa:** General characteristics with special reference to *Amoeba, Paramecium, Plasmodium, Leishmania and Giardia*

Contents	**No. of lectures required**	**Learning outcomes**
Systems of classification: Binomial Nomenclature, Whittaker's five kingdom and Carl Woese's three kingdom classification systems and their utility. Difference between prokaryotic and eukaryotic microorganisms .	04	Students will be given introduction to classification system of microorganism taxonomy, different systems of classification and their drawbacks and detailed overview of differences between prokaryotic and eukaryotic microorganisms
General characteristics of different groups: **Acellular** microorganisms (Viruses, Viroids & Prions) and **Cellular** microorganisms (Bacteria, Protozoa Algae and Fungi) with emphasis on distribution and occurrence, morphology, mode of reproduction and economic importance.	04	Students will be made aware about the difference between cellular and acellular microorganisms by giving details of their distribution and occurrence, morphology, mode of reproduction and economic importance.
Protozoa: General characteristics with special reference to *Amoeba, Paramecium, Plasmodium, Leishmania and Giardia*	06	Students were made to understand the general characteristics of different protozoans, their physiology , reproduction and life cycle.

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Unit 3 (14 Periods)

Algae: History of phycology with emphasis on contributions of Indian scientists; General characteristics of algae including occurrence, thallus organization, algae cell ultra structure, pigments, flagella, eyespot food reserves and vegetative, asexual and sexual reproduction. Different types of life cycles in algae with suitable examples: Haplobiontic, Haplontic, Diplontic, Diplobiontic and Diplohaplontic life cycles. Applications of algae in agriculture, industry, environment and food.

Contents	**No. of lectures required**	**Learning outcomes**
History of phycology with emphasis on contributions of Indian scientists	02	Students will be given introduction to the contributions of different to Indian as well as foreign workers that has led to the establishment of phycology as science.
General characteristics of algae including occurrence, thallus organization, algae cell ultra structure, pigments, flagella, eyespot food reserves and vegetative, asexual and sexual reproduction.	05	Students will be made aware about the main characteristic features of algae, their habitat, ultrastructure, thallus types and modifications and types of reproduction
Different types of life cycles in algae with suitable examples: Haplobiontic, Haplontic, Diplontic, Diplobiontic and Diplohaplontic life cycles.	05	Students were made to understand different types of life cycles involved in the life span of different algae and detailed overview was given.
Applications of algae in agriculture, industry, environment and food.	02	Students will be given a detailed explanation about the economic importance of algae in the field of food, medicine industry ,bioremediation, etc

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Unit 4 (14 Periods)

Fungi: Historical developments in the field of Mycology including significant contributions of eminent mycologists. General characteristics of fungi including habitat, distribution, nutritional requirements, fungal cell ultra- structure, thallus organization and aggregation, fungal wall structure and synthesis, asexual reproduction, sexual reproduction, heterokaryosis, heterothallism and parasexual mechanism. Economic importance of fungi with examples in agriculture, environment, Industry, medicine, food, biodeterioration and mycotoxins

Contents	**No. of lectures required**	**Learning outcomes**
Historical developments in the field of Mycology including significant contributions of eminent mycologists.	02	Students will be given introduction to the contributions of different to Indian as well as foreign workers that has led to the establishment of mycology as science.
General characteristics of fungi including habitat, distribution, nutritional requirements, fungal cell ultra- structure, thallus organization and aggregation, fungal wall structure and synthesis,	05	Students will be made aware about the main characteristic features of fungi, their habitat, ultrastructure, thallus types and modifications and types of cellwall components
asexual reproduction, sexual reproduction, heterokaryosis, heterothallism and parasexual mechanism.	05	Students were made to understand different types of methods of reproduction involved in the life cycle of different fungi and detailed overview was given about heterokaryosis, heterothallism and parasexual mechanism of replication.
Economic importance of fungi with examples in agriculture, environment, Industry, medicine, food, biodeterioration and mycotoxins	02	Students will be given a detailed explanation by citing examples about the positive and negative aspects of algae in the field of food, agriculture medicine, industry bioremediation, etc

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Music

COURSE PLAN (2020-21)

HINDUSTANI MUSIC: VOCAL AND INSTRUMENTAL CODE: MUSA 101 TH

SECTION-III (Basic Principles of Indian music and biographies of musicians, composers and musicologists)

1.	MOTIVATION: P.K. TESTING:		1.What do you understand by raag? 2.Can anyone tell me what is literal meaning of taal? 3.What are different types of raag? 4. How many taals are there in music?
2.	LEARNING OBJECTIVE:		The main objective behind imparting the knowledge of music to students is to promote highest levels of human aspirations and to develop analytical, creative and intuitive understanding for cultural and aesthetic experiences through active participation. Another objective is to provide guidance to students to prepare them for life skills through mentorship, internships, and training as educators.
3.	CONCEPTS/COURSE OBJECTIVES:		In this section students get a good deal of understanding about raag, its types and taal with its type to give them a deep understanding about the basics of Indian music.
4.	CONTENTS:		Study of prescribed Raagas and Taalas. Raaga- Alhaiya Bilawal, Kafi, Bhairav Taal- Teental, Dadra
5.	METHODOLOGY:		1. Explanation 2. Question probing Skill
6.	TEACHING AIDS:		Black board, chart, chalks, musical instruments.
7.	EVALUATION:		Students are monitored and evaluated by the teacher on the basis of their quality knowledge they gained by learning the concepts. Evaluation being the most important tool in making teaching learning process effective, aids student's learning process with respect to the fulfilment of

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			the teaching learning objectives. It increases the magnitude of teaching learning process by organising, coordinating, planning and teaching as well as evaluating them. One of the methods is to give them regular tests, minor tests and assignments.
8.	SUMMARY:		An overview of the concepts is taken from the students separately. They summarized the topics by sequencing and categorizing the information. They impart knowledge regarding the topic in the class by group discussion and draw appropriate inferences. They can also create a visual representation of the topics so as to get a quality knowledge of the content.
9.	REFRENCES:		Swar Bharti Dr. Gian Chand, Sangeet prabodhika, -Dr. P.N. Bansal, Dr. Gian Chand, Bhatkahnde Sangeet Shastra- V.N. Bhatkahnde, Sangeet Parvah- Dr. Gian Cand, Dr. Dev Raj Sharma, Rag Vigyan- Dr. P.N. Parvardhan, Hamare Sangeet Ratna- Laxmi Narayan Garg,
10.	ASSIGNMENTS:		Assignment on- 1. Biographies of Pt. Vishnu Narayan Bhatkhande

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Physics

Course Plan (2020-21)

Physics

B.Sc. I

MECHANICS

Name of the Course: PHYSICS-DSC 1A

MECHANICS (Credits: Theory-04)

Code PHYS101TH

Unit-I

Ordinary Differential Equations: 1st order homogeneous differential equations. 2nd order homogeneous differential equations with constant coefficients.

After completing this topic "Students will be able to

- write down the required ordinary differential equation, and correctly calculate the answer
- identify the type of differential equation (homogeneous, linear vs. nonlinear, constant vs. variable coefficients, 1st, 2nd, or higher order, etc) and choose the correct method to solve that type of ODE.
- use initial conditions as part of their solutions to ODEs.

Coordinate systems and motion of a particle: Volume, velocity and acceleration in Cartesian and Spherical co-ordinate systems, Solid angle.

After completing this topic "Students will be able to

- explain the physical meaning of position, velocity, and acceleration and describe how they are related to each other.
- write position velocity and acceleration in cartesian, plane polar and spherical polar coordinates
- solve problems in plane polar and spherical coordinates.
- take time derivatives of unit vectors

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Space Time Symmetry and Conservation Laws: Relationship of conservation laws and symmetries of space and time.

After completing this topic "Students will be able to

- state properties of space and time
- understand that the homogeneity of free space leads to law of conservation of linear momentum
- understand that the isotropy of free space leads to law of conservation of angular momentum
- understand that the homogeneity of time leads to law of conservation of energy
- explain both conceptually and mathematically how force (F) and potential (U) are related and when this relation is applicable.

Frames of Reference: Inertial frames of reference, Galilean transformation and Galilean invariance. Non-inertial frames, Coriolis force and its applications; Foucault's pendulum.

After completing this topic "Students will be able to

- Learn the concept of frames of reference in physics and differentiate between inertial and non-inertial frames of references
- understand concept of absolute space and time.
- understand Galilean transformations and principle of relativity.
- check invariance of different laws of physics under Galilean transformations.
- understand what is the Coriolis force
- understand how does the Coriolis force affect the direction of motion in the northern hemisphere and in the southern hemisphere
- understand how does the Coriolis force influence the direction of trade winds on Earth
- compare simple pendulum with Foucault's pendulum in terms of gravity and momentum
- Interpret the motion of Foucault's pendulum in terms of Earth's rotation
- Describe and calculate the period of Foucault's pendulum based on the latitude of its location

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Unit-II

Gravitation and Inverse Square Force Law:

Newton's Law of Gravitation, Various forces in nature (qualitative). Central and non-central forces, Inverse square force, Centre of mass. Equivalent one body problem. Reduced mass, angular momentum in central force field. Equation of motion under a force law. Equation of orbit and turning points. relationship between eccentricity and energy, Kepler's laws., Basic idea of global positioning system (GPS).

After completing this topic "Students will be able to

- understand that all objects, irrespective of their masses, experience the same acceleration g when falling freely under the influence of gravity at the same point on the Earth.
- understand that if gravity is the only force acting on an object, the sum of kinetic energy and gravitational energy is constant
- identify and describe each of Kepler's three laws of planetary motion.
- describe the fundamental theory and concepts of the Global Positioning System

Unit-III

Rotational Motion and Kinematics of Elastic and Inelastic Collisions: Angular velocity, angular momentum, Torque, Conservation of angular momentum, Elastic and inelastic collisions, coefficient of restitution, Elastic collisions in laboratory and C.M. systems, Velocities, angle and energies in elastic collisions in C.M. and lab. Systems, Classical Scattering: Cross- section for elastic scattering, Rutherford scattering (with derivation).

After completing this topic "Students will be able to

- describe the essential features of elastic and inelastic collisions, and give examples of each
- use the law of conservation of momentum, and (when appropriate) the law of conservation of kinetic energy, to solve a variety of simple collision problems.
- Differentiate between Laboratory and C.M frames
- Understand Rutherford Scattering

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Unit-IV

Special Theory of Relativity: Concept of stationary universal frame of reference and search for ether. Michelson- Morley experiment, postulates of special theory of relativity. Lorentz transformations. Observer in relativity. Relativity of simultaneity.

Effects of Relativity: Length contraction. Time dilation. Relativistic addition of velocities. Relativistic Doppler effect. Variation of mass with velocity and mass energy equivalence. Increase of mass in an inelastic collision, Relativistic momentum and energies. Transformation of momentum, energy. Minkowsky space.

After completing this topic "Students will be able to

- understand the concept of special relativity and its applications to Physical Sciences
- establish the non-existence of the hypothesised stationary aether through the null result of Michelson-Morley experiments with interferometer.
- derive & understand Lorentz Transformation equations.
- understand the concept of constant relative motion of different bodies in different frames of references
- use the Lorentz Transformation equation to:
  - describe events and how it will be reported by different observers in different frames of references
  - determine proper time and dilated time
  - determine proper length and contracted length
  - prove the invariability of physical laws

These LO will be verified by regular class tests, weekly assignments, group projects, Quizzes and minor test.

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Political Science

DEPARTMENT OF POLITICAL SCIENCE

(Course plan for 2020-21)

CLASS – B.A I

PAPER I DSC – Introduction to Political Theory

S. No.	DATE	TOPICS TO BE COVERED	No. of Lectures	ACADEMIC ACTIVITY
1.	26th Aug -30th Aug 2020	1.Discussion of the syllabus 2. Suggested Readings 3. Pattern of the Exam 4. Pattern of Internal Assessment	2	• Bridge Classes • Orientation of departmental students • Explaining about E-content (college library), Departmental Library
2.	1st Sep-30th Sep,2020	UNIT –I 1.What is Politics? 2.Evoution of Political Science as a subject. 3. Approaches to study Political science. 4.What is Political Theory and its relevance?	1 2 3 3	• Group Discussion on Politics • Power Point Presentations • Assignments
3.	1st Oct-30th Oct. 2020	UNIT –II 1.What is State? 2. Elements & meaning of state. 3.Various Theories on origin of state 4.Civil Society ,its meaning and relevance 5. Relationship between civil society and state	2 1 3 3 2	• Tutorials • Quiz • Class Test • Explaining Glorious revolution • PPT-Civil war
4.	1st Nov.-30th Nov. 2020	6.Theoretical Concepts – Liberty Equality Justice	2 2 2	• Lecture • Assignments • Paper Presenatation

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		UNIT-III 1. What is Democracy ? 2.Debates on Democracy & economic growth. 3.Tenets of democrarcy. 4.Types of Dempocracy.	 1 3 2 3	• Discussion on previous year papers • Lecture Method
5.	3rd Dec.-31st Dec. 2020	1.Liberalistic & socialist Perspective. 2.Differnce between liberalism and socialism. 3. Why socialism? Relevance of Socialism.	3 3 3	• Class tests • MCQ's • Tutorials • Class discussion
6.	9th Feb,-16th march 2021	UNIT-IV 1.Protective Discrimination 2.What is Principle of Fairness?Principles. 3.Rawlsian theory of Justice	 2 3 2	• Presenataions • Class Discussion • Tutorial • Quiz • Minor Tests
7.	17th march-7 April,2021	4.Institution of Family and State Intervention . Revision 1.Revision of the syllabus	4 4	• Paper Presentation • PPT • Lecture mode • Class Test
Total			**60**	

CLASS – B.A I

PAPER DSC-1B POLS102 – Indian Goverrnent and Politics

S. No.	**DATE**	**TOPICS TO BE COVERED**	**No. of Lectures**	**ACADEMIC ACTIVITY**
1	27th Aug - 30th Aug 2020	1.Discussion of the syllabus 2. Suggested Readings 3. Pattern of the Exam 4. Pattern of Internal Assessment 5 Relevance of the subject	2	• Bridge Classes • Orientation of departmental students Explaining about E-content ,Inflibnet (college library), Departmental Library
2	3rdSep-9th Oct.2020	UNIT –I 1.Nature Of Indian State. 2.Historical background of	2	• Discussion on Indian as a Nation

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		making of Indian State 3.Approaches ton study Indian politics-Marxist Theory, Liberal State. 4. Difference between Liberal & Marxist Theory	3 3 3	State • Lecture Method • Power Point Presentations
3	5th Oct-30th Oct. 2020	1.Gandhian Approach,it's relevance 2.Local Self Government,Urban and rural. UNIT- II 1.Indian Preamble, its, features and relevance 2.Indian Constitution and it's making. 3.Fundamental Rights-Features,Scope,Limitations	2 3 3 2 2	• Class discussion • Objective Questions • Lecture method • MCQ's • Tutorials
4	1st Nov.-7th Dec. 2020	4.Fundamental Duties-Need and relevance 5.Difference between Fundamental Rights and Fundamental Duties 6.Directive Principles 7.Parliament,Indian ,Office of Prime Minister.	3 3 2 2	• LectureMethod • Assignments • Paper Presenatations • Discussion on previous year papers
5	3rd Dec.-31st Dec. 2020	8.Judicial set up Of India. 9.Hierarchy of the Courts in India and their Features. 10.Nature of appointment of the judges,Power Structure of India.	2 3 3	• LectureMethod • Power Point Presentation • Class Test
7	9th Feb.-1st March 2021	UNIT-III 1.Concept of Secular State, Role of religion in Politics. 2.Party and party systen in India. 3.Differencce between National and State Parties. UNIT-IV 1.What are Social Movements? Workers Movements,peasants' Movements,Women's Movements.	3 2 3 4	• Lecture Method • Power Point Presentation • Paper Presentation

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8	10th March,2021-27 th March,2021	2.Economic system Of Indian. 3.Economic Reforms after 1990's-Liberalization, Privatization and Globalization.	2 3	• Lecture Method • Power point presentation • Class discussion • Question paper discussion
Total			60	

B.A. II

DSC-1C –POLS 201-Comparative Government and Politics

S. No.	DATE	TOPICS TO BE COVERED	No. of Lectures	ACADEMIC ACTIVITY
1	14th Aug-29th August,2020	1.Brief Discussion of the syllabus 2. Suggested Readings 3. Pattern of the Exam 4. Pattern of Internal Assessment 5. Origin of Comparative Politics as a separate discipline	5	• Bridge Classes • Orientation of departmental students • Discussion on Scope of the subject
2	1ST Sep-30th Sep,2020	UNIT-I 1.Nature of Comparative Politics and Government. 2.Difference between Comparative Govt. and Comparartive Politics 3.Methods and approaches to study the subject. 4.Relevance of the Comparative government and Politics	3 2 3 2	• Lecture Method • Power Point Presentation • Paper Presentation • Class Discussion
3	3rd Oct.-30th Oct.2020	UNIT-II 1.Different types of regimes in the World. 2.Authoritarian Regime and their presence in the world. 3.Democratic regimes- what is Democracy? Forms-Direct, Indirect	2 3 3 2	• LectureMethod • Class Discussion • Class Quiz • Power Point Presentation by students

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4	3rd Nov-28th Nov2020	UNIT-II 1.Classification of Political systems- Parliamentary form of Govt- Features,U.k and Constitutional Monarchy. 2. Presidential form of Govt.- U.S.A ad it's Congress	2 3	• Lecture Method • Power Point Presentation • Paper Presentation • Class Test
5	1st Dec.-30th Dec,2020	4.What is Federalism?Features of Federal form of Government. 5.Unitary form of Government –Features and scope 6.Difference between Federal and Unitary form of Government	3 3 4	• Paper Presentation by students • Lecture method • Group Discussion • Assignments
6	10th Feb-1st March,2021	UNIT-III 1.What is electoral system? 2.First Past the Post System.- Features, significance. 3.Limitations of First past the Post System 4.What is Proportioanl Representation? 5.Significance of Proportional Representation and Limitations.	1 3 2 2 4	• Lecture Method • Class Discussion • Power Point Presentation • Class test
7	10th March - 8th April2021	UNIT –IV 1.Party system in world. 2.Forms of Party system- One Party,Two Party and Multi-Party system. 3.What is welfare State. 4. Need od welfare State	 3 4 2 2	• Group Dsiscussion on Party System. • Lecture Method • Paper Presentation
	TOTAL		60	

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B.A II

Sec-2-Pols204-Public opinion and Survey Research

S. No.	DATE	TOPICS TO BE COVERED	No. of Lectures	ACADEMIC ACTIVITY
1	18Aug-29th August,2020	1.Brief Discussion of the syllabus 2. Suggested Readings 3. Pattern of the Exam 4. Pattern of Internal Assessment 5.Relevance of the subject	3	• Bridge Classes • Orientation of departmental students • Discussion on Types of Research and it's value. • Discussion on Scope of the subject
2	02 Sep-7th Oct.2020	UNIT-I 1.What is Public Opinion? 2.Meaning of Public Opinion, Notions associated with Public Opinion, why it matters? 3.Features of Public Opinion and scope 4.Role of Public Opinion.	 2 3 2 2	• Lecture method • Group Discussion • Power Point Presentation
3	10thOct-6th Nov.2020	5.Meaning of Democracy,Types of Democracy. 6.Relationship between Public Opinion and Democracy UNIT-II 1.What is Research? 2.Steps to conduct a research.	3 3 2 2	• Lecture method • Peer Teaching • Classroom Discussion • Class Test
4	9th Nov-30th Nov 2020	3.Meaning of Sampling- Types of Sampling Technique. 4.Meaning of a Sample,Utility of a Sample.	3 1	• Lecture Method • Assignment • Classroom Discussion
5	1st Dec.31st Dec,2020	5.Types of Sampling-Probability Sampling and Non-Probability UNIT-III 1.Survey Research-What and why? Importance of Survey in Research	4 3	• Paper Presentation by Students • Class Test • Powerpoint Presentation • Extempore speech by Students

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		2.Interview technique – Types, 3.Advantages, disadvantages of Interview Techniques.	3 2	
6	10th Feb2021-27th Feb2021	4. Meaning and relevance of a Questionnaire. 5.Questionnaire Methods. Advantages and disadvantages of the questionnaire methods UNIT-IV 1.Types of Data –Quantitative Method,Qualitative Method.	2 3 3	• Lecture method • Group Discussion • Power Point Presentation • Oral Test Of Students
7	12th March-12th April,2021	2.Analysis and interpretation of Data. 3.Meaning of Opinion Pollsand it's Relevance 4.Exit Polls-Relevance andFormation 5.Revision classes	3 3 4 4	• Tutorials • Lecture method • Group Discussion on Research in Social Sciences • Class Tests
	TOTAL		**60**	

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Psychology

Course plan BA III YEAR
2020-2021

SYLLABUS

EXPERIMENTAL PSYCHOLOGY (BAPSYCA309TH/PR)

Unit I: Types of Sensation: Structure and function of Visual and auditory Sensation.

Unit II: Perceptual Processes: Perceptual organization: Gestalt Theory, Laws, Concept of Figure and Ground.

Unit III: Depth Perception, Monocular and Binocular cues.

Unit-IV: Nature and types Attention. Factor affecting attention.

Readings

Baron, R. A. (2005). Psychology (5th Ed.). New Delhi: Sanat Printers.
Carlson, N. R. (2009). Foundation of physiological psychology. Amazon.
Chauhan, B. R. (2001). Adhunik Prayogic Manovigyan(fourth Ed.) . Kurukshetra: Azad Publication.
Coon, D. & Mitterer, J. O. (2007). Introduction to Psychology: Gateway to mind and behavior. New Delhi: Akash.
Jain, Shashi (2007). Introduction to Psychology (4th Ed.).New Delhi: Kalyani Publishers.
Kantowitz, H. & Kantowitz, R. L. (2006) Study guide for experimental psychology. Atlantik. Mangal, S. K. (2013). General Psychology. New Delhi: Sterling Publishers Pvt. Ltd.
Morgan, C.T. et al. (1979), Introduction to Psychology. New Delhi: T.M.H.
Morris, C. G. (1990). Psychology: An Introduction. New Delhi: Prentice Hall.
Ramnath Sharma & Rachna Sharma (2006). Experimental Psychology. Atlantik Publisher.
Singh, R. N. (2010). Adhunik Samanya Manovigyan. Agra: Aggrawal Publications. Srivastava, D. N. & Verma, P. (2009). Adhunik Samanya Manovigyan. Agra: Aggrawal Publications.
Srivastava, D. N. (Revised). General Psychology. Agra: Aggrawal Publications.

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Zana, M. & Olson, J. (2013). Advances in experimental social psychology. Elsevier. Zinta, R. L. (2010). Psychology manual. New Delhi: HG Publications.
Zinta, R. L. (2018). Psychology: Cannon for Budding Brain. New Delhi : Indu Publishers and Distributors.

Learning Goals

- To gain an understanding of the important psychological processes.
- To be able to draw to represent distribution of intelligence .

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- To gain an understanding of processes of memory and forgetting.
- To learn to draw and interpret Ebbinghaus curve.
- To acquire practical skills for measurement of intelligence.
- To understand the importance of aptitudes and measuring dexterity.
- To acquire presentation skills by means of group seminars.
- To learn to document and illustrate topics by preparing assignments

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UNIT- 1	No. of Lectures
1. Meaning and types of Sensation	2
2. Structure and function of eye	3
3. Theories of vision	2
4. Structure and function of ear	3
5. Theories of audition	2
UNIT - II	
1. Meaning of perception	2
2. Perceptual Processes	2
3. Laws of perceptual organization	3
4. Gestalt theory	2
5. Concept of Figure and ground	1
UNIT-III	
1. Concept of depth perception	2
2. Monocular cues of depth perception	2
3. Binocular cues of depth perception	3
4. Illusion and its types	2
5. Theories of illusion	2
UNIT- IV	
1. Meaning of attention	2
2. Types and characteristics of attention	3
3. Factors affecting attention	3

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Zoology

COURSE PLAN (2020-21) UNIT I

ZOOLOGY: DSC IB(COMPARATIVE ANATOMY AND DEVELOPMENTAL BIOLOGY OF VERTEBRATES) Code: ZOOL 102 TH

1.	MOTIVATION: P.K. TESTING:	1.What is the largest organ in the body? 2. What is the outermost layer of skin called? 3. What are different types of glands present in the body? 4. What are the different types of digital tips present in vertebrates?
2.	LEARNING OBJECTIVE:	In addition to the specific knowledge, teacher provide a broad spectrum of knowledge to students by developing interpersonal skills in students so that they also learn verbal and non-verbal communication, optimism, listening skills, problem solving ability. Awareness is gained by students regarding their duties for the society, family and for themselves and become aware about their career options. Students connect themselves with the reality, thus discarding the myths and accepting the truth.
3.	CONCEPTS/COURSE OBJECTIVES:	In this unit students will get aquatinted with the skin and its derivatives in vertebrates. They will understand about the origin of integumentary system and glands associated with it. They will also study about the secretions of skin through glands and various types of skin extinctions which will form digital tips in these vertebrates.
4.	CONTENTS:	Derivatives of integument w.r.t. glands and digital tips.
5.	METHODOLOGY:	1. Explanation 2. Question probing Skill 3. Demonstration
6.	TEACHING AIDS:	Black board, chart, chalks.
7.	EVALUATION:	Students are monitored and evaluated by the teacher on the basis of their quality knowledge they gained by learning the concepts. Evaluation being the most important tool in making teaching learning process effective, aids student's learning process with respect to the fulfilment of the teaching learning objectives. It increases the magnitude of teaching learning process by organising, coordinating, planning and teaching as well as evaluating them. One of the methods is to give them regular tests, minor tests and assignments.
8.	SUMMARY:	An overview of the concepts is taken from the students separately. They summarized the topics by sequencing and categorizing the information. They impart knowledge regarding the topic in the class by group discussion and draw appropriate inferences. They can also create a visual representation of the topics so as to get a quality knowledge of the content.
9.	REFRENCES:	Kardong, K.V. (2005) Vertebrates' Comparative Anatomy, Function and Evolution. IV Edition. McGraw-Hill Higher Education. • Kent, G.C. and Carr R.K. (2000). Comparative Anatomy of the Vertebrates. IX Edition. The McGraw-Hill Companies. • Hilderbrand, M and Gaslow G.E. Analysis of Vertebrate Structure, John Wiley and Sons. • Walter, H.E. and Sayles, L.P;

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		Biology of Vertebrates, Khosla Publishing House. • Gilbert, S. F. (2006). Developmental Biology, VIII Edition, Sinauer Associates, Inc., Publishers, Sunderland, Massachusetts, USA. • Balinsky, B.I. (2008). An introduction to Embryology, International Thomson Computer Press. • Carlson, Bruce M (1996). Patten's Foundations of Embryology, McGraw Hill, Inc.
10.	ASSIGNMENTS:	Assignment on skin glands.

COURSE PLAN (2020-21) UNIT II

ZOOLOGY: DSC IB (COMPARATIVE ANATOMY AND DEVELOPMENTAL BIOLOGY OF VERTEBRATES) Code: ZOOL 102 TH

1.	MOTIVATION: P.K. TESTING:	1.What forms the skeletal structure in the body of vertebrates? 2. What are visceral Arches? 3. How many pairs of visceral arches are there in the body?
2.	LEARNING OBJECTIVE:	In addition to the specific knowledge, teacher provide a broad spectrum of knowledge to students by developing interpersonal skills in students so that they also learn verbal and non-verbal communication, optimism, listening skills, problem solving ability. Awareness is gained by students regarding their duties for the society, family and for themselves and become aware about their career options. Students connect themselves with the reality, thus discarding the myths and accepting the truth.
3.	CONCEPTS/COURSE OBJECTIVES:	In this unit students will get a thorough knowledge of visceral arches their structure and the functions of these visceral arches in vertebrates. They will be given a detail understanding and the role of visceral arches in the evolutionary process among the vertebrates.
4.	CONTENTS:	Evolution of visceral arches.
5.	METHODOLOGY:	1. Explanation 2. Question probing Skill 3. Demonstration
6.	TEACHING AIDS:	Black board, chart, chalks.
7.	EVALUATION:	Students are monitored and evaluated by the teacher on the basis of their quality knowledge they gained by learning the concepts. Evaluation being the most important tool in making teaching learning process effective, aids student's learning process with respect to the fulfilment of the teaching learning objectives. It increases the magnitude of teaching learning process by organising, coordinating, planning and teaching as well as evaluating them. One of the methods is to give them regular tests, minor tests and assignments.
8.	SUMMARY:	An overview of the concepts is taken from the students separately. They summarized the topics by sequencing and categorizing the information. They impart knowledge regarding the topic in the class by group discussion and draw appropriate inferences. They can also create a visual representation of the topics so as to get a quality knowledge of the content.
9.	REFRENCES:	Kardong, K.V. (2005) Vertebrates' Comparative Anatomy, Function and

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		Evolution. IV Edition. McGraw-Hill Higher Education. • Kent, G.C. and Carr R.K. (2000). Comparative Anatomy of the Vertebrates. IX Edition. The McGraw-Hill Companies. • Hilderbrand, M and Gaslow G.E. Analysis of Vertebrate Structure, John Wiley and Sons. • Walter, H.E. and Sayles, L.P; Biology of Vertebrates, Khosla Publishing House. • Gilbert, S. F. (2006). Developmental Biology, VIII Edition, Sinauer Associates, Inc., Publishers, Sunderland, Massachusetts, USA. • Balinsky, B.I. (2008). An introduction to Embryology, International Thomson Computer Press. • Carlson, Bruce M (1996). Patten's Foundations of Embryology, McGraw Hill, Inc.
10.	ASSIGNMENTS:	Assignment on the structure of visceral arches.

COURSE PLAN (2020-21) UNIT III

ZOOLOGY: DSC IB (COMPARATIVE ANATOMY AND DEVELOPMENTAL BIOLOGY OF VERTEBRATES) Code: ZOOL 102 TH

1.	MOTIVATION: P.K. TESTING:	1.What is digestion? 2. What is alimentary canal? 3. What do you understand by a gland? 4. What is the dental formula of human teeth? 5. What is pigeon milk? 6. Can you name Digestive glands?
2.	LEARNING OBJECTIVE:	In addition to the specific knowledge, teacher provide a broad spectrum of knowledge to students by developing interpersonal skills in students so that they also learn verbal and non-verbal communication, optimism, listening skills, problem solving ability. Awareness is gained by students regarding their duties for the society, family and for themselves and become aware about their career options. Students connect themselves with the reality, thus discarding the myths and accepting the truth.
3.	CONCEPTS/COURSE OBJECTIVES:	In this unit students will get a deep understanding about the histology of the digestive system in all five vertebrate classes with their comparison. They will understand through this the evolutionary significance in the digestive system among different vertebrate classes with its specifications in each class.
4.	CONTENTS:	Brief account of alimentary canal and digestive glands.
5.	METHODOLOGY:	1. Explanation 2. Question probing Skill 3. Demonstration
6.	TEACHING AIDS:	Black board, chart, chalks.
7.	EVALUATION:	Students are monitored and evaluated by the teacher on the basis of their quality knowledge they gained by learning the concepts. Evaluation being the most important tool in making teaching learning process effective, aids student's learning process with respect to the fulfilment of the teaching learning objectives. It increases the magnitude of teaching learning process by organising, coordinating, planning and teaching as well as evaluating them.

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		One of the methods is to give them regular tests, minor tests and assignments.
8.	SUMMARY:	An overview of the concepts is taken from the students separately. They summarized the topics by sequencing and categorizing the information. They impart knowledge regarding the topic in the class by group discussion and draw appropriate inferences. They can also create a visual representation of the topics so as to get a quality knowledge of the content.
9.	REFRENCES:	Kardong, K.V. (2005) Vertebrates' Comparative Anatomy, Function and Evolution. IV Edition. McGraw-Hill Higher Education. • Kent, G.C. and Carr R.K. (2000). Comparative Anatomy of the Vertebrates. IX Edition. The McGraw-Hill Companies. • Hilderbrand, M and Gaslow G.E. Analysis of Vertebrate Structure, John Wiley and Sons. • Walter, H.E. and Sayles, L.P; Biology of Vertebrates, Khosla Publishing House. • Gilbert, S. F. (2006). Developmental Biology, VIII Edition, Sinauer Associates, Inc., Publishers, Sunderland, Massachusetts, USA. • Balinsky, B.I. (2008). An introduction to Embryology, International Thomson Computer Press. • Carlson, Bruce M (1996). Patten's Foundations of Embryology, McGraw Hill, Inc.
10.	ASSIGNMENTS:	Assignment on digestive glands.

COURSE PLAN (2020-21) UNIT IV

ZOOLOGY: DSC IB (COMPARATIVE ANATOMY AND DEVELOPMENTAL BIOLOGY OF VERTEBRATES) Code: ZOOL 102 TH

1.	MOTIVATION: P.K. TESTING:	1.What are the two gases involved in breathing? 2. What is respiration? 3. What are the respiratory organs present in aquatic animals? 4. What are the respiratory organs present in terrestrial animals? 5. What is the function of air sacs? 6. What is swim bladder?
2.	LEARNING OBJECTIVE:	In addition to the specific knowledge, teacher provide a broad spectrum of knowledge to students by developing interpersonal skills in students so that they also learn verbal and non-verbal communication, optimism, listening skills, problem solving ability. Awareness is gained by students regarding their duties for the society, family and for themselves and become aware about their career options. Students connect themselves with the reality, thus discarding the myths and accepting the truth.
3.	CONCEPTS/COURSE OBJECTIVES:	In this unit students will get a deep understanding about the histology of the respiratory systemin all five vertebrate classes with their comparison. They will also understand how evolution helped the vertebrates to evolve on land through water by developing a complex system of respiratory organs in their body which helped them to get adapted in their new evolving environment very well.
4.	CONTENTS:	Brief account of gills, lungs, air sacs, and swim bladder.
5.	METHODOLOGY:	1. Explanation

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		2. Question probing Skill 3. Demonstration
6.	TEACHING AIDS:	Black board, chart, chalks.
7.	EVALUATION:	Students are monitored and evaluated by the teacher on the basis of their quality knowledge they gained by learning the concepts. Evaluation being the most important tool in making teaching learning process effective, aids student's learning process with respect to the fulfilment of the teaching learning objectives. It increases the magnitude of teaching learning process by organising, coordinating, planning and teaching as well as evaluating them. One of the methods is to give them regular tests, minor tests and assignments.
8.	SUMMARY:	An overview of the concepts is taken from the students separately. They summarized the topics by sequencing and categorizing the information. They impart knowledge regarding the topic in the class by group discussion and draw appropriate inferences. They can also create a visual representation of the topics so as to get a quality knowledge of the content.
9.	REFRENCES:	Kardong, K.V. (2005) Vertebrates' Comparative Anatomy, Function and Evolution. IV Edition. McGraw-Hill Higher Education. • Kent, G.C. and Carr R.K. (2000). Comparative Anatomy of the Vertebrates. IX Edition. The McGraw-Hill Companies. • Hilderbrand, M and Gaslow G.E. Analysis of Vertebrate Structure, John Wiley and Sons. • Walter, H.E. and Sayles, L.P; Biology of Vertebrates, Khosla Publishing House. • Gilbert, S. F. (2006). Developmental Biology, VIII Edition, Sinauer Associates, Inc., Publishers, Sunderland, Massachusetts, USA. • Balinsky, B.I. (2008). An introduction to Embryology, International Thomson Computer Press. • Carlson, Bruce M (1996). Patten's Foundations of Embryology, McGraw Hill, Inc.
10.	ASSIGNMENTS:	Assignment onrespiratory system of birds and humans.

COURSE PLAN (2020-21) UNIT V

ZOOLOGY: DSC IB (COMPARATIVE ANATOMY AND DEVELOPMENTAL BIOLOGY OF VERTEBRATES) Code: ZOOL 102 TH

1.	MOTIVATION: P.K. TESTING:	1. What is the function of heart in the body? 2. What are the two main chambers of heart? 3. What do you understand by double circulation of blood? 4. How the purification of blood occurs through heart in ver5tebvrates? 5. How many chambered heart does a crocodile has?
2.	LEARNING OBJECTIVE:	In addition to the specific knowledge, teacher provide a broad spectrum of knowledge to students by developing interpersonal skills in students so that they also learn verbal and non-verbal communication, optimism, listening skills, problem solving ability. Awareness is gained by students regarding their duties for the society, family and for themselves and become aware about their career options. Students connect themselves

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		with the reality, thus discarding the myths and accepting the truth.
3.	CONCEPTS/COURSE OBJECTIVES:	In this unit students will know abut the comparative account of the evolution of heart in different vertebrate classes. Through histology of heart, they will understand how heart as a blood pumping organ in vertebrates has evolved from a very simple structure in Pisces to highly evolved as an efficient and complex organ in higher vertebrate classes in mammals. Also in continuation to this they will also get a thorough understanding of blood circulation through the aortic arches and their evolutionary process in the body of vertebrates.
4.	CONTENTS:	Evolution of heart and aortic arches.
5.	METHODOLOGY:	1. Explanation 2. Question probing Skill 3. Demonstration
6.	TEACHING AIDS:	Black board, chart, chalks.
7.	EVALUATION:	Students are monitored and evaluated by the teacher on the basis of their quality knowledge they gained by learning the concepts. Evaluation being the most important tool in making teaching learning process effective, aids student's learning process with respect to the fulfilment of the teaching learning objectives. It increases the magnitude of teaching learning process by organising, coordinating, planning and teaching as well as evaluating them. One of the methods is to give them regular tests, minor tests and assignments.
8.	SUMMARY:	An overview of the concepts is taken from the students separately. They summarized the topics by sequencing and categorizing the information. They impart knowledge regarding the topic in the class by group discussion and draw appropriate inferences. They can also create a visual representation of the topics so as to get a quality knowledge of the content.
9.	REFRENCES:	Kardong, K.V. (2005) Vertebrates' Comparative Anatomy, Function and Evolution. IV Edition. McGraw-Hill Higher Education. • Kent, G.C. and Carr R.K. (2000). Comparative Anatomy of the Vertebrates. IX Edition. The McGraw-Hill Companies. • Hilderbrand, M and Gaslow G.E. Analysis of Vertebrate Structure, John Wiley and Sons. • Walter, H.E. and Sayles, L.P; Biology of Vertebrates, Khosla Publishing House. • Gilbert, S. F. (2006). Developmental Biology, VIII Edition, Sinauer Associates, Inc., Publishers, Sunderland, Massachusetts, USA. • Balinsky, B.I. (2008). An introduction to Embryology, International Thomson Computer Press. • Carlson, Bruce M (1996). Patten's Foundations of Embryology, McGraw Hill, Inc.
10.	ASSIGNMENTS:	Assignment on the aortic arches..

COURSE PLAN (2020-21) UNIT VI

ZOOLOGY: DSC IB (COMPARATIVE ANATOMY AND DEVELOPMENTAL BIOLOGY OF VERTEBRATES) Code: ZOOL 102 TH

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1.	MOTIVATION: P.K. TESTING:	1. What is the difference between ureotelic and uricotelic organisms? 2. What is the role of kidney in the body? 3. What is Bowmann's capsule? 4. What is archinephric kidney? 5. Does urinary system and genital system in vertebrates are connected? 6. What do you understand by urinogenital system?
2.	LEARNING OBJECTIVE:	In addition to the specific knowledge, teacher provide a broad spectrum of knowledge to students by developing interpersonal skills in students so that they also learn verbal and non-verbal communication, optimism, listening skills, problem solving ability. Awareness is gained by students regarding their duties for the society, family and for themselves and become aware about their career options. Students connect themselves with the reality, thus discarding the myths and accepting the truth.
3.	CONCEPTS/COURSE OBJECTIVES:	In this unit students will be imparted a thorough understanding of evolution of kidneys in vertebrates from the pronephric to metanephric ones. With this they will understand how the kidneys evolved from lower vertebrate classes to the higher ones, thus increasing its efficiency among organisms thereby making the vertebrate class a highly evolved class. Further their knowledge will be enhanced by making them understand that how at the time of gradual evolution rudimentary parts of excretory system gets modified in the body to become important functional parts of urinary system thus, forming urinogenital system in vertebrates.
4.	CONTENTS:	Succession of kidney, Evolution of urinogenital ducts.
5.	METHODOLOGY:	1. Explanation 2. Question probing Skill 3. Demonstration
6.	TEACHING AIDS:	Black board, chart, chalks.
7.	EVALUATION:	Students are monitored and evaluated by the teacher on the basis of their quality knowledge they gained by learning the concepts. Evaluation being the most important tool in making teaching learning process effective, aids student's learning process with respect to the fulfilment of the teaching learning objectives. It increases the magnitude of teaching learning process by organising, coordinating, planning and teaching as well as evaluating them. One of the methods is to give them regular tests, minor tests and assignments.
8.	SUMMARY:	An overview of the concepts is taken from the students separately. They summarized the topics by sequencing and categorizing the information. They impart knowledge regarding the topic in the class by group discussion and draw appropriate inferences. They can also create a visual representation of the topics so as to get a quality knowledge of the content.
9.	REFRENCES:	Kardong, K.V. (2005) Vertebrates' Comparative Anatomy, Function and Evolution. IV Edition. McGraw-Hill Higher Education. • Kent, G.C. and Carr R.K. (2000). Comparative Anatomy of the Vertebrates. IX Edition. The McGraw-Hill Companies. • Hilderbrand, M and Gaslow G.E. Analysis of Vertebrate Structure, John Wiley and Sons. • Walter, H.E. and Sayles, L.P;

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10.	ASSIGNMENTS:	Assignment on the structures of urinogenital systems of all vertebrate classes.

COURSE PLAN (2020-21) UNIT VII

ZOOLOGY: DSC IB (COMPARATIVE ANATOMY AND DEVELOPMENTAL BIOLOGY OF VERTEBRATES) Code: ZOOL 102 TH

1.	MOTIVATION: P.K. TESTING:	1. What is the function of brain in the body? 2. What do you understand by stimulus and response? 3. what is neurogenesis? 4. What are meninges? 5. What are the three parts of a brain? 6. What is the function of medulla oblongata?
2.	LEARNING OBJECTIVE:	In addition to the specific knowledge, teacher provide a broad spectrum of knowledge to students by developing interpersonal skills in students so that they also learn verbal and non-verbal communication, optimism, listening skills, problem solving ability. Awareness is gained by students regarding their duties for the society, family and for themselves and become aware about their career options. Students connect themselves with the reality, thus discarding the myths and accepting the truth.
3.	CONCEPTS/COURSE OBJECTIVES:	In this unit students will get a deep understanding about the evolution of brain among vertebrates to understand how mammals and especially homo sapiens become intelligent beings over other organisms with this complex evolutionary change which can be studied through the histology of brain in reference to its embryonic origin among vertebrates.
4.	CONTENTS:	Comparative account of brain.
5.	METHODOLOGY:	1. Explanation 2. Question probing Skill 3. Demonstration
6.	TEACHING AIDS:	Black board, chart, chalks.
7.	EVALUATION:	Students are monitored and evaluated by the teacher on the basis of their quality knowledge they gained by learning the concepts. Evaluation being the most important tool in making teaching learning process effective, aids student's learning process with respect to the fulfilment of the teaching learning objectives. It increases the magnitude of teaching learning process by organising, coordinating, planning and teaching as well as evaluating them. One of the methods is to give them regular tests, minor tests and assignments.
8.	SUMMARY:	An overview of the concepts is taken from the students separately. They

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		summarized the topics by sequencing and categorizing the information. They impart knowledge regarding the topic in the class by group discussion and draw appropriate inferences. They can also create a visual representation of the topics so as to get a quality knowledge of the content.
9.	REFRENCES:	Kardong, K.V. (2005) Vertebrates' Comparative Anatomy, Function and Evolution. IV Edition. McGraw-Hill Higher Education. • Kent, G.C. and Carr R.K. (2000). Comparative Anatomy of the Vertebrates. IX Edition. The McGraw-Hill Companies. • Hilderbrand, M and Gaslow G.E. Analysis of Vertebrate Structure, John Wiley and Sons. • Walter, H.E. and Sayles, L.P; Biology of Vertebrates, Khosla Publishing House. • Gilbert, S. F. (2006). Developmental Biology, VIII Edition, Sinauer Associates, Inc., Publishers, Sunderland, Massachusetts, USA. • Balinsky, B.I. (2008). An introduction to Embryology, International Thomson Computer Press. • Carlson, Bruce M (1996). Patten's Foundations of Embryology, McGraw Hill, Inc.
10.	ASSIGNMENTS:	Assignment on the structures of brain in different vertebrate classes.

COURSE PLAN (2020-21) UNIT VIII

ZOOLOGY: DSC IB (COMPARATIVE ANATOMY AND DEVELOPMENTAL BIOLOGY OF VERTEBRATES) Code: ZOOL 102 TH

1.	MOTIVATION: P.K. TESTING:	1. What are different sense organs present in body? 2. What do you understand by receptors associated with sense organs? 3. What are the sensory receptors of eye?
2.	LEARNING OBJECTIVE:	In addition to the specific knowledge, teacher provide a broad spectrum of knowledge to students by developing interpersonal skills in students so that they also learn verbal and non-verbal communication, optimism, listening skills, problem solving ability. Awareness is gained by students regarding their duties for the society, family and for themselves and become aware about their career options. Students connect themselves with the reality, thus discarding the myths and accepting the truth.
3.	CONCEPTS/COURSE OBJECTIVES:	In this unit students will learn about the comparative account of different sense organs present in the vertebrate classes along with the role of different receptors associated with it. They will thoroughly understand how these sense organs evolved with time with increased efficiency in vertebrates.
4.	CONTENTS:	Types of receptors.
5.	METHODOLOGY:	1. Explanation 2. Question probing Skill 3. Demonstration
6.	TEACHING AIDS:	Black board, chart, chalks.
7.	EVALUATION:	Students are monitored and evaluated by the teacher on the basis of their quality knowledge they gained by learning the concepts. Evaluation being the most important tool in making teaching learning process effective, aids student's learning process with respect to the fulfilment of the teaching learning objectives. It increases the magnitude of teaching

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		learning process by organising, coordinating, planning and teaching as well as evaluating them. One of the methods is to give them regular tests, minor tests and assignments.
8.	SUMMARY:	An overview of the concepts is taken from the students separately. They summarized the topics by sequencing and categorizing the information. They impart knowledge regarding the topic in the class by group discussion and draw appropriate inferences. They can also create a visual representation of the topics so as to get a quality knowledge of the content.
9.	REFRENCES:	Kardong, K.V. (2005) Vertebrates' Comparative Anatomy, Function and Evolution. IV Edition. McGraw-Hill Higher Education. • Kent, G.C. and Carr R.K. (2000). Comparative Anatomy of the Vertebrates. IX Edition. The McGraw-Hill Companies. • Hilderbrand, M and Gaslow G.E. Analysis of Vertebrate Structure, John Wiley and Sons. • Walter, H.E. and Sayles, L.P; Biology of Vertebrates, Khosla Publishing House. • Gilbert, S. F. (2006). Developmental Biology, VIII Edition, Sinauer Associates, Inc., Publishers, Sunderland, Massachusetts, USA. • Balinsky, B.I. (2008). An introduction to Embryology, International Thomson Computer Press. • Carlson, Bruce M (1996). Patten's Foundations of Embryology, McGraw Hill, Inc.
10.	ASSIGNMENTS:	Assignment on the types of receptors.

Submitted by :

Ms. Shivani Chauhan

Dept. of Zoology

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