

SADHU VASWANI AUTONOMOUS COLLEGE, BAIRAGARH. BHOPAL

Program Specific Outcome

Program- Undergraduate Courses

Program Outcomes:

Student will:

- develop critical thinking.
- enhance life skills, will develop language competence and soft skills.
- understand the use of analytical methods required for interpreting, analyzing results and drawing conclusions as per the data.
- have better employability in the field of finance, industry, administration, social and extension work, IT sectors, research and many others.
- be able to pursue career in multi-disciplinary fields.
- develop confidence to appear for various competitive exams related to public and private sectors.

Program Specific Outcomes:

(A) Faculty of Arts

(I) BA (Bachelor of Arts)

The Faculty of Arts offers the following subjects under Under-graduate program— Political Science, English Literature, Hindi Literature, Sociology, Economics, Foundation Course (English Language, Hindi, Entrepreneurship Development and Environmental Studies) is a common compulsory subject for all the students.

- The study of various subjects under this program enables the students to acquire life skills and be a better human being.
- Students will develop language competence and proficiency in oral communication and written skills.
- Students will include e a sense of national pride and respect for the nation by studying varied cultures, customs, literature, architecture, constitution, life skills, music, society etc.
- The study of various subjects under Humanities will facilitate students to become efficient leaders, able administrators, entrepreneurs and extension workers.

(i) Department of Economics

Program Specific Outcomes

- To provide and adapt curricula that prepares our graduates for employment.
- To provide students with the opportunity to focus on applied and policy issue in economics.

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Program Specific Outcome

- Students will be able to explain core economics terms, concepts and theories.
- To encourage the students to collect, process and interpret data, including statistical inference.
- Students will develop of critical thinking skills within the discipline of economics about economic matters.

Course Outcomes

Class – B.A. I Year

Paper I Micro Economics

- The module includes in this course deal with the concepts of consumer behavior, Production cost analysis, market & factor pricing.

Paper II Indian Economy

- To equip the students with the theoretical, empirical and policy issues relating to the society, policy and economy of India.

Class – B.A. II Year

Paper I Macro Economics

- To make the students aware of the theoretical aspects of Macro Economics to acquaint the student with the working of banks & reforms in banking sectors and monetary phenomenon.

Paper II Public finance & International Economics

- To understand the role of state in fostering the economics activities via budget and fiscal policies and various issues between central and State Government.
- To understand the theories of International trade and to examine the impact of the trade policies on the dynamic gains.

Class – B.A. V Sem.

Paper Development & Environmental Economics

- To enable the students to understands the theories and strategies of growth and development.

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Program Specific Outcome

- To understand the issues relating to sustainable development environment, protection and pollution control measures.

Class – B.A. VI Sem.

Paper Quantitative Techniques

- Understanding in quantitative techniques with in economics.
- Role of statistics in Economics
- The objective of this course is to equip the students with primary statistical tools for analyzing economic problems.

(ii)Department of English

Program Specific Outcomes

- The students should familiarize with the artistry and utility of the English language through the study of different genres of literature.
- The students are expected to develop critical faculties necessary in an academic environment and on the job in an increasingly complex, interdependent world.
- The under graduate students should be comfortable in performing research, analysis, and criticism of literary and cultural texts from different historical periods and genres.
- The students are encouraged to develop intellectual flexibility, creativity, and cultural literacy so that they may engage in life-long learning.
- To develop intellectual, personal and professional abilities through effective
- communicative skills; ensuring high standard of behavioral attitude through literary subjects and shaping the students socially responsible citizens.
- The student will become skilled in interpreting literary language and literary arte facts through various forms of literature such as poetry, drama, prose, novel and short story
- Students should be proficient in oral communication and writing.

Course Outcomes

Class – B.A. I Year

SADHU VASWANI AUTONOMOUS COLLEGE, BAIRAGARH. BHOPAL
Program Specific Outcome

Paper I –Poetry

- Recognize poetry from various literary periods and understand and appreciate poetry as a literary art form.
- Analyze the various elements of poetry, such as diction, tone, form, genre, imagery, figures of speech, symbolism, theme, rhythm, rhyme etc.
- Identify variety of forms of poetry such as satire, epic ,lyric and different schools of poetry as Romantic and Metaphysical and study works of the authors associated with these literary forms.
- Develop creativity and critical thinking among the students and enhance their writing skills.

Paper II –Prose

- Recognize different forms of prose and identify the essayists of the different ages .
- Familiarize with the writing styles of the various writers and comprehend their style.
- Identify the importance of brevity in writing and differentiate the diction of the various ages.
- Evaluate the growth of prose writing in English and analyses the stylistic use of language.

Class – B.A II Year

Paper I – Drama

- Interpret literary texts in English by nurturing and utilizing their ability to understand drama in a skilled, knowledgeable, and ethical manner.
- Conceptualize various types of drama viz. Tragedy, Comedy, Farce, Melodrama,
- Gain knowledge in the development of English drama from 16th Century to 21st century i.e. Shakespearean drama, Romantic Comedy, Shavian plays and One-act plays .
- Understand the structure of a play and learn the dramatic devices used in writing a play and become well acquainted with the rhetorical aspect of Drama, historical contexts and psycho-social aspects.

Paper II – Fiction

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Program Specific Outcome

- Conceptualize the Genre of Novel and its types viz. Allegorical, Gothic, Historical, Picaresque, and Psychological.
- Learn the elements of fiction – Narrative Technique, Setting, Point of view, Style and Detective fiction.
- Become well acquainted with the literary genre of Novel and Short Story and literary devices like allegory, metaphor, satire, and stream of consciousness technique.
- Understand the social, historical and political backgrounds of the novelists and short story writers through the elaborate and allegorical descriptions in the prescribed novels.
- Get a wide exposure of eminent writers like George Orwell, Jane Austen and Charles Dickens etc. their unique styles of writing and imagination help to enhance their creative writing skills.

Class – B.A.V Sem

Paper - Contemporary Literature

- Broadens the origin of English education during British Empire in India and highlights the glory of Indian Writings in English through the works of J. L. Nehru, Mahatma Gandhi, Amartya Sen, R.K. Narayan, Jhumpa Lahiri etc.
- Ignites the minds to compare the glory of Indian writings with other writings through the study of American, British poets, dramatists, Indian poets and dramatists and other modern poets viz. Philip Larkin, Sylvia Plath, T.S. Eliot, Asif Currimbhoy, Ruskin Bond etc.
- Inculcate interests to focus on contemporary literature and deepens the knowledge of contemporary world culture.

Class – B.A.VI Sem

Paper -Indian Writings in English

- Enhances aesthetic sense – admiring the beauty of life and literature.
- Inculcate the essence of the other regional literature of India in English translation and Indian Literature in English through the works of R. N. Tagore, Girish Karnad, Khushwant Singh, M.R. Anand, Sarojini Naidu, Sri Aurobindo etc.
- Enhance Reading skills and understand how to represent their experience and ideas critically, creatively, and persuasively through the medium of language.

(iii) Department of Hindi

Program Specific Outcomes

SADHU VASWANI AUTONOMOUS COLLEGE, BAIRAGARH. BHOPAL

Program Specific Outcome

- To understand the basic concept and subject of Hindi and its origin.
- To make or not the importance of subject Hindi and its branches.
- To understand various aspect of Hindi literature with a process to reach method and giving new mode and direction.
- To make a attempt in different area and theory such as vocabulary and vice versa.
- To understand in the literature more in a border area then Mary confined to subject.
- To know about Hindi literature its roots cause perspectives and methods.
- Elaborating and understanding its philosophical methods of Hindi litu.
- Evaluating the concept of Hindi from past to present and making the society more closely through literature.

Course Outcomes

Class -B. A. I year

Paper I - Pracheen avam Madhyakaleen Kavya.

- Understanding the role played by the poets of Bhakti cult in literature and society.
- Describing the progressive nature of Sant Kabir and his writings.
- Describing the Krishna Leela poetry of Surdas by relating it with his philosophy of his life.
- Describing the Rama Bhakti poetry of Tulsidas along with the philosophy of Bhakti cult.
- Describing the content and the skill of writing Jayasi Vidhyapati in context of the socio cultural conditions of his period.
- Understanding the division of Mira in context of her Krishna Bhakti poetry.

Paper II - Hindi Katha Sahitya

- Understanding the vision of Premchand about middle class and his concern for strengthening the freedom movement in India through Gaban novel.
- Understanding the change in content and style of expression in stories in different periods through the stories of Prasad, Premchand, Jainendra, Renu, Bhishma Sahni, Amarkant, Doodhnath Singh Mridula Sinha.
- Describing the philosophy of life as well stories of Aadhunik writers.
- Understanding the importance of environment culture and social life.

Class -B. A. II year

Paper - I Arvachin Hindi Kavya

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Program Specific Outcome

- Describing the philosophy of life as well as poem of Chayavadi writers Prasad, Nirala, Mahadevi.
- Describing the contribution of different authors to Hindi literature.
- Understanding the literary trends of Adhunik Kal.
- Describing the poem of Agye in context with his experience of life.

Paper-II Hindi Bhasha Aur Sahitya ka Itihas aur Kavyang Vivechan

- Analysing the development of khari boli Hindi.
- Understanding the concept of Bhasha sahitya.
- Identifying the dialects of Hindi language family.
- Understanding the origin of Hindi language and its literature.
- Understanding the relation between society and literature by Hindi literature in past and present.

Class -B.A. V Sem

Paper- Prayojan Moolak Hindi

- Understanding the meaning concept and importance of functional Hindi.
- Understanding various forms and functional Hindi according to its area of application.
- Understanding the official language act of 1963,1968, and 1976
- Understanding the importance of translations media writing.

Class -B.A. VI Sem

Paper- Hindi Natak, Nibandh, Tatha Sphut Gadhya Vidhayen Evam Malvi Bhasha.

- Understanding the origin of malvi Bhasha and it's literature.
- Understanding the history of development and Hindi drama and ekankee.
- Understanding the drama Dhruvswamini written by Prasad in context of struggle for independence of women in patriarchal society.
- Understanding the spirit of nationalism of Bhartendu Harishchandra

(IV) Department of Political Science

SADHU VASWANI AUTONOMOUS COLLEGE, BAIRAGARH. BHOPAL

Program Specific Outcome

- The Political Science undergraduate program was born out of recognition of the increasing Significance of cross-disciplinary studies in the social sciences.
- The program is organized around the combined perspectives and analytical tools of Political Science, International Relations and History.
- The Political Science degree furnishes the students with a unique multidisciplinary approach in social sciences and prepares them for further academic study and/or for careers in the public and the private sector.

Course Outcomes

Class – B.A. I Year

Paper I- Basic Principles of Political Science

- Develop the ability to make logical inference about political Issues on the basis of historical and comparative knowledge.

Paper II- Indian Government & Politics

- Introducing the Indian Constitution with a focus on the role of the Constituent Assembly

Class – B.A. IInd Year

Paper I- Representative Political Thinkers

- Tracing the evolution of Indian political thought from ancient India to modern India.

Paper II- Constitution of Major Countries

- Encouraging a comprehensive, comparative understanding of specific world constitutions such as UK, USA, China, Switzerland, Pakistan ,Afghanistan, Bhutan ,Nepal.

Class – B.A. V Sem.

Paper - Indian Foreign Policy

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Program Specific Outcome

- Explaining scope and subject matter of International Relations as an autonomous academic discipline.

Paper VI Sem.-Public Administration

- Explaining the nature, scope and evolution of Public Administration annual or standard results.

(V) Department of Sociology

Program Specific Outcomes

- The programmer seeks to develop in student the sociological knowledge and skills that will enable them to think critically and imaginatively about society and social issues.
- Better understanding of real life situation. The ability to apply sociological concepts and theories to the real world and ultimately their everyday lives.
- Sociological understanding: The ability to demonstrate sociological understanding of phenomena for example how individual biographies are shaped by social structures
Better Understanding of real life situation: The ability to apply sociological concepts and theories to the real world and ultimately their everyday lives.
- Observation powers: a sensible observation power is necessary to identify the research problems in field study so a perception about human society slowly grows up.

Course Outcomes

B.A I Year

Paper I Basic concept of sociology

- To understand all aspects of human social behavior including the behavior of individuals as well as the social dynamics of small group, large organization communities, institutions and entire societies.

Paper II : Indian society

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Program Specific Outcome

- Basic social Institution to describe Indian society and culture of different periods from pre-history to modern era. It also provides knowledge about various social processes that play significant role in bringing about changes in Indian society.

B.A II Year

Paper I: Social processes and change

- Learn and understand theoretical knowledge on social change and development. It will enable the students to understand the processes of change and development on society.
- To recognize the significances of social change.

Paper II:Rural, Urban and Tribal society

- Aims to draw attention mainly to the problems, policies and programmes taken for the upliftment of the backward sections of Indian society and causes of their backwardness.
- Know the problem faced by the tribes and policies and programmes taken by the government for the upliftment of tribes.

B.A V Sem

Paper :Sociological Thinkers

- Sociological thinkers to student are to enable them to apply theory to their own everyday life experiences.
- Application of theories and concepts from classical sociological theories to develop intellectual openness and curiosity.

B.A VI Sem

Paper:Methods of social Research

To understand how research is actually done.

Importance of research design in social research and how to formulate it.

How to collect, analyze data and how to write a field report.

BCA –I YEAR

Paper – I

SADHU VASWANI AUTONOMOUS COLLEGE, BAIRAGARH. BHOPAL
Program Specific Outcome

Fundamentals of Computer

- Knowledge of computer, hardware, software, input, & output devices, basic working Mechanism.
- Programming concepts, types of programming languages, algorithm, flowchart.
- Types of software's and their role in working mechanism of computer.

Paper – II

English Language Communication

- Expertise in written & verbal communication.
- Complete Knowledge of English language grammar constructs.
- Proficient in oral communication skill.

Paper – III

Package

- Practical implementation of office automation package.
- Documentation, tabulation, graphs, analysis, reporting.
- Importing & exporting of data.

Paper – IV

Programming Through C

- Developing programs through C language.
- Logic building , use of functions, pointers, structures, files in programming.

Paper – v

Business Mathematics

- Concept of height/ distance and trigonometry.
- Problems solving and a quick, review of matrices, determinants, statistics, and number systems.
- Integration & differentiation.

Paper – VI

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Program Specific Outcome

Digital computer Organization

- Introducing computer architecture & basic internal operations.
- Various modes of data transfer.
- CPU structure and function of control unit.

Paper – VII

Accounting & financial Management

- Analyze accounting theory and prepare financial statements.
- Implement accounting method in real world business.

BCA – II YEAR

Paper – I

Programming with C ++

- Object oriented programming concepts are introduction.
- Inheritance, encapsulation, polymorphism, overloading are implemented in logic designing.

Paper – II

Computer Oriented numerical methods

- Compare various algorithms for their proficiency.
- **Use** various numerical methods to find out the solution of various equations.
- Design programs for practical implementation of numerical methods.

Paper – III

Operating System

- Understand the concepts. Of and role of operating system as a manager.
- Memory management, device managements, file Management, process management and scheduling techniques are well understood.

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Program Specific Outcome

- Commands of Unix/Linux OS.

Paper – IV

WEB Technology & Application development using .NET and C #

- Knowledge to design web applications using ASP.NET & C#
- Creating database, using .NET controls and use various web services.
- Learning debugging in .NET web application.

Paper – V

RDBMS Concepts & Oracle

- Concepts of SQL,DDL,DML,DCL,TCL
- Illustration of data models, functional dependency, integrity and schema of database.
- Normalization of the database.

Paper – VI

Software Engineering

- Learning various paradigms of the software models.
- Development, maintenance and evaluation of software systems.
- Develop a good quality S/W at low cost.

Paper – VII

Organizational Behavior

- Learn about the organizational behavior and its role in other disciplines.
- Compare the individual behavior in various conditions.

BCA – V SEMESTER

Paper – I

Data Communication & Network

- Understand concept of networking, data transfer modes and carrier.

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Program Specific Outcome

- Good idea about the network models.
- Knowledge about network security.

Paper – II
Visual Basic

- Form designing and logic building using visual basic.
- Database handling controls are well understood.
- Creation of views, sequences and data reports.
- Granting and revoking permissions to the user.

Paper – III
Marketing Management

- Understand marketing concept, elements affecting marketing.
- Device good customer relationship.
- Relation of price with products and services.

Paper – IV
Management Information System

- Developing and maintaining the information system.
- An effective search of data from the system.
- Implementation of data structures.

BCA – VI Semester

Paper – I
Internet Technology & security

- Understand encryption and decryption techniques.
- Knowledge of security techniques and cipher principles.

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Program Specific Outcome

Paper – II

Software Engineering

- Understand software, engineering, product, process.
- Exposed to different types of software process models.
- Develop a good quality software at low cost.

Paper – III

.Net Technology

- Exposed to objects, interfaces and applications of C#.
- Connection between web page and SQL server Database file.

Paper – IV

JAVA

- Understand object oriented programming concepts.
- Identify classes, objects, members, and functions in JAVA.
- Concept of inheritance, polymorphism, overloading and reusability of objects.

Management Dept

B.B.A – I Year

Paper –

Principles of Management:-

- Assess global situation including opportunities and threats that Will impact management of an organization.

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Program Specific Outcome

- Students will be able to understand the concepts related to business.
- Evaluate the global context for Taking managerial actions of planning, organizing and controlling.

Paper –II

Communication Skills:-

- Students will be able to communicate effectively orally and in writing.
- Students will be able to differentiate methods of communication.
- Students will be able to understand and apply Knowledge of human communication and language processes as they occur across various contexts.

Paper – III

Micro Economics:-

- Students will be able to demonstrate an understanding, usage and application of basic economic Principles.
- Students will be able to describe and apply the methods for analyzing consumer behavior through demand & supply, elasticity and marginal utility.
- Students will be able to understand the role of price and output decisions for maximization of profit.

Paper – IV

Business Stastics:-

- Students will be able to understand the key terminology, concepts, tools and techniques used in business stastical analysis.
- Students will be able to solve a range of problems using the techniques covered.
- Students will learn to conduct basic stastical analysis of data.

Paper – V

Financial Accounting:-

- Students will understand general purpose and functions of accounting.
- Students will be able to describe the main elements of financial accounting information- assets, liabilities, revenue and expenses.

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Program Specific Outcome

- Students will be able to record basic accounting Transactions and prepare annual financial statements.

Paper – VI

Business Mathematics:-

- Students will be able to understand the basic concepts of mathematics and its application in business.
- Students will have a proper understanding of mathematical application in economic, finance, commerce and management.

B.B.A II Year:-

Paper – I

Marketing Management:-

- Students will be able to understand fundamental marketing concepts, theories and principles in areas of marketing.
- Students will learn to formulate strategies for developing new or modified products, goods and services that respond to evolving market needs.

Paper – I

Marketing Research :-

The students will be able to-

- Understand the process of Marketing Research
- Understand different Research Methods.
- Analyse and interpret both qualitative and quantitative data.
- Apply Selected Research Methods.

Paper – III

Financial Management:-

- Students will be able to describe the financial environment within which organizations must operate.
- Students will understand the function of capital markets.
- Students will be able to analyse a company's performance and make appropriate recommendations.

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Program Specific Outcome

- Students will learn to select and apply techniques in managing working capital.

Paper – IV

Project Managements:-

- Students will learn to manage the scope, cost, timing and quality of the project.
- Students will able to learn project goals, constraints, performance criteria, resource requirements in consolation with stake holders.

Paper – V

Human Resource Management:-

- Students will be able to examine current issues, trends, practices, and processes in HRM.
- Students will learn effectively manage and plan key human resource functions within organizations.
- Students will understand the concepts of recruitment, selection and retention.

Paper – VI

Organizational Behaviour :-

- Students will be able to demonstrate the applicability of the concept of organizational Behavior to understand the behavior of people in the organization.
- Students will learn to analyze the complexities associated with management of the group behavior in the organization.

B.com Ist Year

Enterprenuership Development

- Understand the nature of entrepreneurship Understand the function of the enterpreneure in the successful, communication application of innovations.
- Confirm an enter preneurial business idea.

SADHU VASWANI AUTONOMOUS COLLEGE, BAIRAGARH. BHOPAL

Program Specific Outcome

Business Law

- Demonstrate an understanding of the legal environment of business.
- Apply basic legal knowledge to business transactions.
- Communicate effectively using standard business and legal terminology.

Business Organization

- Understanding of the main working aspects of org. not only from an economic point of view but also considering org. as part of society.
- Knowledge of a comprehensive glossary of economic terms widely used in the analysis and discussion of behavior organization.

Business Mathematics

- Appreciate business mathematics concepts that are encountered in the real world . understand and be able to communicate the underlying business concepts and mathematics involved to help another person gain insight into the situations.

Financial Account

- Define book Keeping accounting.
- Explain the general purpose and functions of accounting.
- Explain the differences between mgt. financial Accounting.
- Describe the main elements of financial accounting information assets. liabilities revenue and expenses.

Micro Economics

- Explain what economics is and explain why it is important.
- Explain the determinates of demand and supply.
- Define the term “Production” and explain what a production function is define the term “Production input” and differentiate between labour, land , capital, entrepreneurship, technology.

Macro Economics

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Program Specific Outcome

- Define the term “economic indication” identify the major economic indicators used to assess the state of the macro economy.
- Explain the expenditure and national income approaches to calculating GDP.
- Describe the relation
- nships among GDP net demgstic product, national income personal income and disposable income.

B.Com II Year

Indian Company Act

- In-depth understanding about ganisations and comprehend importance of company form of business organist rporation and administration
- Learning about raising of ,capital by core s incompliance with SEBI regulations
- Comprehension of corporate management and governance
- Learning legal aspects of accounts and audit of companies with role of auditors
- Understanding different restructuring meth is for companies
- Under:standing business rescue proceedings and compromises

INDIAN BANKING AND PRACTICE IN INDIA

- To make the students understand the various services offered and various risks faced by banks
- To make them aware of various banking innovations after nationalization To give them an overview about insurance industry
- To make the students understand various principles, provisions that govern the Life General Insurance Contracts

Corporate Account

- Know about the companies all accounts.
- Get the Knowledge of banking system.
- Learn about Working format of companies.
- Understand Mutual funds investments.
- Find out how, can a company dissolve.

Cost Account

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Program Specific Outcome

- Define the various components of total cost of a product i.e. direct & indirect cost and fixed & flexible cost.
- Determine various levels of material i.e. reorder level, minimum level, maximum level & EOQ for managing working capital.
- Use methods of time-keeping & time-hooking and manage idle & overtime.
- Define the features or overhead or indirect cost of production and basis of allocation and apportionment.
- Use cost-sheet to compute unit cost of product.
- Determine basis for computing tender price of a product.

Principal Of Management

- Describe the influence of historical forces on the current practice of management.
- Identify and evaluate social responsibility and ethical issues involved in business situations and logically articulate own position on such issues.
- Explain how organizations adapt to an uncertain environment and identify techniques managers use to influence and control the internal environment.
- Describe the process of management's four functions: planning, organizing, leading, and controlling.
- Identify and properly use vocabularies within the field of management to articulate one's own position on a specific management issue and communicate effectively with varied audiences.
- Evaluate leadership styles to anticipate the consequences of each leadership style.

Business Statistic

- Student will be able to independently calculate basic statistical parameters (mean, measures of dispersion, correlation coefficient, indexes)
- Student will be able to interpret the meaning of the calculated statistical indicators
- Student will be able to choose a statistical method for solving practical problems.
- Student will be able to explain probability theory and probability distributions in relation to general statistical analysis.
- Student will be able to Understand and appreciate the need to solve a variety of business related problems using a systematic approach involving accepted statistical techniques.

B.Com-V Sem

Income Tax

SADHU VASWANI AUTONOMOUS COLLEGE, BAIRAGARH. BHOPAL

Program Specific Outcome

- Provide students with an understanding of the Indian income tax system
- Provide knowledge of fundamental concepts of Indian income tax law.
- Enable students to develop experience in identifying tax issues and applying the income tax law to arrive at reasoned problems.
- Income Taxation will also cover the following specific learning objectives
- Understand fundamental concepts of Indian income tax.
- Research, analyse and evaluate income tax information and issues
- Apply critical thinking and problem solving skills to resolve income tax issues.
- Communicate effectively orally income tax information and solutions to income tax issues
- Communicate effectively in writing income tax information and Solution to income tax issues

Principal Of Marketing

- Use a vocabulary of marketing terms correctly.
- Demonstrate the ability to critically evaluate a marketing program from consumer and marketing practitioner viewpoints, including consideration of ethical implications.
- Communicate clearly, in an organized fashion, the concepts of marketing in both oral and written work.
- Demonstrate an understanding of how marketing fits with the other business disciplines within an organization._

Management Accounting

- Assistance in planning and formulation of future policies.
- Helps in the interpretation of financial information
- Help in controlling performance.

B.Com-VI Sem

International Marketing

- Have developed an understanding of major issues related to international marketing
- Have developed skills in researching and analyzing trends in global markets and in modern marketing practice
- Be able to assess an organization's ability to enter and compete in international markets.

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Program Specific Outcome

Indirect Tax

- After this lesson, student will be able to:
- Describe indirect taxes and criticisms of these taxes.
- Compare and contrast direct tax and indirect tax
- Generate examples of indirect taxes.

Auditing

- Baware of audit terminology.
- Have knowledge about audit planning and execution.
- Larn linkage between auditing, accounting and financial statement analysis.
- Be aware of basics of International Finzincial Reporting Standards.
- Express themselves and their ideas better than today in terms of technical points in accounting and auditinal

Auditing

LEARNING GOALS AND OBJECTIVES

Goals and Objectives

Students who take this course are expected to:

- 1 Baware of audit terminology.
- 2 Have knowledge about audit planning and execution.
- 3 Larn linkage between auditing, accounting and financial statement analysis.
- Be aware of basics of International Finzincial Reporting Standards.
- 5 Express themselves and their ideas better than today in terms of technical points in accounting and auditing

B.Sc

(I) B.Sc – I Year (CS)

Paper I – Fundamentals of Computer

- Concepts of fundamentals of Computer, their computers, storage, I/o devices.
- Computer architecture and data transfer techniques.
- Clear understanding of digital logic circuits and computer organization.

Paper II-

Programming in “C”

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Program Specific Outcome

- Developing logic building, analyzing problems.
- Flowcharts and algorithm developing for the problems.
- Understanding Input/ Output for files and consoles.

B.Sc II Year

Paper I – Object Oriented Programming concepts using C ++

- The relative merits of C++ as an object oriented programming language.
- Inheritance, encapsulation, polymorphism for object oriented application.
- Concepts of overloading of function and operator.

Paper II – Data Structures.

- Role of data structures in programming
- Searching and surfing techniques are well implemented.
- Stack, queue, linked list operations conceptualized.

B.Sc – V Semester

Paper – RDBMS & Oracle.

- A Good understanding about database management system.
- SQL, DDL, DML, TCL are practically used.
- Integrated development environment with various tools and form controls are understood.

B.Sc. VI Semester

Paper – Web Design

- Learning Basic concepts of internet, Web designing, and HTML.
- Working with graphics, tables, text, forms and Hyperlink in a webpage.
- Ability to use cascaded style sheets.

Department of Chemistry and Industrial Chemistry
Program Specific Outcomes

- The course of chemistry will help them to think critically and analytically. By doing experiments they will come to know practically the concept of error, accuracy and

SADHU VASWANI AUTONOMOUS COLLEGE, BAIRAGARH. BHOPAL

Program Specific Outcome

precision. They will also be familiar with safety guidelines to be used in any chemical laboratory. After studying papers of industrial chemistry students will be well versed with the various techniques used in industries. The course will teach the concept of working in teams. With topics of environmental chemistry, they can help the society about various types of pollutants and pollution and how it can be controlled. UG students will be able to correlate chemistry with their everyday life.

Course Outcomes - Chemistry

B.Sc. I Year

Paper I – Physical Chemistry

- After studying this paper, the students will learn to use mathematical concepts in Chemistry wherever needed. They will also have the knowledge of various phenomena occurring in the gaseous state, acquire knowledge about liquid and solid state that will help in their related topics at higher level. By studying Chemical Kinetics, they will be familiar with rates of reactions and related topics which will give them an idea about practical utility of a chemical reaction. Nuclear Chemistry will give them an idea about radioactivity and other such reactions. By studying Chemical Equilibrium, they can again check the feasibility of a reaction by applying law of mass action, equilibrium constant and Le Chatelier's principle. The chapter Colloidal Solutions will help them acquire knowledge about various properties of colloids and their applications.

Paper II – Inorganic Chemistry

- With the unit Atomic Structure, the students will get familiarized with dual nature of matter, Schrodinger equation, the important Aufbau, Pauli and Hund's rule and writing of electronic configuration of elements. They will also learn periodic table and various periodic properties. The units of chemical bonding are also very important with the knowledge of various types of bonds, hybridization and shapes of simple inorganic molecules and ions. These units also deal with other interactions and chemistry of noble gases. Units of s-block and p-block elements will enable to know the nature of these elements.

Paper III – Organic Chemistry

- This paper will help students to understand structure and bonding in organic compounds, various types of reaction intermediates and reaction mechanisms. Students will also learn IUPAC nomenclature, methods of formation and various chemical reactions of alkanes, cycloalkanes, alkenes, cycloalkenes, dienes, alkynes and alkyl halides. After studying the

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Program Specific Outcome

stereochemistry of organic compounds students will be able to understand concept of isomerism, various aspects of optical and geometrical isomerism.

Practical

- After successfully completing practical course, students will be able to determine melting point, boiling point of compounds, weighing and preparation of solution. They will also be able to determine surface tension and viscosity, percentage composition of liquid mixture. Students will analyse inorganic mixture for two cations and two anions and separate cations by paper chromatography. Students will be familiar with process of crystallization, sublimation and be able to detect elements and identify functional groups in organic compounds.

B.Sc. II Year

Paper I – Physical Chemistry

- After completion of Unit I, the students will get familiarized with basic concepts and laws of Thermodynamics, Carnot cycle and thermodynamic efficiency, concepts of entropy, Gibbs function and Helmholtz functions. They will also get knowledge of standard state, Hess's law and its applications and concept of entropy. With Unit II students will be able to understand phase equilibrium, phase, component and the degree of freedom, systems in which compound formation with congruent melting point and incongruent melting point. They will also learn liquid-liquid mixtures, non-ideal system, partial miscible liquids, Nernst distribution law: thermodynamic derivation, applications. In unit III they will understand the concept of electrical transport, conduction in metals and in electrolyte solutions, Kohlrausch law, Arrhenius theory of electrolyte, Ostwald's dilution law, Hittorf method. Unit IV deals with different types of electrodes, Nernst equation, reversible and irreversible cells, determination of pH using hydrogen. quinhydrone and glass electrodes by potentiometric methods, mechanism of buffer action. Unit V gives an idea of surface chemistry, Freundlich and Langmuir adsorption isotherms and catalysis

Paper II – Inorganic Chemistry

- In first two units students will get knowledge about chemistry of elements of first, second and third transition series, characteristic properties of d-block elements, spectral properties and stereochemistry. After studying Unit III, they will get information about coordination compounds, Werner's coordination theory and concept of oxidation and reduction. The unit of lanthanides and actinides provide information about f- block

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elements. Unit V gives knowledge about acids, bases, Arrhenius, Bronsted- Lowry, Lewis concepts of acids and bases. This unit also deals with non-aqueous solvents characteristics, reactions in non-aqueous solvents.

Paper III – Organic Chemistry

- In this paper students will learn about absorption spectra, absorption laws, UV spectroscopy, analysis of UV spectra. They will get knowledge about IR spectroscopy, measurement and interpretation of IR spectrum of simple organic compounds. With the help of these students will be able to predict various functional groups present in the given IR spectra. They will get idea about alcohols, their classification, nomenclature, methods of formation and various chemical reactions of mono-, di- and tri- hydric alcohols. Students will learn nomenclature, different methods of preparations and reactions of phenol and mechanism of various rearrangement reactions. Students will be able to understand nomenclature, synthesis of aldehydes and ketones, their physical properties, chemical reactions and mechanism of various name reactions. This paper also provides information about the nomenclature, methods of formation and various chemical reactions of carboxylic acids, halo acids, hydroxy acids, dicarboxylic acids and ethers. In the unit organic compounds of nitrogen students will be able to understand the nomenclature, methods of formation and various chemical reactions of nitroalkanes, halonitro arenes and amines.

Practical

- Students will be able to analyse the given inorganic mixture containing five radicals with at least one interfering radical. They will learn to determine percentage of acetic acid in commercial vinegar. They will learn to do redox titrations and estimation of hardness in water samples. They will determine the transition temperature of substance by thermometer method, enthalpy of neutralization of strong acid and strong base. They will be able to draw phase diagram of two component system by cooling curve method. They will be able to identify the given organic compound through functional group analysis and determination of melting point with preparation of suitable derivatives. They will be able to perform paper chromatography and thin layer chromatography.

B. Sc. Sem V Chemistry

- Unit I will provide the students knowledge about organic compounds of nitrogen like nitroalkane, nitroarenes, halo nitroarenes and amines as the unit deals with preparation, properties and chemical reactions of these compounds. The second unit carbohydrates will give an idea of classification and nomenclature of monosaccharides, chain lengthening and shortening of aldoses, determination of ring size, cyclic structure of D(+)

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Program Specific Outcome

glucose, mutarotation, reducing and non reducing sugars. After studying Unit III students will be able to distinguish between thermal and photochemical processes. They will also be familiar with Laws of photochemistry Jablonski diagram and the important Woodward-Fieser rule for determining λ -max. The Unit IV gives knowledge about Essential and trace elements in biological processes, metalloporphyrins Role of metal ions in biological process nitrogen fixation etc. Unit V gives an idea of Hard and Soft Acids and Bases. It also gives knowledge about the important concept of errors, precision and accuracy, their use and concept of gravimetric estimation.

Practical

- Students will be able to analyze the given inorganic mixture containing five radicals with at least one interfering radical or typical combination. They will learn the technique of estimation of Ba gravimetrically. They will be able to prepare some organic compounds by acetylation, benzylation etc.

B. Sc. Sem VI Chemistry

- Unit I will give knowledge about classification, structure, preparation and properties of amino acids. Students will get familiar with nucleic acids and get an elementary idea of fats, oils and detergents. Unit II deals with synthesis, structure and bonding in metal carbonyl complexes. The students will also get knowledge of organometallic compounds. Unit III deals with magnetic properties and electronic spectra of transition metal complexes. They will also be able to understand various concepts of water analysis. After studying unit IV students will be benefited with knowledge about infrared spectroscopy, Raman spectroscopy and their application. Unit V give a brief knowledge about NMR spectroscopy, it also deals broadly with surface phenomena and catalysis.

Practical

- Students will be able to separate and analyze the binary organic mixture and identify two simple organic compounds. They will learn the stoichiometry of complex formation by Job's method and mole ratio method. They will analyze various ions present in water samples. They will also be able to determine dissolved oxygen and hardness of given water samples

Course Outcomes - Industrial Chemistry

B.Sc. I Year Industrial Chemistry

Paper I

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Program Specific Outcome

- This paper will cover origin of petroleum, crude oil, composition, different refining processes employed industrially to obtain different fractions of petroleum. The course will also cover coal, its specifications, various test methods used to qualify different types of coal as well as characterization methods. Students will learn about the petroleum, its refining processes and fractional distillation of crude oil. They will be able to understand different types of catalysis, its principle and mechanism. They will get knowledge of surface chemistry and interfacial phenomena. Students will gain knowledge of inorganic materials of industrial importance. They will be able to understand the process of drying, distillation and evaporation and the equipments used in above processes.

Paper II

- After studying this paper students will be able to understand various concepts of basic metallurgical operations and physicochemical principles of extraction of different metals. They will learn rate model and industrially important enzyme catalysed reaction. They will get knowledge of dimensions and units, basic chemical calculations and mole composition of liquid and gaseous mixtures. They will be able to make Material balance without chemical reaction for chemical engineering operations. Students shall be able to understand different types of fuels and their different aspects in detail. Students will get knowledge of boilers and heat exchangers. They will learn specification for industrial use of water, steam and air. They will be able to understand the working of fans, blowers and different type of pumps.

Practical

- Students will be able to determine different physical constants, various parameters of water and soil samples. They will learn to prepare standard solutions and calibration of thermometers. They will learn different techniques of chromatography.

B.Sc. II Year Industrial Chemistry

Paper I

- After studying this paper students will be able to get knowledge of inorganic materials, organic processes and industrial pollution. They will get sound knowledge of inorganic materials like cement, ceramics and their manufacturing processes. They will learn about the polymeric materials and preparation and properties of plastics. They will get knowledge of various types of corrosion relevant to chemical industry. They will study the process of nitration, halogenation and sulphonation. They will be able to understand various industrial pollution with reference to water and air pollutants.

Paper II

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Program Specific Outcome

- Students will be able to understand the concept of measurement and accuracy of temperature, pressure, liquid level, density, viscosity. They will learn about process of oxidation, reduction, hydrogenation, esterification. They will be able to learn management of solid waste, soil conditioning, ozone depletion, carbon credits, principle and equipments of aerobic and anaerobic treatment.

Practical

- Students will be able to understand the various instrumental methods of analysis. They will be able to learn sampling and analysis of different parameters of water samples. They will prepare organic compounds by simple unit processes. They will determine Flash point and Ignition points of Oils and Lubricants.

B.Sc. Semester V Industrial Chemistry

- After studying this paper students will be able to learn basics skills of project cost estimation, pricing policy. They will understand basic principles of separation techniques and instruments like GLC, HPLC. They will be able to learn basic concepts and instrumentation of IR Spectroscopy, NMR-Spectroscopy, flame photometry and neutron diffraction. They will get knowledge of physical and chemical processes used in the recovery of important compounds. They will learn about Biological processes used for the treatment of waste water.

Practical

- Students will be able to determine iodine value and saponification value of oils or fats. They will be able to perform ore and alloy analysis

B.Sc. VI Semester Industrial Chemistry

- After studying this paper students will be able to understand the concept of scientific management in industry, management of human resources and concept of welfare and safety in industries. They will learn Need for waste recycles, conversion of waste-in to useful products. They will familiarize with synthetic fibres, properties and application of synthetic fibres. They will learn characterization of waste, management and recovery of important compound from the waste of some industries. They will be able to setup small scale units like agarbatties, wax candles, shoe polish, chalk, crayons, plaster of paris and safety matches.

Practical

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Program Specific Outcome

- Students will be able to determine the calorific values of fuels. They will learn separation of important metals and their estimation. They will learn the chromatographic separation techniques for the separation of ions and metals. They will learn the process of adsorption and validity of Freundlich's adsorption isotherm.
- Students are required to visit industries and submit a brief report.

Department of Physics

Programme Specific outcomes

- Students are expected to acquire core knowledge in Physics including major premises of Mathematical Physics, Mechanics, Properties of Matter, Special Theory of Relativity, and Earlier development in physics – Contribution of Scientist, Thermodynamics, Statistical Physics, Optics, Electrostatics, Magnetostatics, Electrodynamics, Quantum Mechanics, Spectroscopy, Nuclear Physics, Solid State Physics and Devices.
- Students are expected to develop a written and oral communicating skill in communicating physics related topics.
- Students will realise and develop an understanding of Physics and Science on Society.
- Students should learn how to conduct series of experiments to understand scientific process, interpret and analyze results, draw conclusions as supported by their data.
- Learn to minimize errors and recognize the limitations of equipments. Discover of Physics concept in other disciplines.
- Apply conceptual understanding of Physics to general real-world situations.

Course Outcomes

Class: B. Sc. I

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Program Specific Outcome

Paper I : Mathematical Physics, Mechanics and Properties of Matter.

- Connect concept and mathematical rigor in order to enhance understanding. To observe concept of Physics in day-to-day life.
- Conceptual understanding and approach the problems mathematically.

Paper II Thermodynamics and Statistical Mechanics

- Be able to use thermal and statistical principles in a wide range of applications.
- Learn and understand how statistics of microscopic world can be used to explain thermal features of macroscopic world.

Class: B.Sc. II

Paper I : Optics

- To develop and understanding of Principles of Optics.
- Understand the basic concept of Physical Optics and Wave Optics. To develop an ability to compute basic quantities in Optics.
- LASER and application, holograms.
- Observe principles of optics in daily life.

Paper II: Electrostatics, Magnetostatics and Electrodynamics

- Know the vocabulary and concept of Physics as it applies to Principles of electric and magnetic field sources and to understand relationship between them.
- Learn AC Circuits and related theorems with applications.
- Be able to use electromagnetic theory and principles in wide range of application. Develop skill to solve numerical problems on it.

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Program Specific Outcome

Class: B.Sc. III Year

Paper I Quantum mechanics and Spectroscopy

- Learn the mathematical tools needed to solve quantum mechanics problem (Complex functions and Operators).

To build connections between mathematical development and conceptual understanding. Develop and communicate analytical skills in subatomic physics and to develop an interest in this subject .

Paper II Solid State Physics and Devices

- Understand basic concept of Solid State Physics. Conceptual gain of crystalline structure.
- Working of Solid State Electronic Devices and to understand their uses. Exposure to basic knowledge of Nanotechnology

Practical Outcomes

- Students will learn to do practicals as an application of what they study in theory.
- Students will also learn how to use measuring instruments and minimize errors, compare results with standard results.
- Students will apply various methods of calculations such as graphical etc.
- Explore the important connections between theory, experiments and current applications. Students will develop the proficiency in acquisition of data using a variety of laboratory instruments and in the analysis and interpretation of such data. Develop a basis for future learning and work experience.

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Program Specific Outcome

- Students have to perform experiments based on their some of the theory part such as mechanics, properties of matter, statistical probability, heat, optics, electricity and magnetism, crystal structure, electronics, nuclear physics etc.

Department of Zoology

- Program Outcomes, Program specific outcomes and course outcomes to BSC in Zoology program.

Program outcomes-BSC -Zoology

- Aware students about knowledge and skill in the fundamentals and systematic of animal kingdom.
- Gain knowledge of anatomical structure and various metabolic functions of organisms.
- Information and skill of advanced biological Technique for experimental purpose.
- Awareness about environment and its conservation process, pollution control and its importance.
- Gain knowledge of protection of vulnerable and endangered species .
- Aware students about ethical principles and commit to professional ethics and responsibilities.
- Information and skill of applied zoology including sericulture, apiculture, Lac culture, fisheries, poultry, vermiculture, agricultural pests, and their control etc.
- Gain knowledge of communicable and non-communicable disease to improve personal and public health.

Program Specific outcomes- BSC - Zoology

- Acquire knowledge on the various aspects of life sciences, cell biology, genetics, taxonomy, physiology, applied zoology, general embryology and public health.
- Gain knowledge to identify and list out common invertebrate and vertebrates.
- Students will be able to understand, classify and identify the diversity of animals.
- Understand the application of biological science, in Apiculture, Sericulture, poultry, Fisheries, Aquaculture, Agriculture and vermiculture.
- Understand good laboratory practices and safety, carry out experimental technique and methods of cell biology, physiology, genetics, applied zoology, pathology, entomology, sericulture, biochemistry, microtomy.
-

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Program Specific Outcome

Course out comes-

Class-BSC-I Year. Paper I-Invertebrate

- Understand to classify and identify the diversity of animals, and general taxonomic rules.
- Study of binomial, trinomial classification and international rules of Nomenclature.
- Study of different phyla, classification from phylum Protozoa to Echinodermata and Hemichordata.
- Gain knowledge about the disease causing protozoan, nematodes and insects along with their remedies.
- Study of different larval forms of annelid, arthropod, Echinodermata and their significance.

Paper II-Cell biology & developmental biology

- Students understand the importance of cell as a structural and functional unit of life.
- Gain knowledge of basic concepts of cell biology and compares between prokaryotic and eukaryotic cell and extrapolates the life to the aspect of development.
- Understand the internal structure of cell and functions of various cytoplasmic & nucleoplasmic organelles.
- Understand the process of cell division and study of special type of chromosomes.
- Knowledge of cell transportation, gap and tight junction.
- Study of embryonic development of frog and chick.
- Understand the basic concept of developmental biology by gametogenesis fertilization, cleavage, blastulation, gastrulating, and formation of larvae.

CLASS-BSC-II Year

Paper I-Vertebrate and Evolution

- Students understand to classify various animals in a given phylum of vertebrates.
- Gain knowledge of classification of protochordates and vertebrate up to orders.
- Study of comparative anatomy of different organ system of chordates.
- Understand the theories of organic evolution, adaptation Speciation mimicry and coloration etc.
- Students understand fossils, methods of fossilization, determination of age of fossils, and study of extinct forms:- Dinosaurs and Archaeopteryx.
- Study of zoogeographical distribution of animals, Evolution of man, Geological time scale and insular fauna.

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Program Specific Outcome

Paper II-Animal Physiology and Biochemistry

- Gain knowledge of basic terms in physiology.
- Understand the physiology of digestion, respiration, and excretion, nerve impulse conduction, structure of muscles and theory of muscles contraction and its biochemistry.
- Students will be able to understand the metabolism of protein, carbohydrate and lipids.
- Gain knowledge about the structure and functions of different endocrine glands, hormones and mechanism of hormones.
- Understand the types of immunity **antigen-antibodies** reaction and their properties, vaccines, disease.

BSC –V Sem

Paper – Genetics

- Explain about mendelian, Non Mendelian inheritance , genetic disorder, gene-mutation linkage, crossing over and sex determination.
- Knowledge of molecular organization and function of DNA and RNA, type of RNA and protein synthesis.
- Illustrate the mechanism of replication, transcription and translation.
- Gain knowledge about human karyotype, human genome project, multiple allele and inheritance of blood group, sex linked and different genetic diseases in human being.
- Students gain knowledge about Recombinant DNA technology, DNA finger printing and gene therapy.

CLASS- BSC VI SEM

Paper- Ecology and Applied Zoology

- Gain basic knowledge about various factors of ecology
- Types of eco system – freshwater ,marine and terrestrial, population and community characteristics and dynamics.
- Understand animal behavior, wild life, biodiversity and conservation biology.
- Student gain knowledge of aquaculture, sericulture apiculture, lac culture along with pest management techniques.
- Provides knowledge to maintain the aquarium.
- Gain knowledge about types of pollution:- Air, Water, Soil, Thermal and noise and their preventive measures.

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Program Specific Outcome

PRACTICAL OUTCOMES

- Study of museum specimens and histological slides related to invertebrates and vertebrates, studied in theory papers.
 - Understand the anatomy and physiology of invertebrates and vertebrates animals by dissection.
 - Study of mechanism of cell division (Mitosis and meiosis)
 - Knowledge about mechanism of embryonic development of frog and chick.
 - Gain knowledge about preparation of slides to observe types & structure of chromosomes.
 - Observation of fossils and evolutionary important specimens by which evolutionary relationship of animal groups can be obtained.
 - Study of blood group and hemoglobin, observation of blood cells.
 - Understand the qualitative analysis of protein, carbohydrates and lipids, excretory products, blood glucose.
 - Understand the enzyme reaction and influence of temperature on enzyme action.
 - Study of histological slides of different visceral organs and endocrine glands.
 - Understanding the working, principle and applications of different instruments.
 - Acquire knowledge on the preserved specimens of fresh water, marine and terrestrial fauna.
 - Water quality assessment by dissolved oxygen, hardness, pH, turbidity etc.
 - Gain knowledge about ecosystem, wild life and its conservation, and life cycle of economically important insects.
 - Exercise based on genetics, instruments related to genetics centrifuge, PCR, DNA fingerprinting, Gel Electrophoresis.
-
- BSC. Zoology is technically an opening door to many specialized Masters programmes, like, food science technology, toxicology, biotechnology, forensic science etc.

Department of Botany

Programmer specific outcomes.

- Students will acquire an in depth knowledge of plant diversity and a systematic approach to the understanding of role of evolution in plant kingdom.

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Program Specific Outcome

- Students will also acquire an intellectual basic of comparative account of study of histology, anatomy and reproduction in various plant groups in the order of hierarchy i.e. from lower level of organization to higher & advanced level of organization of plants groups.
- Student will this also enhance the importance of classification of plant groups and their further demission.

Course outcomes:- Paper I

- Student, will be able to accomplish application of study of plants by studying the economic importance of lower & higher plants.

Course related outcomes:- Paper II

- Student will acquire the importance of study of palaeobotany.
- Student will understand the importance of classifying the flowering plants into families by studying floral diagrams floral structure as a process of advancement diversification of flowering plants understanding the phylogeny of flowering.

B.Sc II Year :- Paper I

- Students will acquire the knowledge of scientific approach to the understanding of various types of pollination & process of double fertilization & in reproduction of flowering plants & development of dicot and monocot embryo.

Paper :- II

- Student will acquire the understanding and importance of energy flow in ecosystem are to the laws of thermodynamics

B.Sc III Year :- V Semester

- Student will understand the of process collection students will understand the metabolism in plants, & interrelation of photosynthesis & respiration

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Program Specific Outcome

B.Sc I Year :- Paper II MICRO

- Students will acquire in-depth knowledge of mutations its user and importance in cancer.

B.Sc V Semester :- Microbiology

Paper I:- Student will

- Understand history of microbiology importance study of this Inmments in dev of microbiology.

B.Sc V Semester :- Paper innucnology

- Student will also understand the concept of interferer and immunization process.
- Student will understand application of immunological techniques in diagnosis of various diseases.

B.Sc III Year, Paper- II :- VI Semester

- Student will accomplish the understanding of gene concept and its application in biotechnology.

Department of Microbiology

Program specific Outcome:-

- Students will be able to understand structure of micro organisms, their variations and growth curves.
- They will be able to understand their user in industries.

Course Outcomes

B.Sc I Year :- Paper I

- Students will know the diversely and distribution of micro organisms and their nutritional types.

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Program Specific Outcome

Paper – II

- Students would understand the parameters and measurements of bacterial growth.
- They will learn culture techniques.
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Department of Mathematics

- Programme Specific outcomes
- Students are expected to acquire knowledge in areas of mathematics such as algebra, trigonometry, differential equations, vector analysis and geometry, Real analysis, Complex Analysis, Linear Algebra. Students are expected to develop critical thinking.
- Formulate and develop mathematical arguments in logical manner.
- Acquire good knowledge of subject and to use it in various problems arising in other disciplines.
- Able to recognise, learn and appreciate the importance of life long learning process.

Course Outcomes

Class: B.Sc . I year

Paper I: Algebra and Trigonometry

- Define the characteristic equation of a matrices.
- Find rank and nullity of matrix
- Define hyperbolic and inverse functions.
- Describe the relation between roots and coefficients of an equation of second order..

Paper II: Calculus and Differential Equations

- Find the solution of differential equations of first order and of degree higher than one, using different methods.
- Find solution of simultaneous differential equation with constant coefficients.
- Define transcendental functions, perform integration of functions using reduction formulae.
- Application of Taylor's and Maclaurin's theorem to functions of one variable.

Paper III: Vector Analysis and Geometry

- Find and interpret the gradient for a function at a given point.
- Interpret and calculate line, surface and volume integral.

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Program Specific Outcome

- Evaluate integrals using Stoke's , Gauss, Green's theorem.
- Develop and interpret the concept of three dimensional figures such as cone, cylinder, ellipsoid & paraboloid.

Class: B.Sc. II year

Paper I: Abstract Algebra

- Define group , its types and there basic properties.
- Find cycles and transpositions of a given permutation.
- Prove Lagrange's Theorem , Euler's Theorem and fermatas' theorem , Caley's Theorem.

Paper II: Advanced Calculus

- Define different types of sequences and series.
- Verify the convergence and divergence of series using test such as comparison test ,
- Cauchy root test , ratio test..
- Find limit and continuity of functions of two variables and apply Taylor's theorem,
- Maclaurin's theorem to functions of two variables.
- Find maxima and minima of functions of two variables , Double and triple integrals , Beta gamma functions.

Paper III: Differential Equations

- The students will be able to Find series solution of differential equations , study Bessel's and Legendre function and their properties.
- Find Laplace transform and inverse Laplace transform of function and its application in finding the solution of differ ential equations with constant coefficients.
- Define partial differential equation of First and find its solutions by methods such as Charpit's method , Lagrange's multiplier method.
- Classify partial differential equations of second order , find solution of homogeneous and non homogeneous partial differential equations with constant coefficients.

Class: B.Sc. V Sem

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Program Specific Outcome

Paper: Linear Algebra , Numerical Analysis

Define vector spaces , subspaces ,linear dependence and independence ,basis , Linear transformations , rank, nullity, find characteristic equations, eigen values and eigen vectors. Define basic concepts of E, , errors and its types, Solve problems using Newton forward formula, Newton backward formula, Striling and Gauss formula Find solution of system of linear equations using gauss elimination method, Gauss Jordan method, L U decomposition method , iterative methods such as Jacobi method Gauss -Seidel method. Find solutions of differential equation by Euler's method , Runge - Kutta Method , Milne–Simpson's method, method based on numerical integration.

Class: B.Sc. VI Sem

Paper: Real Analysis , Discrete mathematics and optional

- Define Riemann Integral and their properties , Mean value theorems of integral calculus..
- Define metric space , neighbourhoods , limit points , open and closed sets ,subspaces of metric space , Cauchy sequences , Prove Cantors intersection theorem , contraction principle.
- Define algebra of logic , and tautologies and contradictions, Algebra of prepositions ,Boolean algebra and its properties ,Boolean function , Binary relation .
- Define Graph , multigraph , paths and circuits , shortest path : Dijkstra's Algorithm and find matrix representation of Graphs.

Course Outcomes

Subject : Foundation Course

Class : Class- BA / BCA/ B.Com/B.Sc I Year

Paper-I Hindi Bhasha Evam Naitik Mulya

- Development reading writing and communication skills.
- Develop Hindi reading and linguistics comprehension of students.
- Develop interest in literature story and poetry.
- Inculcate moral and human values within themselves.

Paper II English Language

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Program Specific Outcome

- To enhance language through a task-based and learner – centric syllabus
- To carry out LSRW skills and to channelize energy through soft skills and Value orientation.
- To help and make them proficient English to prosper in professional and personal lives and for global competency through the text reading ,grammar exercises and comprehension.

Paper III Entrepreneurial Development

- Understanding the stages of entrepreneurial process and the resources needed for the successful development of entrepreneurial ventures.
- Understand basic concepts in the area of entrepreneurship.

Class : Class- BA / BCA/ B.Com/B.Sc II Year

Paper-I Hindi Bhasha Aur Naitik Mulya

- The verbal and non-verbal skills of communication are developed.
- Make accurate use of Hindi language in their respective fields.
- Understand the basic forms of story and poetry.

Paper II English Language

- To learn the correct usage of English.
- To expose the students to a range of contexts where the language is used to meet a variety of real life communication needs.
- To equip with the practical, emotional, intellectual and creative aspects of language by integrating knowledge and skills.
- To focus on readability, teach-ability and testability - to think beyond the text.
- To enhance practice in objective and subjective writing through expansion of ideas, passages etc..
- To give them a practice of Subject –Verb agreement,enhance vocabulary and develop writing skills.

Paper III Environmental Studies

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Program Specific Outcome

- Upon successful completion of this course, students are expected to be able to Appreciate the role of solar energy, food chains & food webs in ecosystem.
- Understand the causes, impacts & remedies for environment pollution.
- Know the importance of family welfare programmes & human health.
- Understand about various types of energy resources.
- Admire / Significance of national park, centuary, poaching.
- Able to cherish the wild life Biodiversity of India.
- Know about various laws for wildlife, pollution & environment conservation.
- Know about management of various disasters like flood, earthquake, cyclones & landslides.
- Able to eff ectively use informational technology for protecting environment health.

Class : BA / BCA/ B.Com/B.Sc V Sem

Paper-I Naitik Mulya Aur Bhasha

- To understand fundamental human values.
- To improve communication and soft skills.
- To make all round personality development.
- To develop their social and moral sense in life.

Paper II English Language

- To help the students to learn good English to prosper in professional and personal lives.
- To equip with the practical, emotional, intellectual and creative aspects of language by integrating knowledge and skills.
- To make them proficient in drafting C.V.,writing E-mails Report etc for their job and other career prospects.

Paper III Basics of computer & Information Technology

After studying this subject, student will be acquainted with–

- Understand the basic organization of Computer System.
- Demonstrate input and Output devices.
- Understand capacity and speed of Different Storage devices.
- Develop basic understanding of various Oper ating Systems.
- Work on text reading and Editing Software.

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Program Specific Outcome

Class : BA / BCA/ B.Com/B.Sc VI Sem

Paper-I Naitik Mulya Aur Bhasha

- To understand fundamental human values.
- To improve communication and soft skills.
- To make all round personality development.
- To develop their social and moral sense in life.

Paper II English Language

- To expose the students to a range of contexts where the language is used to meet a variety of real life communication needs.
- To develop intellectual, personal and professional abilities through effective communicative skills; ensuring high standard of behavioural attitude through literary subjects and shaping the students socially responsible citizens.
- Students should be proficient in oral communication and writing.

Paper III Basics of computer & Information Technology

After studying this subject, student will be acquainted with—

- Power point enables them to create presentations.
- Microsoft Excel helps them in preparing sheets with calculations, charts and recording data about all sorts of business processes.
- Knowledge of emerging tools offered by the internet.

Program- Postgraduate Courses

Program Outcomes:

- Provide students with the critical faculties necessary in an academic environment and on the job in an increasingly complex inter dependant world.
- Students will be able to apply critical and theoretical approaches to the reading and analysis of particular subjects.

SADHU VASWANI AUTONOMOUS COLLEGE, BAIRAGARH. BHOPAL

Program Specific Outcome

- Students will also develop insight for research and also study research methodology which will help them to present their ideas in a structured manner.
- Students will develop a thorough knowledge of theories, concepts and research methods in the field and apply them in research design and data analysis.
- Students will gain confidence to become entrepreneur as well in the areas of their interest.

Program Specific Outcomes:

(A) Faculty of Arts

(I) MA (Master of Arts)

The Faculty of Arts in the college offers

PG in Hindi.

- Students should develop critical faculties necessary in an academic environment and on the job in an increasingly complex interdependent world.
- Students should be familiar with representative literary and cultural texts within a significant number of historical, geographical, and cultural contexts.
- Students should be able to apply critical and theoretical approaches to the reading and analysis of literary and cultural texts in multiple genres.
- Students will also develop insight for research and study of research methodology which will help them to present their ideas in a structured manner.
- Students will develop a thorough knowledge of theories, concepts and research methods in the field and apply them in research design and data analysis.

Department of Hindi

Program specific outcomes

MA in Hindi - After completion of the course, the student will develop ability.

- To prepare for the examinations like NET/ SLET/ Ph.D
- To make use of Hindi language for getting employment.
- To prepare for competitive examinations.
- To appreciate Hindi literature.
- To inculcate moral values in order to strengthen the society.
- To prepare for journalism.
- To prepare for work on computer in Hindi.
- To prepare for post of Hindi Adhikari in Government and banks.

SADHU VASWANI AUTONOMOUS COLLEGE, BAIRAGARH. BHOPAL
Program Specific Outcome

Course Outcomes

M.A. (Hindi) I Sem

Paper I Prachin evam Madhyakaleen Kavya

- Describing the progressive nature of Sant Kabir and his writings.
- Describing the content and the skill of writing Jayasi, Vidhyapati in context of the socio cultural condition of his period.
- Understanding the vision of Raidas, Dadu Dayal, Ameer Khusro

Paper II Adhunik Hindi Gadhya Aur Uska Itihas

- Develop interest in Novel.
- Understand Novel forms and their types.
- Get information about the modern Hindi literature.
- Know the concept of Drama.
- Know the concept and process of dramatics.
- Increase vision regarding literary value.
- Learn the origin of drama as dramatic art.

Paper III Bhartiya avam Paschatya Kavya Shastra

- Know Indian poetry structure in Ancient and modern era.
- Know the importance of criticism.
- Increase vision regarding literary value.
- Get information about Alankar in Hindi literature.

Paper IV Prayojanmulak Hindi.

- Understanding the official language act of 1963 1968 and 1976.
- Understanding the concept of proof reading.
- To prepare for journalism.
- How to prepare for work on computer in Hindi.

SADHU VASWANI AUTONOMOUS COLLEGE, BAIRAGARH. BHOPAL
Program Specific Outcome

Class - M.A. (Hindi) II Sem

Paper I Pracheen evam Madhyakaleen Kavya

- Understanding the vision of Mira in context of her Krishna bhakti poetry.
- Describing the Krishna Leela poetry of Soordas by relating it with his philosophy of his life.
- Describing the Rama Bhakti poetry of Tulsidas along with a philosophy of Bhakti cult.

Paper II Adhunik Hindi Gadhya Aur Uska Itihas

- Develop the story reading skills.
- Develop knowledge of literary forms in Hindi story.
- Obtained information about the history of modern Hindi literature.
- Obtained information about literary theory.
- Develop relations between stories and society.
- Understanding the social consciousness of Premchand, Nirmal Verma, Amritlal Nagar, Manuu Bhandari through their short stories.
- Understanding the change in content and style of expression in short stories in different periods through the stories Jai Shankar Prasad, Premchand.
- Develop the essay writing and auto Biography.

Paper-III Bhartiya evam Paschatya Kavya Shastra

- Know the concept types of literature.
- Get information about Siddhant and Vad.
- Get detail information about criticism in Hindi literature.
- Know the concept and process of literature.
- Know Western poetry structure in Ancient and Modern era.

Paper IV Prayojanmulak Hindi.

- Understanding the meaning concept and importance of functional Hindi.
- Understanding various forms and functional Hindi according to its area of applications.

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Program Specific Outcome

- Understanding the importance of translation junior and senior in government and private.
- Understanding various forms of writing in media.
- To prepare for Hindi officer in different books.
- PRO in public sectors.

Class - M.A (Hindi) III Sem

Paper I Adhunik Hindi Kavya Aur Uska Itihas

Developed Creativity.

Love for poetry.

- Familiarizing the literary Contribution of as well as work of famous poet like Maithlisharan Gupta and Jaishankar Prasad.
- To introduce in the poets of modern Hindi poetry and its function.
- Development of poetic tendency, moral values sensation and thinking tendency.

Paper II Bhasha Vigyan Evam Hindi Bhasha

- To develop love towards mother language.
- To understand the importance of language.
- Knowledge of language behaviour and its proper use.
- Knowledge of grammer rules.
- Development of sentence structure and accuracy of writing.

Paper III Hindi Sahitya Ka Itihas

- Understanding the concept of history of literature.
- Understanding the basis of classification of Hindi literature.
- Understanding the features of Aadikal, Bhaktikal, Ritikal in the context of socio cultural and political condition of that period.
- Understanding the importance and basis of the names given to each period of Hindi literature.
- Describing the Ram and Krishna Kavya Kavi and his poetry.

Paper IV Optional (Surdas)

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Program Specific Outcome

- We will get information about Surdas the leading poet of Bhakti period.
- Will be familiar with the importance of Surdas famous book.
- Will get information from old age period.
- Will understand the importance of golden age.
- Will gain knowledge of literary role of prominent poets, Kumbhan Das, Krishna Das,
- Parmanand Das.
- Will be familiar with the Vatsalya Ras.

Class - M.A.(Hindi) IV Sem

Paper I Adhunik Hindi Kavya Aur Uske Itihas

- The significance of poetry and tendency to write poetry will develop.
- There will be knowledge of prominent poet like Sumitranandan Pant, Suryakant Tripathi Nirala poets of modern poetry.

- Will have sense of all characteristics of modern Hindi poetry and its major poet.
- Intellectual ability will develop.
- Interest in creation will arise.
- Students will understand the importance of poetry.
- Paper II Bhasha Vigyan Evam Hindi Bhasha
- There will be knowledge of historical background of Hindi and students will get proper knowledge of their language.

- Will understand the nature of Hindi like noun pronoun verb etc.
- Milan the language and the use of prefix suffix.

- Vocabulary will develop.
- Developing the translation process.

Paper III Hindi Sahitya Ka Itihas

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Program Specific Outcome

- Understanding the reason of emergency of Aadhunik Kal in Hindi literature.
- Understanding the features of Aadhunik Kal in the context of social cultural and political condition of that period.
- Understanding the literary trends of Adhunik Kal.
- Understanding the history of development of Hindi drama, short stories and novels.

Paper-IV Optional (Surdas)

- Will understand the history of Bhakti and will get information about many poetic stream.
- Emotions will develop.
- Will gain detailed knowledge of personality as well as work of devotional poet such as
- Raskhan, Meera, Nandas etc.
- Will understand the characteristics of important epics like Sursagar.
- Learning and writing skills will develop.

Learning Outcomes

M.Com 1sem

Advance Accounting

- 1 .To make the learners understand the concept of currency conversion as per AS 11 and also the concept of foreign branches.
- 2. To provide information to learners about accounting and statutory requirements of General insurance companies.
- 3. To provide information to learners about accounting and statutory requirements of Life insurance companies.
- 4.To provide information to learners about accounting of Co-Operative society.

Management Concept

Course Objectives

- To help the students gain understanding of the functions and responsibilities of managers.

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Program Specific Outcome

- To provide them tools and techniques to be used in the performance of the managerial job
- To enable them to analyze and understand the environment of the organization.
- To help the students to develop cognizance of the importance of management principles.

Cost Analysis And Cost Control

- 1.. Determination of the profitability of each of the products and help management in the maximization of these profits.
- 2. Exercise effective control of stocks of raw material. work-in progress, consumable stores, and finished goods so as to minimize the capital invested in them.
- 3. Present and interpret data for management planning decisionmaking, and control.
- 4. Help in the preparation of budgets and implement of budgetary control.
- 5. Aid management in the formulation and implementation, of incentive bonus plans on the basis of productivity and cost savings.

Business environment

- 1.Develop new or improved innovative business processes from gap analysis through process design in support of a company's strategic objectives in a socially responsible manner.
- 2.Develop business models that support a company strategic objectives.
- 3. Articulate the interdependence between financial and operational metric used in value chain analysis to key decision makers.
- 4. Appraise the impact on financial and operational performance of specific business processes/models..
- 5.Evaluate the opportunities for business process and supply chain improvement based on current best practice across industries. As well as new breakthrough thinking.
- 6.Analyze the key business processes that drive the value chain of an organization throughout the entire product life cycle.
- 7.Articulate the impact of proposed changes to all major stakeholders and levels of the organization.
- 8.Evaluate current global business issues and their impact on various enterprises.

M.COM 2nd SEM

Functional Management

- 1 To understand the meaning and significance of Planning

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Program Specific Outcome

- 2 .Explain the significance of Planning.
- 3. Enumerate various types of Plans.
- 4 .List out the steps in Planning process.

Advance Statistical Anslysis

- Introduction to advanced statistical analysis
- Group variables: Factor Analysis and Principal Component analysis
- Group similar cases: Cluster Analysis
- Predict categorical targets with Nearest Neighbor Analysis
- Predict categorical targets with Discriminant Analysis
- Predict categorical targets with Logistic Regression
- Predict categorical targets with Decision Trees
- Introduction to Survival Analysis
- Introduction to Generalized Linear Models
- Introduction to Linear Mixed Models

Corporate Legal Framework

- Students will demonstrate the professional skills of collaboration, counseling and negotiation needed for competent and ethical participation as a member of the legal profession.
- All students will also demonstrate a basic understanding of business fundamentals and be able to read and understand basic financial documents.

Organization Behaviour

- 1.Understand the nature of employee motivation.
- 2.Recognize the importance of creating a workplace that inspires and supports employee motivation.

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Program Specific Outcome

- 3. Identify aspects of today's workplace that can affect employee motivation.
- 4. Understand the nature of employee motivation.
- 5. Recognize the importance of creating a workplace that inspires and supports employee motivation.

M.Com3sem

Managerial Economics

- Understand the roles of managers in firms.
- Understand the internal and external decisions to be made by managers .
- Analyze the demand and supply conditions and assess the position of a company.
- Design competition strategies, including costing, pricing, product differentiation, and market environment according to the natures of products and the structures of the markets.
- Analyze real-world business problems with a systematic theoretical framework.
- Make optimal business decisions by integrating the concepts of economics, mathematics and statistics.

Tax Planning And Tax Management

- It helps to estimate and disclose correct information to the IT department
- 2 - Reduce chances of litigations and tax losses.
- 3 - Reduces ignorance against applicable tax laws and changes.
- 4 - Help to estimate better plans which can be altered in the future.

Accounting for managerial accounts

Course objective

- This course aims to enable students to appreciate the significance of concepts, theories and practice of financial decision making in firms and to make them acquainted with analytical and problem solving skills for corporate financing decision. The course also aims to familiarize student with contemporary issues on corporate finance and enable them to critically analyze these issues.

3. Entrepreneur skill development

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Program Specific Outcome

- Make quality vocational training aspirational for both youth and employers where by youth sees it as a matter of choice and employer acknowledge the productivity linked to skilled workforce by paying the requisite premium.
- Ensure both vertical and horizontal pathway to skilled workforce for further growth by providing seamless integration of skill training with formal education.
- Focus on an outcomes based approach towards quality skilling that on one hand result in increased employability and better livelihoods for individuals and on the other hand translates into improved productivity across primary secondary and tertiary sectors.

M.com 4sem

Rural and Agriculture marketing

Understand the fundamentals of management with reference to agribusiness.

2. Acquaint with various functional areas of agribusiness
3. Study the managerial functions and its applications with reference to agribusiness
4. Learn the concepts and process of Planning and Organizing
- 5 .Provides knowledge about the staffing Directing and

Consumer Behavior

1. Demonstrate how knowledge of consumer behavior can be applied to marketing.
2. Identify and explain factors which influence consumer behavior.
3. Relate internal dynamics such as personality, perception, learning motivation and attitude to the choice consumers make.
4. Use appropriate research approaches including sampling data collection and questionnaire design for specific marketing situations.

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Program Specific Outcome

5 In a team work effectively to prepare a research report on consumer behavior issues within a specific context.

Advertising and sales management

- 1. Determine, analyze and respond to clients' advertising and marketing communications objectives by applying principles of marketing and communications.
- 2. Perform a market segmentation analysis, determine the organization's target market/audience and define the consumer behavior of each segment.
- 3. Develop an integrated advertising and marketing communications plan and persuasively present and defend it.

International marketing

- Have developed an understanding of major issues related to international marketing
- Have developed skills in researching and analyzing trends in global markets and in modern marketing practice
- Be able to assess an organization's ability to enter and compete in international markets.

M.SC(CS)-I SEM

Paper I-Discrete mathematics structures

- Complete knowledge of set theory, logic gates, binary relations, graphs and proof techniques.
- Solving a variety of discrete mathematical problems and make effective use of technology.
-

Paper II- Programming skill with C++

- A Complete knowledge of object oriented programming techniques.
- A clear understanding of Inheritance, polymorphism, overloading and reusability of objects.
- Develop a menu driven solution for a real world problem.

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Program Specific Outcome

Paper III- Computer Organization & Architecture

- Detailed knowledge of representation, storage, transfer and manipulation of data.
- Instruction set, addressing modes, data format , ALU, Control unit and data representation.

Paper IV-Windows and PC-Software

- Introduction to features of windows.
- Understanding practical concepts of word, Excel and PowerPoint.

M.SC(CS)- III SEM

Paper I-RDBMS Concepts and Oracle

- Understanding concepts of DBMS and RDBMS.
- Various queries and SQL functions needed to maintain RDBMS.
- Normalize the database.

Paper II- Multimedia Tools and Applications

- Concept of computer graphics, multimedia tools & application.
- Two and three dimensional transformations, windowing, shading .
- The process of sampling MIDI and MIDI devices.

Paper III-Software Engineering

- Understanding product, process, software.
- Develop good quality software at low cost.
- Conceptualize SCM,SQA, Risk Management during software development.

Paper IV- Advance JAVA Programming

- Concepts of Activation, serialization and Interface definition language – COBRA.
- Detailed knowledge of JAVA BEANS and SWING BEANS concepts.

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Program Specific Outcome

- Developing graphic applications in JAVA media frame work.

M.Sc.I Semester

Paper I:Mathematical Physics

After completing the course students explore the following.

- Mathematical physics to develop a understanding of physics and solve the complex problem under the quantum mechanics, classical mechanics and fluid dynamics.
- Students have cleared a concept of vector and tensor analysis.
- Students should also be able to understand the Fourier and Laplace Transform, Series and Analytic functions to solve many complex problems and useful to higher studies.

M.Sc.I Sem

Paper II- Classical Mechanics

Students Will be able to understand

- Lagrangian Formulation
- Hamiltonian Formulation
- Motion under center force
- Small Oscillations
- Many problems have been worked out to aid in understanding the underlying theory. At the end of each chapter is a set of problems.

MSC 1st Semester

Paper – III

Quantum Mechanics – I

- The most precise clocks in the world atomic clocks, are able to use principles of Quantum theory to Measure time.
- A Standard Computer encodes information as a string of binary digit, or bits Quantum Computers.
- In Quantum Mechanics:
- Schrodinger equation gives us a detailed account of the form of the wave functions of probability waves that control the motion of some smaller particles.

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Program Specific Outcome

- The equation also describes how these waves are influenced by external Factors.

M.SC. I Sem

Paper IV Electronic Devices

- The Syllabus is systematically organized and the presentation has been kept at a level suitable for a student with the basic Knowledge of circuit theory
- Expanded and improved coverage of Memory devices:
RAM,ROM, CMOS and NMOS logic.

M.Sc. II Semester

Paper –I

Quantum Mechanics – II

Student Will be able to Understand

- Rayleigh – Schrodinger.
- WKB Approximation.
- Einstein's A and B coefficients and transition probability.
- Klein – Gordon equation.
- Learning about famous equations like the schrodinger equation.
- Which describes subatomic particles to advance physics of particle entanglement.

M.Sc. II Sem

Paper II Statistical Mechanics

- Students will able to understand an insight in to the interesting correlation and other details of the Statistical mechanics exploring fully the limitations and scope.
- To learn the postulates of statistical mechanics.
- To learn statistical interpretation of thermodynamics micro canonical, canonical and grand canonical ensembles.
- To study the methods of statistical mechanics are used to develop the statistics for Bose-Einstein and Fermi- Dirac.

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Program Specific Outcome

- Learn and understand how statistics of microscopic world can be used to explain thermal features of macroscopic world.

M.Sc II Sem

Paper III: Electrodynamics and plasma physics

After completing the course students gain the following

- Students will be able to understand the concept of electromagnetic theory, EM wave propagation by different modes, ionosphere and communication techniques will be useful in our daily life.
- The concept of various potentials and gauge transformation give a working Knowledge and applications.
- Students have studied Introduction of plasma, occurrence of plasma and plasma waves that is motivated to research in plasma.

M.Sc II Semester

Paper IV

Atomic Spectroscopy

- Atomic Spectroscopy is the study of the electromagnetic radiation absorbed and emitted by atoms.
- Atomic Spectroscopy plays a Major role as the basis of a wide range of analytical technique that contributes to determine elemental concentration and isotope ratios.
- In Atomic Spectroscopy:-X-ray Specter:-X- Ray transition in an atoms.

Radiation of shorter wave lengths is forbidden by the conservation of energy- X- ray

Spectrum from a silver target.

M.Sc III Semester

Paper I

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Program Specific Outcome

Condensed Matter Physics

After the completion of this course, students will be.

- Able to understand properties of solid.
- Able to correlate the X-Ray diffraction pattern for a given crystal structure based on the corresponding reciprocal lattice.
- Able to understand the quantum theory of lattice vibrations.
- Know the concepts of phonons and its application.
- Understanding skin effect and anomalous skin effect.

M.Sc III Sem

Paper II: Nuclear and Particle physics

After completion of the course students get a sound Knowledge of nucleus, interaction with nucleons, size and nuclear force.

- Students understand the properties and nuclear reaction on the basis of different models such as Liquid drop, Shell model and collective model.
- Students get the knowledge with high energy based Accelerator like Betatron, Synchrotron, Linear accelerator and other. Students also explore the concept of Alpha, Beta and Gamma rays.
- Students also familiarize to fundamental of particles and its nature which will be useful in research.

M.Sc.III Sem

Paper – III Digital Electronics

The students are expected to acquire core Knowledge in

- The fundamental concepts of digital electronics and commonly used code in digital systems and the basic digital circuit.
- Various number systems and commonly used codes in digital systems included.
- The A/D and D/A converters form an important part of many digital systems and the commonly used techniques for such conversions are included.

SADHU VASWANI AUTONOMOUS COLLEGE, BAIRAGARH. BHOPAL
Program Specific Outcome

M.Sc.III Sem

Paper IV : Molecular Spectroscopy

After completing the course students familiarize the concept of spectroscopy and gain the following-

- Students learned the atomic and molecular spectroscopy and various techniques used to study the spectra.
- Students the principle and working of Raman spectroscopy, Mossbauer spectroscopy and Infrared spectroscopy to study the spectra of material.
- Students will also familiar with Electron Spin resonance and Nuclear magnetic resonance techniques which are useful for high studies and research work.

M.Sc. IV Sem

Paper I Condensed Matter Physics

By the end of this course, students should be able to understand

- Superconductors.
- An extensive coverage is also given to the topics that fall under the realm of condensed matter physics.
- Identify defects in crystal structure.
- Exposure to basic Knowledge of Nanotechnology
-

M.Sc – IV Semester

Paper – II Laser Physics

Student after the course should be able to:

Solve problem on :

- Absorption and spontaneous and stimulated emission in two level systems.
- Explain operation principal and construction of Lasers.
- Operation and basic properties of the most common laser type He-Ne, and carbon – dioxide, Ruby, titanium sapphire neodym YAG and glass, Knowledge of laser cavity and stability conditions.
- Non-Linear optical frequency conversion optical parametric conversion.

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Program Specific Outcome

Student can learn various types of laser use in their daily life.

MSc IV Sem

Paper III : Computer programming and Informatics

The course introduce the introduction, algorithm, operators and languages of computer.

- Students able to write a programme in C++ language using commands that is useful in scientific purpose.
- Students also learn the LAN,WAN and MAN networking of computers that will connected to worldwide.
- HTML language and C++ language explore the creative programming for research purposes.

M.Sc IV Sem

Paper IV (optional) Communication Electronics

By the end of this course, students should be able to understand:

- Many practical circuits for AM,DSBSC,SSB,VSB generation and detections.
- Pulse Code Modulations (PCM) also discusses other systems such as Delta Modulation and Adaptive Delta Modulation.
- Many problems have been worked out to aid in understanding the underlying theory. At the end of each chapter is a set of problems.

Department of Chemistry

Programme Specific Outcomes

- The course of chemistry will help them to think critically and analytically. By doing experiments they will come to know practically the concept of error, accuracy and precision. They will also be familiar with safety guidelines to be used in any chemical laboratory. The units of biology, maths and computer will help them in better understanding of their higher studies. After studying papers of industrial chemistry students will be well versed with the various techniques used in industries. The course

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Program Specific Outcome

will teach the concept of working in teams. With paper of environmental chemistry they can help the society about various types of pollutants and pollution and how it can be controlled. Students will be able to correlate chemistry with their everyday life. The theoretical concepts studied in UG and PG classes will help them in starting their own ventures. After completing PG course students will be trained to a greater extent to find jobs in various related fields.

Course Outcomes

M.Sc. Semester I Chemistry

Paper I -Inorganic Chemistry - I

- The purpose of the study of stereochemistry and bonding in main group compounds is to familiarise students with $d\pi-p\pi$ bond, Bent rules. Students will be able to understand the stepwise and overall formation constant and their interaction, chelate effect and its thermodynamic origin. They will get knowledge of the reaction mechanism of transition metal complexes and metal ligand bonding. They will acquire knowledge of HSAB theory, classification, principle and its applications.

Paper II - Organic Chemistry - I

- Students will get knowledge of nature of bonding in organic molecules, tautomerism, aromaticity, addition compounds and inclusion compounds. They will be able to learn basic concept of symmetry in the molecules, optical activity in the presence and in the absence of chiral carbon. They will understand the stereochemistry of compounds containing nitrogen sulphur and phosphorus. They will acquire knowledge of conformational analysis and linear free energy relationship. They will study about the reaction intermediates, their structure, stability and reactivity, different types of reaction mechanisms, kinetic and thermodynamic control and methods of determination of mechanisms. They will get knowledge of and linear different mechanism of aliphatic nucleophilic substitution.

Paper III- Physical Chemistry-I

- After studying this paper, the student will be familiar with the quantum mechanics, Schrodinger equation and its model systems. They will also have the knowledge of various approximate methods and their application to the Helium atom. They will get an idea of Molecular Orbital Theory and its various applications. The unit of Angular Momentum will give idea about Eigen functions, Eigen values of angular momentum. They will learn classical thermodynamics, laws of thermodynamics, non-ideal systems and application of phase rule to three component systems. The unit of statistical

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Program Specific Outcome

thermodynamics also deals with concepts of distribution and application of partition functions.

Paper IV - Group Theory and Spectroscopy

- After studying Unit 1 students will be familiar with the concept of symmetry, symmetry elements, symmetry operation, group, sub group, representation of group by matrices and character table. Unit 2 Microwave spectroscopy will give an idea about rotational transition in rigid and non-rigid rotor. Unit III Infrared Spectroscopy will give knowledge about vibrational energy of diatomic molecules and harmonics, vibration of polyatomic molecules, selection rules, factors affecting band position and intensities etc. Unit 4 Raman spectroscopy gives knowledge about classical and quantum theory of Raman effect, spectra, resonance Raman spectroscopy and CARS. After studying Unit 5 students will get an idea about electronic spectroscopy, Frank-Condon principle and concept of photoelectron spectroscopy.

Paper - V (a) Mathematics for Chemists

- Students will be able to understand basics of vectors, vector calculus and matrix algebra. They will be able to learn differential calculus, integral calculus and their applications. They will get knowledge of elementary first order and second order differential equations and its application to chemical kinetics, quantum chemistry etc. They will be able to understand permutations, combinations and probability.

Paper - V(b) Biology for Chemists

- Students will be able to understand basics of cell structure and functions, metabolic processes and origin of life. They will learn about structure and basic functions of carbohydrates, lipids, amino-acids, peptides, proteins and nucleic acids.

Practical

Inorganic Chemistry

- Students will be able to analyse inorganic mixture containing eight radicals including insoluble and rare earth. They will understand the chromatographic techniques like column chromatography, paper chromatography. They will be able to prepare various inorganic compounds and perform spectral analysis and magnetic susceptibility measurement of these compounds

Organic Chemistry

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Program Specific Outcome

- Students will be able to separate, purify and perform identification of simple organic compounds of binary mixture and ternary mixture. They will synthesize simple organic compounds by different reactions and characterize the products by spectral techniques.

Physical Chemistry

- Students will get basic knowledge of errors, calibration of volumetric apparatus like burette, pipette and. Knowledge of conductometry will help them in the determination of velocity constant, order of the reaction and energy of activation for saponification, solubility and solubility product of sparingly soluble salts and strength of strong and weak acid. They will be able to determine molecular weight by cryoscopic method, activity coefficient of an electrolyte, degree of dissociation of weak electrolyte etc. They will study surface tension concentration relationship. They will be able to determine congruent composition and temperature of a binary system and also learn to construct phase diagram for three component system.

M.Sc. Semester II Chemistry

Paper I-Inorganic Chemistry II

- Students will get knowledge of spectroscopic ground states, correlation. Orgel and Tanabe-Sugano diagrams for transition metal complexes (d^1 - d^9 states) in electronic spectral studies of transition metal complexes. They will understand magnetic properties of transition metal complexes. They will study about metal π -complexes like metal carbonyl, their structure and bonding. Students will get knowledge about metal clusters that is that is higher boranes, carboranes, metalloboranes and metallo-carboranes. They will learn about optical rotatory dispersion and circular dichroism.

Paper II - Organic chemistry II

- Students will be able to learn mechanism of aromatic electrophilic and nucleophilic substitution. They will understand elimination reactions, free radical reactions and rearrangements. They will learn mechanistic and stereochemical aspects of addition reactions and addition to carbon-hetero multiple bonds. They will get knowledge of pericyclic reactions and sigmatropic rearrangements.

Paper III- Physical Chemistry II

- After studying this paper, the students will learn about the Chemical dynamics, Arrhenius equation and its activated complex theory. They will also get knowledge of surface

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Program Specific Outcome

tension, adsorption and related topics. Unit of macromolecule will give them an idea about mechanism and molecular mass determination. By studying non equilibrium thermodynamics, they will understand the importance of entropy production and entropy mechanism. The unit of Electrochemistry will help them acquire knowledge about various electrochemistry of solution and their applications.

Paper IV - Spectroscopy II and Diffraction Methods

- After studying Unit 1 students will get knowledge about Nuclear Magnetic Resonance
- spectroscopy, chemical shift, spin-spin interaction, spindecoupling and FT NMR. Unit II deals with various concepts and applications of Nuclear Quadrupole Resonance Spectroscopy. Unit 3 deals with basic principle of Electron Spin Resonance Spectroscopy its various concepts and applications. With Unit 4 students will be familiar with X-ray diffraction, Bragg's condition, various methods of X-ray Structure, analysis of crystals, identification of unit cell. Unit 5 deals with important concept of electron diffraction and neutron diffraction.

Paper V - Computers for Chemists

- Students will get Introduction to Basic structure and functioning of computer. They will learn about computer language and programming in FORTRAN/C/BASIC, use of computer programmes. They will be able to learn programming in chemistry and application of internet for chemistry with search engines.

Practical

Inorganic Chemistry

- Students will be able to separate and determine two metal ions using volumetric and gravimetric methods. They will be able to separate cations and anions by column chromatography and Ion exchange chromatography. They will prepare selected inorganic compounds and also learn their structure spectral studies etc.

Organic Chemistry

- Students will be able to synthesize organic compounds using name reactions. They will be able to analyse the groups / compounds quantitatively and determine some parameters.

Physical Chemistry

- Students will learn to determine the velocity constants of hydrolysis of an ester, oxidation of iodide ions by hydrogen peroxide etc. with the help of chemical kinetics experiments. They will be able to determine the strengths of halides in a mixture, valency of mercurous ions, formation constant, stoichiometry of the complex potentiometrically. They will

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Program Specific Outcome

learn to determine dissociation constant, thermodynamic constants. They will perform experiments using pH meter and polarimeter.

M.Sc. Semester III

Paper I - Application of Spectroscopy-I

- After studying unit 1 students will be familiar with d - d transition taking place in metal complexes. Second unit will give an idea of mode of bonding of ambidentate ligands and application of Resonance Raman spectroscopy. Unit of NMR - I will give an idea about NMR phenomenon, chemical shift, shielding, deshielding, spin - spin interaction and an idea of chemical shift values of different types of organic compounds. Unit NMR-II deals with chemical exchange effect of deuteration, complex spin- spin interaction and NOE. Unit 5 Mossbauer Spectroscopy gives information about basic principles, spectroscopy parameters and technique.

Paper II - Photochemistry

- Students will be able to learn types of excitations, fate of excited molecule, transfer of excitation energy. They will get knowledge of photochemical reactions and determination of reaction mechanism. They will understand photochemistry of alkenes, aromatic compounds and carbonyl compounds. They will learn miscellaneous photochemical reactions like formation of smog, photochemistry of vision.

Paper III - Environmental Chemistry

- Students will be able to understand atmosphere, atmospheric chemistry, tropospheric chemistry, Biogeochemical cycles. They will learn aquatic chemistry, water pollution, air pollution, greenhouse effect, acid rain and **stratospheric ozone depletion. They will get knowledge of environmental toxicology, toxic heavy metals, toxic organic compound, polychlorinated biphenyls, polynuclear aromatic hydrocarbons. They will be acquainted with the composition of soil, soil pollution and some environmental disaster.**

Paper IV- Polymer

- **Students will be able to understand basic concepts of polymers,** polymerization conditions, polymer reactions, **polymer characterization,** polymerization in homogeneous and heterogeneous systems. **They will learn** analysis and testing of polymers. They will get knowledge of structure, properties and applications of different types of Polymers.

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Program Specific Outcome

Paper V - Industrial Chemistry-Heavy Chemicals & Petroleum

- Students will get knowledge of water pollutants, thermal pollution, various methods of water purification. They will be able to study large scale production of different gases and heavy chemicals. They will learn about coal and petroleum, their origin, composition etc. and their economic importance. They will also learn fats and oils, hydrogenation of unsaturated oils, manufacture of vanaspati and margarine.

Practical

Inorganic Chemistry

- Students will be able to determine quantitatively three component mixture (One volumetrically and two gravimetrically). Students will learn chromatographic techniques like paper chromatography and thin layer chromatography for the separation of metal ions.

Organic Chemistry

- Students will be able to learn the estimation of elements and functional groups. They will be able to synthesise few organic compounds and their characterization by spectral techniques. They will learn the technique of paper chromatography.

Physical Chemistry

- Students will be able to perform various chemical kinetics practical. They will also learn determination of pKa of an indicator (methyl red), study of stoichiometry and stability constant of complex ion in solution, oxidation of alcohol by Ce(IV) etc. spectroscopically.

M.Sc. Semester IV

Paper I -Application of Spectroscopy-II

- After studying unit 1 students will be familiar with various electronic transitions Beer Lambert law, Fieser Woodward rule. Unit 2 Infrared Spectroscopy will give an idea about characteristic frequency of different organic compounds, effect of hydrogen bonding and solvent effect. Unit 3 gives information about contact and Pseudo contact shifts in NMR and applications of NMR. Unit 4 deals with C-13 NMR spectroscopy, its various concepts and twodimensional NMR spectroscopy. Unit 5 mass spectrometry deals with

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Program Specific Outcome

introduction, various methods of ion production, mass spectra of common functional groups and to rule and McLafferty rearrangement, Nitrogen rule.

Paper II- Solid State Chemistry

- Students will get familiar with solid state reactions, its general principles and experimental procedure. They will also learn about crystal defects, non-stoichiometry and defects. The unit of electronic properties and band theory deals with the knowledge of metal insulators, semiconductors, application of optical and electron microscopy and magnetic properties. They will learn organic solid, importance of organic metals and new superconductors. Unitofliquid crystal will enable them to understand different types of liquid crystals and liquid crystal display.

Paper III - Biochemistry

- Students will be able to learn about role of metal ions in biological systems, storage of dioxygen and electron transfer processes. They will understand the concept of biological and chemical nitrogen fixation. They will get knowledge of different enzymes participating in the chemical reactions inside the body, their functions, mechanism of enzyme action, biotechnological applications of enzymes, enzyme models andco-enzyme chemistry. They will learn about biological cell and its constituents, bioenergetics, biopolymer interactions, cell membrane and transport of ions.

Paper IV - Analytical Chemistry

- After studying this paper students will be able to learn different types of analytical methods, cleaning, calibration of glassware, types of errors in experimental data and uses of statistics. They will get knowledge of methods employed for the analysis of adulterants present in food. They will be able to learn about water pollution and methods for the analysis of different types of water pollutants. They will get theoretical knowledge of analytical methods employed in the analysis of **soil, fuel, body fluids and drugs**.

Paper V - Industrial Chemistry- Pesticides & Glass industries

- Students will get knowledge of preparation, properties and uses of cleansing agents and detergents. They will acquire basic knowledge about fertilizers, inorganic materials, glass and ceramics. They will learn about different types of cement, ferrous industry, silicones and electronics industry. They will be able to understandpesticides and food additives, classification, important categories and mode of action.

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Program Specific Outcome

Practical

Inorganic Chemistry

- Students will be able to prepare inorganic compounds and characterize them by spectral studies. They will learn spectrophotometric determination of fluoride/nitrite/phosphate etc. and spectroscopic identification of recorded spectra. they will be able to determine sodium, potassium etc. flame photometrically.

Organic Chemistry

- Students will be able to prepare organic compounds by **multi-step synthesis and purification of products** by chromatographic techniques. They will learn to identify organic compounds by analysing spectral data. They will be able to isolate some natural products and estimate some compounds spectrophotometrically.

Physical Chemistry

- Students will be able to determine and understand the pK_a of an indicator (methyl red), stoichiometry and stability constant of complex ion in solution, rate constant and effect of ionic strength on the rate of reaction. Chemical kinetics practicals will help them to determine and understand rate constant, of energy of activation, enthalpy and entropy of activation. They will also learn to perform various practicals related to thermodynamics and polarography.

Class: M.Sc Biotechnology I Sem

PAPER –I Cell Biology

The objective of this course is to provide exposure to the students on cells, structural and functional units of living organisms and morphological studies. Moreover they will learn the functions and vital processes of various cellular compartments and organelles. It also gives the structural, functional and biochemical details of all cellular activities.

- Student will be able to comprehend the cellular architecture of prokaryotes and eukaryotes with fine details of various intracellular organelles.
- Student will be able to interpret molecular mechanisms involved at various stages of cell cycle and its regulation.
- They can study the Cell signaling and cellular communication so that they correlate between signal molecules and their role in various cellular activities.
- Student will be able to Study of concept of genes: analysis of genomes, genes, and the flow of genetic information

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Program Specific Outcome

- Students will be able to study regulation of gene expression and its influence on various stages of development and they can study the application of stem cell biology.

PAPER –II Structure Function and Metabolism of Biomolecules

The objective of this course is to give students an idea on different biological molecules their origin biological role and its degradation according to the needs and demand of the system under various conditions. Also the interrelation of each of these metabolic pathways and their contribution in various metabolic disorders are also explained in detail.

- Students will be able to explain the structure-function relationships of biomolecules.
- Students will be able to characterize properties of enzymes and their kinetics; understand their role as biocatalysts involved in biochemical transformations.
- Students will be able to correlate how different signals perceived by the organisms are converted into biochemical information which drives different functions of living systems.
- Students will be able to Comprehend various metabolic pathways through which the biomolecules transform form one form.
- Student will be able to interpretate molecular structure, their properties and interactions present in carbohydrate, proteins Lipids, and Nucleic acids.
- The metabolism and regulation of biomolecules can be understood by students.

PAPER –III Microbiology

The objective of this course is to give students an introduction about the microbial world – their distribution morphology and reproduction ad about the role of microorganism in various fields of science.

- Students will be able to understand the classification and nomenclature of Micro organism.
- Student will be able to learn morphology and physiological characteristics of different groups of microorganism
- They will be able to recognize and compare the structure and function of microbes.
- They are able to check microbial contamination in environmental samples.
- They will be able to understand virus cultivation phages and bacterial genetics
- They can demonstrate aseptic microbiological techniques in the laboratory. And how to control microbial contamination and take safety measures and to apply norms of biosafety practices in various set ups.

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Program Specific Outcome

PAPER –IV Bioinstrumentation

The objective of this course is to make students understand the physical principles behind the various techniques available for interrogating biological macromolecules also they will be able to interpret the results obtained from such studies.

- Student will be able to Understand, develop and analyze the principles of various bioanalytical techniques
- Student will be able to Learn various instruments like centrifugation electrophoresis, chromatographic and spectrophotometric techniques which are involved in isolation, purification and analysis of biomolecules. The quantitative and qualitative analysis through these instruments will be learned by students.
- Student will be able to analysis and interpretate data generated from the instruments.
- They are able to learn various microscopic techniques to study structural and morphological features.
- Students will be able to apply and evaluate safety concepts fro bioinstrumentation and labortroy implementations.

Class: M.Sc Biotechnology II Sem

PAPER –I Molecular Genetics –

- The student will be able to describe the fundamental molecular principles of genetics and mutations.
- The student will be able to understand the genetic bases of cancer
- The student will get an idea about the principles behind molecular genetics which makes students to understand the basic molecular tools and its application in basic research and applied research in various fields of life sciences.
- The student will be aware with a basic knowledge of modern molecular biology and genomics.
- They will be able to understand genetic mapping and human genetic traits

PAPER –II Basic enzymology and Enzyme technology

- Students will be able to describe structure and functions and mechanism of action of enzymes
- The student will learn kinetics of enzyme catalyzed reactions and enzyme inhibitory and regulatory process.

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Program Specific Outcome

- The preservation and storage of enzyme through immobilization techniques will be learned by students.
- They will get the learning of application of enzyme and various fields and their future potential.

PAPER –III Molecular Biology

- Students will be able to learn the structure and properties of nucleic acids
- They will be able to learn the mechanism of replication, transcription and translation
- The students will be able to describe the gene expression and its regulation at transcriptional and post transcriptional level.
- The students will be able to understand the biology and application of antisense technology and biology of cancer.

PAPER –IV Immunology and Animal cell culture

- Students will be able to understand the basic concepts of immunity and types of immunity
- Students will be aware of the structure and diversity of the antibodies and they are able to understand the morphology and functions of the various immune cells such as neutrophils, macrophages and their association with the MHC molecule will be studied.
- This study will make the student to understand the basic mechanisms of hypersensitivity responses and their associations with different diseases.
- The various immunological techniques and concept of vaccine can be studied.
- The students will be able to study the animal cell culture and its applications.

Class: M.Sc Biotechnology III Sem

PAPER –I Genetic Engineering

- Student will be able to comprehend the importance of various DNA modifying enzymes in developing various molecular techniques used in rDNA technology
- They will be able to understand the selection of suitable hosts for the individual vectors for different purposes and to know the uses of restriction and other enzymes in molecular cloning, PCR and genetic manipulations.
- Students will be able to carryout construction and screening of the genomic and cDNA libraries and to design experiments for expression of the cloned gene (s) for useful products.
- The student will achieve a sound knowledge on how to apply these techniques in basic and applied fields of life science researches like healthcare, Agriculture and environment.

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Program Specific Outcome

PAPER –II Biostatistics and Bioinformatics

- Students will be able to tabulate, organize and summarize biological data of various fields like Statistical tools to analyze public health, clinical and biological research problems
- They will be able to understand the key concepts of probability and probability distributions to deterring and analyzing biological data
- The students will learn to approach a research problem logically and will be able to do statistical analyses in research. And to develop algorithms to solve complex biological problems
- Student will be able to conduct basic bioinformatics research through bioinformatics softwares and to develop new platform for molecular biology research experiments
- They will be able to analyze sequence and structure bio-macromolecule data and to apply the knowledge of bioinformatics in it.

PAPER –III Plant Biotechnology

- Students will be able be familiar with organization of PTC Lab and to learn the techniques of aseptic transfer and culturing tissues, single cells, protoplast and anther culture, hairy root culture and germplasm conservation
- The students will be able to understand the large scale in vitro propagation of plants and plan commercial production through micropropagation
- The students will gain knowledge generate plants with desirable/novel traits through genetic manipulations using different methods of gene transfer
- The student will able to differentiate various types of intellectual property rights and report measures for conservation of biodiversity .

PAPER –IV Bioprocess and Biochemical Engineering

- Students will be able to describe relevance of microorganisms from industrial context.
- Students will be able to describe the design and operation s of various fermenters.
- Students will be able to apply the concepts of basic chemical engineering principles in a bioprocess to Produce bio-products on an industrial scale using fermenters.
- Students will be able to operate and optimize process parameters for producing industrial products.
- Students will be able to carry out the quality control procedures in the production of various Biotechnology industries.
- Students will be able to analyze any bioprocess from an economic market point of view and give an account of important microbial or enzymatic industrial process in food and fuel industry.

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Program Specific Outcome

PAPER –V Applied Biotechnology

- The student will be able to evaluate the potential of biodegradation of organic pollutants taking microbial and physical chemical environments as well as the chemical structure of the compound itself into consideration
- Students will gain basic information of microbial cultures sterilization methods and enzyme productions.
- Students will be able to apply basic knowledge of pharmaceutical manufacturing in the production of biopharmaceuticals like antibiotics, vaccines, proteins and hormones
- Students will be able to explain the industrial aspects of Biotechnology for the production of various of industrial products of biological origin
- Students will learn about the biosafety guidelines.

Class: M.Sc Biotechnology IV Sem

Course Code – C042

PAPER –I Advance in Fermentation and Food Biotechnology

- This course provides theory about micro organisms used in fermentation processes and about application of these microbes in food fermentation process. Theoretical background of functional microorganisms like lactic acid, bacteria, yeasts and moulds and to study their behavior as fermentation starters.
- Students can understand the role of fermentation microorganisms in major food fermentation.
- The students will able to understand the biochemical activities and conversions that takes place during fermentations and their impact on quality and safety.
- They are able to carry out food fermentation processes and monitor their progress by measurements and analyses
- They are able to carry out calculation of microbial growth and transfer processes during food fermentations.
- They are able to apply the knowledge and to get a detailed insight into the industrial processes carrying out in the food and dairy sector as well as how to transfer a small scale laboratory process to a large scale industrial process.

PAPER –II Applied Immunology and Immunodiagonostics

- Students will be able to explain the role of immune cells and their mechanism in body defense mechanism.

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Program Specific Outcome

- The students will be able to apply the knowledge of immune associated mechanisms in medical biotechnology research.
- The student will be able to explain that how principles of immunology have been applied to development of new drugs, vaccines and immunological techniques for industrial uses.
- The students will be able to demonstrate the association of immune system with cancer, autoimmune disorders and transplantation
- The students will be able to evaluate the relevance of currently available immunological techniques capable of being applied in modern medical sciences.

PAPER –III Principles of Drug Designing

- This course provides knowledge of the basics of microbiology, principles of antimicrobial use and the use of synthetic chemistry to alter the properties of drugs.
- The course will focus on chemistry and in particular how the chemical structure of a drug relates to its biological activity. Structure activity relationships of drug families will include the discovery development and design of antibiotics.
- Student will be able to understand the pharmacogenomics and bioinformatics included in relation to the development of new drug development. Key concepts in globalization and cultural aspects of pharmacy are integrated into this course in the areas of traditional medicine and complementary and alternative medicines.
- The students will be able to understand the basic knowledge in pharmaceuticals to look at chemical kinetics and the stability of pharmaceuticals
- The course follows the evolution of drugs through time covering the principles of drug discovery in the areas of pharmacognosy and natural products: synthetic medicinal chemistry and the development of medicinal substances the development of modern and innovative therapeutic substances including biopharmaceuticals and future trends in drug discovery.

One month Training

Or

Four month Dissertation

Course Outcomes

- M.Sc Dissertation is designed in a way to teach and train the students with the practical knowledge in the different areas of Biotechnology in order to become efficient researchers to start their carrier in research through Ph.D and R & D Programmes.
- Students would train in the research areas selected from different fields of biotechnology like animal biotechnology, microbiology, environment biotechnology ,genetic engineering, plant biotechnology, parasitology, virology, nanotechnology.

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Program Specific Outcome
