SUPPORTING DOCUMENTS

1.1.1 & 1.1.2

COURSE PLANS

DEPARTMENTS
BIOTECHNOLOGY
BOTANY
CHEMISTRY
COMMERCE
COMPUTER SCIENCE
ECONOMICS
ENGLISH
GEOGRAPHY
HINDI
HISTORY
NUTRITION AND HEALTH
MATHEMATICS
MICROBIOLOGY
MUSIC
PHYSICS
PHYSICAL EDUCATION
POLITICAL SCIENCE
PSYCHOLOGY
ZOOLOGY

Biotechnology

Course Plan
Course: BIOTECH3C11TH
ANIMAL BIOTECHNOLOGY
Dr. Shruti Gupta

Course: BIOTECH3C11TH

ANIMAL BIOTECHNOLOGY

Theory examination: 50 marksPractical examination: 20 marksInternal 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.

UNITI(10 Periods)

Gene transfer methods in Animals – Microinjection, Embryonic Stem cell, gene transfer,

Retrovirus & Gene transfer.

UNITII(10 Periods)

Introduction to transgenesis. Transgenic Animals – Mice, Cow, Pig, Sheep, Goat, Bird,

Insect. Animal diseases need help of Biotechnology – Foot-and mouth disease,

Coccidiosis, Trypanosomiasis, Theileriosis.

UNITIII(20 Periods)

Animal propagation – Artificial insemination, Animal Clones. Conservation Biology –

Embryo transfer techniques. Introduction to Stem Cell Technology and its applications.

UNITIV(20 Periods)

Genetic modification in Medicine - gene therapy, types of gene therapy, vectors in gene

therapy, molecular engineering, human genetic engineering, problems & ethics.

Course Plan

UNIT I   **(10 Periods)**

Gene transfer methods in Animals – Microinjection, Embryonic Stem cell, gene transfer, Retrovirus & Gene transfer.

Content	No of Lectures Required	Lesson Outcome
Gene transfer methods in Animals – Microinjection, Embryonic Stem cell	5	Students are educated about the various methods of gene transfer in animals such as microinjection, stem cell transfer etc.
Retrovirus & Gene transfer.	5	The various viral methods of gene transfer in animal cells are also illustrated to the students

UNIT II   **(10 Periods)**

Introduction to transgenesis. Transgenic Animals – Mice, Cow, Pig, Sheep, Goat, Bird, Insect. Animal diseases need help of Biotechnology – Foot-and mouth disease, Coccidiosis, Trypanosomiasis, Theileriosis.

Content	No of Lectures Required	Lesson Outcome
Introduction to transgenesis. Transgenic Animals – Mice, Cow, Pig, Sheep, Goat, Bird,	5	Students are given an insight into the details of the production and applications of transgenic animals
Animal diseases need help of Biotechnology – Foot-and mouth disease, Coccidiosis, Trypanosomiasis, Theileriosis	5	The role of biotechnology in treatment, diagnosis and prevention of animal diseases is discussed with the students

UNITIII (20 Periods)

Animal propagation – Artificial insemination, Animal Clones. Conservation Biology –

Embryo transfer techniques. Introduction to Stem Cell Technology and its applications.

Content	No of Lectures Required	Lesson Outcome
Animal propagation – Artificial insemination, Animal Clones. Conservation Biology	10	Students are given a detailed insight into the reproductive technology including animal cloning, artificial insemination and conservation biology
Embryo transfer techniques. Introduction to Stem Cell Technology and its applications.	10	The concept of embryo transfer techniques in animals and humans and their applications along with the stem cell technology are explained in depth to the students.

UNITIV (20 Periods)

Genetic modification in Medicine - gene therapy, types of gene therapy, vectors in gene

therapy, molecular engineering, human genetic engineering, problems & ethics.

Content	No of Lectures Required	Lesson Outcome
Genetic modification in Medicine - gene therapy, types of gene therapy, vectors in gene therapy,	10	Students are educated about the concept of gene therapy, their types and applications.
Molecular engineering, human genetic engineering, problems & ethics.	10	The techniques involved in the molecular engineering and human genetic engineering along with the problems and ethics involved are briefed to the students

Teaching Learning Activities
Teaching and learning will be made more effective through activities like • Power Point Presentations • Group Discussions • Smart Boards • Debates • Quiz Competitions • Poster Making • Paper Presentations • Class Tests

Botany

COURSE PLAN: B.Sc II
Plant Anatomy and Embryology (BOTA 201)

1.	MOTIVATION P.K Testing	1. What is plant anatomy? 2. How anatomy is different from morphology. 3. How many types of plant tissues are there? 4. What is the difference between simple and complex permanent tissues? 5. What are the components of xylem and phloem? 6. How will you detect the plant age? 7. What are the annual rings? 8. Define anomalous plant growth. 9. What is plant embryology? 10. How many layers are present in a mature anther structure? 11. Which is the first cell of gametophytic generation in plants? 12. How many cells are there in an embryo sac? 13. Differentiate between monocot and dicot embryo?
2.	LEARNING OBJECTIVES	1. To familiarize students with the detailed internal and also external structures of the plant parts. 2. To make students able to understand the concept of secondary growth and its importance to the plants. 3. To enable students to understand about the reproductive development of the plants.
3.	CONTENTS	**Unit 1: Meristematic and permanent tissues** (7 Lectures) Root and shoot apical meristems; Simple and complex tissues. **Unit 2: Organs** (7 Lectures) Structure of dicot and monocot root stem and leaf. **Unit 3: Adaptive and protective systems** (4 Lectures) Epidermis, cuticle, stomata **Unit 4: Secondary Growth** (8 Lectures) Vascular cambium – structure and function, seasonal activity. Secondary growth in root and stem, Wood (heartwood and sapwood). **Unit 5: Anomalous Secondary Growth** (4 Lectures) *Boerhaavia* (Dicot) and *Dracaena* (Monocot)

		Unit 6: Structural organization of flower (13 Lectures) Flower- a modified shoot, Function of floral parts; Structure of anther and pollen; Microsporogenesis, Male gametophyte, Structure and types of ovules; Megasporangium, Types of embryo sacs, organization and ultra structure of mature embryo sac. **Unit 7: Pollination** (4 Lectures) Pollination mechanisms and adaptations. **Unit 8: Fertilization** (7 Lectures) Double fertilization; Seed-structure, appendages and dispersal mechanisms. **Unit 9: Embryo and endosperm** (6 Lectures) Endosperm types, structure and functions; Dicot and monocot embryo; Embryo-endosperm relationship, polyembryony.
4.	METHODOLOGY	1. Class lectures 2. Discussion 3. Topic related Power point presentations 4. Live demonstrations
5.	TEACHING-LEARNING ACTIVITIES	1. White boared and marker 2. Power point presentation 3. Charts, Models, Preserved specimens
8.	REFERENCES	1. Bhojwani, S.S. & Bhatnagar, S.P. (2011). Embryology of Angiosperms. Vikas Publication House Pvt. Ltd. New Delhi. 5th edition.
	ASSIGNMENTS	1. Structural organization of flower. 2. Power point presentation by students on important topics related to plant anatomy and embryology.

Chemistry

Chemistry Lesson Plans
First Year (2022-23)
CHEM 101TH
**ATOMIC STRUCTURE, BONDING, GENERAL ORGANIC CHEMISTRY &
ALIPHATIC HYDROCARBONS**

PK Testing:
1. What is the atom
2. Discovery and brief history
3. Models for the structure of atom
4. Electronic configuration
5. Various laws and principles
6. Wave nature.
7. Particle nature
8. Dual Nature of matter
9. Bonding
10. Organic chemistry
11. Basic rules and IUPAC nomenclature
12. What are hydrocarbons.

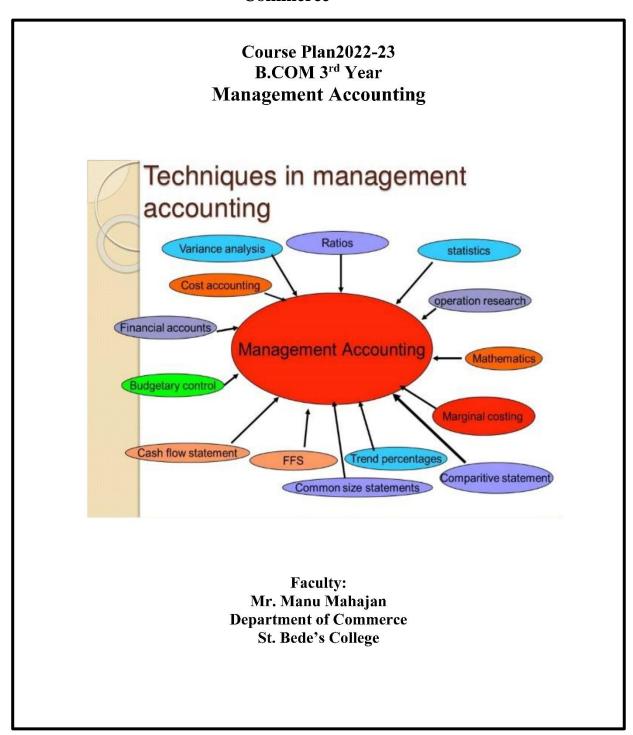| Section	Name of Topic	No of Hours	Name of Teacher
	Atomic Structure	14	
A	Review of Bohr's theory and its limitations, dual behaviour of matter and radiation, de Broglie's relation, Heisenberg Uncertainty principle.	3	Dr. Maheshwar Singh Thakur
	Hydrogen atom spectra. Need of a new approach to Atomic structure. Schrodinger wave equation and meaning of various terms in it. Significance of ψ and $\psi 2$. 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.	5	
	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.	6	
B	**Chemical Bonding and Molecular Structure**	16	
	Ionic Bonding: General characteristics of ionic bonding. Energy considerations in ionic bonding,	2	Dr. Maheshwar Singh Thakur

	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.	4	
	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.	3	
	Concept of resonance and resonating structures in various inorganic and organic compounds.	3	
	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	4	
	Fundamentals of Organic Chemistry	18	
C	Physical Effects, Electronic Displacements: Inductive Effect, Electromeric Effect, Resonance and Hyperconjugation. Cleavage of Bonds: Homolysis and Heterolysis.	2	**Dr. Maheshwar Singh Thakur**
	Structure, shape and reactivity of organic molecules: Nucleophiles and electrophiles. Reactive Intermediates: Carbocations, Carbanions and free radicals.	3	
	Strength of organic acids and bases: Comparative study with emphasis on factors affecting pK values. Aromaticity: Benzenoids and Hückel's rule.	3	
	Stereochemistry Conformations with respect to ethane, butane and cyclohexane.	3	

	Interconversion of Wedge Formula, Newman, Sawhorse and Fischer projections.	3	
	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	4	
D	**Aliphatic Hydrocarbons**	14	
	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.	5	
	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). 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.	4	**Dr. Maheshwar Singh Thakur**
	Alkynes: (Upto 5 Carbons) Preparation: Acetylene from CaC_2 and conversion into higher alkynes; by dehalogenation of tetra halides and dehydrohalogenation of vicinal-dihalides.	2	
	Reactions: Formation of metal acetylides, addition of bromine and alkaline $KMnO_4$, ozonolysis and oxidation with hot alkaline $KMnO_4$.	3	

Commerce

Course Plan2022-23
B.COM 3rd Year
Management Accounting

Faculty:
Mr. Manu Mahajan
Department of Commerce
St. Bede's College

COURSE OBJECTIVE:

- To impart basic knowledge of Management Accounting.
- To familiarize the students with concepts of Management Control Techniques.

LEARNING OBJECTIVE:
The objective of this paper is to help students to acquire conceptual knowledge of management accounting and to impart Skills for Management Control Techniques.

UNIT- 1 Introduction	
Name of the topic	**No. of lectures**
A) Introduction to Management Accounting	
Definition, Meaning and Functions of Management Accounting	3 lectures
Need and importance of Management Accounting	1 lectures
Difference between Financial Accounting and Management Accounting, Cost Accounting Vs. Management Accounting	2 lecture
Tools and Techniques of Management Accounting	2 lecture
Advantages and Limitations of Management Accounting, Scope of Management Accounting	1 lecture
B) Ratio Analysis	
Introduction to ratios, Meaning and definitions of ratios, Various types of ratios	1 lecture
Advantages and disadvantages of Ratio Analysis	1lecture
Formulas for calculation of various ratios	1 lecture
Numerical Problems on Ratio Analysis	5 lectures
Du -Pont	1 lecture

LEARNING OUTCOME
Students will be able to:

- Understand the concept of Management Accounting.
- Understand the concept of various types of ratios and their utility.

UNIT – II

Budget and Budgetary Control	
Name of the Topic	**No. of lectures**
Meaning, Definitions and objectives of Budgetary Control	1 lecture
Limitations and Steps in Budgetary Control	1 lecture
Types and Classification of Budgets	1 lecture
Practical Problems on Cash Budget	3 lectures
Practical Problems on Flexible Budget	2 lectures
Practical Problems on Sales Budget	1 lecture
Practical Problems on Production Budget	1 lecture
Zero Base Budgeting- Concept, Merits and Demerits	1 lecture
Difference between Traditional Budgeting and Flexible Budget; Concept of Master Budget	1 lecture

LEARNING OUTCOME
Students will be able to:

- Understand the concept of preparation of different types of Budgets.

UNIT – III	
Marginal Costing	
Name of the Topic	**No. of lectures**
Meaning, Definitions of Marginal Cost and Marginal Costing	1 lecture
Advantages and Disadvantages of Marginal Costing	1 lecture
Calculation of P/V Ratio, B.E.P (in Rs. And in Units), Margin of Safety; Difference between Profit & Contribution, How P/V ratio can be increased	2 lectures
Problems of Marginal Costing	1 lecture
Break even Chart:- Advantages & Disadvantages	1 lecture
Numerical Problems on Marginal Costing	9 lectures

LEARNING OUTCOME
Students will be able to:

- Understand the concept of Break –even point.
- Understand how to make Break even graph and P/V graph.

UNIT – IV Standard Costing	
Name of the Topic	**No. of lectures**
Meaning, Definitions of Marginal Cost and Marginal Costing	1 lecture
Advantages and Disadvantages of Marginal Costing	1 lecture
Calculation of P/V Ratio, B.E.P (in Rs. And in Units), Margin of Safety; Difference between Profit & Contribution, How P/V ratio can be increased	2 lectures
Problems of Marginal Costing	1 lecture

MINOR TEST	
METHODOLOGY:	• Interactive Lecture • Discussions • Chalk and talk method • Assignments • Presentations • Class Tests
TEACHING AIDS:	• Black Board • Smart Board

| REFERENCES | • Arora, M.N. Management Accounting. Vikas Publishing House, New Delhi.
• Maheshwari, S.N. and S.N. Mittal. Management Accounting. Shree Mahavir Book Depot, New Delhi.
• Singh, S. K. and Gupta Lovleen. Management Accounting – Theory and Practice. Pinnacle Publishing House.
• Khan, M.Y. and Jain, P.K. Management Accounting. McGraw Hill Education |

Computer Science

Course plan

Session -22-23

BA/BSc

BCA

M.Com

Nivedita Bhardwaj

Course plan

B.Sc BA Computer Science

COMP301TH: Operating System

Unit-I
Introduction: System Software, Resource Abstraction, OS strategies.
Types of operating systems - Multiprogramming, Batch, Time Sharing, Single user and Multiuser, Process Control & Real Time Systems.
Unit-II
Operating System Organization: Factors in operating system design, basic OS functions implementation consideration; process modes, methods of requesting system services – system calls and system programs.
Process Management : System view of the process and resources, initiating the OS, process address space, process abstraction, resource abstraction, process hierarchy, Thread model
Scheduling: Scheduling Mechanisms, Strategy selection, non-pre-emptive and pre-emptive strategies.
Unit-III
Memory Management: Mapping address space to memory space, memory allocation strategies, fixed partition, variable partition, paging, virtual memory
Unit-IV
Shell introduction and Shell Scripting: shell and various type of shell, Various editors present in Linux, Different modes of operation in vi editor, What is shell script, Writing and executing the shell script, Shell variable (user defined and system variables), System calls, Using system calls
Text Book:
1. Silberschatz, Galvin "Operating System Concepts", Addison Wesley Publishing Company, 1989.
Reference Books:
1. William Stallings, "Operating Systems", Macmillan Publishing Company.
2. Deitel H.M., "An Introduction To Operating System", Addison Wesley Publishing Company, 1984.
3. Tanenbaum, A.S., "Modern Operating System", Prentice Hall of India Pvt. Ltd. 1995.
20

Paper Title: : Operating System

Paper Code: COMP301TH

Objectives:

The objectives of the course are to learn:

- **To understand the importance of operating system and using it purposefully.**
- **To understand different scheduling techniques.**
- **To make students aware of the deadlock like situations .**
- **To make students aware latest operating systems.**

Teaching aids used:

- **Whiteboard and marker**
- **PowerPoint presentation**
- **Practical implementations**

Methodology:

- **Discussions**
- **Lectures**
- **videos**

Topic Wise Schedule and Duration	
Topic	Lectures
Introduction: System Software, Resource Abstraction, OS strategies.	2
Types of operating systems – Multiprogramming, Batch, Time Sharing, Single user and Multiuser	2
Process Control & Real Time Systems. Thread model	2
Scheduling: Scheduling Mechanisms, Strategy selection, non-pre-emptive and pre-emptive strategies	2

Different modes of operation in vi editor	2
What is shell script	2
Writing and executing the shell script, Shell variable (user defined and system variables)	4
System calls, Using system calls	4

Economics

Course Plan
B.A. II 2022-23

SYLLABUS
Course No. ECONHA203
Course title: Statistical Methods for Economics
Nature of Course: DSC – 7
Number of credits: 6
Number of Lectures (L): Practical (P): Tutorial (T): 74:0:16
Course Description This is a course on statistical methods for economics. It begins with some basic concepts and terminology and then develops the notion of probability, probability distributions and is followed by a discussion on sampling techniques. The course introduces the notion of sampling distributions that act as a bridge between probability theory and statistical inference.

Unit I Descriptive Statistics - July & August

Objective: By the end of the lesson, students will be able to understand the basic concepts of descriptive statistics, including measures of central tendency, measures of dispersion, measures of skewness and kurtosis, and the concept of moments.

Methodologies:

1. **Lecture:** A comprehensive video on descriptive statistics, covering the topics of measures of central tendency, measures of dispersion, measures of skewness and kurtosis, and the concept of moments will be shown. The video will include definitions, formulas, and examples to illustrate the concepts.
2. **Group discussion:** Students will be divided into groups to discuss and compare the different measures of central tendency, dispersion, skewness, and kurtosis. They will also discuss the concept of moments and its applications in statistics.
3. **Problem-solving:** Students will be given practice problems to solve individually or in groups to apply the concepts they have learned. The problems will involve calculating measures of central tendency, dispersion, skewness, kurtosis, and moments.
4. **Real-world application:** Real-world examples of the use of descriptive statistics in various fields, such as finance, economics, and medicine, to demonstrate the relevance and importance of the concepts will be provided to students.

Assessment:

1. **Quizzes and exams:** Students will be assessed through quizzes and exams that will cover the topics of measures of central tendency, dispersion, skewness, kurtosis, and moments.
2. **Problem sets:** Students will be given problem sets to solve that will assess their ability to apply the concepts they have learned.
3. **Class participation:** Students will be evaluated based on their participation in class discussions and activities.

Materials:

1. Lecture videos
2. Practice problems
3. Real-world examples
4. Assessment materials
5. Whiteboard or chalkboard and markers or chalk
6. Textbook or online resources for reference

Unit II Correlation and Regression Analysis – September & October

Objective: By the end of the lesson, students will be able to understand the concepts of linear correlation and regression, and how to apply them to real-world data.

Materials:

- Laptop and projector for presentation
- Handouts of sample data sets for correlation and regression analysis

Introduction

Introduce the concept of correlation and regression and their importance in analysing data.

- Review the measures of central tendency and dispersion discussed in the previous lesson as they will be useful in calculating correlation and regression.

Correlation

Define the terms covariance and correlation and explain their relationship.

- Present the formula for calculating Karl Pearson's coefficient of correlation and explain its properties.
- Use a sample data set to demonstrate how to calculate correlation coefficient and interpret its value.
- Introduce Spearman's rank correlation and explain when it is used.
- Provide examples of data sets where each correlation method would be appropriate.

Regression Analysis

Define the concept of regression and its importance in predicting one variable based on another.

- Present the formula for the equation of a regression line and explain how to estimate the slope and intercept using the least squares method.
- Use a sample data set to demonstrate how to calculate a regression line and interpret its slope and intercept.
- Define the coefficient of determination and explain its importance in assessing the strength of a regression model.

- Present the formula for the standard error of estimate and explain its role in measuring the accuracy of a regression model.
- Provide examples of data sets where regression analysis would be appropriate.

Recap the concepts of correlation and regression and their applications.

- Assign homework exercises for students to practice calculating correlation and regression on their own.
- Encourage students to find and bring in real-world data sets to use in future lessons.

Unit III Elementary Probability Theory and Random Variables: November & December

Objective: To understand the basic concepts of probability theory and random variables and their applications in solving problems.

I. Introduction

- Definition of probability
- Sample space and events
- Approaches to probability (classical, empirical, and axiomatic)
- Addition and multiplication theorems

II. Conditional Probability and Independence of Events

- Definition of conditional probability
- Bayes theorem and its application
- Independence of events

III. Random Variables

- Definition of a random variable
- Discrete and continuous random variables
- Probability density function
- Mathematical expectation and its properties

IV. Applications

- Solving problems involving probability theory and random variables
- Real-life applications in various fields

V. Conclusion

- Recap of the main concepts covered.
- Importance of probability theory and random variables in various fields

Teaching Methodologies:

1. Lecture and Discussion: The concepts of probability theory and random variables will be introduced through lecture and encourage students to ask questions and participate in discussions to clarify the concepts and their applications.
2. Problem-Solving: Examples and problems to solve, both individually and in groups, to apply the concepts learned in class.
3. Real-Life Applications: Examples of real-life applications of probability theory and random variables in various fields, such as economics, finance, and medicine.

Assessment:

1. In-class participation and discussions
2. Homework assignments and problem sets
3. Mid-term and final exams

Unit IV: Sampling and Probability Distribution – February & March

Objectives:

- Understand the importance of sampling in statistics.
- Differentiate between sampling and non-sampling errors.
- Learn various methods of sampling, including simple random sampling, stratified random sampling, systematic sampling, cluster sampling, and quota sampling.
- Understand theoretical distributions, including binomial distribution, Poisson distribution, and normal distribution.

Materials:

- Video Lectures
- Handouts with examples and exercises
- Calculator

Procedure:

- Introduction
- Begin by asking students what they know about sampling in statistics.
- Discuss why sampling is important and the potential consequences of not using proper sampling techniques.
- Introduce the concept of sampling errors and distinguish between sampling and non-sampling errors.
- Sampling Methods
- Discuss various methods of sampling, including simple random sampling, stratified random sampling, systematic sampling, cluster sampling, and quota sampling.
- Use examples to illustrate each sampling method and its advantages and disadvantages.
- Divide students into groups and provide each group with a different scenario to which they must apply a specific sampling method.
- Have groups present their findings to the class and discuss any questions or concerns.
- Theoretical Distributions

- Introduce the concept of theoretical distributions and discuss how they can be used to make predictions about populations.
- Discuss binomial distribution, Poisson distribution, and normal distribution.
- Use examples to illustrate each distribution and how they can be used in real-world situations.
- Provide students with exercises involving each distribution and discuss any questions or concerns.
- Conclusion
- Summarize the key concepts covered in the lesson.
- Discuss the importance of sampling and theoretical distributions in statistics.
- Provide students with resources for further practice and exploration.

Assessment:

- Formative assessments throughout the lesson, including group work and class discussion.
- Summative assessment at the end of the lesson, including exercises involving sampling methods and theoretical distributions.

Differentiation:

- Provide additional resources for students who need extra support or enrichment.
- Allow for group work and peer teaching to accommodate different learning styles.
- Modify exercises to accommodate different skill levels.

Suggested Readings

1. 1. Jay L. Devore, Probability and Statistics for Engineers, Cengage Learning, 2010. 2. John E. Freund, Mathematical Statistics, Prentice Hall, 1992. 3. Richard J. Larsen and Morris L. Marx, An Introduction to Mathematical Statistics and its Applications, Prentice Hall, 2011. 4. William G. Cochran, Sampling Techniques, John Wiley, 2007

English

Course Code: ENGHONS102

COURSE Title: European Classical Literature

Credits: 6

Course Contents: Homer: Iliad; Sophocles: Oedipus Rex; Plautus: The Pot of Gold

Name of the Book	Lecture Details	No. of Lectures
Homer's *Iliad*	In these classes the students will be introduced to the epic poem and they will learn about the definition, devices and conventions of an epic. They will also be introduced to the history of epic poetry from Homer to Virgil to Milton.	4
	In this class, the *Iliad* will be read and important aspects will be discussed with the students.	10
	Various important topics like *Iliad* as an epic poem, the role of supernatural machinery, and Homer's narrative technique will be discussed.	4
	Paper presentations on Odyssey by students.	2
Sophocles' *Oedipus Rex*	The students will learn about the features and history of Greek tragedy. They will be introduced to Sophocoles, Aristotle and also to *Oedipus Rex*.	5
	In these classes the play *Oedipus Rex* will be read and explained.	8
	In these two classes focus will be on the important aspects of the play namely, character sketches of Creon, *Oedipus Rex*, Tieresias; role of the chorus, theory of Greek tragedy, plot construction and ideal tragic hero.	5
	Paper presentations on Oedipus Rex by students.	2
Plautus' *Pot of Gold*	Students will be introduced to the theory of comedy with special reference to the *Pot of Gold*. Also they will learn about the differences between a tragedy and a comedy.	4
	The *Pot of Gold* will be read in detail in these classes. Students will be explained the use of satire and dramatic irony during the course of reading this play.	9
	Important aspects of the play will be discussed. These will include character sketches of Euclio, Megadorus the slave; comic elements in the play, *Pot of Gold* as a satire on greed and miserliness, Megadorus's view on marriage and dowry etc.	5
	Paper presentations on important aspects of the play by students.	2

Geography

LESSON PLAN

Name: **DR. P. MARY SANTHI**   Subject: **Population Geography**

Class: **3rd year Honours**   Code: **GEOGH305EDS1**

General objectives: -

After the completion of this subject, the students will be able toanalysis: -

- Nature and scope, Census and NSSOof population geography
- The theories of Growth- Malthusian Theory and Demographic Transition theory
- Size and distribution and growth of population geography
- Population Dynamics
- Contemporary Issues of population geography

Methods of teaching: -

The subject will be explained with help of examples by lecturer, question and answer, demonstration, discussion, presentation,class tests, assignments,and home task methods so that students can relate the content with their day today lives and understand the concept clearly.

Teaching Aid: -

Black board, Maps, diagrams, figures, ppt, reference books and journals

Recapitulation:

Pupil and teacher will recapitulate the topics and ask questions

Learning outcome:

Students understand how population can be an asset or a liability for the Nation.

LESSON PLAN

Name: **DR. P. MARY SANTHI**   Subject: **Political Geography**

Class: **3rd year Honours**   Code: **GEOGH310EDS3**

General objectives: -

After the completion of this subject, the students will be able to analysis: -

- Concept, Nature and scope, Political geography
- Attributes of State
- Concept of Nation, State and Nation State
- Electoral Geography
- Resources Conflicts and Political of Displacement

Methods of teaching: -

The subject will be explained with help of examples by lecturer, question and answer, demonstration, discussion, presentation, class tests, assignments, and home task methods so that students can relate the content with their day today lives and understand the concept clearly.

Teaching Aid: -

Black board, Maps, diagrams, figures, ppt, reference books and journals

Recapitulation:

Pupil and teacher will recapitulate the topics and ask questions

Learning outcome:

It will help students to see how different places are governed, how political boundaries have been formed, how they have changed, and how the natural environment has influenced political decisions.

LESSON PLAN

Name: **DR. P. MARY SANTHI**   Subject:**Statistical Methods in Geography**

Class: **2ndyear Honours**   Code: **GEOGH202CC- P**

General objectives: -

After the completion of this subject, the students will be able to analysis: -

- Introduction to Statistic methods in geography
- Tabulation and descriptive Statistics
- Sampling of Statistic methods in geography
- Association and Correlation

Methods of teaching: -

The subject will be explained with help of examples by lecturer, question and answer, demonstration, discussion, presentation, class tests, assignments, tables, calculator and home task methods so that students can relate the content with their day today lives and understand the concept clearly.

Teaching Aid: -

Black board, diagrams, figures, ppt, reference books and journals

Recapitulation:

Pupil and teacher will recapitulate the topics and ask questions

Learning outcome:

Students will use statistics in numerous ways: **To describe and summarize spatial data**. To generalize concerning complex spatial patterns. To estimate the probability of outcomes for an event at a given location.Statistical methods are an essential and vital tool in scientific research and scientific research. It **helps in designing experiments, analysing and interpreting data**. It also contributes to making appropriate decisions in the light of the researcher's findings.

LESSON PLAN

Name: **DR. P. MARY SANTHI**   Subject: **EconomicGeography**

Class: **2ⁿᵈ yearHonours**   Code: **GEOGH204CC**

General objectives: -

After the completion of this subject, the students will be able to analysis: -

- Concept, Nature and scope, Economic geography
- Classifications of Economic activity
- Theories of Von Thunen theory and Weber's theory
- Primary, Secondary and Tertiary activities and contemporary issues

Methods of teaching: -

The subject will be explained with help of examples by lecturer, question and answer, demonstration, discussion, presentation, class tests, assignments, and home task methods so that students can relate the content with their day today lives and understand the concept clearly.

Teaching Aid: -

Black board, Maps, diagrams, figures, ppt, reference books and journals

Recapitulation:

Pupil and teacher will recapitulate the topics and ask questions

Learning outcome:

It will help the students understand the relationship between economic activities and environment and how the labour market will react to a sudden increase of potential workforce.

Hindi

2018 -2019 के पाठ्यक्रम के आधार पर पाठ योजना

बी. ए. द्वितीय वर्ष 2022-23

प्रश्न पत्र : SKILL ENHANCEMENT COURSE

SEC – 2

HIND 206

विषय : अनुवाद विज्ञान

डॉ देविना अक्षयवर

हिंदी विभाग

सेंट बीड्स कॉलेज

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)

आंतरिक मूल्यांकन : 30

समय : तीन घंटे

सहायक पुस्तक : 'अनुवाद विज्ञान', डॉ नगेंद्र

शिक्षण - उद्देश्य

1. भाषा तथा साहित्य के क्षेत्र में ज्ञान अर्जित करने के अतिरिक्त, छात्राओं के भाषिक कौशल में वृद्धि करना।

2. हिंदी तथा अन्य भाषाओं के उत्कृष्ट साहित्य को पढ़ने के लिए उन्हें प्रोत्साहित करना और उसके लिए अनुवाद के महत्त्व के बारे में अवगत कराना।

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 बताए जाएँगे। भाषांतरण, सारानुवाद तथा रूपांतरण में समानताएं एवं असमानताओं के बारे में भी समझाया जाएगा। अनुवाद के शिल्पगत भेदों की भी जानकारी दी जाएगी ।

इकाई 1 के अंतर्गत पाठों को पूरा करने के लिए निर्धारित समय - 24 जुलाई से 15 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 – 16 सितम्बर से 10 नवम्बर 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 सफल 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 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 सफल 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 - 11 नवम्बर से 15 दिसंबर 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 वाली भाषाओं की श्रेष्ठ अनूदित कृतियों के बारे में समझाया जाएगा, इस प्रकार विश्व भर की उम्दा साहित्यिक 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 - 10 फरवरी से 28 मार्च तक।

BACK

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 ।

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।

छात्राओं के लेखन कौशल को निखारने के लिए उन्हें प्रोजेक्ट/ पीपीटी प्रस्तुति आदिके माध्यम से पढ़ाया जाएगा।

History

B.A. SECOND YEAR

HISTORY PASS

HISTORY OF INDIA FROM 1707 TO 1950

SESSION 2022-23

Course Objectives:
- Absorb fully each of the events that shaped Modern Indian History during the early phase of its modern times
- Gather data on triggering factors that led to the coming of the European Nations to India
- Observe the pattern of events that led to the uprising of individual states and the rise of Indian Nationalism
- Discern deeply how the Indian people struggled to attain freedom from Britain
- Prove that Gandhi's principle of nonviolence was effective force that led to the granting of India's independence

Intended Learning Outcomes:
- Knowledge of the social, economic cultural and administrative changes in India between 1780-1950
- The ability to present material in seminars and participate intelligently in discussions
- Analyse the key processes& events in the modernization of the Indian subcontinent

Teaching Methodology:
Interactive Lecture; Discussions; Case Study; Debate; Writing; Role Play; Seminars; Independent Study

Plan for Periodic Student Evaluation
Evaluation must be appropriate to the students needs and developmental levels as well course goal objectives
A. Teacher made Tests
  1.Minor test
  2.Class Test
B. Semester and Final Tests
C.Projects &Assignments Assigned to the students

Assignments: Revolt od 1857

Unit	Name of the Topic	Lectures
	Introduction to the course	2
I	Interpreting the 18th century	4
II	Emergence of Independent States &establishment of Colonial power	12
III	Expansion & consolidation of Colonial Power up to 1857	12
IV	Uprising of 1857:Causes,Nature&aftermath	5
V	Colonial Economy :Agriculture, Trade &Industry	4
VI	Socio-Religious Movements in the 19th century	2
VII	Emergence &Growth of Nationalism with focus on Gandhian Nationalism	8
VIII	Communalism: Genesis, Growth and partition of India	7
IX	Advent of Freedom :Constituent Assembly, establishment of Republic	4

REFRENCES:

1. Sekhar Bandyopadhya,From Plassey to Partition and After
2. Sumit Sarkar ,Modern India 1885-1947
3. Bipan Chandra,History of Modern India
4. Bipan Chandra, Nationalism and Colonialism
5. Bipan Chandra,Aditya Mukherjee,India after Independence
6. Ramchandra Guha,The Fissured Land

LESSON PLAN

COURSE: Introduction to Microbiology and Microbial World

Faculty: Department of Microbiology
NAME : Ms Reena Thakur
Course Plan Session: 2022-2023

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, 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.

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

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

Mathematics

B.A. with Mathematics

Syllabus and Examination Scheme

Course Code	MATH101TH
Credits= 6	L-5,T-1,P-0
Name of the Course	Differential Calculus
Type of the Course	Core Course
Number of teaching hours required for this course	75 hrs.
Continuous Comprehensive Assessment: Based on Minor Test(1), Class tests, Assignments, Quiz, Seminar and Attendance (Marks Attendance: 5 marks to be given as per the regulations)	Max. Marks:30
Tutorials : Solving Problems and exercises	15 hours
Yearly Based Examination	Max Marks: 70 Maximum Times: 3 hrs.
Total Lectures to be Delivered (One Hour Each)	75

Instructions

Instructions for paper setter: The question paper will consist of **two Sections A & B** of 70 marks. **Section A** will be **Compulsory** and will contain 8 questions of 16 marks (each of 2 marks) of short answer type having two questions from each Unit of the syllabus. **Section B** of the question paper shall have four Units I, II, III, and IV. Two questions will be set from each unit of the syllabus and the candidates are required to attempt one question from each of these units. Each question in Units I, II, III and IV shall be of 13.5 marks each.

Instructions for Candidates: Candidates are required to attempt five questions in all. Section A is Compulsory and from Section B they are required to attempt one question from each of the Units I, II, III and IV of the question paper.

Core 1.1: Differential Calculus

Unit-I (19 **hrs.**)

Limit and Continuity (epsilon and delta definition), Types of discontinuities, Differentiability of functions, Successive differentiation, Leibnitz's theorem.

Unit-II (19hrs.)

Indeterminate forms, Rolle's theorem, Lagrange's & Cauchy Mean Value theorems, Taylor's theorem with Lagrange's and Cauchy's forms of remainder, Taylor's series. Maclaurin's series of sin x, cos x, e^x, log(l+x), $(l+x)^m$.

Unit-III (19 hrs.)

Concavity, Convexity & Points of Inflexion, Curvature, Radius of curvature, center of curvature, Asymptotes, Singular points, Double point, Polar coordinates, Relation between Cartesian and polar coordinates.

Unit-IV (18 hrs.)

Functions of several variables (upto three variables): Limit and Continuity of these functions Partial differentiation, Euler's theorem on homogeneous functions, Maxima and Minima with Lagrange Multipliers Method (two variables), Jacobian (upto three variables).

Books Recommended:

1.   H. Anton, I. Birens and S. Davis, *Calculus*, John Wiley and Sons, Inc., 2002.

2.   G.B. Thomas and R.L. Finney, *Calculus*, Pearson Education, 2007.

BACK

Music

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 LLEARNING ACTIVITIES:		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

			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

Nutrition and Health

B.A. NUTRITION & HEALTH EDUCATION
BA I ST YEAR LESSON PLAN

BANHE A 101:FUNDAMENTALS OF NUTRITION & FOOD SCIENCE
(DSC)   (CREDITS:THEORY-4,PRACTICAL-2)

Objectives

- To familiarize the students with fundamentals of food, nutrients and their relationship to health.
- To create awareness with respect to deriving maximum benefit from available food resources.

UNIT 1 :Basic concepts in Food and Nutrition	4	1
- Basic terms used in study of food and nutrition - Understanding relationship between food, nutrition and health - Functions of Food	Classes will be organized before starting of the course to familiarize the students with the various uints to be covered. Basic terms like food, nutrition, nutrients etc. will be explained. They will refer to their text books and definition of Food & Nutrition will be discussed. The various aspects of food, nutrition and health will be discussed by the teacher.. The teacher will explain to the students the meaning and concept of balanced diet, the factors affecting the person' health. The students will then study functions of food. The term malnutrition, nutritional status will be elaborated. An assignment will be given to them pertaining to definitions, functions of food.	Presentations will be shown to them.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.

UNIT II - NUTRIENTS	**17**	**3**
Functions, dietary sources deficiency and recommended dietary allowances of the following nutrients: • Energy, Carbohydrates, Lipids and Proteins • Fat soluble Vitamins-A,D,E,K • Water soluble Vitamins: Thiamine, Riboflavin, Niacin, Pyridoxine, Folate, Vitamin B12 and Vitamin C • Minerals: Iron, Calcium, Phosphorus, Iodine, Flourine	The students will be asked questions pertaining to their knowledge of various nutrients. The working of nutrients in the body will be discussed. The composition, functions, deficiency, excess and RDA of each nutrient will be studied. The important minerals will be enumerated in detail.	Presentations Quiz consisting of questions dealing with Unit I and Unit II will be organized.
UNIT III - FOOD GROUPS	**20**	**5**
Selection, nutritional contribution and changes during cooking of the following food groups: • Cereals • Pulses • Fruits and Vegetables • Milk & milk products • Eggs • Meat, poultry and fish • Fats and Oils	The students will be asked to name the food groups they known or what they eat at home. The different food groups will be discussed on basis of selectition, nutritional content and changes during cooking. Five and Seven food groups will be discussed. An assignment will be given regarding the Food Groups.	The students will be shown Presentation and various books in the library.
UNIT IV - METHODS OF COOKING AND PREVENTING NUTRIENT LOSSES	**7**	**3**

• Different methods of cooking • Nutrient losses in cooking • Enhancing nutritional quality of foods through supplementation substitution, fermentation and use of local foods	The students will be asked questions regarding the use of various methods of cooking in their homes. They will be asked about the best method of cooking. Different methods of cooking will be discussed in the calss. The loss of nutrients due to faulty methods of cooking will be elaborated upon. The meaning of use of supplementation, substitution, fermentation will be discussed.	The students will be asked to go through the receipe books in the library and note down five receipes pertaining to different methods of cooking.

FUNDAMENTALS OF NUTRITION & FOOD SCIENCE

Maximum marks: 20   **Practical**

S.No.	TOPIC	ALLOTED TIME IN HOURS
1.	Weights and measures	4
2.	Food preparation, understanding the principles involved, nutritional quality and portion size	1
3.	Recipe writing and cooking of the following:	15
	Beverages: Hot tea/coffee, milk shake/lassi	1
	Cereals: boiled rice, pulao, chappati, prantha, puri	1
	Pulses: Whole, dehusked	1
	Vegetables: curries, dry preparations	1
	Milk and milk products: kheer, custard	1
	Egg Preparations: boiled , poached,fried, scrambled,omelette	1
	Soups: Plain and cream soups	1
	Baked Products: Plain cake, sponge cake, baked vegetables	1
	Snacks : Pakoras, cutlets, upma, poha	1
	Salads : salads and salad dressing	1

Political Science

DEPARTMENT OF POLITICAL SCIENCE

(Course plan for 2022-23)

CLASS – B.A I

PAPER I DSC – Introduction to Political Theory

S. No.	DATE	TOPICS TO BE COVERED	No. of Lectures	ACADEMIC ACTIVITY
1.	01 Aug-05 Aug 2022	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.	09-30 Aug,2022	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.	01-30 Sep. 2022	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.	01Oct-09Nov, 2022	6.Theoretical Concepts – Liberty Equality Justice UNIT-III	2 2 2	• Lecture • Assignments • Paper Presentation • Discussion on

		1. What is Democracy ? 2.Debates on Democracy & economic growth. 3.Tenets of democracy. 4.Types of Democracy.	1 3 2 2	previous year papers • Lecture Method
5.	12 -30 Nov,2020	1.Liberalistic & socialist Perspective. 2.Differnce between liberalism and socialism. 3. Why socialism? Relevance of Socialism.	2 3 3	• Class tests • MCQ's • Tutorials • Class discussion
6.	01-31 Dec, 2022	UNIT-IV 1.Protective Discrimination 2.What is Principle of Fairness? Principles.	 2 2	• Presentations • Class Discussion • Tutorial • Quiz • Minor Tests
7.	10 -28Feb, 2023	3.Rawlsian theory of Justice 4.Institution of Family and State Intervention .	3 1 2 2	• Paper Presentation • PPT • Lecture mode • Class Test
8.	01-20March, 2023	Revision 1.Revision of the syllabus 2. Class Tests	3 2	Conceptual Clarification
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,2022	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	UNIT-I		

	Sep,2022	1.Nature of Comparative Politics and Government. 2.Difference between Comparative Govt. and Comparative 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	1stOct.-30th Oct.2022	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	• Lecture Method • Class Discussions • Class Quiz • Power Point Presentation by students
4	4th Nov-28th Nov, 2022	UNIT-II 1.Classification of Political systems- Parliamentary form of Government- Features, U.k and Constitutional Monarchy. 2. Presidential form of Govt.- U.S.A ad it's Congress	2 3	• Lecture Method • Paper Presentation • Oral Class Test • Power Point Presentation
5	1st Dec.-31st Dec,2022	4.Meaning of 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	• Lecture method • Group Discussion • Assignments • Documentary • Paper Presentation by students
6	10th Feb-1st March,2023	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 Proportional Representation? 5.Significance of Proportional Representation and Limitations.	1 3 2 2 4	• Lecture Method • Class Discussion • Power Point Presentation • Class test

BACK

7	05-31st March,2023	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 of welfare State	3 4 2 2	• Group Discussion on Party System. • Lecture Method • Paper Presentation
	TOTAL		60	

B.A II

Sec-2-Pols204-Public opinion and Survey Research

S. No.	DATE	TOPICS TO BE COVERED	No. of Lectures	ACADEMIC ACTIVITY
1	12Aug-30th August,2022	1.Brief Discussion of the syllabus 2. Suggested References 3. Pattern of the Exam 4. Pattern of Internal Assessment 5.Relevance of the subject	2	• Bridge Classes • Orientation of departmental students • Discussion on Types of Research and its value. • Discussion on Scope of the subject
2	O4 Sep-3rd Oct.2022	UNIT-I 1. What is Public Opinion? 2. Meaning of Public and Opinion. Notions associated with Public Opinion, why it matters? 3.Features of Public Opinion and scope	2 1 1 2	• Lecture method • Library visits • Group Discussion • Power Point Presentation

		4.Role of Public Opinion.		
3	10th Oct-6th Nov.2022	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 1 2 2	• Lecture method • Peer Teaching • Classroom Discussion • Class Test
4	10 -30th Nov 2022	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,2022	5.Types of Sampling- Probability Sampling and Non-Probability UNIT-III 1.Survey Research-What and why? Importance of Survey in Research 2.Interview technique – Types, 3.Advantages, disadvantages of Interview Techniques.	3 3 3 2	• Paper Presentation by Students • Class Test • Power point Presentation • Extempore speech by Students
6	12th Feb-27th Feb2023	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 2 2	• Lecture method • Group Discussion • Power Point Presentation • Oral Test Of Students
7	12th March-30 March,2023	2.Analysis and interpretation of Data. 3.Meaning of Opinion Polls and it's Relevance 4.Exit Polls-Relevance and Formation 5.Revision classes	3 2 2 2	• Tutorials • Lecture method • Group Discussion on Research in Social Sciences • Class Tests
	TOTAL		46	

Physics

BSCPHY0102
Computational Physics
SEC

LEARNING OBJECTIVES

Unit-1 (12 hrs.)
1.1 Physics and Computers: Importance of Computers in Physics as third way of doing physics, Formulation of a problem for solution on a computer, paradigm for solving physics problems for solution**. Algorithms and Flowcharts: Algorithm:** Definition, Properties and development **Flowchart:** Concept of flowchart, flowchart symbols, flowcharting guidelines, advantages and limitations of flowcharts, Types of flowcharts. **Examples of algorithms and flowcharts:** Cartesian to Spherical Polar Coordinates, Roots of Quadratic Equation, Sum of two matrices, Sum and Product of a finite series, calculation of sin x as a series, algorithm for plotting lissajous figures, algorithm for plotting trajectory of a projectile thrown at an angle with the horizontal. (4)

Table 1			
Content Part	**Instructional/Learning Objective (IO)**	**Classification of the IO as Per Bloom's Taxonomy**	**Condition, Behaviour, Criteria**
Physics And Computers			
Importance of computers in doing physics	• To help students understand the role of Physics in science and society and to see the connections between science, current events and physical phenomena • An understanding of how to use computers in data acquisition and processing • An understanding of how to use available software as a tool in data analysis • An understanding of how electronic experimentation works	Knowledge	*Condition:* *Behavior:* identify *Criteria:*

Table 1			
Content Part	**Instructional/Learning Objective (IO)**	**Classification of the IO as Per Bloom's Taxonomy**	**Condition, Behaviour, Criteria**
Formulation of a problem	• Learner will be able to An understanding of the physical principles required to analyze a physical question or topic • An understanding of the importance of basic physical laws and their limitations • Solve problems competently and confidently • An understanding of the physical principles required to analyze a physical question or topic • Analyze problems to determine what is being asked and develop the best approach to provide a solution • Think creatively about scientific problems and their solution	Comprehension	*Condition:* Given a crystal structure *Behavior:* Comprehend and Appreciate *Criteria: A spatially periodic structure correctly*
Algorithms	• At the end of this class you will understand key concepts needed to devise new algorithms for graphs and other important data structures and to evaluate the efficiency of these algorithms.	Knowledge	*Condition:* Given a basic structure *Behavior:* Name and carry out *Criteria: Correctly a symmetry operation* (implied)
Flow charts		Comprehension, application	*Condition:* Given a crystal structure *Behavior:* Distinguish, identify *Criteria:* Correctly a crystal possess a given symmetry or not (implied)

Table 1			
Content Part	Instructional/Learning Objective (IO)	Classification of the IO as Per Bloom's Taxonomy	Condition, Behaviour, Criteria
Examples	Given a crystal structure Learner should be able to define primitive lattice cell as a unit cell and a minimum volume unit cell	Knowledge	*Condition:* Given a crystal structure *Behavior:* Define *Criteria:* Correctly, a unit cell as primitive unit cell (implied)
Overview of Output devices of Computer	Learners should be able to identify the output devices and their uses	Knowledge	Condition: Given a output device Behavior: Define Criteria: Correctly, (implied)
Types of Software (System and Application): Translators: Interpreter, Assembler, Compiler	Learners should be able to differentiate Interpreter, Assembler, Compiler ,	Comprehension and application	Condition: Given a device Behavior: identify Criteria: Correctly, (implied)
Programming languages: Machine, Assembly and HLL	Learners should be able to differentiate machine , assembly and HLL	Comprehension and application	Condition: Given a device Behavior: identify Criteria: Correctly, (implied)
Operating System: Concept and Functions of OS	Learners should be able to understand the role of operating system and different OS	Comprehension and application	Condition: Given a device Behavior: identify Criteria: Correctly, (implied)
Some fundamental Linux Commands: Internal and External commands Introduction to Windows	Learners should be able to know fundamental Linux Commands	Comprehension and application	Condition: Given a device Behavior: identify Criteria: Correctly, (implied)

1.2 Fundamentals of Computer: Introduction to Computers: Definition, Characteristics, Advantages & Limitations. **Anatomy of Computers:** Components of Computer (Input, Output, Storage, ALU, CU CPU) and their functions. **Generations of Computer:** First to 5th Generation **Overview of Input devices of Computer:** Keyboard, Mouse, **Scanners:** Image scanner, OCR, OMR, MICR. **Overview of Output devices of Computer**: Monitors: CRT, LCDs, **Printers:** Dot Matrix, Laser. **Memory:** Units and Types (Primary: RAM/ROM, Cache; Auxiliary Memory: Hard Disk, Memory Cards (SD/MMC), CDs, DVD, Flash Derive.)**Types of Software (System and Application)**: Operating System, **Translators:** Interpreter, Assembler, Compiler & **Programming languages**: Machine, Assembly and HLL **Operating System**: Concept and Functions of OS **Some fundamental Linux Commands:** Internal and External commands **Introduction to Windows:** features of windows, Brief history of Windows, Parts of window screen, types of windows (Application and document windows), and Anatomy of windows. (8

UNIT I Physics and Computers Flowcharts: Algorithm:

TEACHING AIDS	➢ White Board ➢ Marker ➢ Simulations ➢ Power point presentation
INTERNAL EVALUATION	Students will be assessed from time to time by asking clicker questions before and during the lecture. Rubrics will be used to check whether learning objectives have been achieved

Unit II
Scientific Programming:
Control Statements:
This unit will be covered in 8 lecture for minor test II

TEACHING AIDS	➢ White Board ➢ Marker ➢ Simulations ➢ Power point presentation
INTERNAL EVALUATION	Students will be assessed from time to time by asking clicker questions before and during the lecture. Rubrics will be used to check whether learning objectives have been achieved

Unit III

Scientific word processing: Introduction to LaTeX:
Visualisation: What is graphical analysis, Why graphical analysis, limitations of graphical analysis, what is gnuplot?
This unit will be covered in 5 lecture

TEACHING AIDS	➢ White Board ➢ Marker ➢ Simulations ➢ Power point presentation
INTERNAL EVALUATION	Students will be assessed from time to time by asking clicker questions before and during the lecture. Rubrics will be used to check whether learning objectives have been achieved

Unit IV

Introduction to electronic spreadsheet
Basic introduction to VBA:
This unit will be covered in 5 lecture

TEACHING AIDS	➢ White Board ➢ Marker ➢ Simulations ➢ Power point presentation
INTERNAL EVALUATION	Students will be assessed from time to time by asking clicker questions before and during the lecture. Rubrics will be used to check whether learning objectives have been achieved

Physical Education

Department of Physical Education
PED 101 TH
Course Plan: Introduction to Physical Education

Unit	Topic	No of Hour's
Unit I	Introduction 1. Meaning, Definition, Need and Scope of Physical Education. 2. Aim and Objectives of Physical Education. 3. Importance of Physical Education in present era. 4. Misconceptions about Physical Education. 5. Relationship of Physical Education with General Education. 6. Physical Education as an Art and Science.	**16 hrs**
Unit II	1. Historical Development of Physical Education in India {Pre-Independence-(Ancient India, Medieval and British Period)}. 2. Physical Education in India (Post-Independence). 3. Contribution of Akhadas, Vyayamshalas and Y.M.C.A. 4. Modern Perspectives: National Awards/State Awards and Honours, Arjuna Award, Rajiv Gandhi Khel Ratna Award, Dronacharya Award, M.A.K.A. Trophy and Parshu Ram Award. 5. Eminent Sports Personalities of different games.	**16 hrs**
Unit III	**Biological Basis of Physical Education** 1. Growth and Development, Differences	**16 hrs**

Psychology

DEPARTMENT OF PSYCHIOLOGY

B.A. PSYCHOLOGY (Pass Course) COURSE PLAN

First Year

DSC-1A FOUNDATION OF PSYCHOLOGY (BAPSYCA101TH)

UNIT	NAME OF TOPIC	NO. OF LECTURES	NAME OF TEACHER
Unit 1:	Introduction: Psychology: Historical perspective. Nature and Scope. Methods: Experimental and Observational.	7	Ms. Jagriti
Unit 2:	Cognitive processes: Perception: nature of perception, laws of perceptual organization, learning: conditioning, observational learning.	8	
Unit 3:	Motivation and Emotion: Motives: biogenic and sociogenic motives. Emotions: Nature of emotions, key emotions.	7	
Unit 4:	Personality and Intelligence: Personality: Nature, determinants. Intelligence: Nature, determinants	7	

DSC-1B INTRODUCTION TO SOCIAL PSYCHOLOGY (BAPSYCA102 TH/PR)

UNIT	NAME OF TOPIC	NO. OF HOURS	NAME OF TEACHER
Unit 1:	Introduction: Concept of social psychology; Scope of social Psychology. Methods of social Psychology: Sociometry and Questionnaire.	7	Ms. Jagriti
Unit 2:	Individual level processes: Person perception: Concept and nature. Attitude: formation and change	6	
Unit 3:	Interpersonal processes: Interpersonal attraction; concept and determinants.	5	
Unit 4:	Group dynamics: Key aspects of groups: Social influence: conformity and obedience.	6	

Second Year

DSC-1C PSYCHOPATHOLOGY (BAPSYCA203TH/PR)

UNIT	NAME OF TOPIC	NO. OF HOURS	NAME OF TEACHER
Unit 1:	Basic Concepts: Definition and criteria of abnormality; Difference between Normal and Abnormal.	6	Dr. Ravi Bhushan
Unit 2:	Theoretical perspectives: Behavioral and psychodynamic.	6	
Unit 3:	Clinical status: Concept of Anxiety disorders-Obsessive compulsive disorder, mood disorders-Unipolar, Bipolar; schizophrenia: Paranoid and Catatonic.	8	
Unit 4:	Treatment of disorders: a) Biological treatment: Electroconvulsive therapy. b) Psychological treatment: Psychoanalytic therapy and Behaviour therapy.	8	

(DSC-1D) STATISTICAL METHODS (BAPSYCA204TH)

UNIT	NAME OF TOPIC	NO. OF HOURS	NAME OF TEACHER
Unit 1:	Measures of central tendency: Mean, Mode and Median for grouped data by any one method.	5	Ms. Jagriti
Unit 2:	Standard deviation computation.	5	
Unit 3:	Correlation: Types, computation by Pearson method.	6	
Unit 4:	Qualitative methods: Interview, observation, case study	6	

(SEC-1) SOCIOPATHIC DISORDERS (BAPSYCA205TH)

UNIT	NAME OF TOPIC	NO. OF HOURS	NAME OF TEACHER
Unit 1:	Nature of Anti-social Personality. Clinical Picture and causal factors.	5	Mr. Mohit Kumar
Unit 2:	Etiology of criminal behavior.	3	
Unit 3:	Juvenile Delinquency and causes of delinquent behavior.	6	
Unit 4:	Socio Psychological Intervention in brief.	7	

BACK

Zoology

Lesson Plan (First Year)

DSC IA : Animal Diversity

ZOOL 101 TH

1.	MOTIVATION P.K Testing	1. What is the basic line of difference between chordates and echinoderms 2. Can you give some examples of chordates 3. From which organisms did chordates evolve 4. How do you differentiate between Balanoglossus, Herdmania, Lamprey on the basis of notochord. 5. What do you know about the subphylum Vertebrata 6. What can you say about Super class Pisces? Gives some examples. 7. Differentiate between class Chondrichthyes and Osteichthyes on the position of its mouth 8. Are there some fishes which can stay out of water? 9. Do fishes migrate? 10. Is consuming fish good or bad 11. Which nutrient does fish contain the most.
2.	LEARNING OBJECTIVES	1. The objective of teaching Zoology is to create general awareness among them about the biodiversity and its impact on society. At the same time, it is expected that the students, on reading this course, shall develop attitude toward science (e.g., interest in animals, attitude toward new discoveries) and scientific attitude (i.e., open-minded, honesty, or skepticism). 2. To develop an appreciation for the *Plasmodium* species and to impart knowledge about various species of *Plasmodium* and its life history 3. To develop an appreciation for the *Sycon* species and to impart knowledge about various functions of their life viz., nutrition, respiration, excretion, reproduction canal system and skeleton. 4. To bring to knowledge about various polymorphic forms in Phylum Coelenterata and their correlation in forming coral and

BACK

coral reefs and understanding their role in ecosystem.

5. To develop an appreciation for the *Fasciola* and study lifecycle and pathogenicity etc

6. To acquaint the students with the latest classification, general organization and morphology lifecycles and pathogenicity of Nematodes.

7. To acquaint the students with the variety of Mollusca and Echinodermata their classification and general characters.

8. To enable the student to develop scientific attitude where student shall have a desire to know and understand, questioning to all various statements, search for data and their meaning, search for verification, and consideration of consequences.

9. To develop in the students positive attitude towards Zoology showing increased attention to classroom instruction and participation more in science activities

10. The objective of studying Chordates in Zoology allows students to see science as a way of dealing with problems faced regarding conservation of animals and students become more curious about the material world and use different scientific methods to conserve animals.

11. It is with this aim in mind that all students attains scientific literacy.

12. To enable the student to create student-centered environment where students improve on their own ideas, raise questions, and undertake investigations. Studying Chordates starts with real world issues and various measures implemented to conserve the biodiversity.

| 3. | CONCEPTS/COURSE OBJECTIVES | 1. To educate the students about the Origin of chordates, characteristics and classification so as to make them aware of the diversity and evolutionary affinities.
2. To acquaint the students about the structure and function of Hemichordates, Urochordates, Cephalochordates and to make the student understand the basic characters, advancements and affinities of Balanoglossus, Herdmania and Lamprey.
3. To enable the student to develop an appreciation for the biodiversity of vertebrate species and to impart knowledge about co-existence of different forms of living organisms. Studies on this group Cyclostoma bring to light variety of modes like phylogenetic position and larva of Petromyzon.
4. To acquaint the students about the general characters including morphology and physiology (nervous system) of Scoliodon. To impart in depth knowledge about their structural modification (scales and fins) acquired to suit varied living conditions.
5. To enable the students to understand the difference in the morphology and general anatomy and to classify and study the general characters of Class Osteichthyes including their behaviour and physiological adaptations and osmoregulation, accessory respiratory organs. To develop an appreciation for various fishes and to impart knowledge about the importance and conservation of fishes. |
| 4. | CONTENTS | Section A
Unit 1:
Kingdom Protista
General characters and classification up to classes; Locomotory Organelles and locomotion in Protozoa
Unit 2:
Phylum Porifera
General characters and classification up to classes; Canal System in Sycon
Unit 3:
Phylum Cnidaria   General characters and classification up to classes; Polymorphism in Hydrozoa Unit 4: |

		Phylum Platyhelminthes General characters and classification up to classes; Life history of Taenia solium Unit 5: Phylum Nemathelminthes General characters and classification up to classes; Life history of Ascaris lumbricoides and its parasitic adaptations Section B Unit 6: Phylum Annelida General characters and classification up to classes; Metamerism in Annelida Unit 7: Phylum Arthropoda General characters and classification up to classes; Vision in Arthropoda, Metamorphosis in Insects Unit 8: Phylum Mollusca General characters and classification up to classes; Torsion in gastropods Unit 9: Phylum Echinodermata General characters and classification up to classes; Water-vascular system in Asteroidea Section C Unit 10: Protochordates General features and Phylogeny of Protochordata Unit 11: Agnatha General features of Agnatha and classification of cyclostomes up to classes Unit 12: Pisces General features and Classification up to orders; Osmoregulation in Fishes Unit 13: Amphibia General features and Classification up to orders; Parental care Section D Unit 14: Reptiles General features and Classification up to orders; Poisonous and non-poisonous snakes, Biting mechanism in snakes Unit 15: Aves General features and Classification up to orders; Flight adaptations in birds Unit 16: Mammals Classification up to orders; Origin of mammals
5.	METHODOLOGY	1. Discussion 2. Power point presentation 3. Brainstorming questions 4. Quiz 5. Field Visits
6.	TEACHING AIDS	1. White board and marker 2. Power point presentation 3. Charts 4. Flex Posters

		5. Learning by doing: A visit to fish culture farm
7.	INTERNAL EVALUATION	1. Student-directed questions shall serve to define problems, potential solutions, and actions need to resolve them. This enables students to see/ do science in the same way that scientists do. This makes science more meaningful, exciting, and appropriate for most students. 2. The purpose of internal evaluation is to investigate whether students can handle the knowledge obtained in classroom with various situations given by the teacher in the class
8	SUMMARY	1. Students shall be able to classify non chordates and chordates and they shall become aware of the diversity and evolutionary affinities through group discussions 2. Students shall be able to understand the structure and function of protochordates and chordates by showing images on projectors of various organisms and showing the basic line of difference among them 3. Students shall be able to educate the society about the importance of conservation of animals through Hand-outs.
9	REFERENCES	1. Kardong, K.V. (2005) Vertebrates Comparative Anatomy, Function and evolution. IV Edition. McGraw-Hill Higher Education. 2. Kent, G.C. and Carr R.K. (2000). Comparative Anatomy of the Vertebrates. IX 3. Edition. The McGraw-HillCompanies. 4. Young, J.Z. (2004). The life of vertebrates. III Edition. Oxford university press. 5. Hall B.K. and Hallgrimsson B. (2008). Strickberger's Evolution. IV Edition. Jones and Bartlett Publishers,Inc. 6. P.S. Dhami (2015) 7. Modern' s Zoology (2015) 8. Ruppert and Barnes, R.D. (2006). 9. Invertebrate Zoology, VIII Edition. Holt Saunders International Edition.