



Government of Maharashtra

ISMAIL YUSUF COLLEGE OF ARTS, SCIENCE & COMMERCE

(Affiliated to University of Mumbai)

Jogeshwari Station Road, Jogeshwari - East, Mumbai - 400 060

Email: principaliyc@rediffmail.com

Website: www.ismailyusufcollege.in

2.6 Student Performance and Learning Outcomes



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2.6.1 Programme Outcomes (POs) and Course Outcomes (COs) for all Programmes offered by the institution are stated and displayed on website



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PROGRAMME OUTCOMES

The College is affiliated to the University of Mumbai. Thus, the college follows the guidelines and syllabus prescribed by the Affiliated University.

PROGRAMME: BACHELOR OF COMMERCE

Programme Outcomes

On completion of the B. Com degree the graduates will be able to:

- PO 1:** Students develop a thorough understanding of the fundamentals in Commerce and Finance
- PO 2:** Capability of the students to make decisions at personal & professional level will increase.
- PO 3:** Students will be equipped to join the industry or setup own entities, peruse further professional and other courses.
- PO 4:** Students will be equipped to face upcoming challenges in the industry and business as the specializations offered expose them to practical aspects
- PO 5:** Students will be responsible citizens as various academic and co-curricular courses imbibe sensitivity, moral and ethical values among them

Prof. (Dr.) A.S. Luhar
Co-Ordinator/HOD



Prof. (Dr.) Vijay Narkhede
Principal



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Course Outcomes

FYBCOM

Course Name	Course Outcomes
Accountancy & Financial Management - I	SEM I
	CO1: Helps to gain knowledge of various accounting concepts and policies.
	CO2: Students get to know the working knowledge of Accounting Standards issued by the ICAI.
	CO3: Calculate closing stock and prepare stock ledger as per perpetual inventory system.
	CO4: Prepare Trading, Profit & Loss records for a Manufacturing organization.
	SEM II
	CO1: Understands the techniques of consignment, Branch and Accounting methods.
	CO2: Acquaints students with knowledge regarding accounting procedures related fire Ins. claims and the process of claims.
	CO3: Understand the concept of fire insurance claim and ascertain the claim on the basis of fire insurance policy.
Commerce	SEM I
	CO1: Transmits understanding of basic concepts of business along with setting business unit and logical provisions for initiating business.

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	<p>CO2: Students gets knowledge regarding entrepreneurship and exposes them to problems and prospects of women entrepreneurs.</p> <p>CO3: Helps to understand new trend in business.</p> <p style="text-align: center;">SEM II</p> <p>CO1: Makes Students understand the fundamentals of services, and plans regarding various strategies to increase service and trends in services.</p> <p>CO2: Imparts knowledge related to retail changes in India with global perspective and converses on problems and prospects in retailing.</p> <p>CO3: Furnishes details regarding BPO, KPO and various e-commerce activities focusing on logistics</p>
Environmental Studies	<p style="text-align: center;">SEM I</p> <p>CO1: Makes students learn the role of environment and ecosystem.</p> <p>CO2: Creates awareness about the relationship between population & environment.</p> <p>CO3: Read, recall and fill in thematic world maps.</p> <p style="text-align: center;">SEM II</p> <p>CO1: Makes students aware about waste management.</p> <p>CO2: Exposes students to the impact of Industrial development on Agriculture.</p>

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	<p>CO3: Understand various Environmental Movement and applications of Geospatial Technology in Environmental Management.</p> <p>CO4: Read, recall and fill in the Mumbai & Konkan region map</p>
Economics	<p style="text-align: center;">SEM I</p> <p>CO1: Gain a better grasp of economic concepts, theories, and how they apply to the real world.</p> <p>CO2: Students learn basic concepts of micro economics and its applications to business situations.</p> <p>CO3: Guides the students towards understanding the real world market situations & business applications.</p> <p style="text-align: center;">SEM II</p> <p>CO1: Enables understanding of the relationship between different market structures and how they compare and contrast with one another.</p> <p>CO2: Enables understanding of how a firm sets price for its products by using different methods.</p> <p>CO3: Enhance critical thinking and analytical skills by evaluating data and policies.</p>
Foundation Course	<p style="text-align: center;">SEM I</p> <p>CO1: Creates understanding of multi-lingual, multi- religious, multi-cultural nature & political nature of Indian society.</p>

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	<p>CO2: Creates understanding of the Indian Constitution & the disparity in Indian society</p> <p>CO3: Identify the inter-group conflicts, relate the consequences and use the measures to solve such conflicts</p> <p style="text-align: center;">SEM II</p> <p>CO1: Makes students understand different evolution of Human Rights.</p> <p>CO2: Creates the basic understanding about the issues related to economic changes and its impact on different fields.</p> <p>CO3: Locate the causes of stress and conflict and outline the measures for stress management.</p> <p>CO4: Analysed the importance of environment and sustainable Development.</p>
Business Communication	<p style="text-align: center;">SEM I</p> <p>CO1: Corporate communication helps future managers and employees in performing managerial functions smoothly.</p> <p>CO2: Creates awareness, imparts knowledge, shapes attitudes and overall improves overall interaction between people.</p> <p style="text-align: center;">SEM II</p> <p>CO1: Equips the students to learn the principles of effective communication so that they can communicate with confidence in the corporate world.</p>

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	<p>CO2: Imparts the techniques of group discussion, the guidelines of preparing for the interview along with the knowledge of drafting different formats of letters like inquiry, sales, marketing, claim, adjustments, appointment and termination.</p>
Mathematics and Statistics	<p style="text-align: center;">SEM I</p> <p>CO1: Introduces mathematics & statistics to undergraduate students of commerce so that they can use them in the field of commerce & industries to solve the real life problems.</p> <p>CO2: Understand basic concepts of mutual funds and shares and calculate rate of return on investments, number of shares and its face value along with brokerage.</p> <p>CO3: Facilitates decision making with the help of decision making techniques</p> <p style="text-align: center;">SEM II</p> <p>CO1: Prepares students to develop skills to solve financial problems.</p> <p>CO2: Understand concepts of simple interest, compound interest and annuity and solve problems relating to the same.</p> <p>CO3: Creates awareness of applications of Derivatives to concepts in Economics.</p>

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SYBCOM

Course Name	Course Outcomes
Accountancy & Financial Management - III	<p>SEM-III</p> <p>CO1: Updates students with working knowledge of accounting standards issued by ICAI.</p> <p>CO2: Imparts conceptual knowledge of various accounting concepts, conventions and policies.</p> <p>CO3: Understand and prepare the statements of final accounts of partnership firms along with admission of a new partner and retirement & death of an existing partner.</p> <p>SEM-IV</p> <p>CO1: Imparts conceptual knowledge of various accounting concepts, conventions and policies.</p> <p>CO2: Inculcates knowledge about accounting methods, practices and techniques particularly pertaining to joint stock companies.</p> <p>CO3: Understanding debentures and its types along with preparation of journal entries related to redemption of debentures.</p>
Introduction to Management Accounting & Auditing	<p>SEM-III</p> <p>CO1: Explain the concepts, methods and techniques of management accounting.</p> <p>CO2: Enables them to know the concept of capital budgeting with reference to time value of money.</p> <p>CO3: Calculate Ratios related to financial statements and also requirement of working capital.</p>

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Auditing	<p>CO4: Enables understanding of the functions, advantages, limitations of management accounting.</p> <p style="text-align: center;">SEM-IV</p> <p>CO1: Imparts knowledge of audit planning, procedures and documentation and assurance standards.</p> <p>CO2: Instills elementary understanding of internal control and internal audit.</p> <p>CO3: Understand and describe Audit Planning, Procedures & Documentation.</p>
Commerce	<p style="text-align: center;">SEM-III</p> <p>CO1: Creates understanding of the concept of management along with evolution of management.</p> <p>CO2: students become aware about universal application of functions of Management.</p> <p>CO2: Analyse and understand the concept of M.B.O and M.I.S</p> <p style="text-align: center;">SEM-IV</p> <p>CO1: Provides basic knowledge of production management, inventory management, and quality management.</p> <p>CO2: Updates students with recent trends in finance.</p> <p>CO3: Learn and understand IPO, Dematerialisation process</p>
Business Economics	<p style="text-align: center;">SEM-III</p> <p>CO1: Explain various macroeconomic concepts.</p>

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	<p>CO2: Creates awareness among students about various economic conditions of macro - economics such as inflation, unemployment etc.</p> <p>CO3: Examines the economy as a whole and inspires a consistent way of thinking about key macroeconomic phenomena.</p> <p style="text-align: center;">SEM-IV</p> <p>CO1: Enables students to understand the primary functions of government like revenue, expenditure, debt and helps to analyze budget.</p> <p>CO2: Provides students with the tools to understand the</p> <p>CO3: underlying concepts and practical tradeoffs entailed in public finance policy alternatives.</p>
Advertising	<p style="text-align: center;">SEM-III</p> <p>CO1: Updates students about current trends in advertising.</p> <p>CO2: Acquaints students about various tools of IMC and careers in advertising.</p> <p style="text-align: center;">SEM-IV</p> <p>CO1: Creates understanding of the construction of effective advertisement.</p> <p>CO2: Highlights the role of advertising for the success of brands and its importance within the marketing function of the company.</p>
Business Law	<p style="text-align: center;">SEM-III</p> <p>CO1: Provides a brief idea about the frame work of Indian business law.</p>

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	<p>CO2: Familiarizes the students with case law studies related to business law.</p> <p>CO3: Understand and explain the basic concepts of The Indian Contract Act along with case laws.</p> <p style="text-align: center;">SEM-IV</p> <p>CO1: Acquaints students with laws related to Indian Companies' Act 2013, IPR, Partnership Act 2008, and Consumer Protection Act.</p> <p>CO2: Provides a brief idea about the frame work of Indian business laws.</p> <p>CO3: Describe the various provisions under The Partnership and The Limited Liability Partnership Act.</p>
Foundation Course	<p style="text-align: center;">SEM-III</p> <p>CO1: Gives basic understanding on issues related to human rights violations, ecology and urban-rural disparities in access to health and education.</p> <p>CO2: Creates the importance of developing scientific temper towards technology and its use in everyday life.</p> <p>CO3: Understanding Disaster and impact on human life.</p> <p style="text-align: center;">SEM-IV</p> <p>CO1: Understanding Social and Economic Issues and discuss contemporary social and economic issues, including inequality, poverty, and environmental concerns.</p>

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	<p>CO2: Understand the duties and responsibilities of citizens in promoting social justice and equality.</p> <p>CO3: Develop teamwork, leadership, and interpersonal skills through group activities and projects.</p>
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TYBCOM

Financial Accounting	<p>SEM-V</p> <p>CO1: Creates awareness about company accounts with provision of various Company's Act.</p> <p>CO2: Provides knowledge about the buyback of shares, investment account with their accounting treatment.</p> <p>CO3: Understanding of Accounting of Investments based on fixed and flexible income bearing securities.</p> <p>SEM-IV</p> <p>CO1: Imparts knowledge about accounting treatment of amalgamation of companies, Foreign currency transactions.</p> <p>CO2: Helps students in gaining practical knowledge of accountancy</p> <p>CO3: Explaining and understanding of concept in relation to purchase and sale of goods, services and assets and loan and credit of Foreign Currency Transactions and its accounting.</p>
Cost Accounting	<p>SEM-V</p> <p>CO1: Impacts the knowledge of various costs on the basis of element behavior and functions.</p> <p>CO2: Helps in ascertaining the cost of material and labour</p>

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	<p>CO3: Differentiate between Financial Accounting and Cost Accounting, and explain how to reconcile the profits derived from each.</p> <p>SEM-VI</p> <p>CO1: Creates understanding on the various techniques of costing like Contract, Process, Standard and Marginal.</p> <p>CO2: Imparts knowledge on various emerging concept of cost accounting like cycling costing, Bench Marking etc.</p> <p>CO3: Differentiate between integrated and non-integrated systems of accounting, distinguish between nominal ledgers and other control accounts, and describe the preparation of Cost Control Accounts.</p>
Commerce	<p>SEM-V</p> <p>CO1: Intercepts and familiarizes students with different and basic concepts of marketing mix, MIS and Marketing Research.</p> <p>CO2: Updates students about marketing challenges faced by marketing managers in 21st century.</p> <p>CO3: Makes students aware about competitive strategies for market leader, and various aspects of market.</p>

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	<p style="text-align: center;">SEM-VI</p> <p>CO1: Refurbishes students with fundamental aspects of HRM, the role, functions and process of HRM.</p> <p>CO2: Explains students the applications of HRIS and different theories of leadership and motivation.</p> <p>CO3: Updates students with recent trends in HRM and make students aware about challenges faced by HR managers.</p>
<p style="text-align: center;">Business Economics</p>	<p style="text-align: center;">SEM-V</p> <p>CO1: Assess the performance of commercial banks in agricultural credit.</p> <p>CO2: Identifies and explains economic concepts and theories related to the behavior of economic agents, markets, industry legal institutions, social norms and government policies.</p> <p>CO3: Explain about the Structure, Growth and Reforms in financial markets.</p> <p style="text-align: center;">SEM-VI</p> <p>CO1: Creates an understanding of the nature of International Trade and the nature of International organization such as the United Nations, the International Bank for Reconstruction and Development (World Bank), International Monetary Fund, World Trade Organization and their effects on business.</p> <p>CO2: Creates understanding of the rate of exchange and how the rate of exchange is determined.</p> <p>CO3: Analyze the international trade policies and trade blocks.</p>

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Export Marketing (Elective)	<p>SEM-V</p> <p>CO1: Furnishes students with basic concepts and global framework for export marketing.</p> <p>CO2: Instructs students about basic financial incentives and updates them with current trends in export marketing</p> <p>SEM-VI</p> <p>CO1: Understanding the concept of Product Planning and Pricing Decisions.</p> <p>CO2: Provides information regarding product planning and pricing decisions for export marketing.</p>
Direct Taxation (Elective)	<p>SEM-V</p> <p>CO1: Creates an understanding of the basic concept of Direct Tax and basic definition related to Direct Tax and assessee.</p> <p>CO2: Provides students an idea of the process and techniques of calculation of taxability and tax liability.</p> <p>SEM-VI</p> <p>CO1: Understand the concept of Goods and Service Tax along with the various definitions stated under section 2 of the CGST Act, 2017.</p> <p>CO1: Enables students to acquire the knowledge of Goods and Services.</p>

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	CO2: Explores the process of Registration, place and value of supply and computation of tax liability.
Computer Systems and Applications (Elective)	<p style="text-align: center;">SEM-V</p> <p>CO1: Provides basic understanding of how communication occurs in computing environment with knowledge of Internet and Network.</p> <p>CO2: Explain and Understand the fundamentals of data communication, networking and Internet.</p> <p>CO3: Apply data analysis techniques such as sorting, creating subtotals, using Pivot tables, and performing various font formatting and cell alignment tasks</p> <p style="text-align: center;">SEM-VI</p> <p>CO1: Familiarizes students of E-Commerce infrastructure and the use of it in today's Digital age.</p> <p>CO2: Gives knowledge of programming platform to students by use of VB scripting language</p> <p>CO3: Enhances the use of Excel office productivity tools.</p>

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Programme Outcomes:

PO1 – Intellectual breadth

- Ability to comprehend knowledge and understand subject.

PO2 – Critical thinking, Problem solving & Analytical skills

- Ability to make reasoned judgements that are logical & well thought out.
- Ability to identify problems, brainstorm & analyse answers & implement the best solutions.

PO3 – Decision making

- Ability to make rational decisions.

PO4 – Skill Development

- Acquire skills to transform into a competent human resource.

PO5 – Research Aptitude

- Ability to search for, locate, extract, organise, evaluate & present information that is relevant to a particular topic.

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Programme Specific Outcomes:

Department of BAF

PSO1 – It enables students to understand the fundamentals of accounting, finance, costing, taxation, financial management, auditing etc.

PSO2 – To acquaint students with Business law & corporate law and Business Economics

PSO3 – It enhances students Business Communication and IT skills

PSO4 – To provide an integrated perspective of global accounting system along with exposure to Indian Accounting Standards in detail

PSO5 - To pursue higher education and research in the field of Commerce, Accounting, Finance, Management etc.

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Course Outcomes:

Department	Semester	Course Name
B.Com in Accounting & Finance	I	Financial Accounting- I

CO No.	Course Outcomes	Skill	Bloom's Level	PO
CO1	Ability to apply basic concepts of accounting, capital and revenue expenditure, departmental accounts, inventory valuation, hire purchase, manufacturing account	Intellectual	L1/L2	PO1
CO2	Ability to solves problems based on Departmental accounts, hire purchase and manufacturing A/c, capital and revenue expenditure	Problem solving	L3	PO2
CO3	Ability to communicate outcome of applying Accounting Standards	Application	L3	PO2
CO4	Ability to Analyse trial balance and prepare Departmental accounts, hire purchase and manufacturing A/c, capital and revenue expenditure	Analytical	L4	PO2
CO5	Ability to determine recognition of revenue as per AS-9, Valuation of inventory as per AS-2 and value of closing stock as per weighted average cost of capital	Decision making	L5	PO3

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Department	Semester	Course Name
B.Com in Accounting & Finance	I	Cost Accounting-I

CO No.	Course Outcomes	Skill	Bloom's Level	PO
CO1	Ability to define, understand & explain cost, costing, cost accounting, material cost, labour cost and overheads	Intellectual	L1/L2	PO1
CO2	Ability to prepare stores ledger and calculate stock levels, EOQ and labour cost	Application & Problem solving	L3	PO2
CO3	Ability to classify cost and overheads on different bases, Apportionment and Absorption of overheads	Analytical	L4	PO2
CO4	Ability to determine Overtime / Idle Time / Incentive Schemes	Evaluation	L5	PO4

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Department	Semester	Course Name
B.Com in Accounting & Finance	I	Financial Management

CO No.	Course Outcomes	Skill	Bloom's Level	PO
CO1	Ability to define basic concepts of Financial Management	Intellectual	L1/L2	PO1
CO2	Ability to calculate leverages, cost of capital and type of financing	Problem solving	L3	PO2
CO3	Ability to analyse selection of project using Net Present Value and Impact of leverages on revenue and EBIT	Analytical	L4	PO2
CO4	Ability to evaluate leverage, time value of money and optimum debt equity mix using weighted average cost of capital	Decision making	L5	PO3

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Department	Semester	Course Name
B.Com in Accounting & Finance	I	BUSINESS COMMUNICATION-I

CO No.	Course Outcomes	Skill	Bloom's Level	PO
CO1	Ability to learn and discuss about concept of communication, problems in communication & business correspondence.	Intellectual	L1/L2	PO1
CO2	Ability to examine various oral and written communication skills needed for effective communication.	Problem solving	L3	PO2
CO3	Ability to analyse about the difficulties of communication in dynamic business environment.	Analytical	L4	PO2
CO4	Ability to demonstrate the effective use of communication technology.	Decision making	L5	PO3

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Course Outcomes:

Department	Semester	Course Name
B.Com in Accounting & Finance	I	Business Economics – I

CO No.	Course Outcomes	Skill	Bloom's Level	PO
CO1	Ability to define, understand & explain the concepts of Demand, Supply, Market structure, economics theories	Intellectual	L1/L2	PO1
CO2	Ability to apply the demand, supply, total cost, fixed cost, variable cost and marginal cost	Critical Thinking	L3	PO2
CO3	Ability to analyse the relationship demand and supply, cost and production function	Analytical	L4	PO2
CO4	Ability to evaluate the pricing models, demand forecasting and estimation	Decision making	L5	PO3

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Course Outcomes:

Department	Semester	Course Name
B.Com in Accounting & Finance	I	Business Environment

CO No.	Course Outcomes	Skill	Bloom's Level	PO
CO1	Ability to define, understand & explain Business Objectives, Dynamics of Business, Ethics, Ethical Dilemmas, Corporate Culture and Ethical Climate, MNCs and TNCs, WTO.	Intellectual	L1/L2	PO1
CO2	Case studies relating to Balance of Trade, FDI Investment Flows and its Implication for Indian Industries.	Problem solving	L3	PO2
CO3	Ability to analyse Environmental Analysis: PESTEL Analysis, SWOT Analysis, Balance of Trade, FDI Investment Flows and its Implication for Indian Industries	Analytical	L4	PO2
CO4	Ability to evaluate Benefits of Social Audit, Audit & Entrepreneurship and Economic Development, Micro, Small and Medium Enterprises Development (MSMED) Act, 2006, Entrepreneurship as a Career Option.	Decision making	L5	PO3

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Course Outcomes:

Department	Semester	Course Name
B.Com in Accounting & Finance	I	Foundation Course – I

CO No.	Course Outcomes	Skill	Bloom's Level	PO
CO1	Ability to define, understand & explain the basic concepts of Diverse Indian Society.	Intellectual	L1/L2	PO1
CO2	Ability to analyse the inequalities and disparities in Indian Society.	Analytical	L4	PO2
CO3	Ability to apply the foundational knowledge in solving personal and social problems.	Problem Solving	L3	PO2
CO4	Ability to evaluate Political situation and is capable to become a responsible citizen.	Decision making	L5	PO3

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Course Outcomes:

Department	Semester	Course Name
B.Com in Accounting & Finance	II	Financial Accounting-II

CO No.	Course Outcomes	Skill	Bloom's Level	PO
CO1	Ability to define, understand & explain Accounting for Consignment Transactions, Meaning of Branch account	Intellectual	L1/L2	PO1
CO2	Ability to prepare Final Accounts of Proprietary Trading Concern	Problem solving	L3	PO2
CO3	Ability to classify branch accounts	Analytical	L4	PO2
CO4	Ability to determine Computation of Loss of Stock by Fire	Evaluation & Decision making	L5	PO3/PO4

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Course Outcomes:

Department	Semester	Course Name
B.Com in Accounting & Finance	II	Auditing

CO No.	Course Outcomes	Skill	Bloom's Level	PO
CO1	Ability to define, understand & explain Audit, objectives, limitation & Qualities of an auditor.	Intellectual	L1/L2	PO1
CO2	Ability to apply Different audit techniques such as Test check, Audit sampling & Internal control.	Problem solving	L3	PO2
CO3	Ability to analyse different types of audit, errors & frauds, basic principles of audit, advantages & disadvantages of different types of audit, and concepts like going concern & secret reserve etc.	Analytical	L4	PO2
CO4	Ability to evaluate different types of expenses/incomes & verify assets/liabilities.	Decision making	L5	PO3
CO5	Ability to create/plan/schedule audit program and, maintain working papers & audit note book.	Skill Development	L6	PO4

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Course Outcomes:

Department	Semester	Course Name
B.Com in Accounting & Finance	II	Business Mathematics

CO No.	Course Outcomes	Skill	Bloom's Level	PO
CO1	Ability to define and explain basic concepts of ratio and percentage, shares and mutual funds and interest	Intellectual	L1/L2	PO1
CO2	Ability to compute leverages ratio and proportion, profit and loss, interest and annuity and simple problems on shares and mutual funds	Problem solving	L3	PO2
CO3	Ability to analyse profit or loss on sale, interest, mutual funds and shares, ratio and proportion	Analytical	L4	PO2
CO4	Ability to determine simple and compound interest, ratio and proportion, profit or loss on sale of goods, shares and mutual funds and brokerage on the same	Decision making	L5	PO3

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Course Outcomes:

Department	Semester	Course Name
B.Com in Accounting & Finance	II	BUSINESS COMMUNICATION-II

CO No.	Course Outcomes	Skill	Bloom's Level	PO
CO1	Ability to explain about presentation skills, group communication, business correspondence & language and writing skills.	Intellectual	L1/L2	PO1
CO2	Ability to examine principles of effective presentation, need and importance of meetings, trade letters.	Problem solving	L3	PO2
CO3	Ability to apply various skills used in writing business correspondence and reports	Skill Development	L4	PO3
CO4	Ability to develop PPT and conduct in meeting & conference.	Skill Development	L5	PO4

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Course Outcomes:

Department	Semester	Course Name
B.Com in Accounting & Finance	II	Business Law

CO No.	Course Outcomes	Skill	Bloom's Level	PO
CO1	Ability to define, understand & explain: Law of Contract 1872 Sale of Goods Act 1930 Negotiable Instrument Act 1881 Consumer Protection Act 1986	Intellectual	L1/L2	PO1
CO2	Case Studies	Problem solving	L3	PO2
CO3	Ability to analyse the special contracts and Analytical Negotiable Instruments Act.	Skill Development	L4	PO4
CO4	Ability to conclude and recommend about how decision making law can be used in current business environment.	Decision making	L5	PO4

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Course Outcomes:

Department	Semester	Course Name
B.Com in Accounting & Finance	II	IFS

CO No.	Course Outcomes	Skill	Bloom's Level	PO
CO1	Ability to define, understand & explain Financial services, factoring & forfaiting, Bill Discounting, venture capital, Housing finance, stock broking, leasing, hire purchase & credit rating.	Intellectual	L1/L2	PO1
CO2	Ability to solve Problems of Hire Purchase, Case for and against Consumer finance.	Problem solving	L3	PO2
CO3	Ability to analyse Growth of Financial Services in India, Problems in Financial Services Sector, Bill Market Schemes, Factoring V/s Bill Discounting in Receivable Management, New Guidelines on Securitization, Growth Factors, Housing Finance Institutions in India, National Housing Bank (NHB)	Skill Development	L4	PO4
CO4	Ability to evaluate Types of Plastic Cards- Performance of Credit Cards and Debit Cards, Benefits of Credit Cards, Dangers of Debit Cards, Prevention of Frauds And Misuse, Consumer Protection.	Skill Development	L5	PO4

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Course Outcomes:

Department	Semester	Course Name
B.Com in Accounting & Finance	II	Foundation Course- II

CO No.	Course Outcomes	Skill	Bloom's Level	PO
CO1	Ability to understand, explain the concept of Human Rights and Ecological Issues.	Intellectual	L1/L2	PO1
CO2	Ability to examine Stress and conflict	Critical thinking	L3	PO2
CO3	Ability to apply the knowledge to resolve stress and conflicts	Problem Solving	L4	PO2
CO4	Ability to evaluate the changing trends in Indian Economy after globalisation	Skill Development	L5	PO4

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Course Outcomes:

Department	Semester	Course Name
B.Com in Accounting & Finance	III	Financial Accounting - III

CO No.	Course Outcomes	Skill	Bloom's Level	PO
CO1	Ability to define, understand & explain the concepts of partnership final accounts, piecemeal distribution of cash, amalgamation of firms	Intellectual	L1/L2	PO1
CO2	Ability to prepare the statement of piecemeal distribution of cash, Balance sheet of new firm after amalgamation & Conversion of firm into a Ltd. company, computation & treatment of exchange rate differences of transactions in foreign currency.	Critical Thinking	L3	PO2
CO3	Ability to complete the accounting procedure for amalgamation of partnership firms & conversion of firm into a Ltd. company.	Analytical	L4	PO2
CO4	Ability to evaluate the effect on final accounts when a partner is admitted during the year or retires/ dies during the year	Decision making	L5	PO3

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Course Outcomes:

Department	Semester	Course Name
B.Com in Accounting & Finance	III	Cost Accounting- II

CO No.	Course Outcomes	Skill	Bloom's Level	PO
CO1	Ability to define, understand & explain Classification of costs, Contract accounts, Process accounts	Intellectual	L1/L2	PO1
CO2	Ability to prepare contract account, Process account and cost sheet	Problem solving	L3	PO2
CO3	Ability to analyse the differences on profit of financial and cost accounts and reconcile the same	Analytical	L4	PO2
CO4	Ability to estimate the cost sheet	Skill Development	L5	PO4

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Course Outcomes:

Department	Semester	Course Name
B.Com in Accounting & Finance	III	Direct Tax

CO No.	Course Outcomes	Skill	Bloom's Level	PO
CO1	Ability to describe and understand fundamental provisions a of Income Tax Act	Cognitive	L1/L2	PO1
CO2	Ability to solve sums based on all the heads of income and applying deduction,	Problem solving	L3	PO2
CO3	Ability to analyse the Residential status and Scope of Income and taxable income from all 5 heads	Analytical	L4	PO2
CO4	Ability to determine Gross Total Income & Net taxable Income, Residential Status, Income under 5 heads of income and Scope of Income	Skill Development	L5	PO4

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Course Outcomes:

Department	Semester	Course Name
B.Com Accounting & Finance	Semester III	Macroeconomics

CO No.	Course Outcomes	Skill	Bloom's Level	PO
CO1	Ability to define, Recognise, Explain, Distinguish Various concepts of Macroeconomics, and Post Keynesian economics, Public Finance, External Sector.	Intellectual	L1/L2	PO1/ PO2
CO2	Ability to demonstrate, Construct, Categorise about working of external sector and Balance of Payment	Analytical	L3	PO2
CO3	Ability to analyse, develop analytical skills about inflation and its effect on economy, Burden of public debt on economy, Various concept of Money supply.	Critical /Analytical	L4	PO2
CO4	Ability to evaluate, recommend economic policy, and measures to control inflation, fiscal appropriate fiscal and monetary policy.	Decision making	L5	PO3

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Course Outcomes:

Department	Semester	Course Name
B.Com in Accounting & Finance	III	Business Law

CO No.	Course Outcomes	Skill	Bloom's Level	PO
CO1	Ability to define, understand & explain: Indian Partnership Act, 1932 Limited Liability Partnership Act, 2008 Factories Act, 1948.	Intellectual	L1/L2	PO1
CO3	Ability to analyse Registration and effects of non-registration of Partnership, Rights and Duties of Partners, Authority and Liability of partners, Admission, Retirement and Expulsion of Partner and Dissolution of Partnership.	Analytical	L4	PO2
CO4	Ability to evaluate provisions pertaining to i. Health- Section 11 to Section 20 ii. Safety- Section 21 to Section 41 iii. Welfare- Section 42 to Section 49	Intellectual	L5	PO1
CO5	Ability to create Winding Up and Dissolution and conversion of LLP.	Skill Development	L6	PO4

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Course Outcomes:

Department	Semester	Course Name
B.Com in Accounting & Finance	III	Information Technology in Accounting & Finance- I

CO No.	Course Outcomes	Skill	Bloom's Level	PO
CO1	Ability to understand and explain different parts of computer.	Intellectual	L1/L2	PO1
CO2	Ability to apply appropriate formulas, different formatting styles.	Problem solving	L3	PO2
CO3	Ability to analyse data using different charts and slides	Analytical	L4	PO2
CO4	Ability to create Project Report, New email ID	Skill Development	L6	PO4

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Course Outcomes:

Department	Semester	Course Name
B.Com in Accounting & Finance	III	Commerce (Financial Market Operations) - II

CO No.	Course Outcomes	Skill	Bloom's Level	PO
CO1	Ability to define, understand & explain Saving and Investment Money, Inflation and Interest, Banking and Non-Banking Financial Intermediaries, Financial Market and Capital Market, Financial Instruments, Consumer Finance, Credit Cards, Mutual Funds and Commercial Paper and Financial Instruments.	Intellectual	L1/L2	PO1
CO2	Ability to apply REPO, TBs, Equities, Bonds and Derivatives in various markets.	Problem solving	L3	PO2
CO3	Ability to analyse Structure of Financial Market in India, Role, Importance, Evolution in India, Primary Market System and Regulations in India, Secondary Market System, Managing of Public Equity / Debenture Issues Mobilizing Fixed Deposits, Arranging Inter-corporate Loans.	Analytical	L4	PO2
CO4	Ability to invest in Bond Market in India Debt Market in India and REPO, TBs, Equities, Bonds, Derivatives in different markets.	Decision making	L5	PO3


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Course Outcomes:

Department	Semester	Course Name
B.Com in Accounting & Finance	IV	Financial Accounting – IV

CO No.	Course Outcomes	Skill	Bloom's Level	PO
CO1	Ability to define, understand & explain the provisions of companies for redemption of preference shares, debentures & final accounts of companies, AS 11	Intellectual	L1/L2	PO1
CO2	Ability to calculate the minimum fresh issue to provide the fund for redemption, ascertain profit prior to incorporation.	Problem solving	L3	PO2
CO3	Ability to relate & comply the methods of redemption of debentures; by payment in lumpsum & by payment in instalments, methods of redemption of preference shares.	Analytical	L4	PO2
CO4	Ability to decide on the minimum DRR & investment to be created as per the provisions of companies act, basis for allocation of expenses/incomes in the preparation of profit & loss account, exchange rate for IFO & NIFO	Decision making	L5	PO3

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Course Outcomes:

Department	Semester	Course Name
B.Com in Accounting & Finance	IV	Management Accounting

CO No.	Course Outcomes	Skill	Bloom's Level	PO
CO1	Ability to understand the Meaning, Features, Scope, Importance, Functions & role of Management Accounting, meaning of financial Statement Analysis, concept of Working Capital Management	Conceptual	L1/L2	PO1
CO2	Ability to prepare Cash Flow Statement and advise management based on the comparative statement.	Problem solving	L3	PO2
CO3	Ability to analyse Vertical Forms of Balance Sheet and Profit and Loss Account suitable for analysis of Trend Analysis, Common Size Statement and also Ratio analysis	Analytical	L4	PO2
CO4	Ability to forecast Working Capital Requirement in case of Trading and Manufacturing Organization	Skill Development	L5	PO4

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Course Outcomes:

Department	Semester	Course Name
B.Com in Accounting & Finance	IV	Direct Tax

CO No.	Course Outcomes	Skill	Bloom's Level	PO
CO1	Ability to describe and understand provisions of clubbing of income, setoff and carry forward, TDS and Advance tax, interest u/s 234A, 234B and 234C, DTAA, tax planning and ethics in taxation	Intellectual	L1/L2	PO1
CO2	Ability to calculate net taxable and tax liability, relief under DTAA, TDS, Advance tax, set off & carry forward of losses and income of a partnership firm	Computation	L3	PO2
CO3	Ability to analyse tax liability of individual and HUF, TDS, Advance tax, losses that can be carry forwarded and interest, book profit and allowable remuneration to partners	Analytical	L4	PO2
CO4	Ability to determine interest liability u/s 234A, 234 and 234 C, relief under DTAA, and net tax liability of individual and HUF	Skill Development	L5	PO4

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Course Outcomes:

Department	Semester	Course Name
B.Com in Accounting & Finance	IV	Introduction to Management

CO No.	Course Outcomes	Skill	Bloom's Level	PO
CO1	Ability to define, understand & explain Management, Planning, Organising, Motivation, Staffing and Directing & Controlling.	Intellectual	L1/L2	PO1
CO2	Ability to apply Selection procedure of staffing, Essentials of a good control system, Centralisation and decentralisation, process of decision making, Process of organisation.	Problem solving	L3	PO2
CO3	Ability to evaluate Distinction between Recruitment and Selection, Employment tests and types of Interview, Administration vs Management, Recruitment and its sources, Selection procedure.	Decision Making	L5	PO3
CO4	Ability to analyse Principles of organisation, Sound Planning, Principles of Directing, steps in controlling, Departmentation and Delegation, Limitations of Planning,	Skill Development	L4	PO4

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Course Outcomes:

Department	Semester	Course Name
B.Com in Accounting & Finance	IV	IT in Accounting & Finance- II

CO No.	Course Outcomes	Skill	Bloom's Level	PO
CO1	Ability to define, understand & explain Business Process, Computerized accounting system, Concept of MIS Reports in Computer Environment, IT and Auditing.	Intellectual	L1/L2	PO1
CO2	Ability to operate Accounting software TALLY, able to develop Accounting Software, Guidelines for Developing MIS reports.	Problem solving	L3	PO2
CO3	Ability to analyse problems in MIS, Outputs of MIS, financial reports and other reports.	Analytical	L4	PO2
CO5	Ability to use modern digital tools effectively.	Digital Skills	L5	PO4

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Course Outcomes:

Department	Semester	Course Name
B.Com in Accounting & Finance	IV	Business Law

CO No.	Course Outcomes	Skill	Bloom's Level	PO
CO1	Ability to define, understand & memorize: Section 2 Clause (2) – Accounting Standard Clause (7) – Auditing Standard Clause (13) – Books of Accounts Clause (31) – Deposit Clause (41) – Financial Year Clause (42) – Foreign Company Clause (47) – Independent Director Clause (48) – Indian Depository Receipts Clause (62) – One Person Company Clause (85) – Small Company	Intellectual	L1/L2	PO1
CO2	Case studies relating to different sections.	Problem solving	L3	PO2
CO3	Ability to evaluate procedure of incorporation, different types of prospectus, ways of issuing capital.	Intellectual	L5	PO1
CO4	Ability to analyse private placement, share capital and Debentures sections.	Analytical	L4	PO2

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Course Outcomes:

Department	Semester	Course Name
B.Com in Accounting & Finance	IV	Research Methodology

CO No.	Course Outcomes	Skill	Bloom's Level	PO
CO1	Ability to define, understand & explain the concepts of research and research analysis	Intellectual	L1/L2	PO1
CO2	Ability to analyse data collection and processing	Critical Thinking	L4	PO2
CO3	Ability to examine data analysis and interpretations and research report	Analytical	L3	PO2
CO4	Ability to develop the knowledge of advanced statistical techniques for data collection	Research Aptitude	L5	PO5

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(Affiliated to University of Mumbai)

Jogeshwari Station Road, Jogeshwari - East, Mumbai - 400 060

Email: principaliyc@rediffmail.com

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Course Outcomes:

Department	Semester	Course Name
B.Com in Accounting & Finance	V	Financial Accounting V

CO No.	Course Outcomes	Skill	Bloom's Level	PO
CO1	Ability to define and interpret concepts of underwriting of shares and debenture, buy back of shares, Amalgamation and external reconstruction and Liquidation of Companies.	Cognitive	L1/L2	PO1
CO2	Ability to solve problems of Underwriting of shares and debentures, computation relating to maximum permissible buyback, internal reconstruction.	Problem solving	L3	PO2
CO3	Ability to prepare financial statement of companies after amalgamation, buyback of shares , balance sheet after internal reconstruction and liquidators statement	Analytical	L4	PO2
CO4	Ability to evaluate maximum permissible buyback, Underwriting of shares and debentures, amalgamation, internal reconstruction and liquidation of companies	Critical Thinking	L5	PO2

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Course Outcomes:

Department	Semester	Course Name
B.Com in Accounting & Finance	V	Financial Accounting VI

CO No.	Course Outcomes	Skill	Bloom's Level	PO
CO1	Ability to understand and apply theory of banking company, Insurance company, non-banking financial company, Valuation of shares and goodwill and accounting for Limited Liability Partnership	Intellectual	L1/L2	PO1
CO2	Ability to prepare Final Accounts of Banking and Insurance Company	Problem solving	L3	PO2
CO3	Ability to analyse, classify and prepare statement of Non – banking Financial Company and conversion of partnership business into Limited Liability Partnership	Analytical	L4	PO2
CO4	Ability to determine value of shares and goodwill	Skill Development	L5	PO4

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Course Outcomes:

Department	Semester	Course Name
B.Com in Accounting & Finance	V	Costing

CO No.	Course Outcomes	Skill	Bloom's Level	PO
CO1	Ability to define, understand & explain for Uniform costing, Operating costing Activity Based Costing.	Intellectual	L1/L2	PO1
CO2	Ability to solve practical problems based on 1)Uniform Costing and Inter-Firm Comparison 2) Integrated System and Non- integrated System of Accounts. 3) Operating Costing 4) Process Costing 5) ABC Analysis	Problem solving	L3	PO2
CO3	Ability to analyse cost drivers, Work in progress and Equivalent production (FIFO Method and Weighted Average Method).	Analytical	L4	PO2
CO4	Ability to evaluate cost structure of costing of hospitals, hotels, goods and passengers transport service	Skill Development	L5	PO4

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Course Outcomes:

Department	Semester	Course Name
B.Com in Accounting & Finance	V	Financial Management -II

CO No.	Course Outcomes	Skill	Bloom's Level	PO
CO1	Ability to define, understand & explain Strategic Financial Management, NPV, Benefit Cost Ratio, Internal Rate of Return, Modified Internal Rate of Return, Payback period, Discounted Payback Period and ARR	Intellectual	L1/L2	PO1
CO2	Ability to apply Capital Structure Theories, Dividend Decision Models, Calculations of NAV, Entry Load and Exit Load.	Problem solving	L3	PO2
CO3	Ability to analyse Capital Rationing Problems Risk Analysis in Capital Budgeting	Analytical	L4	PO2
CO4	Ability to evaluate Credit Management, measure Returns on Bond, estimate project cash flow	Skill Development	L5	PO4

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Course Outcomes:

Department	Semester	Course Name
B.Com in Accounting & Finance	V	Taxation – IV (Indirect Taxes – II)

CO No.	Course Outcomes	Skill	Bloom's Level	PO
CO1	Ability to define, understand & explain GST and its implications.	Intellectual	L1/L2	PO1
CO2	Ability to compute GST, Input Tax Credit, Tax Invoices, Credit and Debit notes.	Problem solving	L3	PO2
CO3	Ability to analyse different Concepts of Supply, Levy and Collection of GST.	Analytical	L4	PO2
CO4	Ability to evaluate whether liable for registration under GST.	Skill Development	L5	PO4

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Course Outcomes:

Department	Semester	Course Name
B.Com in Accounting & Finance	V	Management Applications

CO No.	Course Outcomes	Skill	Bloom's Level	PO
CO1	Ability to define, understand & explain the concepts of Marketing, Production, Human Resource and Financial Management	Intellectual	L1/L2	PO1
CO2	Ability to analyse the knowledge of 4P'S , Production process, functions of HRM and Financial management	Critical Thinking	L4	PO2
CO3	Ability to examine different techniques used in financial Investments and as well techniques for production management	Analytical	L3	PO2
CO4	Ability to develop the knowledge related to the practical aspects of Marketing , HR, Production, and Finance by means of case study discussion	Skill Development	L5	PO4


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Course Outcomes:

Department	Semester	Course Name
B.Com in Accounting & Finance	VI	Financial Accounting VII

CO No.	Course Outcomes	Skill	Bloom's Level	PO
CO1	Ability to remember and apply theory of IFRS and accounting standards, mutual funds, Accounts of Electricity Company and Final Accounts of Co-operative Society	Intellectual	L1/L2	PO1
CO2	Ability to solve problems based on Final Accounts of Electricity Company and Final Accounts of Co-operative Society	Problem solving	L3	PO2
CO3	Ability to analyse investment accounting in shares and debentures and accounting of Electricity Company and Financial Accounts of Co-operative Society	Analytical	L4	PO2
CO4	Ability to evaluate investment related to shares and debentures, accounting of mutual fund and accounts of Electricity company and accounts of Co-operative Society	Skill Development	L5	PO4

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Course Outcomes:

Department	Semester	Course Name
B.Com in Accounting & Finance	VI	Financial Management - III

CO No.	Course Outcomes	Skill	Bloom's Level	PO
CO1	Ability to define, understand & explain Conceptual Framework of Valuation, Approaches of Valuation, Basic modes of acquiring another firm, Corporate Restructuring and Takeovers, Types of Leases & Working Capital financing	Conceptual	L1/L2	PO1
CO2	Ability to solve Problems based on Factoring and calculations of yield of CP's and CD's, problems on Corporate Restructuring	Problem solving	L3	PO2
CO3	Ability to analyse Cash flows of a finance lease & hire purchase lease and Choice between Leasing and Hire Purchase	Analytical	L4	PO2
CO4	Ability to determine the Exchange Ratio – EPS, MPS, Book value and Combination of Measures and Evaluation of Mergers	Skill Development	L5	PO4

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Course Outcomes:

Department	Semester	Course Name
B.Com in Accounting & Finance	VI	Cost Accounting - IV

CO No.	Course Outcomes	Skill	Bloom's Level	PO
CO1	Ability to define, understand & explain Budgeting and Budgetary Control, Absorption Costing and Marginal Costing, Cost Volume and Profit, Managerial Decision Making, Standard Costing.	Intellectual	L1/L2	PO1
CO2	Ability to prepare flexible and functional budgets and calculate different types of variances and marginal costing.	Problem solving	L3	PO2
CO3	Ability to analyse Break even analysis meaning and graphic presentation, Margin of safety.	Analytical	L4	PO2
CO4	Ability to evaluate: Make or buy Sales mix decisions Exploring new markets Plant shut down decision	Skill Development	L5	PO4

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Course Outcomes:

Department	Semester	Course Name
B.Com in Accounting & Finance	VI	Indirect Taxes – III

CO No.	Course Outcomes	Skill	Bloom's Level	PO
CO1	Ability to define, understand & explain Returns, Accounts, Audit, Assessment and Records, Custom Act, Foreign Trade Policy.	Intellectual	L1/L2	PO1
CO2	Ability to compute Tax under GST, Returns, Duty drawback & Customs, valuation of exported & imported Goods.	Problem solving	L3	PO2
CO3	Ability to analyse Payment of Tax and Refunds, Classify imported and export Goods.	Analytical	L4	PO2
CO4	Ability to evaluate Export Promotion Capital Goods Scheme, EOU, STP, BTP and EHTP scheme.	Skill Development	L5	PO4

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Course Outcomes:

Department	Semester	Course Name
B.Com Accounting & Finance	V	Indian Economy

CO No.	Course Outcomes	Skill	Bloom's Level	PO
CO1	Ability to Define, Recall, Describe Various Sectors such as agricultural, Industrial, Service and External.	Intellectual	L1	PO1
CO2	Ability to explain, understand, summarise and compare the concepts of Demography of India, Various sectors, Technological Changes in Agriculture, Pattern of industrialization India, International organizations, Money Market.	Intellectual/ Analytical	L2	PO1/PO2
CO3	Ability to examine Problems of various sectors, Performance of Industrial sector, Role of FDI in development.	Analytical	L3	PO2
CO4	Ability to analyse, categorise, classify unemployment, Industrial Sector, Service Sector, functions of SEBI	Problem Solving/ Skill Development	L4	PO2/PO4
CO5	Ability to evaluate, recommend measures, forecast problems of agricultural sector, Industrial sector and other sectors.	Critical thinking / Skill Development	L5	PO2/PO4


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Course Outcomes:

Department	Semester	Course Name
B.Com in Accounting & Finance	VI	Project

CO No.	Course Outcomes	Skill	Bloom's Level	PO
CO1	Ability to define, understand & explain the concepts of research and interpret a particular aspect of a study	Intellectual	L1/L2	PO1
CO2	Ability to apply selected tools or techniques to arrive at findings and present graphs based on the information collected through different techniques	Problem solving	L3	PO2
CO3	Ability to analyse the collected data	Analytical	L4	PO2
CO4	Ability to recommend and suggest the findings of the work to validate the objectives and hypotheses.	Research Aptitude	L5	PO5

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PROGRAMME OUTCOMES

The College is affiliated to the University of Mumbai. Thus, the college follows the guidelines and syllabus prescribed by the Affiliated University.

PROGRAMME: BACHELOR OF MANAGEMENT STUDIES (BMS)

Programme Outcomes

PO1: Develop a strong foundation in business management concepts, including finance, marketing, human resources, operations, and strategic management.

PO2: Enhance the ability to analyze complex business situations, identify problems, and develop effective solutions through critical thinking and data-driven decision-making.

PO3: Improve oral and written communication skills, enabling students to convey ideas clearly, persuasively, and effectively in a business environment.

PO4: Encourage innovation and entrepreneurship by fostering the ability to identify business opportunities and take calculated risks in starting and managing new ventures.

PO5: Promote adaptability to changing business environments and the importance of continuous learning to stay updated with the latest trends and practices in management.

PO6: Prepare students to demonstrate professionalism, work ethics, and a commitment to personal and professional growth in their careers

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Course Outcomes

FYBMS SEM I

Course Name	Course Outcomes
Introduction to Final Accounts	<p>CO1: Familiarizes the students with the basic accounting principles and techniques of preparing and presenting the accounts.</p> <p>CO2: Provides the underlying framework and concepts of financial accounting in the context of how accounting fits into overall business environment of contemporary society.</p> <p>CO3: Prepare final accounts of a sole trader.</p>
Business Statistics	<p>CO1: Prepares students to learn to apply commonly used mathematics concepts and statistical methods in business context and how to interpret analyses performed by others.</p> <p>CO2: Equips the students with a broad based knowledge of mathematics with emphasis on business application.</p> <p>CO3: Understanding time series and index number</p>
Foundation of Human Skills	<p>CO1: The course has developed an understanding of human nature, personality and attitudes among students.</p> <p>CO2: Students understand the concept of group behaviour, organizational culture and theories of motivation</p>

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	<p>CO3: Learners comprehend the organizational processes and systems, reasons for conflicts and resolution.</p> <p>CO4: Students acquired the skill of creativity in problem solving</p>
Business Communication	<p>CO1: Provides exposure to business writing, preparation of reports and presentation.</p> <p>CO2: Develops basic communication skills in the students and enables them to communicate appropriately in the corporate and social world.</p>
Business Economics	<p>CO1: Enables complete grasp over the General Principles of Economics, Profit Principles, Pricing Practices and Demand and supply.</p> <p>CO2: Prepares students to apply the various theories and principles of Economics in Business and Commercial Environment.</p> <p>CO3: Understand how various companies price their products and services.</p>
Foundation course	<p>CO1: Sensitizes the students regarding numerous social issues, constitution and preamble.</p> <p>CO2: Creates basic awareness amongst the students regarding various social issues ranging from gender, religion, caste, social justice etc.</p> <p>CO3: Examine inequalities manifested due to caste system and inter-group conflicts</p>
Business law	<p>CO1: The course enhanced the student understanding of Indian constitution and the fundamental rights granted to the citizens.</p> <p>CO2: The course developed the understanding of various negotiable instruments and legal aspects associated with the same.</p>

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	CO3: The students gained knowledge of various objectives and concepts associated with Contract Act, 1872 & Sale of Goods Act, 1930, Negotiable Instrument Act, 1981 & Consumer Protection Act, 1986, Company Law 15 and Intellectual Property Rights(IPR).
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FYBMS SEM II

Course Name	Course Outcomes
Principles of Marketing	CO1: Students understand the basic concepts of marketing, its functions and orientation. CO2: Learners comprehend marketing environment and the various forces that affect business firms. CO3: Students understand the marketing mix, its needs and elements. Students have learnt the concepts of segmentation, targeting and positioning and the various trends in marketing
Business Mathematics	CO1: Prepares students to learn to apply commonly used mathematical concepts and statistical method in business contexts and how to interpret analyses performed by others. CO2: Introduces linear programming, graphical reading, statistical application of investment based on business application. CO3: Understand matrices and determinants
Business Environment	CO1: Students understand the basic concept of business environment and its components CO2: Students comprehend the factors of political and legal environment, social and cultural environment, technological environment and competitive environment

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	CO3: Learners gained knowledge of environment challenges faced by International Business and Investment opportunities for Indian Industry
Business Communication II	CO1: Provides exposure to business writing, presentation of reports and presentation, basic knowledge of Verbal Skills. CO2: Develops the students for interviews and Group discussions. CO3: Enhances and develops students for facing the corporate world
Industrial Law	CO1: Students understand laws related to Industrial Relations and Industrial Disputes CO2: Students have gained insights in the laws related to health, safety and welfare CO3: Learners acquired knowledge about the social legislations and Miscellaneous Provision Act, 1948 CO4: Students comprehend laws related to compensation management
Foundation Course	CO1: Creates understanding of the concepts of Liberalization, Privatization and Globalization, Growth of Information technology and Communication and Migration. CO2: Evolves the concept of Human Rights, Importance of Ecology. CO3: Provides knowledge about the causes of Stress and management of stress.

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Principles of Management	CO1: Prepares the students with better managerial abilities and development of managerial skills. CO3: Provides detail knowledge about the Management process and various functions of management.
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SYBMS SEM III

Course Name	Course Outcomes
Information Technology in Business Management – I	CO1: Learners develop basic understanding of concepts of Information Technology, its support and role in Management, for managers CO2: Students acquired practical hands on training in office automation through practical sessions. CO3: Learners understand basic concepts of Email, Internet and websites, domains and security therein. CO4: Students learn to recognize security aspects of IT in business, highlighting electronic transactions, advanced security features.
Foundation Course (Environmental Management)	CO1: Learners have developed basic understanding of the environmental concepts CO2: Students understand the ill effects of environmental degradation and measures to solve the same CO3: Students understand the concept of sustainability and role of business for achieving the same CO4: Learners have explored the innovations in business from an environmental perspective

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Business Planning & Entrepreneurial Management	CO1: Learners understand the concept of Entrepreneurship. CO2: The course has developed entrepreneurial skills among learners CO3: The students have acquired knowledge of management function of a company with special reference to SME sector.
Accounting for Managerial Decisions	CO1: The course has acquainted management learners with basic accounting fundamentals. CO2: The course has developed financial analysis skills among learners. CO3: Students understand the core concepts of business finance and its importance in managing a business
Strategic Management	CO1: Students understand the management policies and strategies in the corporate world. CO2: Students have learnt to critically examine the management of the entire enterprise from the top management view-point CO3: Students have developed conceptual skills in corporate level policy CO4: Learners acquired knowledge of strategy formulation as well as application in the corporate world.
Introduction to Cost Accounting (finance elective)	CO1: Learners gained knowledge of the basic concepts and the tools used in Cost Accounting CO2: The course enabled the learners to understand the principles and procedures of cost accounting

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	CO3: The students understand practical application procedure of cost accounting to different situations
Corporate Finance (Finance elective)	CO1: Students understand tools, techniques and processes of financial management in the area of financial decision making CO2: Students have learnt about the core concepts of corporate finance and its importance in managing a business CO3: The course has provided an understanding of nature, importance and structure of corporate finance
Consumer Behaviour (Marketing elective)	CO1: Students understand the consumer decision making process and its applications in marketing function of firms. CO2: Students are equipped with basic knowledge about issues and dimensions of Consumer Behaviour. CO3: The course has developed the skill of understanding and analyzing consumer information and using it to create consumer- oriented marketing strategies.
Advertising (Marketing Elective)	CO1: Students understand and examine the growing importance of advertising. CO2: Students have acquired the skill of constructing an effective advertisement campaign. CO3: Learners understand the role of advertising in contemporary scenario CO4: The course helped students explore the future careers in advertising

SYBMS SEM IV

Course Name	Course Outcomes
Information Technology in Business Management -	CO1: Students understand managerial decision-making and develop perceptive of major functional areas of MIS CO2: Learners acquired knowledge of Enterprise Resource Planning, Supply Chain Management, Customer Relationship Management, etc.

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II	CO3: This course provides understanding about emerging MIS technologies like ERP, CRM, SCM and trends in enterprise applications.
Foundation Course (Ethics & Governance) – IV	CO1: Students get to learn the applicability of ethics in functional areas like marketing, finance and human resource management CO2: Students understand emerging need and growing importance of good governance and CSR by organizations CO3: Students attained knowledge of ethical business practices, CSR and Corporate Governance practiced by various organizations.
Business Economics-II	CO1: Students have learnt the concept of macroeconomic data and theory. CO2: Learners are acquainted with concepts of money, Inflation and Monetary Policy. CO3: Students understand the constituents of Fiscal Policy CO4: Learners gain knowledge about open economy, theory and issues of International Trade
Business Research Methods	CO1: Students are introduced to the concept of business research methods, data collection and processing CO2: Learners understand the techniques of data analysis and Interpretation CO3: Students inculcated the analytical abilities and research skills. CO4: Students gained hands on experience in Business Research.
Production & Total Quality Management	CO1: Learners are acquainted with the basic management decisions with respect to production and quality management CO2: Learners understand the designing aspect of production systems CO3: Students apply what they have learnt theoretically.
Auditing	CO1: Learners get acquainted with the various concepts of auditing. CO2: Students understand and practice the various techniques of auditing while managing their finances

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Corporate Restructuring	CO1: Students develop a conceptual frame work of corporate restructuring CO2: Learners acquired knowledge relating to legal, accounting and practical implementation of corporate restructuring CO3: Students understand the complex facets of corporate restructuring process.
Integrated Marketing Communication	CO1: Learners gain knowledge about the nature, purpose and complex construction in the planning and execution of an effective Integrated Marketing Communication (IMC) program CO2: Students understand the various tools of IMC and the importance of coordinating them for an effective marketing communication program.
Event Marketing	CO1: Learners understand basic concepts of Event Marketing. CO2: Students gain knowledge about categories of Events. CO3: Students understand segmenting, targeting and positioning in the context of Event Marketing. CO4: Learners are familiarized with trends and challenges in Event Marketing

TYBMS SEM V

Course Name	Course Outcomes
Logistics and Supply Chain management	CO1: Learners have basic understanding of concepts of logistics and supply chain management CO2: Learners understand key activities performed by the logistics function. CO3: Students learn the nature of supply chain and its functions CO4: Students understand global trends in logistics and supply chain management

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Corporate Communication & Public Relations	<p>CO1: Learners acquire basic understanding of the concepts of corporate communication and public relations</p> <p>CO2: Students are familiarized with various elements of corporate communication and their roles in managing organizations</p> <p>CO3: Learners understand how various elements of corporate communication must be coordinated to communicate effectively</p> <p>CO4: Learners develop critical understanding of the different practices associated with corporate communication</p>
Investment Analysis & Portfolio Management	<p>CO1: The course acquaints learners with various concepts of finance.</p> <p>CO2: Students understand the terms which are often confronted while reading newspaper, magazines etc. for better correlation with the practical world</p> <p>CO3: Students understand various models and techniques of security and portfolio analysis</p>
Financial Accounting	<p>CO1: Learners are acquainted with preparation of final accounts of companies.</p> <p>CO2: Students learn provisions relating to underwriting of shares and debentures.</p> <p>CO3: Learners understanding accounting of foreign currency and investment.</p> <p>CO4: Students understand the need of ethical behaviour in Accountancy</p>
Risk Management	<p>CO1: Students are familiarized with the fundamental aspects of risk management and control.</p> <p>CO2: Learners get an overview of risk governance and assurance with special reference to insurance sector.</p> <p>CO3: Learners understand basic concepts, functions, process, techniques of risk management</p>
Direct Taxes	<p>CO1: Students understand the provisions of determining residential status of individual</p>

Prof. (Dr.) A.S. Lohar
Co-Ordinator BMS



Prof. (Dr.) Vijay Narkhede
Principal



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	CO2: Learners comprehend various heads of income. CO3: Learners deductions from total income
Services Marketing	CO1: Learners understand distinctive features of services and key elements in services. CO2: Students gained insight into ways to improve service quality and productivity. CO3: Students understand marketing of different services in Indian context
E-Commerce & Digital Marketing	CO1: Students understand increasing significance of E-Commerce and its applications in business and various sectors. CO2: Learners have an insight of Digital Marketing activities on various Social Media platforms and its emerging significance in Business. CO3: Students understand Latest Trends and Practices in E-Commerce and Digital Marketing, along with its Challenges and Opportunities for an Organisation
Sales & Distribution Management	CO1: Learners develop understanding of the sales & distribution processes in organizations. CO2: Students get familiarized with concepts, approaches and the practical aspects of the key decision making variables in sales management and distribution channel management
Customer Relationship Management	CO1: Students understand concept of Customer Relationship Management (CRM) and implementation of Customer Relationship Management. CO2: Learners acquired insight of CRM marketing initiatives, customer service and CRM strategy. CO3: Students are acquainted with new trends in CRM, challenges and opportunities for organizations

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TYBMS SEM VI

Course Name	Course Outcomes
Operation Research	CO1: Learners understand operations research methodologies. CO2: Learners understand how to solve various problems practically. CO3: Learners become proficient in case analysis and interpretation
International Finance	CO1: Students are familiarized with the fundamental aspects of International Finance. CO2: Learners have an overview of International Finance as a separate area in International Business. CO3: Students have understanding of techniques and functioning of International Finance in Globalized Market
Innovative Financial Services	CO1: Learners are familiarized with the fundamental aspects of various issues associated with financial services. CO2: Students have an overview of emerging financial services in the light of globalization. CO3: Learners understand basic concepts, functions, process, and techniques of financial services
Strategic Financial Management	CO1: Students learn to match the needs of current market scenario and upgrade skills and knowledge for long term sustainability. CO2: Learners are acquainted with the changing scenario in Banking Sector. CO3: Students are given insights into banking as a career. CO4: Learners are made aware of contemporary issues related to financial management.
Indirect Taxes	CO1: Students understand the basics of GST. CO2: Learners understand the registration process and computation of GST.

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	CO3: Learners are acquainted with filing of returns in GST.
Brand Management	CO1: Students understand the meaning and significance of Brand Management. CO2: Students learn how to build, sustain and grow brands. CO3: Learners are acquainted with various sources of brand equity
Retail Management	CO1: Learners are familiarized with retail management concepts and operations. CO2: Students have basic understanding of retail management and types of retailers. CO3: Learners develop an understanding of retail management terminology including merchandize management, store management and retail strategy. CO4: Students are acquainted with legal and ethical aspects of retail management. CO5: Students are made aware about emerging trends in retail management
International Marketing	CO1: Students understand International Marketing, its Advantages and Challenges. CO2: Students have an insight on the dynamics of International Marketing Environment. CO3: Learners understand the relevance of International Marketing Mix decisions and recent developments in Global Market
Media Planning & Management	CO1: Learners understand Media Planning, Strategy and Management with reference to current business scenario. CO2: Students know the basic characteristics of all media to ensure most effective use of advertising budget. CO3: Learners gain an insight on Media Planning, Budgeting, Scheduling and Evaluating the Different Media Buys.

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Project Work	CO1: Provides learning experience to students. CO2: Provides opportunity to students to synthesize knowledge from various areas of learning.
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Department of Economics

Programs Outcomes (POs)

- **Strong foundation in economics:** Graduates have a solid understanding of microeconomics, macroeconomics, and various specialized areas within the field.
- **Research proficiency:** Students develop research skills through projects, theses, and coursework, preparing them for further academic study or research roles.
- **Communication skills:** Graduates can effectively communicate economic concepts and analyses to diverse audiences, both orally and in writing.
- **Problem-solving abilities:** BA Economics programs cultivate students' ability to identify and address economic problems using theoretical and empirical approaches.
- **Data analysis expertise:** Graduates are proficient in collecting, analyzing, and interpreting economic data using statistical software and other tools.



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• Course Outcomes (COs)

- **Understanding Economics:** Gain a better grasp of economic concepts, theories, and how they apply to the real world.
- **Improved Thinking Skills:** Enhance critical thinking and analytical skills by evaluating data and policies.
- **Networking:** Connect with peers, professors, and professionals for potential mentorship and career opportunities.
- **Career Paths:** Explore various career options in finance, consulting, public policy, and more.
- **Research Opportunities:** Conduct independent studies and contribute to academic research projects.
- **Practical Experience:** Gain hands-on experience through internships or fieldwork, applying economic principles.



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Department of History

Course Outcomes

Program Name & Code	Course Code	Name of the Course	Course Outcome
B.A. UAHIS	UAHIS101	FYBA History and Archaeology SEM I Course I-History of Modern India (1857-1947)	1. The course is designed to make the student aware about the making of modern India and the struggle for independence. 2. Students acquainted with the modern Indian history political events/ National Movement of the era. 3. It enhanced the knowledge about role of various national leaders, Social reformers and freedom fighters in creation of an Independent Nation..
	UAHIS201	FYBA History and Archaeology SEM II Course I -History of Modern India: Society and Economy.	1. The course is designed to make the student aware about the making of modern India . 2. Students acquainted with the modern Indian history, society and Renaissance/ Economy of the era. 3. It enhanced the knowledge as well as transition in the society and economy leading nation towards modernization.
B.A. HISTORY UAHIS	UAHIS301	SYBA History and Archaeology SEM III Course II/ Paper II - Landmarks in World History, 1300 A.D.-1945 A.D.	1. Students understood transition of Europe from medieval to modern times and its impact on the world. 2. Acquainted with accurate knowledge of the most significant events and personalities of the period and understood of the making of the modern world 3. Appreciate the events such as Renaissance, Reformation, Revolutions and transition leading to socio-political, economic and cultural change in the world. 4. Analyse the causes of the First World War and the establishment of Communism in Russia.




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	UAHIS302	SYBA History and Archaeology SEM III Course III/ Paper III -Ancient India from Earliest Times to 1000 A.D.	<ol style="list-style-type: none"> 1. Students acquainted with different sources of Ancient Indian History. 2. Students understood the political, socio-economic and cultural developments in the period under study and appreciate the rich cultural heritage in India. 3. They will be able to trace the history of India in chronological framework of Ancient Indian Administration, Culture, Polity and Society 4. Develop a basic understanding of India's ancient past.
B.A. HISTORY UAHIS	UAHIS401	SYBA History and Archaeology SEM IV Course II/ Paper II - Landmarks in World History, 1300 A.D.-1945 A.D.	<ol style="list-style-type: none"> 1. Provide accurate knowledge of the most significant events and personalities of the period. 2. Analyse the role of some prominent world personalities who through their ideologies have shaped the course of history. 3. Enhance student abilities to relate development of the landmark events, concepts and themes like Fascism, Nazism in the World History 4. Understand political developments in the Far East and the Middle East in the interwar period. 5. Equipped to understand the forces that propelled the world towards its second major conflict and efforts towards a lasting peace.
	UAHIS402	SYBA History and Archaeology SEM IV Course III/ Paper III -Ancient India from Earliest Times to 1000 A.D.	<ol style="list-style-type: none"> 1. Students acquainted with different sources of Ancient Indian History. 2. Students understood the political, socio-economic and cultural developments in the period under study and appreciate the rich cultural heritage in India. 3. They will be able to trace the history of India in chronological framework of Ancient Indian Administration, Culture, Polity and Society. 4. To study the impact of India's contact with South East Asian regions.
B.A. HISTORY UAHIS	UAHIS501	TYBA History and Archaeology SEM V Core Course IV- History of Medieval India	<ol style="list-style-type: none"> 1. Students acquainted with the history of early Medieval India that laid the foundation of the Sultanate in India. 2. Gain insight into theoretical and organizational changes in Medieval Indian administration 3. Understand the contribution of Vijayanagar and Bahamani kingdoms to Medieval Indian



		(1000 CE – 1526 CE)	History. 4. Examine the administrative, socio-economic and cultural aspects of Medieval India
B.A. HISTORY UAHIS	UAHIS502	TYBA History and Archaeology SEM V Core Course V- History of Modern Maharashtra (1818 CE-1960 CE)	1. Students acquainted with regional history. 2. Appreciate and analyse political and socio-economic developments during the 19th and 20th centuries. 3. Appreciate; respect the movement that led to the formation of Maharashtra. 4. Explain the rise of new forces with special reference to the movements of Dalits, Tribals and Peasants
	UAHIS503A	TYBA History and Archaeology SEM V Elective Course VI. A (With Project) Introduction to Archaeology	1. Understand the basic facets of Archaeology. 2. Discuss the relationship between archaeology with other sciences and describe the stages of field archaeology 3. Assess the development from Palaeolithic Age to Early Historical Periods 4. Evaluate the importance of Epigraphy. 5. Understand the definitions of Numismatics and History of Indian Numismatics and contribution of ancient Indian coinage from Punch marked Coins to Gupta Coinage
	UAHIS504	TYBA History and Archaeology SEM V Core Course VII History of the Marathas (1630 CE -1707 CE)	1. Students introduced to the regional history of Maharashtra. 2. Students acquainted with the literary sources of the history of the Marathas. 3. Gain insight into Maratha – Bijapur and Maratha -Mughal relations 4. Understand the forces leading to the establishment of Maratha power under Chhatrapati Shivaji Maharaj. 5. Evaluate civil and military administrative Institutions of the Maratha.
	UAHIS505	TYBA History and Archaeology SEM V Core Course VIII History of Contemporary World (1945 CE - 2000 CE)	1. Trace some of the major events of post-World War II period and understand the significance of these events. 2. Analyse the reforms introduced by Mikhail Gorbachev in Soviet Union and subsequently its impact that led to the collapse of communism in Russia and the emergence of USA as a Uni-polar world. 3. Students acquainted with Movements for



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			<p>Equal Rights against Apartheid in South Africa and Civil Rights Movement in U.S.A</p> <p>4. Create awareness about the need to have a holistic approach towards environment, to emancipate and empower the women</p> <p>5. Comprehend the ways in which events of the latter half of the twentieth century have influenced the present.</p>
	UAHIS506B	<p>TYBA History and Archaeology SEM V Elective Course IX B (With Project) Introduction to Heritage Tourism</p>	<p>1. Develop an understanding of Heritage Tourism</p> <p>2. Appreciate different Forms of Heritage Tourism in India.</p> <p>3. Students understand new trends in Heritage Tourism.</p> <p>4. To prepare the students for careers in Tourism industry.</p>
	UAHIS601	<p>TYBA History and Archaeology SEM VI Core Course IV History of Medieval India (1526 CE – 1707 CE)</p>	<p>1. Students acquainted with the history of India since the emergence of the Mughal rule.</p> <p>2. Understand the establishment and consolidation of Mughal rule in India</p> <p>3. Examine the administrative structure of the Mughal Empire.</p> <p>4. Study the rise of the Maratha Power.</p> <p>5. Assess impact of the Mughal rule on medieval society, culture, art and architecture.</p>
	UAHIS602	<p>TYBA History and Archaeology SEM VI Core Course V History of Contemporary India (1947 CE-2000 CE)</p>	<p>1. Understand the process of making the Constitution and the integration and Reorganization of Indian States.</p> <p>2. Students acquainted with the political developments in India after Independence.</p> <p>3. Analyse India's Relations with neighboring Countries and concepts like Liberalization, Privatization and Globalization</p> <p>4. Comprehend the socio-economic changes and progress in science and technology in India.</p>
	UAHIS603A	<p>TYBA History and Archaeology SEM VI Elective Course VI A (With Project) Introduction to Museology and</p>	<p>1. Students informed about the role of Museums in the preservation of Heritage.</p> <p>2. Understand the importance of Archival Science in the study of History.</p> <p>3. Understand the meaning and definitions of Archives and explain new trends in the archival management</p> <p>4. Students encouraged pursuing careers in</p>




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		Archival Science	various Museums and Archives in India and abroad.
	UAHIS604	TYBA History and Archaeology SEM VI Core Course VII History of the Marathas (1707 CE - 1818 CE)	<ol style="list-style-type: none"> 1. Students enabled to understand the processes that led to the expansion of the Maratha Power. 2. Appreciate the contribution of the Marathas in the national politics of the 18th century. 3. Assess the role and contribution of the Peshwa's in consolidation of the Maratha Power 4. Develop an understanding of the society and culture in Maharashtra in the 18th century.
	UAHIS605	TYBA History and Archaeology SEM VI Core Course VIII History of Asia (1945 CE -2000 CE)	<ol style="list-style-type: none"> 1. Students acquainted with some of the major changes that occurred in Asia after World War II. 2. Explain the factors and adverse effects of the Cultural Revolution in China and will be able to review the role of Deng Xiaoping in the modernisation of China 3. Students understand the ways in which Asian nations resisted and defied the control of the West. 4. Analyse the nature of Arab- Israel conflicts and enumerate the factors that led to the Iranian Revolution of 1979 with special emphasis on the role of Ayatolla Khomeini and importance of oil politics 5. Comprehend some of the trends that emerged in Asia.
	UAHIS606B	TYBA History and Archaeology SEM VI Elective Course IX B (With Project) Heritage Tourism in Maharashtra	<ol style="list-style-type: none"> 1. Students introduced to the Cultural Heritage of Maharashtra 2. Understand various resources of Heritage Tourism in Maharashtra 3. Appreciate different types of natural Architectural Cultural heritage. 4. Students learn the relevance and scope of Heritage Tourism




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Department of History

Course Outcomes

Program Name & Code	Course Code	Name of the Course	Course Outcome
B.A. AIC UAAIC	UAAIC101	FYBA Ancient Indian Culture SEM I INTRODUCTION TO ARCHAEOLOGY	1. Understand the basic facets of Archaeology. 2. Evaluated the importance of Exploration, Excavation. 3. Understood importance of archaeology its development, relation with other sciences 4. Students acquainted with Role & Relevance and Careers in Archaeology
	UAAIC201	FYBA Ancient Indian Culture SEM II Cultural Heritage of Mumbai (upto 1534)	1. Acquainted with regional culture and its development. 2. Analyzed and evaluate the importance of inscription as a source to regional history 3. Understand Cultural Heritage of Mumbai during Shilahara Period as seen reflected in Inscriptions and Literature 4. Gain insight on Archaeological remains in Mumbai of Pre-Portuguese Early Medieval Mumbai
B.A. AIC UAAIC	UAAIC301	SYBA Ancient Indian Culture SEM III Course II/ Paper II India through Ages -A	1. Study of Cultural History of India. 2. Evaluate, compare various phases in and the process of the evolution of Indian Culture. 3. Review of the Theoretical framework in which the Indian Culture has been understood by the scholars.
	UAAIC302	SYBA Ancient Indian Culture SEM III Course III/ Paper III Social Organization in Ancient India-A	1. Study of Basic Structure of Indian Society. 2. Understand the principals guiding the Indian Social Institution. 3. Inspect important feature of Indian Society.



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B.A. AIC UAAIC	UAAIC401	SYBA Ancient Indian Culture SEM IV Course II/ Paper II India through Ages -B	<ol style="list-style-type: none"> 1. Study of Cultural History of India. 2. Understand various phases in and the process of the evolution of Indian Culture. 3. Review of the Theoretical framework in which the Indian Culture has been understood by the scholars.
	UAAIC402	SYBA Ancient Indian Culture SEM IV Course III/ Paper III Economic History of India -B	<ol style="list-style-type: none"> 1. Study of Basic Structure of Ancient Indian Economic Institution. 2. Study of principals guiding the set up. 3. Study of important feature of Ancient Indian Economic Institutions.




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(POs)

New Syllabus
Programme Outcomes

Revised Syllabus for FYBA Optional English

Introduction to Prose and Fiction Paper I and II

To be implemented from 2021-22 (100 Marks Examination Pattern)

Objectives of the Course:

- To create interest and develop passion amongst learners towards English Literature
- To familiarize learners with salient characteristics of literary genres like short story, prose, fiction and non-fiction
- To introduce learners to various elements of selected short stories written in English and translated into English
- To acquaint learners with different forms of prose and its importance through close reading of selected works
- To understand that literature is an expression of human values and universal truths

Course Outcomes:

- To develop passion for reading literary works amongst students
- To make learners at ease in the process of appreciation of literature
- To enable learners to understand and analyze selected stories, prose, fiction and non-fiction masterpieces
- To imbibe the underlying philosophy and values reflected in literature
- To develop sensitivity to nature and understand the relationship between human beings and environment



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**Revised Syllabus for FYBA Communication Skills in
English Paper I and Paper II**

To be implemented from 2021-22 (80:20 Marks Examination Pattern)

Preamble:

The English language is the dominant medium through which one can connect to the global community. It is, therefore, vital that all learners acquire adequate skills in this language. Communication Skills in English is a core course wherein the first year learners are guided to acquire the four skills of communication viz., Listening, Speaking, Reading and Writing.

The focus of the syllabus is on building confidence in the learners in applying these skills while using the English language both academically and socially. Keeping this in mind, the units will have a multi-pronged approach. The course is graded from basic to higher levels of learning so as to help learners gradually acquire the skills. The 80:20 pattern will also help in accomplishing this goal. The tutorial activities are designed to focus on oral skill development, while the lectures are aimed at honing their cognitive, analytical, linguistic and creative skills.

It is hoped that by the end of the academic year, the learners will have developed confidence in using the English language both for oral and written communication as well as develop interest in enhancing these skills later on.

Objectives:

1. To enhance English language proficiency of students by familiarizing them with the skills of Listening, Speaking, Reading and Writing (LSRW)
2. To introduce learners to different perspectives of looking at a text or passage
3. To equip learners in the functional aspects of English so that they use the acquired language skills correctly and confidently
4. To guide learners in the effective use of the digital medium of communication.

Outcomes:

1. The learners will learn to understand and interpret any text they are reading from different perspectives
2. The interest of learners in listening to and watching good quality audio and visual media will be aroused.
3. Learners will acquire proficiency in the skills of listening, speaking, reading and writing that will help them meet the challenges of the world.
4. The learners will develop good oral and written skills of communication in the English language.

Periods: 45 lectures + 15 Tutorials (3 lectures + 1 tutorial per week per batch) per semester

All passages, stories, articles, poems selected should help the learners develop different communication skills. Learning through example and practice with a theoretical base is the intention.



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***Revised Syllabus of courses of S.Y.B.A. Programme
with effect from the Academic Year 2017-2018***

***Skill Enhancement Courses (SEC)
SEMESTER – IV***

ADVERTISING - II

Course Objective:

1. To highlight the role of advertising for the success of brands and its importance within the marketing function of a company.
2. It aims to orient learners towards the practical aspects and techniques of advertising.
3. It is expected that this course will prepare learners to lay down a foundation for advanced post-graduate courses in advertising

S. No.	Modules	No. of Lectures
1	Media in Advertising	15
2	Planning Advertising Campaign	15
3	Execution and Evaluation of Advertising	15
4	Fundamentals of Creativity in Advertising	15
Total		60



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SYBA English (Ancillary) Course Title:
Optional English: Introduction to Poetry
Paper III
(100 Marks Examination Pattern)


Objectives of the Course:

- To introduce students to different genres and forms of poetry
- To sensitize them to the rhythmical and formal properties of poetry by introducing key elements of poetry
- To provide them with basic poetic devices for analyzing poems
- To introduce them to the trends and characteristics of significant poetic movements through representative poems
- To develop their skills in reading, writing and to critically appreciate poetry
- To introduce students to poetry produced in various social and cultural context

Course Outcome: By the end of the course, a student should develop the ability to:

- Identify different genres and forms of poetry
- Identify poetic technique, style and rhetorical devices used in poetry
- Critically appreciate poems by separating various component parts and investigating the relationship of the parts to the whole
- Demonstrate understanding of wide range of poems from different historical periods, written in a wide range of forms, styles and subject matter
- Identify the major poets of world literature and define the importance of their works
- Enhance their cultural sensitivity through reading of representative poems from diverse cultural context




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SYBA English (Ancillary) Course Title

Optional English: Introduction to Drama

Paper II

(100 Marks Examination Pattern)

Objectives of the Course:

- To create interest and develop passion amongst learners towards drama (and theatre)
- To familiarize learners with the salient elements and characteristics of drama
- To introduce learners to different forms and types of drama
- To introduce learners to the trends and characteristics of significant dramatic movements through representative dramas
- To equip the learners with the tools and techniques to critically appreciate drama
- To inculcate and propagate human values reflected in the plays among learners
- To demonstrate that drama is reflection / representation of life
- To Develop analytical skills and critical thinking through close reading of drama

Course Outcomes:

By the end of the course, a learner will:

- develop interest and passion for drama (and theatre).
- be familiarized with the salient elements and characteristics of drama.
- be able to identify the different forms and types of drama.
- be capable to identify the various trends and characteristics of significant dramatic movements through the representative dramas.
- be equipped with the tools and techniques to critically appreciate drama.
- imbibe human values reflected in the selected plays.
- justify that drama is reflection / representation of life
- develop analytical skills and critical thinking through close reading of the representative dramas.



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Syllabus for TYBA Paper IX-A

Course: Elective Paper


Course Title: Literature and Science

Course Codes: UAENG506A & DAENG606A

Preamble:

Literature and Science are two different aspects of the human mind and both the areas had always been perceived as two completely diverse fields of academic discourses which actually is far from being true. However, Literature and science go hand in hand if we look closely. Both emerged as a consequence of curiosity. Literature is born as a product of imagination and curiosity whereas science is born as a product of experimentation and curiosity. Although both are considered different, yet they're closely related. It is said that science or its requisite elements concern with the facts, reasons, causes and effects whereas literature also deals with the same but in modified forms and therefore the bond between literature and science is truly indissoluble and cannot be denied at all. We are living in the era where science and technology has become a matter of lived social reality, a matter of daily consumption. If literature is the mirror of society, then mirroring today's reality will definitely include an element of all pervasive science. Science has become the culture of twenty first century and science-fiction therefore, has become its folklore. Science-Fiction as a genre of literature mixes literary art, scientific and philosophical speculations while evoking a sense of wonder and thus functions as a fertile ground for interaction and integration of the two seemingly different academic discourses. This course, therefore, is designed in such a way that it provides an understanding of the complex relationship between Science and Literature and, in the process, improves the dialogue between literature and science. Introducing Science Fiction as a literary genre and its various components along with the recurring themes, ideas and issues commonly dealt with, the course intends to build a compact base for understanding the most popular genre of the twenty first century. Keeping in mind the vast diversity of the genre, the course makes an attempt to be inclusive while choosing the representative stories across the world. The immense popularity of the science fiction movies and texts is a testimony to this statement. Therefore, to keep up with the time, it is imperative to include this most popular genre into our academic syllabus.




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Objectives of the Course:

1. To provide knowledge and understanding of the complex relationship between literature and science and its emerging bond.
2. To introduce science fiction literature and its different requisite elements to the students and develop interest in it
3. To acquaint the students with the forms, themes, tropes, and modes of expression of Science Fiction.
4. To create awareness and familiarise students with the advancement in the field of science through science fiction and develop the skill of interpretation and inference.
5. To inculcate the utopian / dystopian perspective and positive/negative side of the advancement in the field of science and technology and explore its impact on the society through the prescribed texts.

Outcomes of the Course:

1. The students will gain the knowledge of the connection between science and literature and its significance in today's postmodern era.
2. The students will be familiar with the prominent stream of Science Fiction along with its different elements and it may help them to develop their interest in it
3. The Students will be able to understand, describe and analyze common themes, tropes, and modes of expression in science fiction.
4. The students will understand the indefinite exposure given to advanced science and technology in science fiction literature and it will help them to think about future and interpret and infer skillfully.
5. The positive side of the advancement in the arena of science and technology will be understood and utopian perspective of looking towards science and technology and its advancement will be developed through the prescribed literature.




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Syllabus for T.Y.B.A.
Course: Contemporary American Literature
Course Codes: UAENG505 and UAENG605

Preamble: American literature has become source of attraction and contributed significantly in the development of world literature. It has been at the forefront in the establishment of various literary trends and genres. There is an immense desire in the mind of people to experience American culture and its literature. It is apparent that America is an embodiment of land of opportunities to the people on the basis of knowledge and skills. America is also considered as a pioneer in accomplishing incredible and commendable growth in economy, science and technology leading to sense of materialism and comfortable life style. American dream is responsible for reforming and transforming the life of people with its positivity and negativity. The prominent strength of America is its vivid reflection of multi- culturalism in all spheres of life and literature. The literary works are depiction of moral, social, ethical values and universal truths. This Contemporary American Literature course is a golden opportunity to the students for understanding and appreciating varied literary works and its significance to become successful personality in the 21st century.

Objectives of the Course:


- 1) To introduce the students with the representative trends, literary genres and movements of Contemporary American Literature
- 2) To explore the socio-political and cultural aspects reflected in the Contemporary American Literature
- 3) To enable the students to understand distinctive features of American, African-American, Jewish American and Literature of Indian and Chinese Diaspora
- 4) To elaborate varied thematic concerns represented in Contemporary American Literature

Outcomes of the Course:

After the completion of the course, students are expected to:

- 1) Understand literary genres, trends and movements in Contemporary American Literature.
- 2) Interpret socio-political and cultural dimensions of Contemporary American literature.




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Syllabus for T.Y.B.A.
Course: Contemporary British Literature
Course Codes: UAENG504 and UAENG604

Preamble:

Contemporary British Literature focuses on the British literature of the twentieth and twenty-first centuries. The development of British Literature and its influence on other literature from the beginning of the twentieth century to the present time are emphasised in the course. The literary history of contemporary British literature also reflects various political, social, economic, psychological, strategic, and tactical incidents of the contemporary world. The course aims to focus on the relationships between literature and these contemporary occurrences. Traditional literary genres have been modified in the contemporary era, and to study them it is required to have reflective and imaginative thinking, and the present syllabus endeavours to serve the purpose.

Objectives of the Course:


- 1) To explore representative trends, literary genres and movements of British Literature in the 20th and 21st Centuries.
- 2) To enable students to create linkages between social and historical contexts and literary texts.
- 3) To train students to develop skills for a critical and analytical understanding of the texts.
- 4) To acclimatise students with the contemporary reaction to literary and cultural structures and concepts.

Outcome of the Course:

After the completion of the course, students are expected to:

- 1) Be equipped with comprehensive understanding of literary genres, trends and movements in contemporary British Literature.
- 2) Understand the valuable co-relation between the socio-cultural, economic and historical contexts; behind the literary production.
- 3) Acquire the discipline to become reflective and imaginative thinkers through a close, critical and analytical reading of the prescribed texts.
- 4) Understand the contemporary reaction to literary and cultural structures and concepts.




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Syllabus for TYBA Paper VI -B

Course: Translation Studies: Theory and Practice

Course Codes: UAENG503B & UAENG603B

Preamble:


Translation Studies has acquired the status of an independent discipline and achieved greater significance in academic and intellectual spheres. It is necessary to understand its definitions, nature, scope and limitations. This course is designed to develop a fundamental understanding of translation - as a process, a product and a discipline with theories and practice. There is a scope for translation in the Indian multi-linguistic and multicultural context with multiple career opportunities in the field of translation and interpretation.

Objectives of the Course:

- 1) To introduce the students to the concept of translation and the terminologies associated with translation activity.
- 2) To enable the students to supplement their basic linguistic and cultural competencies with translation skills and knowledge in translation studies.
- 3) To make the students familiar with the problems and issues of translation.
- 4) To enable the students, to translate literary/non-literary texts from English into other Indian languages and vice-versa.

The outcome of the Course:

- 1) The students will be able to prepare written, verbal, or multimedia texts from a written, verbal, or multimedia template that fulfils the defined goal in the target language or culture.
- 2) The practical translation skills of a high level will be developed whilst integrating practical with professional and theoretical insights.
- 3) The students will get acquainted with the process and various theories of translation studies.
- 4) The students will be familiar with the problems of translation and various techniques to tackle them.


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Syllabus for TYBA Paper V

Course: Literary Theory and Criticism
Course Codes: UAENG501 & UAENG602

Preamble:

The course 'Literary Theory and Criticism' is a study of literary theory and criticism, focusing on a selection of writing by prominent theorists, their work and ideas. Placed within the socio-cultural, economic and political contexts, the study and application of these theories can enlighten the learners about the aesthetics and politics of the reading/writing/interpretive processes and explore the links between life and literature. The course will prove immensely useful to make the learners aware about the literature, criticism and literary theories and their applicability in the research.

Objectives of the Course:


- 1) To introduce the learners of literature to the basics of literary criticism
- 2) To sensitize them to critical approaches and literary theories
- 3) To impart the technique of close reading of literary texts
- 4) To enable the learners to analyze, interpret, explicate and evaluate literary texts
- 5) To familiarize the learners with the tenets of practical criticism

Outcome of the Course:

After studying the Course the learner will.

- 1) realize the basics of literary criticism.
- 2) come to know to about the critical approaches and literary theories.
- 3) understand the techniques of close reading of literary texts.
- 4) be able to analyze, interpret, explicate and evaluate the literary texts.
- 5) be familiar with tenets of practical criticism.




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Syllabus for TVBA Paper IV
Course: INDIAN LITERATURE

Course Codes: UAENG501& UAENG601

Preamble: Indian English Literature has now become a full-fledged discipline of study as many writers are writing originally in English. It is enriched with Anglo-Indian and Indo-Anglian writers. The translations of regional language literatures into English enrich its horizon also. To know various cultures of India, it is essential to delve deep into literature of various types. This course is an attempt to provide insight into various creative facets and cultures of Indian society. This will definitely enlarge the learners' understanding and critical aptitude of Indian Literature in English.

Objectives of the Course:

- To enable learners to realize the diversity of Indian writing in English
- To help learners to understand the importance of political, religious, social and economic issues in understanding the literature
- To acquaint learners with the various facets of Indian history and society through literature
- To familiarise the learners to various themes and cultural contexts of Indian literature in English
- To help the learners to understand various voices in Indian literature in English

Outcome of the Course: After Completion of the course the learners will be able to:

- analyse the thematic concerns of Indian Literature in English,
- explore Indian Literature in English in various ways,
- find different literary techniques employed in Indian Literature in English
- understand Indian society and issues.
- find various research topics in Indian literature in English.



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DEPARTMENT OF PHILOSOPHY

PROGRAM SPECIFIC OUTCOME

Philosophy has always been referred to as 'the mother of all sciences.' It is the foundation of all subjects. As Plato correctly defines it as the love for knowledge, philosophers pursue knowledge that is external as well as internal to them. Thus, Philosophy becomes an inevitable part of our life. Defined as a subject focusing on knowledge, Philosophy reveres the development of critical and creative thinking skills, the knowledge of morality, skills to articulate your opinions and the want to lead a good life. The Department of Philosophy actively makes efforts at trying to build upon these skills in the students. As the students would broaden their knowledge about the subject, they need to be comfortable with the basics of it. Therefore, at the first year level, an introductory view about ethics has been established. Perspectives of an individual develop when one has a comprehensive knowledge about various perspectives and thus, philosophers and their theories have been introduced in the second year; it offers a comprehensive view of the history of Indian and Western Philosophy along with socio-political theories. At the third year level, the Department offers papers like Philosophy of religion, Philosophy of Yoga, Philosophy of Bhagavad-Gita, Living Ethical Issues, Logic and advancement of Indian and Western philosophy. Acquainting the students with these will help them not only in learning these theories but also in skill building which will help them become an appropriate candidate in any career of their choice.

Programme Duration: Three years (Entire BA Course)

PSO Description	PSO Description
PSO1	To make the learners aware about Philosophical thoughts - Indian and Western.
PSO2	To acquaint students with the basic philosophical questions and issues that are current in Socio-political philosophy.
PSO3	To provide basic knowledge of various philosophical concepts and discuss key issues related to it.
PSO4	To equip students with argumentative and analytical skills involved in philosophizing through these issues.
PSO5	To encourage a spirit of rationality in philosophizing while appreciating and respecting differing philosophical ideas and perspectives.
PSO6	Developing familiarity with the foundations of ethics and morality.
PSO7	Inculcating the idea of morality by discussing ethical theories
PSO8	Equipping professional skills that enhance the overall personality development of an individual and trains oneself for pursuing good life.
PSO9	Comprehend knowledge about deep Philosophical thoughts - Indian and Western and also understand its influence on the society
PSO10	Inculcate the values of tolerance and secularism and respect to other people's beliefs and faith
PSO11	Critically evaluate various ethical problems and bring out effective solutions to it
PSO12	Develop a spirit of rational thinking and enhance the skill of logical reasoning
PSO13	Thriving towards understanding of the various contemporary issues concerning the current society



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Course Outcomes

B.A.I Sem- I

1. To acquaint the learners with the basics of Philosophy, its branches and Moral Philosophy.
2. To introduce them to religion as the groundwork for Ethics.
3. To make them understand different views on Good life.
4. To develop the foundations of ethics in the Bhagavad-Gita

B.A. ISem- II

1. To introduce various theories of self-interest.
2. To learn modern ethical theories.
3. To introduce alternative ethical theories.
4. To make them aware about the application of ethics in contemporary areas of human development.

B.A. –IISem- III

1. To introduce them to various Indian Philosophical schools.
2. To help them understand different concepts under each system.
3. To acquaint students with the basic philosophical questions that philosophers in India have addressed.
4. To understand Social Philosophy as a branch of philosophy.
5. To become aware of the scope and relevance of Social Philosophy in life.
6. To help them understand the relation of Philosophy with Sociology, Politics and Ethics.

B.A. –IISem-IV

1. To know the scope of Political Philosophy.
2. To become aware of some important themes in philosophy and their practical application to certain contemporary issues in Political Philosophy.
3. To understand the relation of Political Philosophy with Politics, Economics and Ethics.
4. To introduce them to Greek thinkers and their philosophical ideas.
5. To make them aware about various ideas and concepts of western thinkers and their traditions.
6. To acquaint students with the basic philosophical questions that philosophers in the Greek and medieval tradition have addressed.

B.A.III, Sem-V

1. Introduce students to the nature of philosophical questions and thinking present in classical Indian thought.
2. Provide a systematic and rational interpretation of philosophical issues addressed in various Indian schools.

3. Introduce students to a reasoned, systematic and critical reflection about religious beliefs.
4. Develop in students the capacity for analytical and critical thinking about religious matters.
5. Reflect on real world ethical questions and the issues they raise, and to discuss those issues in an informed way.
6. Demonstrate an ability to recognize, articulate, and apply ethical principles in various academic, professional, social, or personal contextsExplore and interpret philosophical ideas of the Gita through reading of the text.
7. To relate the social, political and ethical ideas of the Gita to the contemporary context
8. Equip students with the knowledge of the formal techniques of logic.
9. Develop the critical thinking approach towards various issues,
10. Explore understanding towards theoretical aspect of Yoga philosophy.
11. Develop the knowledge about its advantages and to explain about how it leads to quality life

B.A.III,Sem-VI

1. Introduce and acquaint students to various Philosophical thoughts under Western tradition.
2. Summarize with clarity of the arguments, problems and questions central to metaphysics and epistemology in western philosophy.
3. Understand different approaches and challenges to Religion.
4. Explore idea the of Universal Religion and comprehend the area of religious pluralism.
5. Develop conceptual tools for thinking through, and participating in, complex ethical discussions about nature, the environment, and ecosystems.
6. Become familiar with classic and current concepts, topics and debates in environmental ethics.
7. Achieve an understanding of the overall structure, purpose and contents of the Bhagavad- Gita.
8. Applying the ideals from Bhagavad Gita in resolving various contemporary issues
9. Introduce students to various topics under logic.
10. Apply reasoning skills to analyze reasoning in newspaper articles,books and speeches
11. Identify misconceptions about Yoga and eradicate it out with proper knowledge.
12. Develop ethico-spiritual perspective among learners.



Dr. Gandhi Dehury
HEAD OF THE DEPARTMENT




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Sr. no	Name	Signature
1	Damini Maurya	<i>Damini</i>
2	Saba Hussain	<i>Saba</i>
3	Meera Gupta	<i>meera</i>
4	Nilam Rana	<i>Nilam</i>
5	Shilpa Maurya	<i>Shilpa</i>
6	Afreen Shaikh	<i>Afreen</i>
7	Aarti Yadav	<i>Aarti</i>
8	Reema Yadav	<i>Reema</i>
9	Shaheena Khan	<i>Shaheena</i>
10	Anamika Yadav	<i>Anamika</i>
11	Ruqaiyya Shaikh	<i>Ruqaiyya</i>
12	Aarzo Khan	<i>Aarzo</i>
13	Samreen Shaikh	<i>Samreen</i>
14	Ajit Singh Tomar	<i>Ajit</i>

[Signature]

Dr. Gandhi Dehury
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Department of Psychology

Code	Sem	Course Title	Credits	Marks
UAPSY 101	1	Fundamentals of Psychology Part I	3	100
UAPSY 101	2	Fundamentals of Psychology Part II	3	100

Program Outcomes (POs)

1. **Comprehensive Understanding of Psychology:** Students will gain a thorough understanding of the fundamental concepts, theories, and modern trends in psychology, preparing them for advanced studies or careers in the field.
2. **Research Competence:** Students will develop the ability to conduct and evaluate psychological research, understanding its ethical considerations and applying scientific methods to study behavior and mental processes.
3. **Application of Psychological Knowledge:** Students will be equipped to apply psychological concepts to various aspects of everyday life, enhancing their problem-solving skills and decision-making processes in personal and professional contexts.
4. **Critical Thinking and Analysis:** Students will cultivate critical thinking and analytical skills by evaluating psychological theories and research, and by applying these skills to analyze psychological phenomena.
5. **Awareness of Biological and Cognitive Processes:** Students will understand the biological and cognitive underpinnings of behavior, including the workings of the nervous system, brain structures, and memory processes.
6. **Effective Communication:** Students will be able to effectively communicate psychological concepts and research findings, both verbally and in writing, to diverse audiences.

Course Outcomes (COs) for UAPSY 101: Fundamentals of Psychology - Part I

1. **CO1: Understanding Psychological Foundations**
 - Students will describe the history and development of psychology as a science and identify the major fields within contemporary psychology.
 -
2. **CO2: Research and Ethics in Psychology**




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- Students will understand the principles of scientific research in psychology, including research methodologies, ethical considerations, and how to critically evaluate psychological studies.
- 3. **CO3: Biological Basis of Behavior**
 - Students will explain the structure and function of the nervous system and endocrine glands, and describe how these biological systems influence behavior and mental processes.
- 4. **CO4: Learning Theories**
 - Students will differentiate between various learning theories, including classical and operant conditioning, cognitive learning theory, and observational learning, and apply these theories to practical scenarios.
- 5. **CO5: Memory Processes**
 - Students will outline the information processing model of memory, including the three memory systems, and understand the processes involved in memory retrieval, forgetting, and the neuroscience behind memory.
- 6. **CO6: Practical Application of Psychological Concepts**
 - Students will apply psychological theories and concepts to everyday life situations, demonstrating their understanding of how psychological principles can be used to address real-world problems.

Unit 1: Cognition: Thinking, Intelligence, and Language

a) How People Think:

CO1: Explain the cognitive processes involved in thinking, including problem-solving, decision-making, and reasoning.

CO2: Identify different types of cognitive biases and their impact on thinking and decision-making.

b) Intelligence:

CO3: Describe various theories and models of intelligence, including IQ and multiple intelligences.

CO4: Evaluate the role of genetics and environment in the development of intelligence.

c) Language:

CO5: Understand the cognitive processes involved in language acquisition, comprehension, and production.

CO6: Analyze the relationship between language and thought, including theories of linguistic relativity.




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d) Applying Psychology to Everyday Life:

CO7: Apply cognitive psychology principles to enhance everyday problem-solving and decision-making.

CO8: Use knowledge of intelligence and language to improve communication and learning strategies in practical settings.

Unit 2: Motivation and Emotion

a) Approaches to Understanding Motivation:

CO9: Explain different theories of motivation, including physiological, psychological, and social approaches.

CO10: Analyze how various motivational theories apply to real-life scenarios.

b) What, Hungry Again? Why People Eat:

CO11: Describe the psychological and physiological factors that influence eating behaviors.

CO12: Evaluate different theories of hunger and eating, including the role of emotion and culture.

c) Emotion:

CO13: Identify and explain the major theories of emotion, including physiological, cognitive, and social perspectives.

CO14: Assess the impact of emotions on behavior and mental health.

d) Culture and Emotions:

CO15: Analyze how cultural factors influence emotional expression and experience.

CO16: Compare emotional experiences across different cultures and understand the role of cultural norms.

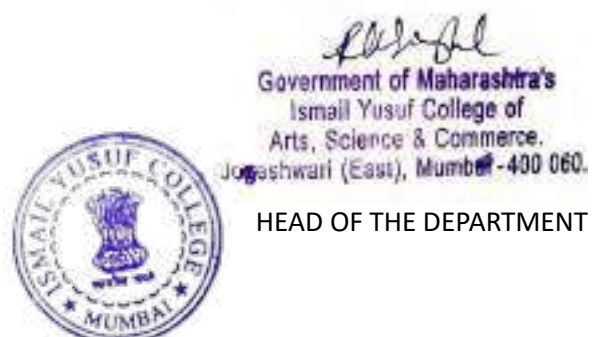
e) Applying Psychology to Everyday Life:

CO17: Apply motivational and emotional theories to improve personal well-being and interpersonal relationships.

CO18: Use knowledge of motivation and emotion to address everyday challenges and enhance life satisfaction.

Unit 3: Theories of Personality

a) Psychodynamic Perspective:



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CO19: Describe the key concepts of psychodynamic theories, including those of Freud and Jung.

CO20: Evaluate the strengths and limitations of psychodynamic approaches to understanding personality.

b) Psychoanalysis in the East:

CO21: Understand how psychoanalytic theories have been adapted or interpreted in Eastern cultures.

CO22: Compare and contrast Western and Eastern psychoanalytic perspectives on personality.

c) The Behavioural and Social Cognitive View of Personality:

CO23: Explain the key concepts of behavioral and social cognitive theories of personality, including those of Skinner and Bandura.

CO24: Apply these theories to understand how personality develops and changes over time.

d) The Third Force: Humanism and Personality:

CO25: Describe the humanistic approaches to personality, including those of Rogers and Maslow.

CO26: Assess the contributions of humanistic psychology to understanding personality and personal growth.

e) Trait Theories: Who Are You?:

CO27: Explain various trait theories of personality, including the Big Five model.

CO28: Evaluate the effectiveness of trait theories in assessing and predicting behavior.

f) Modern Trait Theories: The Big Five and Current Thoughts on the Trait Perspective:

CO29: Analyze the Big Five personality traits and their relevance to modern psychology.

CO30: Discuss current developments and debates in trait theory research.

g) Personality: Genetics and Culture:

CO31: Understand the role of genetics and cultural factors in shaping personality.

CO32: Evaluate research findings on the interplay between genetic, cultural, and environmental influences on personality.

h) Assessment of Personality:

CO33: Identify various methods and tools used to assess personality, including self-report inventories and projective tests.

CO34: Apply these assessment tools in practical contexts to evaluate personality.




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i) Applying Psychology to Everyday Life:

CO35: Use knowledge of personality theories to improve self-awareness and interpersonal relationships.

CO36: Apply personality assessment techniques to enhance personal and professional development.

Unit 4: Statistics in Psychology

a) What are Statistics?:

CO37: Define key statistical concepts and their relevance to psychological research.

CO38: Explain the role of statistics in analysing and interpreting psychological data.

b) Descriptive Statistics:

CO39: Describe and calculate measures of central tendency (mean, median, mode) and variability (range, standard deviation).

CO40: Interpret and present descriptive statistics effectively.

c) Inferential Statistics:

CO41: Understand the basic principles of inferential statistics, including hypothesis testing and confidence intervals.

CO42: Apply inferential statistical methods to analyze research data and draw valid conclusions.




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Code	Sem.	Course Title	Credits	Marks
UAPSY 301	3	Social Psychology: Part I	3	100
UAPSY 401	4	Social Psychology: Part II	3	100

Course Outcomes (COs)

Course Title: Social Psychology: Part I

Credits: (Typically 3)

Lectures per Week: 3

Unit 1: Social Psychology: The Science of the Social Side of Life

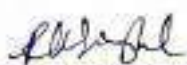
1. **CO1:** Define social psychology and differentiate it from other related discipline
2. **CO2:** Discuss recent advancements and emerging boundaries in social psychology.
3. **CO3:** Explain the research methods used in social psychology to answer fundamental questions.
4. **CO4:** Describe the role of theory in social psychology and its importance for scientific understanding.
5. **CO5:** Analyze the ethical considerations in social psychological research and balance the quest for knowledge with individual rights.

Unit 2: Social Perception: Seeking to Understand Others

1. **CO6:** Describe the role and importance of nonverbal communication in social interactions.
2. **CO7:** Explain the process of attribution and how people understand the causes of behavior.
3. **CO8:** Discuss how impression formation and management influence social perceptions and interactions.
4. **CO9:** Review research on the impact of nonverbal cues in job interviews and how they affect perceptions.
5. **CO10:** Analyze research findings on why some individuals may perceive themselves as superior to others.

Unit 3: Attitudes: Evaluating and Responding to the Social World




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1. **CO11:** Explain the processes of attitude formation and the factors that contribute to the development of attitudes.
2. **CO12:** Discuss when and why attitudes influence behavior and how attitudes guide social behavior.
3. **CO13:** Analyze the science of persuasion and strategies for changing attitudes.
4. **CO14:** Describe methods to resist persuasion attempts and the concept of cognitive dissonance.
5. **CO15:** Explain cognitive dissonance and strategies for managing it.
6. **CO16:** Review research on cultural differences in attitude processes and their implications.

Unit 4: Liking, Love, and Other Close Relationships

1. **CO17:** Identify internal factors such as needs and emotions that influence liking and attraction.
2. **CO18:** Describe external sources of attraction including proximity, familiarity, and physical beauty.
3. **CO19:** Analyze how social interactions contribute to the formation of liking and attraction.
4. **CO20:** Discuss the foundations of close relationships and their significance in social life.
5. **CO21:** Review research on the impact of physical appearance differences between partners and the concept of "love is blind."
6. **CO22:** Examine research findings on factors that can undermine love, such as jealousy and infidelity.



Program Outcomes (POs)

Program Title: Bachelor of Arts in Psychology (or relevant undergraduate psychology program)

1. **PO1: Comprehensive Knowledge:** Demonstrate a thorough understanding of key concepts, theories, and research methods in social psychology.
2. **PO2: Analytical and Critical Thinking:** Develop critical thinking skills to analyze and evaluate social psychological theories and research findings.
3. **PO3: Practical Application:** Apply social psychological principles to understand and address real-world social issues and interpersonal dynamics.
4. **PO4: Research Skills:** Conduct and interpret social psychological research using appropriate methodologies and analytical tools.




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5. **PO5: Communication Skills:** Communicate social psychological concepts and research findings effectively, both orally and in writing.
6. **PO6: Ethical and Professional Conduct:** Adhere to ethical standards in conducting and interpreting social psychological research and practice.
7. **PO7: Cultural Sensitivity:** Understand and respect cultural differences in social behavior and apply this understanding in research and practice.
8. **PO8: Lifelong Learning:** Show a commitment to ongoing learning and professional development in social psychology.
9. **PO9: Collaborative Skills:** Work effectively in teams and collaborate with others to address social psychological issues and conduct research.
10. **PO10: Application of Theory to Practice:** Utilize social psychological theories to enhance personal relationships, professional interactions, and societal understanding.

Course Outcomes (COs)

Course Title: Social Psychology: Part II

Credits: (Typically 3)

Lectures per Week: 3

Unit 1: Causes, and Cures of Stereotyping, Prejudice, and Discrimination

1. **CO1:** Describe how different groups perceive and experience inequality and its impact on social relations.
2. **CO2:** Explain the nature, origins, and mechanisms of stereotyping.
3. **CO3:** Analyze the emotional and cognitive aspects of prejudice towards social groups.
4. **CO4:** Understand and identify various forms of discrimination and how prejudice manifests in actions.
5. **CO5:** Evaluate techniques and strategies for reducing and countering prejudice and discrimination.
6. **CO6:** Review research on the role of existential threats in the development and maintenance of prejudice.

Unit 2: Social Influence: Changing Others' Behavior

1. **CO7:** Explain how conformity to group norms influences individual behavior and decision-making.
2. **CO8:** Analyze the mechanisms of compliance and the effectiveness of different compliance techniques.




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3. **CO9:** Discuss the concept of obedience to authority and review classic studies on this phenomenon.
4. **CO10:** Examine unintentional social influence and how individuals' behaviors are affected by others without direct intent.
5. **CO11:** Review research on the extent of conformity in various social contexts.
6. **CO12:** Assess the role of scarcity in gaining compliance and its effectiveness based on research findings.

Unit 3: Aggression: Its Nature, Causes, and Control

1. **CO13:** Explore various perspectives on aggression and the search for its roots and causes.
2. **CO14:** Analyze the social, cultural, personal, and situational causes of human aggression.
3. **CO15:** Identify instances of aggression in different settings, such as classrooms and workplaces.
4. **CO16:** Discuss prevention and control strategies for managing and reducing violence and aggression.
5. **CO17:** Review research on the role of emotions in the expression and management of aggression.
6. **CO18:** Examine research findings on aggression in workplace environments and potential interventions.

Unit 4: Prosocial Behavior: Helping Others

1. **CO19:** Discuss the motives behind prosocial behavior and why people engage in helping others.
2. **CO20:** Analyze the factors influencing bystander intervention in emergency situations.
3. **CO21:** Identify the factors that increase or decrease the likelihood of helping behavior.
4. **CO22:** Explore crowdfunding as a modern form of prosocial behavior and its impact.
5. **CO23:** Evaluate whether prosocial behavior and aggression are opposites based on theoretical and empirical evidence.
6. **CO24:** Review research on the concept of "paying it forward" and the effects of helping others after receiving help.
7. **CO25:** Examine research on individuals' reactions to receiving help and its implications for social interactions.

Program Outcomes (POs)




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Program Title: Bachelor of Arts in Psychology (or relevant undergraduate psychology program)

1. **PO1: Comprehensive Knowledge:** Demonstrate a deep understanding of advanced social psychological concepts, theories, and research methodologies.
2. **PO2: Analytical and Critical Thinking:** Develop the ability to critically analyze social psychological phenomena and evaluate research findings in the context of real-world applications.
3. **PO3: Practical Application:** Apply advanced social psychological principles to address and understand complex social issues, such as prejudice, aggression, and prosocial behavior.
4. **PO4: Research Skills:** Conduct and interpret advanced social psychological research, utilizing appropriate methods and tools to investigate social behavior and interactions.
5. **PO5: Communication Skills:** Communicate social psychological concepts, research findings, and theoretical perspectives effectively, both in written and verbal formats.
6. **PO6: Ethical and Professional Conduct:** Uphold ethical standards in conducting and interpreting research and practice within the field of social psychology.
7. **PO7: Cultural Sensitivity:** Demonstrate an understanding of cultural differences and their impact on social behavior and apply this understanding in research and practice.
8. **PO8: Lifelong Learning:** Commit to ongoing learning and professional development in social psychology, staying abreast of new research and emerging trends.
9. **PO9: Collaborative Skills:** Work effectively with others in collaborative settings to conduct research, address social issues, and enhance understanding of social psychological concepts.
10. **PO10: Application of Theory to Practice:** Utilize advanced social psychological theories to improve interpersonal relationships, organizational dynamics, and societal understanding.




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Code	Sem.	Course Title	Credits	Marks
UAPSY 301	3	Developmental Psychology A Focus on Adolescent and Adult Development: Part I	3	100
UAPSY 401	4	Developmental Psychology A Focus on Adolescent and Adult Development: Part II	3	100

Course Outcomes (COs)

Course Title: Developmental Psychology: A Focus on Adolescent and Adult Development Part I

Credits: (Typically 3)

Lectures per Week: 3

Unit 1: An Introduction to Lifespan Development and Adolescence Physical & Cognitive Development

1A: Lifespan Development

1. **CO1:** Define lifespan development and describe its scope, including the key areas and stages across the human lifespan.
2. **CO2:** Identify and analyze the basic influences on development, such as historical, age-related, sociocultural factors, and life events.
3. **CO3:** Discuss the key theories and perspectives in lifespan development, focusing on individual differences and developmental changes throughout life.

1B: Adolescence Physical & Cognitive Development 4. **CO4:** Explain the physical maturation processes during adolescence and their implications for overall development. 5. **CO5:** Describe cognitive development during adolescence, including the role of schooling and educational experiences. 6. **CO6:** Identify and assess the threats to adolescent well-being and strategies for addressing these challenges.

Unit 2: Social and Personality Development in Adolescence

7. **CO7:** Analyze the concept of identity formation during adolescence and the processes involved in answering the question "Who am I?"
8. **CO8:** Explore the role of relationships with family and friends in adolescent social and personality development.




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9. **CO9:** Discuss issues related to dating, sexual behavior, and teenage pregnancy, and their impact on adolescent development.

Unit 3: Physical and Cognitive Development in Early Adulthood

10. **CO10:** Describe the physical development changes that occur in early adulthood and their implications for overall health and well-being.
11. **CO11:** Analyze cognitive development in early adulthood, including changes in thinking, problem-solving, and decision-making abilities.
12. **CO12:** Examine the role of higher education in early adulthood, focusing on the impact of pursuing college or other forms of higher education on development.

Unit 4: Social and Personality Development in Early Adulthood

13. **CO13:** Explore the processes of forging intimate relationships during early adulthood, including the concepts of intimacy, liking, and loving.
14. **CO14:** Discuss the course of relationships over time, including the development and maintenance of romantic and social relationships.
15. **CO15:** Analyze career development in early adulthood, focusing on the process of choosing and embarking on a career, and its impact on social and personality development.

Program Outcomes (POs)

Program Title: Bachelor of Arts in Psychology (or relevant undergraduate psychology program)

1. **PO1: Comprehensive Knowledge:** Demonstrate an in-depth understanding of developmental psychology concepts, theories, and research methodologies across different stages of the lifespan.
2. **PO2: Analytical and Critical Thinking:** Apply analytical and critical thinking skills to evaluate developmental processes and issues related to adolescence and early adulthood.
3. **PO3: Practical Application:** Utilize developmental psychology principles to address real-world issues related to physical, cognitive, social, and personality development in adolescents and young adults.
4. **PO4: Research Skills:** Conduct and interpret research on developmental psychology topics, using appropriate methodologies to investigate developmental changes and issues.




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5. **PO5: Communication Skills:** Communicate developmental psychology concepts and research findings effectively, both orally and in writing.
6. **PO6: Ethical and Professional Conduct:** Adhere to ethical standards in the study and application of developmental psychology, including considerations of individual differences and cultural contexts.
7. **PO7: Lifelong Learning:** Show a commitment to ongoing learning and professional development in developmental psychology, staying updated on new research and theories.
8. **PO8: Cultural Sensitivity:** Demonstrate an understanding of cultural differences and their impact on developmental processes, and apply this understanding in research and practice.
9. **PO9: Collaborative Skills:** Work effectively in collaborative settings to conduct research, analyze developmental issues, and enhance understanding of developmental psychology.
10. **PO10: Application of Theory to Practice:** Apply developmental psychology theories to improve personal understanding and professional practice related to adolescent and early adult development.

Course Title: Developmental Psychology: A Focus on Adolescent and Adult Development
Part II

Credits: (Typically 3)

Lectures per Week: 3

Course Outcomes

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

1. **Understand Physical and Cognitive Changes:**
 - Identify and describe the physical and cognitive changes that occur during middle and late adulthood.
 - Analyze the impact of these changes on individuals' overall functioning and quality of life.
2. **Evaluate Health and Wellness Strategies:**
 - Assess common health issues and wellness strategies relevant to middle and late adulthood.
 - Apply knowledge of preventive health measures and lifestyle adjustments to promote well-being in these stages of life.
3. **Examine Social and Personality Development:**




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- Explore theories and research related to personality development, social relationships, and life satisfaction in middle and late adulthood.
 - Critically evaluate how changes in social roles and relationships influence individuals' experiences and identity during these stages.
4. **Apply Developmental Theories:**
- Use developmental theories to analyze real-life scenarios and case studies related to middle and late adulthood.
 - Integrate theoretical concepts with practical examples to better understand the complexities of aging.
5. **Develop Effective Communication Skills:**
- Communicate psychological concepts and research findings effectively through written reports and oral presentations.
 - Engage in discussions that reflect a deep understanding of developmental changes and their implications for individuals and society.

Program Outcomes

For the overall program in Developmental Psychology, these outcomes might include:

1. **Comprehensive Understanding of Developmental Stages:**
 - Students will demonstrate a thorough understanding of human development across the lifespan, including physical, cognitive, and socio-emotional aspects.
2. **Critical Thinking and Analytical Skills:**
 - Students will apply critical thinking skills to analyze developmental phenomena and research, and to evaluate different theoretical perspectives.
3. **Research and Application:**
 - Students will design, conduct, and interpret research related to developmental psychology, applying findings to real-world situations and interventions.
4. **Ethical and Culturally Competent Practice:**
 - Students will adhere to ethical standards in psychological practice and demonstrate cultural competence in understanding and addressing diverse developmental experiences.
5. **Effective Communication and Professional Skills:**
 - Students will exhibit strong communication skills, both written and verbal, and will be prepared for professional roles in psychology and related fields.




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Code	Sem.	Course Title	Credits	Marks
UAPS501	5	Psychological Testing and Statistics: Part I	4	100
UAPS601	6	Psychological Testing and Statistics: Part II	4	100

Psychological Testing and Statistics: Part I
(Credits = 4) 4 lectures per week

Unit 1: Psychological Testing, Assessment, and Norms

CO1: Define and Differentiate Psychological Testing and Assessment

- Objective: Students will be able to clearly define and differentiate between psychological testing and assessment, understanding their respective processes and purposes.

CO2: Describe the Assessment Process and Tools

- Objective: Students will outline the assessment process and identify various tools used, including tests, questionnaires, and observational methods.

CO3: Identify Parties and Settings in Assessment

- Objective: Students will recognize the roles of various stakeholders and describe different settings where psychological assessments are conducted.

CO4: Evaluate the Characteristics of a Good Test

- Objective: Students will assess test quality based on criteria such as reliability, validity, practicality, and fairness.

CO5: Apply and Interpret Norms and Scoring Systems

- Objective: Students will understand how to develop, apply, and interpret norms, distinguishing between norm-referenced and criterion-referenced evaluations and considering cultural factors.

Unit 2: Reliability

CO6: Explain the Concept of Reliability and Sources of Error

- Objective: Students will describe the concept of reliability and identify sources of error variance affecting test results.

CO7: Calculate and Interpret Reliability Estimates

- Objective: Students will compute and interpret various reliability estimates, such as Test-Retest, Parallel Forms, Split-Half, and Inter-Item Consistency measures.




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CO8: Apply Coefficients of Reliability

- Objective: Students will use reliability coefficients to assess test consistency and stability, understanding the implications of the true score model and its alternatives.

CO9: Assess Reliability of Individual Scores

- Objective: Students will apply concepts such as Standard Error of Measurement (SEM) and Standard Error of Difference (SE-Difference) to evaluate the reliability of individual scores.

Unit 3: Validity and Measures of Central Tendency

CO10: Define and Apply Types of Validity

- Objective: Students will define and apply different types of validity, including Face, Content, Criterion-Related, and Construct Validity.

CO11: Evaluate Validity, Bias, and Fairness

- Objective: Students will assess the validity of tests considering bias and fairness to ensure equitable interpretation of results.

CO12: Calculate Measures of Central Tendency

- Objective: Students will calculate and interpret the mean, median, and mode of datasets, including using the assumed mean method when necessary.

CO13: Compare Measures of Central Tendency

- Objective: Students will compare the merits and limitations of mean, median, and mode in various contexts.

Unit 4: Types of Scores, Scales, Frequency Distribution, and Graphical Representations

CO14: Differentiate Types of Scores and Scales

- Objective: Students will distinguish between continuous and discrete scores and understand various measurement scales (Nominal, Ordinal, Interval, Ratio).

CO15: Prepare and Analyze Frequency Distributions

- Objective: Students will prepare and analyze frequency distributions, understanding their advantages and disadvantages.

CO16: Utilize Graphical Representations

- Objective: Students will create and interpret various graphical representations of data, including frequency polygons, histograms, cumulative frequency curves (ogives), and polygons of smoothed frequencies.

Program Outcomes (POs)

PO1: Mastery of Psychological Assessment Principles

- Outcome: Graduates will have a thorough understanding of the principles, methods, and tools used in psychological testing and assessment, applicable across various settings and purposes.

PO2: Proficiency in Evaluating Test Reliability and Validity




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- Outcome: Graduates will be proficient in assessing and applying concepts of reliability and validity in psychological tests, including calculating and interpreting various estimates and understanding their implications.

PO3: Advanced Statistical and Analytical Skills

- Outcome: Graduates will demonstrate advanced skills in statistical analysis related to psychological testing, including measures of central tendency and their application in data interpretation.

PO4: Expertise in Norms and Scoring Systems

- Outcome: Graduates will effectively use and interpret norms and scoring systems, understanding norm-referenced and criterion-referenced evaluations, and addressing cultural considerations.

PO5: Competence in Data Representation and Communication

- Outcome: Graduates will be skilled in preparing and analyzing frequency distributions and employing various graphical representations to effectively communicate data findings and insights.

SEMESTER 6

Psychological Testing and Statistics: Part II
(Credits = 4) 4 lectures per week

Course Outcomes (COs)

Unit 1: Test Development and Correlation

CO1: Define Test Development Processes

- Objective: Students will define and describe the processes involved in test conceptualization, construction, tryout, and revision, including item analysis.

CO2: Understand and Apply Correlation Concepts

- Objective: Students will explain the meaning and types of correlation (positive, negative, zero) and interpret graphical representations, such as scatterplots.

CO3: Calculate and Interpret Correlation Coefficients

- Objective: Students will calculate Pearson's product-moment correlation coefficient and Spearman's rank-difference correlation coefficient, understanding their uses and limitations.

CO4: Apply Regression Analysis

- Objective: Students will understand and apply simple and multiple regression techniques for predicting outcomes based on predictor variables.

Unit 2: Measurement of Intelligence, Intelligence Scales, Probability, Normal Probability Curve, and Standard Scores

CO5: Define and Measure Intelligence




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- Objective: Students will define intelligence, understand various theories, and describe methods for measuring intelligence, including the Stanford-Binet and Wechsler scales.

CO6: Apply Probability Concepts

- Objective: Students will explain the concept of probability, the laws of probability, and the characteristics and applications of the Normal Probability Curve, including calculating areas under the curve.

CO7: Analyze Skewness and Kurtosis

- Objective: Students will define and calculate skewness and kurtosis, understanding their implications for data distribution.

CO8: Calculate and Use Standard Scores

- Objective: Students will calculate and interpret various standard scores (z, t, Stanine), perform linear and non-linear transformations, and understand normalized standard scores.

Unit 3: Assessment of Personality

CO9: Develop and Assess Personality Assessment Instruments

- Objective: Students will describe the fundamental questions in personality assessment and develop instruments considering theory, data reduction methods, and cultural factors.

CO10: Utilize Objective Methods of Personality Assessment

- Objective: Students will identify and apply various objective methods for personality assessment.

CO11: Utilize Projective Methods of Personality Assessment

- Objective: Students will describe and use projective methods of personality assessment, including the Rorschach Inkblots and Thematic Apperception Test (TAT), and evaluate their effectiveness.

Unit 4: Measures of Variability, Percentiles, and Percentile Ranks

CO12: Calculate and Interpret Measures of Variability

- Objective: Students will calculate and interpret measures of variability, including range, quartile deviation, and standard deviation.

CO13: Compare Measures of Variability

- Objective: Students will compare the merits, limitations, and uses of different measures of variability.

CO14: Calculate and Use Percentile Ranks and Scores

- Objective: Students will calculate percentile ranks and percentile scores, understanding their nature, merits, limitations, and uses.

Program Outcomes (POs)

PO1: Mastery of Psychological Test Development and Correlation Techniques

- **Outcome:** Graduates will demonstrate comprehensive knowledge and skills in the processes of test development, including conceptualization,




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construction, tryout, item analysis, and revision. They will be proficient in applying correlation and regression techniques to analyze and interpret data, including Pearson's product-moment correlation coefficient and Spearman's rank-difference method.

PO2: Expertise in Measuring and Analyzing Intelligence

- **Outcome:** Graduates will possess in-depth understanding and practical skills in measuring intelligence using established intelligence scales, such as the Stanford-Binet and Wechsler scales. They will be able to apply probability concepts, understand the Normal Probability Curve, and calculate standard scores for various types of data transformations.

PO3: Advanced Skills in Personality Assessment

- **Outcome:** Graduates will be skilled in developing and utilizing both objective and projective methods for personality assessment. They will be able to create and apply assessment instruments based on theoretical frameworks and data reduction methods, considering cultural influences in personality assessment.

PO4: Proficiency in Statistical Analysis and Interpretation

- **Outcome:** Graduates will exhibit advanced proficiency in calculating and interpreting measures of variability (range, quartile deviation, standard deviation), percentile ranks, and percentile scores. They will be adept at analyzing data distributions, including understanding skewness and kurtosis, and applying graphical representations effectively.

PO5: Competence in Data Representation and Communication

- **Outcome:** Graduates will be capable of preparing and communicating data using various statistical and graphical methods. They will effectively use scatterplots, frequency distributions, and other graphical tools to represent and interpret data insights.

PO6: Application of Theoretical and Practical Knowledge in Professional Settings

- **Outcome:** Graduates will apply their theoretical knowledge and practical skills in psychological testing, intelligence measurement, personality assessment, and statistical analysis to real-world professional settings, demonstrating critical thinking and problem-solving abilities in their assessments and research.




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Code	Sem	Course Title	Credits	Marks
UAPS502	5	Abnormal Psychology: Part I	5	100
UAPS602	6	Abnormal Psychology: Part II	6	100

Course Title: Abnormal Psychology: Part I

Credits: (Typically 4)

Lectures per Week: 4

Paper V: Abnormal Psychology: Part I and Part II

Program Outcomes (POs)

PO1: In-depth Understanding of Abnormal Behavior and Clinical Assessment

- Outcome: Graduates will demonstrate a thorough understanding of what constitutes abnormal behavior according to contemporary definitions, such as those outlined in the DSM-5. They will be proficient in the historical and current perspectives on abnormal behavior, including an understanding of the basic elements of clinical assessment, such as physical and psychosocial assessments, and the classification systems used in diagnosing mental disorders.

PO2: Expertise in Identifying Causal Factors and Theoretical Viewpoints

- Outcome: Graduates will be able to identify and analyze the causes and risk factors associated with abnormal behavior. They will be skilled in applying various theoretical viewpoints to understand these causes, including biological, psychological, and sociocultural perspectives. This includes understanding how these factors contribute to the development and maintenance of mental health conditions.

PO3: Proficiency in Diagnosing and Understanding Anxiety, Obsessive-Compulsive, and Related Disorders

- Outcome: Graduates will have expertise in diagnosing and understanding various anxiety-related disorders, including specific phobias, social phobias, panic disorder, agoraphobia, and generalized anxiety disorder. They will also be skilled in the assessment and treatment of obsessive-compulsive and related disorders.

PO4: Advanced Knowledge of Somatic Symptom and Dissociative Disorders

- Outcome: Graduates will demonstrate advanced knowledge of somatic symptom and related disorders, including hypochondriasis, somatization disorder, pain disorder, and illness anxiety disorder. They will be able to distinguish these from malingering and factitious disorders. Additionally, graduates will have a comprehensive understanding of dissociative disorders, including depersonalization/derealization disorder, dissociative amnesia, dissociative fugue, and dissociative identity disorder.




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Specifics to Each Unit:

Unit 1: Understanding Abnormal Behavior: Clinical Assessment and Diagnosis

- **PO1:** In-depth Understanding of Abnormal Behavior and Clinical Assessment

Unit 2: Causal Factors and Viewpoints

- **PO2:** Expertise in Identifying Causal Factors and Theoretical Viewpoints

Unit 3: Panic, Anxiety, Obsessions and Their Disorders

- **PO3:** Proficiency in Diagnosing and Understanding Anxiety, Obsessive-Compulsive, and Related Disorders

Unit 4: Somatic Symptom and Dissociative Disorders

- **PO4:** Advanced Knowledge of Somatic Symptom and Dissociative Disorders

Course Outcomes (COs)

Unit 1: Understanding Abnormal Behavior: Clinical Assessment and Diagnosis

1. CO1: Define and Describe Abnormal Behavior

- **Objective:** Students will define what constitutes abnormal behavior using the DSM-5 criteria and discuss the historical and contemporary views of abnormal behavior.

2. CO2: Explain the Basics of Clinical Assessment

- **Objective:** Students will describe the basic elements of clinical assessment, including physical and psychosocial assessments, and explain how these assessments contribute to diagnosing mental disorders.

3. CO3: Classify Abnormal Behavior

- **Objective:** Students will categorize various types of abnormal behavior and understand the systems used for classification and diagnosis.

Unit 2: Causal Factors and Viewpoints

1. CO4: Identify Causes and Risk Factors for Abnormal Behavior

- **Objective:** Students will identify and explain various causes and risk factors associated with abnormal behavior, including biological, psychological, and sociocultural factors.

2. CO5: Apply Theoretical Viewpoints to Understand Abnormal Behavior

- **Objective:** Students will apply different theoretical viewpoints (biological, psychological, and sociocultural) to understand the causes and development of abnormal behavior.

3. CO6: Analyze Psychological and Sociocultural Factors

- **Objective:** Students will analyze how psychological and sociocultural factors contribute to abnormal behavior and mental health conditions.

Unit 3: Panic, Anxiety, Obsessions, and Their Disorders

1. CO7: Understand Fear and Anxiety Response Patterns




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- **Objective:** Students will explain the fear and anxiety response patterns and differentiate between various anxiety disorders, including specific phobias, social phobias, panic disorder, and agoraphobia.
- 2. **CO8: Diagnose Generalized Anxiety Disorder**
 - **Objective:** Students will identify and describe the symptoms and diagnostic criteria for generalized anxiety disorder.
- 3. **CO9: Assess Obsessive-Compulsive and Related Disorders**
 - **Objective:** Students will assess and describe obsessive-compulsive and related disorders, understanding their characteristics and diagnostic criteria.

Unit 4: Somatic Symptom and Dissociative Disorders

1. **CO10: Diagnose Somatic Symptom and Related Disorders**
 - **Objective:** Students will diagnose somatic symptom and related disorders, including hypochondriasis, somatization disorder, pain disorder, and illness anxiety disorder, and distinguish these from malingering and factitious disorders.
2. **CO11: Understand Conversion and Dissociative Disorders**
 - **Objective:** Students will explain and diagnose conversion disorders and dissociative disorders, including depersonalization/derealization disorder, dissociative amnesia, dissociative fugue, and dissociative identity disorder.
3. **CO12: Differentiate Somatic and Dissociative Disorders from Other Disorders**
 - **Objective:** Students will differentiate somatic and dissociative disorders from other types of mental health disorders and understand the clinical significance of these distinctions.

Course Title: Abnormal Psychology: Part II

Credits: (Typically 4)

Lectures per Week: 4

Semester 6

Course Outcomes (COs)

Unit 1: Schizophrenia and Other Psychotic Disorders

CO1: Describe the Clinical Picture and Subtypes of Schizophrenia

- **Objective:** Students will be able to describe the clinical features and subtypes of schizophrenia, including the symptoms and diagnostic criteria for each subtype.

CO2: Differentiate Between Various Psychotic Disorders

- **Objective:** Students will differentiate between schizophrenia and other psychotic disorders, such as schizoaffective disorder, schizophreniform disorder, delusional disorder, and brief psychotic disorder.




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CO3: Analyze Risk and Causal Factors for Psychotic Disorders

- Objective: Students will analyze and explain the risk and causal factors for psychotic disorders, including genetic, neurodevelopmental, neurochemical, psychosocial, and cultural factors.

Unit 2: Mood Disorders and Suicide

CO4: Identify and Diagnose Unipolar Depressive Disorders

- Objective: Students will identify and diagnose unipolar depressive disorders, including dysthymia disorder and major depressive disorder, and understand their symptoms and diagnostic criteria.

CO5: Examine Causal Factors in Unipolar Mood Disorders

- Objective: Students will examine and explain the biological and psychological causal factors associated with unipolar mood disorders.

CO6: Assess Bipolar and Related Disorders

- Objective: Students will assess and differentiate between various bipolar and related disorders, including cyclothymic disorder and bipolar disorder (I and II), and understand their biological and psychological causal factors.

CO7: Analyze Sociocultural Factors Affecting Mood Disorders

- Objective: Students will analyze the impact of sociocultural factors on unipolar and bipolar disorders, including treatment approaches and outcomes.

CO8: Understand the Clinical Picture and Causal Patterns of Suicide

- Objective: Students will understand the clinical picture of suicide and analyze the causal patterns and risk factors associated with suicidal behavior.

Unit 3: Personality Disorders

CO9: Describe Clinical Features of Personality Disorders

- Objective: Students will describe the clinical features and diagnostic criteria of various personality disorders.

CO10: Categorize Personality Disorders by Cluster

- Objective: Students will categorize personality disorders into Cluster A, Cluster B, and Cluster C, and describe the characteristics of each cluster.

CO11: Analyze Sociocultural Causal Factors and Treatments for Personality Disorders

- Objective: Students will analyze general sociocultural causal factors for personality disorders and evaluate different treatment approaches for these disorders.

Unit 4: Sexual Variants, Abuse, and Dysfunctions

CO12: Examine Sociocultural Influences on Sexual Practices and Standards

- Objective: Students will examine how sociocultural factors influence sexual practices and standards.

CO13: Understand and Treat Paraphilias




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- Objective: Students will understand the causal factors and treatment approaches for paraphilias.

CO14: Analyze Gender Dysphoria and Sexual Abuse

- Objective: Students will analyze the concepts of gender dysphoria and sexual abuse, including their psychological and sociocultural aspects.

CO15: Identify and Treat Sexual Dysfunctions

- Objective: Students will identify various forms of sexual dysfunction and understand the treatment options available.

Program Outcomes (POs)

1. **PO1: Comprehensive Understanding of Psychotic Disorders**
 - **Outcome:** Graduates will demonstrate a thorough understanding of schizophrenia and other psychotic disorders. They will be able to describe the clinical picture, subtypes, and differentiating features of various psychotic disorders, as well as analyze the risk and causal factors involved.
2. **PO2: Expertise in Diagnosing and Understanding Mood Disorders**
 - **Outcome:** Graduates will possess expertise in diagnosing and understanding unipolar depressive disorders and bipolar and related disorders. They will be skilled in examining causal factors, including biological and psychological influences, and analyzing sociocultural factors affecting these mood disorders.
3. **PO3: Proficiency in Identifying and Treating Personality Disorders**
 - **Outcome:** Graduates will be proficient in identifying and describing the clinical features of personality disorders, categorizing them into clusters, and understanding the sociocultural factors and treatment approaches associated with these disorders.
4. **PO4: Advanced Knowledge of Sexual Variants, Abuse, and Dysfunctions**
 - **Outcome:** Graduates will have advanced knowledge of sexual variants, including paraphilias, gender dysphoria, and sexual abuse. They will be able to analyze sociocultural influences, understand causal factors, and apply appropriate treatment strategies for sexual dysfunctions.
5. **PO5: Application of Theoretical Knowledge to Clinical Practice**
 - **Outcome:** Graduates will apply theoretical knowledge of abnormal psychology to clinical practice, including accurate diagnosis, effective treatment planning, and understanding the multifaceted nature of mental health disorders.
6. **PO6: Critical Analysis and Interpretation of Psychological Disorders**
 - **Outcome:** Graduates will critically analyze and interpret psychological disorders by integrating various theoretical perspectives and empirical evidence, ensuring a holistic understanding of mental health issues.
7. **PO7: Effective Communication and Professional Skills**




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- **Outcome:** Graduates will demonstrate effective communication and professional skills in assessing, diagnosing, and treating individuals with psychological disorders, including the ability to convey complex information in an accessible manner.

Paper VI: Industrial/Organizational Psychology: Part I and Part II (Major Elective; Applied Component)

Code	Sem	Course Title	Credits	Marks
UAPS503	VI	Industrial/Organizational Psychology: Part I	3.5	100 (80+20)
UAPS503	VI	Industrial/Organizational Psychology: Part II	3.5	100 (80+20)

Course Title: Industrial/Organizational Psychology: Part I

Credits: (Credits 4)

Lectures per Week: (6 lectures per week per Batch of 8 students)

SEMESTER 5

Course Outcomes (COs)

Unit 1: Introduction to Industrial/Organizational Psychology & Job Analysis

1. **CO1: Define and Describe Industrial/Organizational Psychology**




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- **Objective:** Students will define Industrial/Organizational Psychology, understand its role as a profession and science, and explain its historical development.
- 2. **CO2: Differentiate Between Job-Oriented and Person-Oriented Approaches to Job Analysis**
 - **Objective:** Students will differentiate between job-oriented and person-oriented approaches to job analysis and describe the purposes and methods of job analysis.
- 3. **CO3: Collect and Evaluate Job Analysis Information**
 - **Objective:** Students will describe methods for collecting job analysis information, including various approaches and the process of job evaluation for setting salary levels.

Unit 2: Performance Appraisal

- 4. **CO4: Explain the Importance of Performance Appraisal**
 - **Objective:** Students will explain why performance appraisal is essential and describe various performance criteria used in appraisals.
- 5. **CO5: Evaluate Performance Using Various Methods**
 - **Objective:** Students will assess job performance using both objective and subjective methods, including 360-degree feedback.

Unit 3: Assessment Methods for Selection and Placement & Recruitment

- 6. **CO6: Identify and Apply Assessment Methods for Selection and Placement**
 - **Objective:** Students will identify job-related characteristics and apply different psychological tests, including cognitive ability tests, psychomotor ability tests, knowledge and skills tests, personality tests, emotional intelligence tests, integrity tests, and vocational interest tests.
- 7. **CO7: Utilize Biographical Information and Other Selection Tools**
 - **Objective:** Students will use biographical information, interviews, work samples, assessment centers, and electronic assessments in the selection and placement process.
- 8. **CO8: Implement Effective Recruitment Strategies**
 - **Objective:** Students will implement recruitment strategies to attract and retain applicants, and address policies and issues related to selection, including reservation policies and gender and disability status.

Unit 4: Training

- 9. **CO9: Conduct a Needs Assessment for Training**


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- **Objective:** Students will conduct a needs assessment to determine training requirements and set training objectives.
- 10. **CO10: Design and Implement Training Programs**
 - **Objective:** Students will design training programs considering trainee characteristics, design factors, and work environment. They will also understand various training methods such as audiovisual instruction, autoinstruction, conference/lecture, on-the-job training, modeling/role-playing/simulation, e-learning, and mentoring/executive coaching.
- 11. **CO11: Evaluate Training Programs**
 - **Objective:** Students will understand the delivery and evaluation of training programs to ensure effectiveness and alignment with organizational goals.

Program Outcomes (POs)

1. **PO1: Comprehensive Understanding of Industrial/Organizational Psychology**
 - **Outcome:** Graduates will have a comprehensive understanding of the field of Industrial/Organizational Psychology, including its historical development, core concepts, and its application as both a profession and a science.
2. **PO2: Expertise in Job Analysis and Performance Appraisal**
 - **Outcome:** Graduates will be skilled in conducting job analyses using various methods, evaluating job performance through different appraisal methods, and understanding the purposes and processes involved in job analysis and performance appraisal.
3. **PO3: Proficiency in Selection, Placement, and Recruitment Processes**
 - **Outcome:** Graduates will be proficient in applying various psychological assessment methods for selection and placement, implementing effective recruitment strategies, and addressing related policies and issues.
4. **PO4: Ability to Design and Implement Effective Training Programs**
 - **Outcome:** Graduates will be able to design, implement, and evaluate training programs based on a thorough needs assessment, utilizing a range of training methods and understanding the factors that impact training effectiveness.
5. **PO5: Application of Theoretical and Practical Knowledge to Organizational Settings**
 - **Outcome:** Graduates will apply theoretical and practical knowledge of Industrial/Organizational Psychology to real-world organizational settings, including enhancing job performance, improving selection and placement processes, and developing effective training programs.




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SEMESTER 6

Course Title: Industrial/Organizational Psychology: Part I

Credits: (Credits 4)

Lectures per Week: (6 lectures per week per Batch of 8 students)

Course Outcomes (COs)

Unit 1: Theories of Employee Motivation

1. **CO1: Define and Explain Employee Motivation**
 - **Objective:** Students will define motivation and explain its significance in the workplace.
2. **CO2: Describe and Compare Work Motivation Theories**
 - **Objective:** Students will describe various work motivation theories, including need theories, reinforcement theory, expectancy theory, self-efficacy theory, justice theories, goal-setting theory, control theory, and action theory, and compare their applications in organizational settings.

Unit 2: Job Satisfaction & Productive and Counterproductive Employee Behaviour

3. **CO3: Analyze Job Satisfaction**
 - **Objective:** Students will analyze the nature of job satisfaction, assess job satisfaction using appropriate methods, identify antecedents of job satisfaction, and evaluate the potential effects of job satisfaction on employees and organizations.
4. **CO4: Distinguish Between Productive and Counterproductive Employee Behaviours**
 - **Objective:** Students will distinguish between productive behaviors, such as Organizational Citizenship Behaviour (OCB), and counterproductive behaviors, including withdrawal, aggression, sabotage, theft, labor unrest, and strikes.

Unit 3: Work Groups, Work Teams & Leadership and Power in Organizations

5. **CO5: Differentiate Between Work Groups and Work Teams**
 - **Objective:** Students will differentiate between work groups and work teams and understand key concepts related to group and team dynamics.
6. **CO6: Understand Leadership and Power Dynamics in Organizations**
 - **Objective:** Students will define leadership, identify sources of influence and power, discuss issues related to the abuse of supervisory power, and




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understand different approaches to leadership. They will also explore gender differences in leadership styles and cross-cultural variations in leadership.

Unit 4: Organizational Development and Theory

7. CO7: Explain Organizational Development and Theories

- **Objective:** Students will explain the concept of organizational development and describe various organizational theories that influence organizational behavior and effectiveness.

Program Outcomes (POs)

1. PO1: Advanced Knowledge of I/O Psychology

- **Outcome:** Graduates will possess advanced knowledge of Industrial/Organizational Psychology, including theories of employee motivation, job satisfaction, and the dynamics of work groups and leadership.

2. PO2: Application of Theoretical Concepts to Real-World Problems

- **Outcome:** Graduates will be able to apply theoretical concepts from I/O Psychology to analyze and address real-world organizational problems, such as improving job satisfaction, enhancing productive behavior, and managing counterproductive behavior.

3. PO3: Critical Analysis and Discussion of I/O Psychology Issues

- **Outcome:** Graduates will critically discuss issues related to Industrial/Organizational Psychology, including the dynamics of work teams, leadership challenges, and organizational development.

4. PO4: Preparedness for Advanced Study and Careers in I/O Psychology

- **Outcome:** Graduates will have built a sufficient foundation in I/O Psychology to pursue postgraduate studies or careers in fields related to Industrial/Organizational Psychology.

5. PO5: Understanding and Managing Organizational Behavior

- **Outcome:** Graduates will understand and manage various aspects of organizational behavior, including employee motivation, job satisfaction, and leadership dynamics, contributing to effective organizational development and performance.

Paper VII: Cognitive Psychology: Parts I and Part II

Code	Sem	Course Title	Credits	Marks
UAPS504	5	Cognitive Psychology: Part I	4	100
UAPS604	6	Cognitive Psychology: Part II	4	100

Course Title: Cognitive Psychology: Part I




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Credits: (Credits 4)
Lectures per Week: 4 lectures per week

SEMESTER 5

Course Outcomes (COs)

Unit I: Perception: Recognizing Patterns and Objects

1. **CO1: Understand Fundamental Concepts of Perception**
 - **Objective:** Students will be able to define and describe fundamental concepts in perception, including how perceptual systems operate and how they contribute to recognizing patterns and objects.
2. **CO2: Analyze Human Perceptual Systems**
 - **Objective:** Students will analyze the components and functions of human perceptual systems and understand how these systems facilitate pattern and object recognition.
3. **CO3: Explore Recognition and Social Perception**
 - **Objective:** Students will explore theories and processes involved in recognition and social perception, including how individuals identify and interpret social cues and patterns.

Unit II: Attention and Consciousness

4. **CO4: Describe the Nature of Attention**
 - **Objective:** Students will describe the nature and types of attention, including selective attention, sustained attention, and the factors that influence attentional processes.
5. **CO5: Understand the Concept of Consciousness**
 - **Objective:** Students will understand the concept of consciousness, including different states of consciousness and how they relate to cognitive processes.

Unit III: Sensory, Short-Term, and Working Memory

6. **CO6: Explain Sensory Memory**
 - **Objective:** Students will explain the characteristics and functions of sensory memory, including how sensory information is initially processed and retained.




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7. CO7: Understand Short-Term and Working Memory

- **Objective:** Students will differentiate between short-term memory and working memory, and describe their functions, limitations, and roles in cognitive processes.

Unit IV: Long-Term Memory

8. CO8: Explore the Structure of Long-Term Memory

- **Objective:** Students will explore the structure and organization of long-term memory, including its subdivisions and how information is stored and retrieved.

9. CO9: Examine Memory and Amnesia

- **Objective:** Students will examine the impact of amnesia on long-term memory and understand the processes involved in memory formation and recall.

10. CO10: Differentiate Between Non-Declarative and Declarative Memory

- **Objective:** Students will differentiate between non-declarative (implicit) memory and declarative (explicit) memory, and describe the types and functions of each memory system.

Program Outcomes (POs)

1. PO1: In-Depth Understanding of Cognitive Processes

- **Outcome:** Graduates will have an in-depth understanding of cognitive processes such as perception, attention, and memory, and how these processes contribute to human cognition and behavior.

2. PO2: Application of Cognitive Theories to Real-World Problems

- **Outcome:** Graduates will be able to apply theories and concepts of cognitive psychology to analyze and address real-world problems related to perception, attention, and memory.

3. PO3: Critical Analysis of Memory and Perception Systems

- **Outcome:** Graduates will critically analyze the functions and limitations of different memory systems (sensory, short-term, working, and long-term memory) and perceptual processes, including recognition and social perception.

4. PO4: Understanding of Cognitive Disorders and Amnesia

- **Outcome:** Graduates will understand the impact of cognitive disorders, such as amnesia, on memory systems and cognitive functioning, and will be able to discuss the implications for cognitive psychology.

5. PO5: Ability to Conduct Research in Cognitive Psychology




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- **Outcome:** Graduates will be equipped with the knowledge to conduct research in cognitive psychology, including designing experiments, analyzing data, and interpreting findings related to perception, attention, and memory.
- 6. **PO6: Development of Critical Thinking and Analytical Skills**
 - **Outcome:** Graduates will develop critical thinking and analytical skills necessary for evaluating cognitive theories and research, and for applying these skills to solve complex cognitive problems.

Course Title: Cognitive Psychology: Part II

Credits: (Credits 4)

Lectures per Week: 4 lectures per week

SEMESTER 6

Course Outcomes (COs)

Unit I: Learning, Forgetting, and Imagery

1. **CO1: Understand Learning Processes**
 - **Objective:** Students will understand the processes of learning, including encoding, storage, and retrieval, and how these processes contribute to memory formation and knowledge acquisition.
2. **CO2: Analyze Forgetting Mechanisms**
 - **Objective:** Students will analyze the mechanisms and theories of forgetting, including reasons why information is lost or becomes inaccessible over time.
3. **CO3: Apply Knowledge to Everyday Memory**
 - **Objective:** Students will apply cognitive psychology concepts to everyday or real-world memory scenarios, understanding practical implications of memory processes in daily life.
4. **CO4: Explore Imagery and Concepts**
 - **Objective:** Students will explore the role of mental imagery in cognitive processes and how concepts are formed and represented in the mind.

Unit II: Problem Solving

5. **CO5: Define and Classify Problem Types**
 - **Objective:** Students will define problems and classify different types of problems, understanding their characteristics and how they are approached.




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6. **CO6: Review Historical and Theoretical Perspectives**
 - **Objective:** Students will review the historical background and theoretical perspectives on problem solving, including the concept of insight and its role in problem resolution.
7. **CO7: Differentiate Between Expert and Creative Problem Solving**
 - **Objective:** Students will differentiate between knowledge-rich (expert) problem solving and creative problem solving, and understand how expertise and creativity influence problem resolution.

Unit III: Decision Making

8. **CO8: Explain Decision-Making Theories**
 - **Objective:** Students will explain various theories of decision making, including expected value theory, utility theory, and prospect theory, and how these theories guide decision-making processes.
9. **CO9: Analyze Decision-Making Heuristics and Processes**
 - **Objective:** Students will analyze different decision-making heuristics and processes, such as the affect heuristic, two-system approaches, and fast and frugal heuristics, and understand their applications and limitations.
10. **CO10: Explore Neuroeconomics and Naturalistic Decision Making**
 - **Objective:** Students will explore neuroeconomics, including how neuroscience approaches contribute to understanding decision making, and naturalistic decision making, focusing on real-world decision contexts.

Unit IV: Reasoning

11. **CO11: Understand Deductive Reasoning**
 - **Objective:** Students will understand the principles of deductive reasoning, including how conclusions are logically derived from premises.
12. **CO12: Explore Inductive Reasoning and Hypothesis Testing**
 - **Objective:** Students will explore inductive reasoning, including methods for testing and generating hypotheses, and understand its role in scientific reasoning and everyday problem solving.

Program Outcomes (POs)

1. **PO1: Comprehensive Understanding of Cognitive Processes**
 - **Outcome:** Graduates will have a comprehensive understanding of cognitive processes related to learning, forgetting, imagery, problem solving, decision making, and reasoning.
2. **PO2: Application of Cognitive Psychology Theories**




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- **Outcome:** Graduates will be able to apply cognitive psychology theories to analyze and solve problems in various contexts, including real-world scenarios and professional settings.
- 3. **PO3: Critical Analysis of Decision-Making and Problem-Solving Strategies**
 - **Outcome:** Graduates will critically analyze different strategies for decision making and problem solving, including the use of heuristics, decision theories, and the impact of cognitive biases.
- 4. **PO4: Insight into Memory and Cognitive Function**
 - **Outcome:** Graduates will gain insight into how memory functions, including the processes of learning, forgetting, and the application of imagery and concepts in cognitive psychology.
- 5. **PO5: Research Skills in Cognitive Psychology**
 - **Outcome:** Graduates will develop research skills necessary for investigating cognitive processes, including designing studies, analyzing data, and interpreting findings related to learning, decision making, and reasoning.
- 6. **PO6: Knowledge Integration for Advanced Study and Careers**
 - **Outcome:** Graduates will integrate knowledge from cognitive psychology to pursue advanced studies or careers in psychology, cognitive science, or related fields, demonstrating a thorough understanding of cognitive processes and their applications

Paper VIII: Practicals in Cognitive Processes and Psychological Testing

Code	Sem	Course Title	Credits	Marks
UAPS504	5	Practicals in Cognitive processes and psychological Testing: Part I	4	100
UAPS604	6	Practicals in Cognitive processes and psychological Testing: Part II	4	100

Course Title: Practicals in Cognitive processes and psychological Testing: Part II

Credits: (Credits 4)

Lectures per Week: (6 lectures per week per Batch of 8 students)

SEMESTER 5

Course Outcomes (COs)

A. Introduction to Experimental Psychology and Statistics in Psychological Research




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1. **CO1: Understand and Define Variables**
 - **Objective:** Students will understand the different types of variables (independent, dependent, control) and be able to provide operational definitions for each in the context of psychological research.
2. **CO2: Design and Implement Experimental Designs**
 - **Objective:** Students will be able to identify and apply various experimental designs (one IV, two IVs), understand the concepts of sampling, randomization, and counterbalancing in designing experiments.
3. **CO3: Formulate and Test Hypotheses**
 - **Objective:** Students will formulate null and alternative hypotheses for experimental studies and understand their roles in statistical analysis.
4. **CO4: Apply Statistical Analysis Techniques**
 - **Objective:** Students will apply inferential statistical methods such as t-tests and F-tests, understand concepts of statistical significance, and interpret the results.
5. **CO5: Utilize Scales of Measurement**
 - **Objective:** Students will understand different scales of measurement (nominal, ordinal, interval, ratio) and their applications in psychological research.
6. **CO6: Write Reports in APA Format**
 - **Objective:** Students will learn to write research reports following APA format, including structuring sections like abstract, introduction, methods, results, and discussion.

B. Practice Exercises

7. **CO7: Design and Analyze Experimental Situations**
 - **Objective:** Students will analyze given experimental situations by discussing design, hypotheses, IV, DV, control variables, statistical analysis methods, and ethical considerations.
8. **CO8: Design Experiments and Frame Hypotheses**
 - **Objective:** Students will design experiments based on given variables, frame appropriate hypotheses, discuss statistical analysis methods, and identify ethical issues.

C. Practice Experiment

9. **CO9: Conduct and Report on Experiments**
 - **Objective:** Students will conduct an experiment, review and analyze an original article related to their experiment, and write the results and discussion sections in APA format.




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D. Two Experiments in Cognitive Processes

10. CO10: Conduct and Analyze Cognitive Experiments

- **Objective:** Students will conduct two cognitive experiments, pool and analyze group data, and apply appropriate statistical techniques.

11. CO11: Write Comprehensive Research Reports

- **Objective:** Students will write detailed research reports including abstract, introduction, methods, results (individual and group), discussion, and conclusion for their experiments.

E. One Psychological Test

12. CO12: Administer and Interpret Psychological Tests

- **Objective:** Students will administer, score, and interpret a psychological test, and write a comprehensive report on the findings.

13. CO13: Calculate and Report Test Reliability and Validity

- **Objective:** Students will calculate the reliability and validity of the administered psychological test and include these calculations in their report.

Program Outcomes (POs)

1. PO1: Mastery of Experimental and Statistical Methods

- **Outcome:** Graduates will have a thorough understanding of experimental designs, statistical analysis, and the application of these methods in psychological research.

2. PO2: Proficiency in Research Design and Implementation

- **Outcome:** Graduates will be proficient in designing and implementing experiments, formulating hypotheses, and applying various statistical techniques to analyze data.

3. PO3: Competence in Report Writing and APA Formatting

- **Outcome:** Graduates will be skilled in writing research reports in APA format, demonstrating the ability to clearly and accurately communicate research findings.

4. PO4: Practical Experience in Psychological Testing

- **Outcome:** Graduates will gain practical experience in administering, scoring, and interpreting psychological tests, and understanding the reliability and validity of these tests.

5. PO5: Ability to Conduct and Analyze Cognitive Experiments

- **Outcome:** Graduates will have the ability to conduct and analyze experiments related to cognitive processes, interpret data, and write comprehensive research reports.

6. PO6: Ethical Considerations in Research and Testing




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- **Outcome:** Graduates will understand and apply ethical considerations in both experimental research and psychological testing, ensuring responsible and ethical conduct in their professional practice.
- 7. **PO7: Application of Theoretical Knowledge in Practical Settings**
 - **Outcome:** Graduates will effectively apply theoretical knowledge of cognitive processes and psychological testing in practical settings, including research, professional, and clinical environments.

SEMESTER 6

Course Title: Practicals in Cognitive processes and psychological Testing: Part II

Credits: (Credits 4)

Lectures per Week: (6 lectures per week per Batch of 8 students)

Course Outcomes (COs)

A. Introduction to Experimental Psychology and Statistics in Psychological Research

1. **CO1: Design and Implement Complex Experimental Designs**
 - **Objective:** Students will learn to design and implement complex (mixed) experimental designs, understanding the interaction between multiple independent variables and their effects.
2. **CO2: Perform Advanced Statistical Analysis**
 - **Objective:** Students will apply inferential statistical methods such as ANOVA and Chi-Square tests to analyze complex data sets and interpret the results.

B. Review a Research Paper

3. **CO3: Critically Review Research Literature**
 - **Objective:** Students will review and critique a research paper, demonstrating an understanding of research methodologies, statistical analysis, and theoretical contributions.

C. Two Experiments in Cognitive Processes

4. **CO4: Conduct and Analyze Cognitive Experiments**
 - **Objective:** Students will conduct two cognitive experiments, pool and analyze group data, apply appropriate statistical techniques, and write comprehensive reports including abstract, introduction, methods, results, discussion, and conclusions.

D. One Psychological Test




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5. CO5: Administer and Debrief Psychological Tests

- **Objective:** Students will conduct a psychological test, debrief participants, and write detailed reports on the test administration, results, and interpretations.

E. One Computer-Based Experiment (Coglab)

6. CO6: Utilize Computer-Based Tools for Experiments

- **Objective:** Students will conduct a computer-based experiment using CogLab, demonstrating proficiency in using technology for psychological research.

F. Use of Excel

7. CO7: Apply Excel for Data Analysis

- **Objective:** Students will gain proficiency in using Excel for statistical analysis, including data entry, manipulation, and performing statistical tests on experimental data.

8. CO8: Perform Statistical Analysis Using Excel

- **Objective:** Students will apply Excel to conduct statistical analysis for their experiments, including creating graphs, performing calculations, and interpreting results.

Program Outcomes (POs)

1. PO1: Proficiency in Advanced Experimental Designs

- **Outcome:** Graduates will have advanced skills in designing and implementing complex experimental designs, including mixed designs involving multiple independent variables.

2. PO2: Competence in Advanced Statistical Analysis

- **Outcome:** Graduates will be proficient in applying advanced inferential statistical methods such as ANOVA and Chi-Square, and will be able to interpret and report on complex data analyses.

3. PO3: Critical Review and Application of Research Literature

- **Outcome:** Graduates will be capable of critically reviewing and applying research literature, demonstrating an understanding of research methods, statistical analyses, and theoretical frameworks.

4. PO4: Expertise in Conducting and Reporting Cognitive Experiments

- **Outcome:** Graduates will have practical experience in conducting cognitive experiments, analyzing data, and writing detailed research reports that adhere to scientific standards.

5. PO5: Skill in Administering Psychological Tests




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- **Outcome:** Graduates will have hands-on experience in administering psychological tests, debriefing participants, and reporting on test results and interpretations.
- 6. **PO6: Proficiency with Computer-Based Experimentation**
 - **Outcome:** Graduates will be adept at using computer-based tools such as CogLab for conducting psychological experiments, demonstrating technical skills in research.
- 7. **PO7: Competence in Data Analysis Using Excel**
 - **Outcome:** Graduates will be proficient in using Excel for data analysis, including statistical calculations and graphical representations of research data.
- 8. **PO8: Ability to Integrate Practical Skills with Theoretical Knowledge**
 - **Outcome:** Graduates will integrate practical skills in experimental design, statistical analysis, and psychological testing with theoretical knowledge, preparing them for advanced studies or professional practice in psychology.




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**B.A. Arabic
Programme Outcomes**

PO No.	Upon Completion of B.A. Degree Programme, the graduates will be able to:
PO-1	Acquire knowledge of the major traditions of literatures written in Arabic, understand literature in its social and cultural contexts and interpret ideologies of World's greatest writers.
PO-2	Become enriched intellectually and ethically with the lofty and profound thoughts and ideas extracted from great literatures of Arabic.
PO -3	Build themselves with rich life skills, comprehend social issues and become agents in bringing about positive societal transformation.
PO-4	Be a global citizen gifted with the world Classical Language, Arabic and communicate excellently with a good degree of grammatical accuracy and flair.
PO-5	Secure prospective careers in International bodies, journalism, translation, Administrative services and teaching Arabic.
PO-6	Pursue critical research in the methods of Arabic language learning and literature teaching.

Programme Specific Outcomes

PSO	Upon completion of B.A. Arabic Degree Programme, the students will be able to:
PSO1	Apply critical and theoretical approaches to the reading and analysis of literary and cultural texts in multiple genres.
PSO2	Cultivate communicative competency and writing skills required in the technical job market.
PSO3	Use ICT effectively both as a means of communication and as an aid to learning Arabic.
PSO4	Become freelance writers, journalists and creative artists.
PSO5	Work as translators in the Arab speaking world.
PSO6	Develop competence and caliber to serve as efficient teachers in Arabic.




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SEMESTER – I			
P-1	APPLIED GRAMMAR AND TRANSLATION-I		18ULAR11
Hrs/ Week: 6	Hrs/ Sem: 90	Hrs/ Unit:18	Credits: 3

Course Outcomes (CO)

CO No.	Upon completion of this course, students will be able to:	PSO addressed	Cognitive level
CO-1	Able to distinguish different alphabet.	PSO-2	Understanding
CO-2	Develop the correct Pronunciation.	PSO-6	Creating
CO-3	Understand the basic grammar.	PSO-1	Understanding & Remembering
CO-4	Develop reading skill.	PSO-3, 6	Applying & Creating
CO-5	Enhances the Skill of writing of Arabic Language.	PSO-6	Creating

SEMESTER- I		
DSC – I	GRAMMAR – I	
Hrs/ Week: 5	Hrs/ Sem: 75	Hrs/ Unit: 15
Credits:4		

Course Outcomes (CO)

CO No.	Upon completion of this course, students will be able to:	PSO addressed	Cognitive level
CO-1	Develop the skill to write the conjugation of past tense verbs.	PSO-6	Creating
CO-2	Evaluating the conjugation of imperfect tense verbs.	PSO-5	Evaluating
CO-3	Distinguish the conjugation of imperative verbs.	PSO-2	Analyzing
CO-4	Comprehend the kinds of verbs and the usage.	PSO-3	Applying

SEMESTER- I		
DSC- 2	PROSE –I	
Hrs/ Week: 5	Hrs/ Sem: 75	Hrs/ Unit: 15
Credits:4		

Course Outcomes (CO)

CO No.	Upon completion of this course, students will be able to:	PSO addressed	Cognitive level
CO-1	Understand the style of classical prose.	PSO-2	Understanding
CO-2	Analyze the different style of writings.	PSO-3	Analyzing
CO-3	Write short stories in the Arabic language.	PSO-6	Creating
CO-4	Understand the morals and ethics of Arabic traditional stories.	PSO-1, 2	Remembering & Understanding



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	SEMESTER - I	
Allied-1-1	History of the Prophets-I	18UAAR11
Hrs/ Week: 6	Hrs/ Sem: 90 Hrs/ Unit: 18	Credits:5

Course Outcomes (CO)

CO No.	Upon completion of this course, students will be able to:	PSO addressed	Cognitive level
CO-1	Able to evaluate the essence of Faith.	PSO-5	Evaluating
CO-2	Know the importance of Zam Zam water.	PSO-4, 5	Analyzing & Evaluating
CO-3	Comprehend the life of Prophet Ibrahim (AS.)	PSO-2	Understanding
CO-4	Learn about the life of Prophet Yousuf (AS).	PSO-2	Understanding
CO-5	Asses and estimate the nature of the characters illustrated in the biographies.	PSO-5	Evaluating

SEMESTER – II			
PAPER-II	APPLIED GRAMMAR AND TRANSLATION-II		18ULAR21
Hrs/ Week: 6	Hrs/ Sem: 90	Hrs/ Unit: 18	Credits: 3

Course Outcomes (CO)

CO No.	Upon completion of this course, students will be able to:	PSO addressed	Cognitive level
CO-1	Able to identify the nouns.	PSO-2, 3	Understanding & Applying
CO-2	Able to identify the interrogatives.	PSO-2, 3	Understanding & Applying
CO-3	Able to differentiate definite nouns.	PSO-5	Evaluating
CO-4	Develop the skill to identify indefinite nouns.	PSO-2, 3	Understanding & Applying
CO-5	Understand the application of preposition.	PSO-2	Applying & Creating




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SEMESTER- II			
DSC-3	GRAMMAR – II	18UCAR21	
Hrs/ Week: 5	Hrs/ Sem: 75	Hrs/ Unit: 15	Credits:4

Course Outcomes (CO)

CO No.	Upon completion of this course, students will be able to:	PSO addressed	Cognitive level
CO-1	Understand and evaluate the types of Arabic Sentences.	PSO-2, 5	Understanding & Evaluating
CO-2	Analyze the functioning of Arabic Prepositions.	PSO-4	Analyzing
CO-3	Be enriched with the rules of Arabic Grammar.	PSO-3, 6	Applying & Creating
CO-4	Classify and make use of different particles in Arabic.	PSO-5, 6	Evaluating & Creating

II- SEMESTER			
DSC-4	PROSE II	18UCAR22	
Hrs/ Week: 5	Hrs/ Sem: 75	Hrs/ Unit: 15	Credits: 4

Course Outcomes (CO)

CO No.	Upon completion of this course, students will be able to:	PSO addressed	Cognitive level
CO-1	Understand the style of classical prose.	PSO-2, 4	Understanding & Analyzing
CO-2	Analyze the different styles of writings.	PSO-4	Analyzing
CO-3	Understand and assimilate the crux of the hadeeth.	PSO-2, 3	Understanding & Applying
CO-4	Study the Arabic vocabulary, sentence structures and the diction.	PSO-5, 6	Evaluating & Creating

SEMESTER-II			
A1-2	History of the Prophets – II	18UAAR21	
Hrs/Week:6	Hrs/Sem: 90	Hrs/Unit : 18	Credit:5

Course Outcomes (CO)

CO No.	Upon completion of this course, students will be able to:	PSO addressed	Cognitive level
CO-1	Enrich themselves with the art of writing simple sentences.	PSO-6	Creating
CO-2	Analyze the types of sentences.	PSO-4	Analyzing
CO-3	Evaluate the history of the major Prophets in Islam.	PSO-5	Evaluating
CO-4	Learn the art of pious living from the biographies of the Prophets.	PSO-5	Evaluating



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III- SEMESTER			
DSC-5	Grammar –III	18UCAR31	
Hrs/ Week: 6	Hrs/ Sem: 90	Hrs/ Unit: 18	Credits: 5

Course Outcomes (CO)

CO No.	Upon completion of this course, students will be able to:	PSO addressed	Cognitive level
CO-1	Write flawless sentences in Arabic.	PSO-6	Creating
CO-2	Identify grammatical errors in sentences.	PSO-1	Understanding
CO-3	Develop competency in writing complex sentences using adverbs and adjectives.	PSO-3, 6	Applying & Creating
CO-4	Grasp the meanings of vowel-less Arabic sentences.	PSO-1	Understanding

III SEMESTER			
Allied -II-1	History of Arabic Literature -I	18UAAR31	
Hrs/ Week: 6	Hrs/ Sem: 90	Hrs/ Unit: 18	Credits: 5

Course Outcomes (CO)

CO No.	Upon completion of this course, students will be able to:	PSO addressed	Cognitive level
CO-1	Understand the customs and cultures of the Arabs.	PSO-2	Understanding
CO-2	Be familiar with the social environment of Arabs.	PSO-2	Understanding
CO-3	Estimate the concepts of Muallaqath (Classical poetry)	PSO-5	Evaluating
CO-4	Educate themselves with the lessons gained from the Eminent poets of the Jaahiliya (Period of ignorance).	PSO-3, 5	Applying & Evaluating

III SEMESTER			
DSE-I (A)	Arabic Type Writing – Practical	18UEAR3A	
Hrs/ Week: 4	Hrs/ Sem: 60	Hrs/ Unit: 12	Credits: 4

Course Outcomes (CO)

CO No.	Upon completion of this course, students will be able to:	PSO addressed	Cognitive level
CO-1	Be trained in Arabic typing.	PSO-6	Creating
CO-2	Develop expertise in drafting official letters.	PSO-6	Creating
CO-3	Acquire skills in the nuances of typing Arabic vowel marks.	PSO-3, 6	Applying & Creating
CO-4	Gain proficiency in typing official documents like passport, visa, and license in appropriate formats.	PSO-6	Creating



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III SEMESTER			
DSE-I (B)	Commercial Arabic	18UEAR3B	
Hrs/ Week: 4	Hrs/ Sem: 60	Hrs/ Unit: 12	Credits: 4

Course Outcomes (CO)

CO No.	Upon completion of this course, students will be able to:	PSO addressed	Cognitive level
CO-1	Comprehend the techniques of correspondences in Arabic.	PSO-2	Understanding
CO-2	Learn the art of writing business letters digitally.	PSO-3	Applying
CO-3	Be competent in employing correct terms of business in Arabic.	PSO-6	Creating
CO-4	Improve communicative skills in commercial transactions.	PSO-3	Applying

III SEMESTER			
NME-I	Functional Arabic -I	18SEAR31	
Hrs/ Week: 2	Hrs/ Sem: 30	Hrs/ Unit: 6	Credits:1

Course Outcomes (CO)

CO No.	Upon completion of this course, students will be able to:	PSO addressed	Cognitive level
CO-1	Distinguish the modern usages of Arabic.	PSO-2	Understanding
CO-2	Be exposed to the kind of Arabic language used in the multimedia.	PSO-2	Understanding
CO-3	Develop felicity of expressions in today's context.	PSO-6	Creating
CO-4	Acquire fluency and enhance eloquence in delivering lectures.	PSO-6	Creating

IV SEMESTER			
DSC-6	PROSE – III	18UCAR41	
Hrs/ Week: 6	Hrs/ Sem: 90	Hrs/ Unit: 18	Credits:5

Course Outcomes (CO)

CO No.	Upon completion of this course, students will be able to:	PSO addressed	Cognitive level
CO-1	Understand the style of classical prose.	PSO-2	Understanding
CO-2	Develop proficiency in comparative analysis of classical and modern prose texts.	PSO-6	Creating
CO-3	Critically examine the niceties of the Quranic verses.	PSO-4, 5	Analyzing & Evaluating
CO-4	Comprehend the stylistic features of the classical prose.	PSO-2	Understanding



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IV SEMESTER			
Allied 2- II	History of Arabic Literature-II	18UAAR41	
Hrs/ Week: 6	Hrs/ Sem: 90	Hrs/ Unit: 18	Credits: 5

Course Outcomes (CO)

CO No.	Upon completion of this course, students will be able to:	PSO addressed	Cognitive level
CO-1	Closely observe the customs and cultures of the Arabs.	PSO-4	Analyzing
CO-2	Analyze the social milieu of Arabs.	PSO-4	Analyzing
CO-3	Enrich themselves with the knowledge of the Ummayyat and Abbasiat – the Arab tribal periods in terms of the spiritual, political and social developments.	PSO-3	Applying
CO-4	Comprehend the richness and depth of the poetry of eminent writers in that period.	PSO-2	Understanding

IV SEMESTER			
DSE-II(A)	Computer Literacy with Arabic	18UEAR4A	
Hrs/ Week: 4	Hrs/ Sem : 60	Hrs/ Unit: 12	Credits: 4

Course Outcomes (CO)

CO No.	Upon completion of this course, students will be able to:	PSO addressed	Cognitive level
CO-1	Acquire basic literacy in computer.	PSO-2	Understanding
CO-2	Familiarize with the exact Arabic terms in operating computers.	PSO-3	Applying
CO-3	Understand the mechanism involving the input and output devices.	PSO-2	Understanding & Analyzing
CO-4	Develop skill in networking and exploit the multimedia to the best advantage.	PSO-6	Creating

IV SEMESTER			
DSE-II(B)	LETTER WRITING IN ARABIC	18UEAR4B	
Hrs/ Week: 4	Hrs/ Sem : 60	Hrs/ Unit: 12	Credits: 4

Course Outcomes (CO)

CO No.	Upon completion of this course, students will be able to:	PSO addressed	Cognitive level
CO-1	Develop the ability in drafting different kinds of letters.	PSO-6	Creating
CO-2	Become experts in composing the formats of letters.	PSO-6	Creating
CO-3	Enhance skill in employing the right terms suitable to letters.	PSO-6	Creating
CO-4	Gain knowledge in drafting commercial documents.	PSO-3	Applying



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IV SEMESTER			
NME-II	FUNCTIONAL ARABIC-II	18SEAR41	
Hrs/ Week: 2	Hrs/ Sem: 30	Hrs/ Unit: 6	Credits: 1

Course Outcomes (CO)

CO No.	Upon completion of this course, students will be able to:	PSO addressed	Cognitive level
CO-1	Be familiar with the current glossaries of functional Arabic.	PSO-2	Understanding
CO-2	Master the art of formal and informal presentations in the present context.	PSO-6	Creating
CO-3	Cultivate the ability to excel in business correspondences and communications.	PSO-6	Creating
CO-4	Attain proficiency in using bilingual expressions and perform effectively as a translator.	PSO-6	Creating

V SEMESTER			
DSC- 7	Tafseer Literature (The Art of interpretation of the Holy Qur'an)	18UCAR51	
Hrs/ Week: 6	Hrs/ Sem: 90	Hrs/ Unit: 18	Credits: 6

CO No.	Upon completion of this course, students will be able to:	PSO addressed	Cognitive level
CO-1	Excel in the art of interpretation of the Holy Qur'an in the light of Prophetic traditions and the guidance of the disciples of the Prophet.	PSO-6	Creating
CO-2	Attain proficiency in understanding the core essence of the Qur'anic verses.	PSO-6	Creating
CO-3	Build sound character and develop refined manners based on the clear understanding of the values as preached in the Holy Qur'an.	PSO-3, 6	Applying & Creating
CO-4	Understand and appreciate the miraculous spectacles and spectacular events as delineated in the Holy Qur'an.	PSO-2, 4	Understanding & Evaluating




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V SEMESTER			
DSC- 8	Hadeeth Literature (The Literature of the Words and Deeds of the Prophet)		18UCAR52
Hrs/ Week: 6	Hrs/ Sem: 90	Hrs/ Unit: 18	Credits: 6

Course Outcomes (CO)

CO No.	Upon completion of this course, students will be able to:	PSO addressed	Cognitive level
CO-1	Acquire knowledge about the immaculate virtues and inspiring value systems of the Prophet.	PSO-2	Understanding
CO-2	Distinguish the Islamic jurisprudence as extracted and codified from the impeccable life of the Prophet.	PSO-2	Understanding
CO-3	Understand the mandatory nature of adhering to and abiding by the teachings of the Prophet.	PSO-2, 3	Understanding & Applying
CO-4	Critically analyze the life-style of the Prophet being a sound basis for a cultured civilization and an enlightened approach to men and matters.	PSO-4	Analyzing

V SEMESTER			
DSC-9	Fiqh (Islamic Jurisprudence)		18UCAR53
Hrs/ Week: 6	Hrs/ Sem: 90	Hrs/ Unit: 18	Credits: 6

Course Outcomes (CO)

CO No.	Upon completion of this course, students will be able to:	PSO addressed	Cognitive level
CO-1	Identify the tenets, codes and laws pertaining to the five mandatory obligations of Islam.	PSO-1, 2	Remembering & Understanding
CO-2	Learn the terms and conditions to perfectly perform the five-time mandatory prayers with purity of heart, mind and body.	PSO-3	Applying
CO-3	Comprehend the rules and regulations concerning the essence of mandatory charity and generous contributions towards establishing a just and equitable society.	PSO-5	Evaluating
CO-4	Discern the great significance of the mandatory pilgrimage as a noble and symbolic gesture of global peace, universal brotherhood and interdependence of man regardless of caste, colour, creed, race etc.	PSO-5	Evaluating




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V SEMESTER			
DSC-10	History of Modern Arabic Literature	18UCAR54	
Hrs/ Week: 6	Hrs/ Sem: 90	Hrs/ Unit: 18	Credits: 5

Course Outcomes (CO)

CO No.	Upon completion of this course, students will be able to:	PSO addressed	Cognitive level
CO-1	Critically analyze the socio, political and cultural affairs that made a deep impact on the creative writers of the Arab countries, specifically the middle Eastern regions during the last two centuries.	PSO-4	Analyzing
CO-2	Identify and study the creative writers who emerged during the last two centuries and their eminent works.	PSO- 2	Understanding
CO-3	Distinguish the distinctive characteristics of those creative works especially the themes, the messages, the diction, the narrative techniques etc.	PSO -2	Understanding
CO-4	Develop a critical outlook and research perspective towards such works of art and gain confidence in nurturing a creative disposition and accomplishing professionalism in Arabic writings.	PSO -6	Creating

V SEMESTER			
DSE-III(A)	CLASSICAL AND MODERN POETRY	18UEAR5A	
Hrs/ Week: 4	Hrs/ Sem: 60	Hrs/ Unit: 12	Credits: 4

Course Outcomes (CO)

CO No.	Upon completion of this course, students will be able to:	PSO addressed	Cognitive level
CO-1	Study in-depth some eminent pieces of classical poetry in Arabic.	PSO-1	Remembering
CO-2	Learn critically the most prominent modern poetry in Arabic.	PSO-5	Evaluating
CO-3	Develop skills in attempting a comparative analysis of the classical and the modern poetry.	PSO-6	Creating
CO-4	Distinguish the poems that deal with love, death, sarcasm, encomium and eulogy.	PSO-8	Understanding




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V SEMESTER			
DSE-III(B)	INTERNET & HTML	18UEAR5B	
Hrs/ Week: 4	Hrs/ Sem: 60	Hrs/ Unit: 12	Credits: 4

Course Outcomes (CO)

CO No.	Upon completion of this course, students will be able to:	PSO addressed	Cognitive level
CO-1	Be exposed to the modern Information Technology relevant in the modern challenging scenario.	PSO-2	Understanding
CO-2	Learn the basics of Internet usage and develop the skill to apply the HTML.	PSO-3	Applying
CO-3	Become familiar with the use of computers in business networks namely mail resources, bulletin services etc.	PSO-3	Applying
CO-4	Acquire the skill in designing HTML documents.	PSO-6	Creating

V SEMESTER			
SEC-I	ESSAY WRITING IN ARABIC	18USAR51	
Hrs/ Week: 2	Hrs/ Sem: 30	Hrs/ Unit: 6	Credits: 2

Course Outcomes (CO)

CO No.	Upon completion of this course, students will be able to:	PSO addressed	Cognitive level
CO-1	Acquire adequate knowledge from voracious reading of a wide range of texts in Arabic.	PSO-3	Applying
CO-2	Attain competency in using exact phrases and expressions and ability in making grammatically accurate sentence structures.	PSO-6	Creating
CO-3	Develop observations skills, imaginative creation and deliver with aesthetic delight.	PSO-6	Creating
CO-4	Enhance caliber to contribute effectively for social transformation through their creative works of art.	PSO-6	Creating

VI SEMESTER			
DSC-11	PROSE -IV	18UCAR61	
Hrs/ Week: 6	Hrs/ Sem: 90	Hrs/ Unit: 18	Credits: 6

Course Outcomes (CO)

CO No.	Upon completion of this course, students will be able to:	PSO addressed	Cognitive level
CO-1	Critically evaluate the narrative style of the classical and the modern prose writings.	PSO-5	Evaluating
CO-2	Attempt an in-depth comparative analysis of the classical and the modern prose texts.	PSO-3	Applying
CO-3	Learn and appreciate the elegance and the richness of various prose pieces.	PSO-4	Analyzing
CO-4	4) Enhance knowledge about the stylistic features of the classical and the modern prose.	PSO-5	Evaluating



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VI SEMESTER			
DSC- 12	Political History of Islam	18UCAR62	
Hrs/ Week: 6	Hrs/ Sem: 90	Hrs/ Unit: 18	Credits: 6

Course Outcomes (CO)

CO No.	Upon completion of this course, students will be able to:	PSO addressed	Cognitive level
CO-1	Recall and evaluate the socio-political affairs existed during the pre-Islamic period.	PSO-1, 2	Remembering & Understanding
CO-2	Elaborately analyze the political and social conditions prevailed during the time of the Prophet Mohamed.	PSO-4	Analyzing
CO-3	Understand and appreciate the social and economical scenarios that were devoid of famine and ill-will between men resulting in remarkable enlightenment and rejuvenation during the reign of the Caliphs.	PSO-2, 5	Understanding & Evaluating
CO-4	Derive illumination and insight from the glorious Islamic political history and lay the foundation for future development.	PSO-3	Applying

VI SEMESTER			
DSC-13	RHETORIC	18UCAR63	
Hrs/ Week: 6	Hrs/ Sem: 90	Hrs/ Unit: 18	Credits:5

Course Outcomes (CO)

CO No.	Upon completion of this course, students will be able to:	PSO addressed	Cognitive level
CO-1	Develop skills in employing rhetoric in speeches and written compositions.	PSO-3, 6	Applying & Creating
CO-2	Learn the art of eloquence and the flair of applying decorative and embellished expressions in oral renderings and written forms of writings.	PSO-3	Applying
CO-3	Excel in the usage of the stylistic features namely, similes, metaphors, ironies etc.	PSO-6	Creating
CO-4	Become creative writers evincing keen interest in developing exemplary rhetorical modes of delivery.	PSO-6	Creating




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VI SEMESTER			
DSC-14		Project	18UCAR64
Hrs/ Week: 6	Hrs/ Sem: 75	Hrs/ Unit: 15	Credits: 5
CO No.	Upon completion of this course, students will be able to:	PSO Addressed	Cognitive Level
CO-1	Develop the right sense of research outlook pertaining to the topic of the project chosen and be knowledgeable about the methodology to be applied.	PSO-3	Applying
CO-2	Acquire the caliber to collect sufficient data, critically analyze the subject matter, organize coherently and be completely original in accomplishing the project.	PSO-3, PSO-6	Applying & Creating
CO-3	Show improvement in communication competency and excel in the art of delivery.	PSO-3	Applying
CO-4	Be careful in selecting the project which is socially relevant and beneficial.	PSO-5	Evaluating
CO-5	Instill confidence in other scholars to further proceed as per the scope and guidance given in the project.	PSO-3	Applying

VI SEMESTER		
DSE-IV (A)	Special Author	18UEAR6A
Hrs/ Week: 4	Hrs/ Sem: 60	Credits: 6

Course Outcomes (CO)

CO No.	Upon completion of this course, students will be able to:	PSO addressed	Cognitive level
CO-1	Delve deep into the life history of the eminent Indian scholar, Abul Hasan Ali Nadwi and his remarkable contributions to the growth of Arabic literature.	PSO-2	Understanding
CO-2	Critically examine his oratorical delivery of speeches and his extraordinary skill in crafting immortal texts.	PSO-5	Evaluating
CO-3	Attempt a comparative analysis of his writings with those of any other contemporary author and evaluate the unique style of Nadwi's communicative competency.	PSO-3, 4	Applying & Analyzing
CO-4	Imitate the art of speech and writing and further emulate him as a role model to lead an impressive and effective life.	PSO-6	Creating




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VI SEMESTER			
DSE –IV (B)	INDO - ARABIC LITERATURE	18UEAR6B	
Hrs/ Week: 4	Hrs/ Sem: 75	Hrs/ Unit: 15	Credits:6

Course Outcomes (CO)

CO No.	Upon completion of this course, students will be able to:	PSO addressed	Cognitive level
CO-1	Understand and appreciate the lives and works of Indian scholars writing in Arabic and their contributions towards the growth of Arabic Literature in India.	PSO-5	Evaluating
CO-2	Become aware of the relationship established and enriched between India and the Arab world through these writings.	PSO-2	Understanding
CO-3	Estimate and evaluate the culture, the traditions, the conventions, the habits and the lifestyle of both the Indian as well as the Arabian races.	PSO-5	Evaluating
CO-4	Become proficient in exchanging the noble value systems between the Indian and Arabian people through aesthetically delightful creative writings by budding scholars.	PSO-3	Applying

VI SEMESTER			
SEC-II	COMMUNICATION SKILL	18USAR61	
Hrs/ Week: 2	Hrs/ Sem : 30	Hrs/ Unit: 6	Credits: 2

Course Outcomes (CO)

CO No.	Upon completion of this course, students will be able to:	PSO addressed	Cognitive level
CO-1	Acquire adequate knowledge of Arabic to be effectively communicative.	PSO-6	Creating
CO-2	Understand the nuances of Arabic language structures and develop skills in exact usage of expressions in day-to-day life.	PSO-6	Creating
CO-3	Secure gainful employments globally with the required knowledge of Arabic and its usage.	PSO-3	Applying
CO-4	Excellent perform in the art of translation with accurate understanding and application of the Arabic language.	PSO-6	Creating




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VI SEMESTER		
PD	PERSONALITY DEVELOPMENT	18USPD62

CO No.	Upon completion of this course, students will be able to:	PSO Addressed	Cognitive Level
CO-1	Lead an honourable life with a great deal of self-awareness, self-esteem and self-respect.	PSO-3	Applying
CO-2	Shine as an exemplary model with impeccable character traits.	PSO-3	Applying
CO-3	Set a reasonably challenging goal exerting enough labour and effectively managing time.	PSO-6	Creating
CO-4	Build relationships in a world filled with different ideologies, overcome social conflicts, excel in team work and contribute constructively.	PSO-4	Analyzing
CO-5	Exhibit skills and manners required in the place of work and win over the approbation of the employers.	PSO-4	Applying




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B.A. Persian Programme Outcomes

PO No.	Upon Completion of B.A. Degree Programme, the graduates will be able to:
PO-1	Acquire knowledge of the major traditions of literatures written in Persian, understand literature in its social and cultural contexts and interpret ideologies of World's greatest writers.
PO-2	Become enriched intellectually and ethically with the lofty and profound thoughts and ideas extracted from great literatures of Persian.
PO -3	Build themselves with rich life skills, comprehend social issues and become agents in bringing about positive societal transformation.
PO-4	Be a global citizen gifted with the world Classical Language, Persian and communicate excellently with a good degree of grammatical accuracy and flair.
PO-5	Secure prospective careers in International bodies, journalism, translation, Administrative services and teaching Persian.
PO-6	Pursue critical research in the methods of Persian language learning and literature teaching.

Programme Specific Outcomes

PSO	Upon completion of B.A. Persian Degree Programme, the students will be able to:
PSO1	Apply critical and theoretical approaches to the reading and analysis of literary and cultural texts in multiple genres.
PSO2	Cultivate communicative competency and writing skills required in the technical job market.
PSO3	Use ICT effectively both as a means of communication and as an aid to learning Persian.
PSO4	Become freelance writers, journalists and creative artists.
PSO5	Work as translators in the Iran speaking world.
PSO6	Develop competence and caliber to serve as efficient teachers in Persian.


Dr. Shahina Ubed Khan
 HES Class-I
 Head, Dept. of Arabic Persian
 and Islamic Studies
 Govt. of Maharashtra's
 Ismail Yusuf College, Mumbai-40.



DEPARTMENT OF POLITICAL SCIENCE

PROGRAM SPECIFIC OUTCOME. –

- PSO1. Understand the basic concept and ideological orientations of political science.
- PSO2. Understand the basic concept and issues concerning human rights and challenges.
- PSO3. Analyse the core intellectual traditions in political thoughts and apply their central tenets to contemporary political problems and issues.
- PSO4. Use analytical skills to understand civic, social and environmental challenges.
- PSO5. Compare and contrast the various political, social and Economic systems that exist across the international community and analyze the political consequences of those variations.
- PSO6. Demonstrate social responsibility and ethical reasoning within a variety of contexts
- PSO7. Acquire knowledge of political law and Constitution of India.
- PSO8. Understand the cultural, social, political, economic and constitutional environment as a historical perspective of Indian Administration.

Course Outcomes -

B.A. Part I : Sem. – I

- CO1. Students study Indian Democracy.
- CO2. They learn philosophy of Indian Constitution and aware about their fundamental rights.
- CO3. Students participate as a voter in the election.

B.A. I : Sem. – II

- CO1. Students study local self-Government.
- CO2. They learn rural and urban local self-Government and realize how the citizen participates in it to develop their villages.

B.A. – II Sem. – III

- CO1. Students study political theory.
- CO2. They learn how to solve the problems of groups community with the help of Political theory.

B.A. – II Sem. IV

- CO1. Students study political concept and political analysis.
- CO2. They learn legitimacy and know the way of legitimacy.

B.A. III, Sem. – V

- CO1. Students study Western political thoughts.
- CO2. Students learn Plato's thought and understand how to create ideal state.
- CO3. Students understand the thoughts of Thomas Hobbes, Lenin and Karl Marx




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B.A. III, Sem. VI

CO1. Students study Indian Political thought.

CO2. Students learn the thought of Mahatma Phule and understand how education is important to human being.

CO3. Students understand the thoughts of V. D. Sawarkar, Mahatma Gandhi, Dr. B. R. Ambedkar, Ram Manohar Lohiya, Pandit Jawaharlal Nehru.




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DEPARTMENT OF URDU

Programme Outcomes, Programme Specific Outcomes and Course Outcomes MA –Urdu
POs for MA Degree Programme

PO1.Critical Thinking: Understand, analyse and explain the nuances expressed through language and literature. Develop newer ideas on the intellectual, organizational and personal level with different perspectives.

PO2.Effective Communication: Speak, read, write and listen clearly in person and through electronic media in Urdu and other languages and make meaning of the word by connecting people, ideas, books, media and technology.

PO3. Social Interaction: Elicit views of others, conduct meaningful discussions, mediate disagreements and help reach conclusions in group settings.

PO4. Effective Citizenship: Demonstrate empathetic social concern and equity centred national development, and the ability to act with an informed awareness of issues and participate in civic life through volunteering.

PO5. Ethics: Recognize different value systems including your own, understand the moral dimensions of your decisions, and accept responsibility for them.

PO6. Environment and Sustainability: Understand the issues of environmental contexts and sustainable development.

PO7. Self-directed and Life-long Learning: Acquire the ability to engage in independent and life-long learning in the broadest context socio-technological changes

PO8. Development of Emotional Quotient: Be empowered to create an emotionally sensitive approach regarding social, cultural, political and environmental issues of the society.

PSOs for MA Urdu Degree Programme

PSO1: Understand and appreciate works written in Urdu

PSO2: Analyse and critically comment on works written in Urdu

PSO3: Translate and annotate on the works written in Urdu

PSO4: Understand Ancient Indian Culture and its relevance in the present scenario

PSO5: Enable expressing thoughts in Urdu

COs for M A Urdu:

MA Part I Semester I : Core papers

Paper I

Nomenclature: Classical Urdu Literature (Poetry)

CO 1: To critically analyse and appreciate Classical Urdu Poetry, with special reference to *ghazal*

Two forms:

☐ Urdu Qasida

☐ Urdu Ghazal

CO 2: Understand and Critically analyse the literary Contribution of following Prominent poets

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- ☐ Sauda
- ☐ Meer
- ☐ Zauq
- ☐ Momin

Paper II

Nomenclature: Urdu Poetry and its Styles

CO1: To Understand and Critically analyse two popular forms of Urdu Poetry.

- ☐ Urdu Masnavi
- ☐ Urdu Nazm

CO2: To Understand and Critically analyse the literary Contribution of following Urdu Poets as Masnavi Nigar & Nazmnigar

- ☐ Mulla Wajhi
- ☐ Daya Shakar Naseem
- ☐ Nazeer Akbarabadi
- ☐ Josh Malihabadi

Paper III

Nomenclature: Classical Urdu Literature (Prose)

CO 1: To critically analyse and appreciate Classical Urdu Prose with Special reference of following:

- ☐ Urdu Dastan
- ☐ Urdu Novel

CO 2: To Understand and critically analyse the literary Contribution of following writers:

- ☐ Meer Amman
- ☐ Inshallah Khan Insha
- ☐ Deputy Nazeer Ahmed
- ☐ Mirza Haadi Rusva

Paper IV

Nomenclature: Urdu Prose and its Style

CO 1: To Understand and critically analyse Short Stories and Drama Written in Urdu.

CO 2: To Understand and critically analyse the literary Contribution of following Short Story & Drama Writers:

- ☐ Rajendar Singh Bedi
- ☐ Qurratul Ain Haidar
- ☐ Imtiyaz Ali Taaj
- ☐ Habeeb Tanveer

M A Part I Semester II: Core Papers

Paper V

Nomenclature: Different forms of Urdu Literature (Poetry)

CO 1: To critically analyse and appreciate following forms of Urdu Poetry

- ☐ Urdu Marsiya
- ☐ Urdu Rubai

CO 2: To Understand and critically analyse the literary Contribution of following Poets

- ☐ Meer Anees
- ☐ Mirza Dabeer
- ☐ Seemab Akbrabadi
- ☐ Jagat Mohanlal Rawaan



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Paper VI

Nomenclature: Urdu Criticism

CO1: To Understand and analyse the Importance and Characteristic of Urdu Criticism. To Understand the Responsibility of a Critic.

CO2: To Understand and critically analyse the contribution of following Urdu Critics:

- ☐ Altaf Hussain Hali
- ☐ Prof. Ehtesham Husain
- ☐ Prof. Ale Ahmad Suroor

Paper VII

Nomenclature: Literary Movement, Trends and Schools of Thoughts of Urdu Literature

CO 1: To Understand and critically analyse various literary Movements, Trends & Schools of Thoughts of Urdu Literature.

CO 2: To Understand and critically analyse the contribution of following Trends, Movements and Schools of Thoughts in Development of Urdu Literature.

- ☐ Dabistaan-e-Delhi
- ☐ Dabistaan-e- Lucknow
- ☐ Aligarh Movement
- ☐ Progressive Movement
- ☐ Halqa-e- Arbab-e- Zauq
- ☐ Modernism

Paper VIII

C Urdu Language, Linguistics & Grammar

CO 1: To Understand and critically analyse the Aims and Importance of Urdu Language and Linguistics.

CO 2: To Understand and appreciate the Urdu Grammar with special reference of following:

- ☐ Ism
- ☐ Sifat
- ☐ Fai

MA Part II Semester III

Elective Course I (A)

Nomenclature: Sir Syed Ahmed Khan

CO1: To understand & Critically analyse the life , personality & Literary Contribution of Sir Syed Ahmad Khan

CO2: To understand the relevance of Social, Educational and Scientific thoughts of Sir Syed.

Elective Course I (B)

Nomenclature: Munshi Premchand

CO1: To understand & appreciate the works of Munshi Premchand as a Fiction writer.

CO1: To understand & Critically analyse the contribution of Munshi Premchand in the development of Urdu Prose.

Elective Course II (A)

Nomenclature: Mirza Asdullah Khan Ghalib

CO1: To understand & critically analyse the contribution of Ghalib in development of Urdu Poetry.

CO2: To understand & appreciate the work of Mirza Ghalib with reference of Ghazalgoi,

Qasida

Nigari & Maktoob Nigari.

Elective Course II (B)



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Nomenclature: Allama Iqbal

CO1: To understand & appreciate the contribution of Allama Iqbal in the development of Urdu poetry.

CO2: To understand & Critically analyse the Art of Allama Iqbal as Ghazal Nigar & Nazm Nigar.

Elective Course III (A)

Nomenclature: Urdu Prose After 1935

CO1: To understand the Importance of Progressive Movement in the Development of Urdu Prose after 1935.

CO2: To Understand and critically analyse the contribution of following Urdu Prose Writers.

- Sajjad Zaheer
- Krishn Chandar
- Ismat Chughtai
- Khwaja Ahmad Abbas

Elective Course III (B)

Nomenclature: Urdu Poetry After 1935

CO1 : To understand the Importance of Progressive Movement in the Development of Urdu Poetry after 1935.

CO2 : To understand and Critically analyse the Contribution of following Urdu Poets.

- Moin Ahsan Jazbi
- Majrooh Sultanpuri
- Ali Sardar Jafri
- Akhtarul Iman

Elective Course IV (A)

Nomenclature: Nonfiction of Urdu Literature

CO1 : To understand & Critically analyse the importance of Urdu Essay & Sketch in the Development of Urdu Literature.

CO2: To understand & Critically analyse the writings of following Non-fiction writers in Urdu:

- Molvi Abdul Haq
- Rasheed Ahmed Siddiqi
- Khwaja Hasan Nizami
- Kanhaiya Lal Kapoor

Elective Course IV (B)

Nomenclature: Different Forms of Urdu Prose

CO1 : To understand and Critically analyse the Characteristics & Importance of Urdu Autobiography and Maktoob

CO2 : To understand and critically analyse the writings of following Maktoob and Autobiography writers:

- Saleha Abid Husain
- Ada Jafri
- Shibli Nomani
- Abul Kalam Azad

Elective Course V (A)

Nomenclature: Essay, Translation, Rhetorics & Prosody

CO1 : To understand the importance of use of figures of speech & Prosody in the Creation


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of

Poetry

CO2 : To understand the importance of Translation in the development of Language & Literature

Elective Course V (B)

Nomenclature: Contemporary Urdu Literature

CO1 : To understand and critically analyse the Characteristics of Contemporary Urdu Literature.

CO2 : To understand and critically analyse the contribution of following Urdu Poets & Fiction

Writers:

- Shahryar
- Zuber Rizvi
- Syed Mohammad Ashraf
- Ali Imam Naqvi

MA Part II Semester IV

Inter Disciplinary (A)

Nomenclature: Folk Literature

CO1 : To understand the historical & Social background and Importance of Folk Literature in India

CO2: To understand and critically analyse the Types & Characterctics of Folk Literature in Urdu

Prose and Urdu Poetry.

Inter Disciplinary (B)

Nomenclature: Womens Studies in India after Independence

CO1 : To understand the importance & aims of women's studies and Women empowerment movement in India.

CO2 : To understand and critically analyse the contribution of following personalities with reference of women's studies and women empowerment:

- Sarojini Naidu
- Aruna Asaf Ali
- Indira Gandhi
- Mahadevi Verma
- Qurratul Ain Haider
- Mahashweta Devi

Skill Based (A)

Nomenclature: Mass Media

CO1: To understand and critically analyse the Types, Gradual Development & Importance of

Mass Media in India.

CO2 : To understand and Critically analyse the Types Importance and Gradual Development of

Urdu Newspaper & Journals electronic Media like Film, Drama, Radio, T,V, Internet &

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mobile

Phone in India.

Skill Based (B)

Nomenclature : Teaching Methods of Urdu Language and Literature

CO1 : To understand the objectives of teaching Urdu Language-Linguistics, Literary and general

CO2: To understand and critically analyse the methods of teaching language to teach the following:

- Urdu Prose
- Urdu Poetry
- Grammar
- Composition

Projects

CO1 : To develop the level of understanding, analyzing & writing skill in the students

CO2 : To understand, Critically analyse and develop the ability of impressive expression in writing on following Area of Project:

- Literature
- Cultural and Social
- Educational
- Journalism (Print & Electronic)
- Others (Related the syllabus)



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Hindi

Sr. No.	Degree Programme	Year of Programme	Course Outcomes
1	BA Hindi	First Year	Hindi Poetry & Story : Sem-1 and 2 <ol style="list-style-type: none"> 1. To create interest as well as introduce the students the genres of literature 2. To introduce poet and their poems to the students 3. To emphasize on the skills of listening, reading and writing in Hindi 4. To develop emotional quotient through essays, stories, one act play, sketch, reports, memories, Caricature etc. 5. To create awareness about the national values
		Second Year	(UAHIN301) Sem-3 and (UAHIN401):Sem-4 <ol style="list-style-type: none"> 1. To create interest as well as introduce the students the genres of literature 2. To introduce poet and their poems to the students 3. To emphasize on the skills of listening, reading and writing in Hindi 4. To develop emotional quotient through essays, stories, one act play, sketch, reports, memories, caricature etc. 5. To create awareness about the national values
			(UAHIND302)Sem-3 and (UAHIN402) Sem-4 <ol style="list-style-type: none"> 1. To create awareness among students about Medieval literature and to imbibe in them the basic skills of life 2. To acquaint students with an outline of Hindi literature create interest as well as introduce the students the genres of literature 3. To introduce poet and their poems to the students



		<p>4. To emphasize on the skills of listening, reading and writing in Hindi</p> <p>5. To develop emotional quotient through essays, stories, one act play, sketch, reports, memories, caricature etc.</p> <p>6. To create awareness about the national values</p>
	Third Year	<p>(UAHIN501): Sem-5 and (UAHIN601)Sem-6</p> <p>1. To create interest of students in Hindi literature by acquainting students with great thoughts instilled in it.</p> <p>2. To emphasize on the skills of listening, reading and writing in Hindi</p> <p>3. To develop analytical skills through the interpretation of essays, stories, one act play, etc.</p> <p>4. To focus on research skills through seminars and projects</p>
		<p>(UAHIN502) and (UAHIN602)</p> <p>1. To create interest as well as introduce the students the genres of literature</p> <p>2. To introduce novelists and their works to the students such as Ana Is Desh (A message of reconciliation through love) and Dohara Abhishap (A message of eradication of caste system and imbibe humanitarian values)</p> <p>3. To emphasize the skills of listening, reading and writing in Hindi</p> <p>4. To develop emotional quotient through essays, stories, one act play, sketch, reports, memories, caricature etc.</p> <p>5. To create awareness about the national values</p> <p>6. To create interest of students in criticism</p> <p>7. To emphasize on the skills of listening, reading and writing in Hindi</p> <p>8. To develop analytical skills through the interpretation of essays, stories, one act play, etc.</p> <p>9. To focus on research skills through seminars and projects</p>



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		<p>(UAHIN503) and (UAHIN603)</p> <ol style="list-style-type: none"> 1. To create interest of students in language through electronic and print media 2. To emphasize on the skills of listening, reading and writing in Hindi 3. To develop analytical skills through the interpretation of language, grammar, dialects, etc. 4. To focus on research skills through seminars and Projects
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MA Joshi

Dr.(Smt.) Madhuri Anil Joshi
 Head Of Dept. (Hindi)
 Government of Maharashtra
 Ismail Yusuf College, Jogeshwari, Mumbai-60.



Syllabus B.Sc. (Botany) (Sem.- I)

Course Objectives (CO): To enable the students

- CO 1.: Recognize different plant types
- CO 2.: Understand the concept of plant communication, plant defense mechanism, and Aesthetic Botany.
- CO 3.: Comprehend the role of plants in providing food, significance of microgreens, plant-derived beverages like tea, coffee, and squash.
- CO 4.: Explore the diverse applications of plants in everyday products, traditional uses of plants in cultural practices.
- CO 5.: Acquire the knowledge of hydroponics and aeroponics, vertical gardening, *Spirulina* farming

Course Outcomes (OC): The learner will be able to

- OC 1.: Differentiate plant types.
- OC 2.: Describe the concept of plant communication, plant defense mechanism, and Aesthetic Botany.
- OC 3.: Explain the role of plants in providing food, the significance of microgreens, and plant-derived beverages like tea, coffee, and squash.
- OC 4.: Utilize plants in everyday products, and traditional cultural practices.
- OC 5.: Illustrate the techniques of hydroponics and aeroponics, vertical gardening, and *Spirulina* farming.



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Vocational Skill Courses

Name of the Course: Entrepreneurial Botany 60 Hours Credits:02


Course Objectives (CO):

- CO 1. To enable the students, learn the different algal and fungal cultivation practices.
- CO 2. To enable the students, develop the skills of designing and carving of natural material.
- CO 3. To enable the students, understand the making of aroma candles and incense sticks.
- CO 4. To enable the students, comprehend the process of preparing herbal teas, natural dyes, organic pesticides, and composting.
- CO 5. To enable the students, prepare business plan, marketing strategies and branding products.

Course Outcomes (OC): Learner will be able to

- OC 1. Practice the different algal and fungal cultivation practices.
- OC 2. Develop the skills of designing and carving of natural material.
- OC 3. Understand the making of aroma candles and incense sticks.
- OC4. Comprehend the process of preparing herbal teas, natural dyes, organic pesticides, and composting.
- OC 5. Prepare business plan, marketing strategies and branding products.




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Vocational Skill Courses

Name of the Course: Indoor Gardening

60 Hours

Credits:02

Course Objectives (CO):

- CO 1. To enable students, identify indoor plants, suitable containers, soils and growth media to grow them.
- CO 2. To enable students, learn different methods and techniques of potting, repotting of indoor plants.
- CO 3. To train students, in care and maintenance of indoor plants.
- CO 4. To enable students, control and manage the insect pests affecting indoor plants.
- CO 5. To enable students, prepare different types of indoor gardens.

Course Outcomes (OC): Learner will be able to

- OC 1. Identify indoor plants, suitable containers, soils and growth media to grow them.
- OC 2. Perform different methods and techniques of potting, repotting of indoor plants.
- OC 3. Take care and maintain the indoor plants.
- OC 4. Control and manage the insect pests affecting indoor plants.
- OC 5. Prepare different types of indoor gardens.

List of Practicals:

1. To Study of different Indoor plants: Foliage and flowering plants.
2. To Study of different types of containers and equipments used in indoor gardening.
3. Selection of soil and media for indoor plants.
4. To Study different methods of application of plant growth regulators.
5. Types of accessories used in indoor gardening.
6. Methods of growing indoor plants: Potting.
7. Technique of Repotting of indoor plants.
8. Care and Maintenance of Indoor plants.
9. Insect pest and their control.
10. Preparation of Terrarium/ Bottle Garden.
11. Preparation of Dish Garden.
12. Preparation of kokidama.
13. Techniques of Growing indoor plants in Different Medias. (Soil, Sand, Sphagnum moss etc.)




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Vocational Skill Courses

Name of the Course: Ayurvedic Aahar

60 Hours Credits:02

Course Objectives (CO):

- CO 1. To enable students, understand the concept of Tridosha and aahar.
- CO2. To enable students, identify the foods with relation to rutuchakra, taste and composition.
- CO 3. To enable students, prepare immunity boosting, iron rich nutritious food.
- CO 4. To enable students, estimate proteins and vitamins in foods.
- CO 5. To enable students, gain knowledge of managing diseases with ayurvedic aahar.

Course Outcomes (OC): Learner will be able to

- OC 1. Understand the concept of Tridosha and aahar.
- OC 2. Identify the foods with relation to rutuchakra, taste and composition.
- OC 3. Prepare immunity boosting, iron rich nutritious food.
- OC 4. Estimate proteins and vitamins in foods.
- OC 5. Manage diseases with ayurvedic aahar.

List of Practicals:

1. Study of Tridosha concept (Prakriti nidaan)
2. Study of Ahar According to Different Prakriti.
3. Study of sattvic, tamasic and Rajasic foods (any two examples of each)
4. Identification of foods as per rutuchakra
5. Study of food based on six taste (Rasa) (two examples of each).
6. Preparation of Iron rich ayurvedic aahar (Nachani satva, aliv laddu)
7. Preparation of immunity boosting dish (amala palak, amala candy)
8. Making a diet plan to manage diseases (diabetes, constipation) with ayurvedic aahar.
9. Study of Examples of incompatibility/antagonistic (*Viruddha-Aahara*)
10. Estimation of Proteins from plant resources used in ayurvedic aahar (Lowry's method)
11. Estimation of vitamin C from fruits. (Amla, Citrus)
12. Study (identification) of Fiber rich vegetables (carrot, sweet potato), leafy vegetables (spinach, fenugreek) and dalia.



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Skill Enhancement Courses

Name of the Course: Tools and Techniques in Plant Science
60 Hours

Credits:02

Course Objectives (CO):

- CO 1. To enable students, understand the essential laboratory techniques used in plant science.
- CO 2. To enable students, identify the foods with relation to rutuchakra, taste and composition.
- CO 3. To enable students, prepare immunity boosting, iron rich nutritious food.
- CO 4. To enable students, estimate proteins and vitamins in foods.
- CO 5. To enable students, gain knowledge of managing diseases with ayurvedic aahar.

Course Outcomes (OC): Learner will be able to

- OC 1. Understand the concept of Tridosha and aahar.
- OC 2. Identify the foods with relation to rutuchakra, taste and composition.
- OC 3. Prepare immunity boosting, iron rich nutritious food.
- OC 4. Estimate proteins and vitamins in foods.
- OC 5. Manage diseases with ayurvedic aahar.

List of Practicals:

Module 1: Introduction to Laboratory Tools and Instruments

- 1.1 Study of Basic Laboratory Instruments (Microscope, Colorimeter, Autoclave, Oven, Incubator, Laminar Air Chamber, Tilak Air Sampler)
- 1.2 Study of stains and staining techniques

Module 2: Microscopy and staining Techniques

- 2.1 Microslide Preparation—Whole Mounts, Smears, Squashes
- 2.2 Plant Microtechnique (T.S., L.S., R.L.S., T.L.S.)

Module 3: Separation techniques

- 3.1 Separation of Amino Acids by Paper Chromatography
- 3.2 Separation of Sugars by Thin-Layer Chromatography

Module 4: Biochemical analysis



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Course I (Mandatory)

**Name of the Course: Cytogenetics, Ecology and Environment
Conservation**

(2 credits)

Course Objectives (CO):

CO 1. To enable the students, to identify the structure and functions of the Cell and cell organelles in plants.

CO 2. To enable the students to understand the Cell cycle and cell division in plants.

CO 3. To enable the students to apply the biostatistical concepts.

CO 4. To enable the students, to comprehend ecology and environment conservation.

CO 5. To enable the students, to carry out a thorough study of the active constituents of medicinal plants

Course Outcomes (OC): The Learner will be able to

OC 1. Identify the structure and functions of the Cell and cell organelles in plants.

OC 2. Understand the Cell cycle and cell division in plants.

OC 3. Comprehend the biostatistical application.

OC 4. Apply the biostatistical concepts.

OC 5. Carry out a thorough study of the active constituents of medicinal plants with an emphasis on the use of plant-based food as medicine.

Module 1: Cytogenetics

15 Lectures

1. Ultrastructure and functions of Cell wall, Plasma membrane **(2 Lectures)**
2. Ultrastructure and functions of the cell organelles – Chloroplast, Endoplasmic reticulum, Mitochondrion **(2 Lectures)**
3. Cell cycle, Mitosis in Plant Cells and its significance **(2 Lectures)**
4. History, Concept and Definition, Genetic Terminologies- Gene, Genome, Allele, Locus, Traits, Genotype, Phenotype, Dominant, Recessive, Co-dominance, Heredity, Inheritance, Variation, Homozygous, Heterozygous, Back Cross and Test Cross. **(1 Lecture)**
5. Mendelian Genetics - Law of Dominance, Law of Segregation, Law of Independent Assortment, Monohybrid Cross, Dihybrid Cross, Incomplete Dominance and Co-Dominance. **(3 Lectures)**



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Vocational Skill Courses

Name of the Course: Flower Arrangement 60 Hours Credits:02

Course Objectives (CO):

- CO 1. To enable students, identify the foliage and cut flowers used in different occasions.
- CO 2. To enable students, learn the basic styles and shapes in flower arrangement.
- CO 3. To enable students, prepare different flower arrangements.
- CO 4. To enable students, study methods of Drying and preservation of flowers.
- CO 5. To enable students, select the suitable types of containers and accessories for flower arrangement.

Course Outcomes (OC): Learner will be able to

- OC 1. Identify the foliage and cut flowers used in different occasions.
- OC 2. Understand the basic styles and shapes in flower arrangement.
- OC 3. Prepare different flower arrangements.
- OC 4. Perform Drying and preservation of flowers.
- OC 5. Select the suitable types of containers and accessories for flower arrangement.

List of Practicals:

1. Identification of cut flowers: flowers on special occasions.
2. Study of different foliage used in flower arrangement.
3. Different types of containers and accessories for flower arrangement.
4. To study basic styles and shapes in flower arrangement.
5. Preparation of various type of garlands, Gajra, Venni etc.
6. Preparation of Rangoli by using various types of flowers.
7. Preparation of various types of bouquets.
8. Japanese style of flower arrangement: Ikebana, Moribana.
9. To study methods of Drying and preservation of flowers.
10. Dry flower arrangement.
11. Preparation of pot pourrie.
12. Preparation of Greeting card /Book mark using dry flower arrangement.
13. Arrangement of flower for different areas and occasions.
14. Visit to nearby florist / Flower market.
15. Visit / Organise exhibition of cut flowers and floral arrangement.



Vocational Skill Courses

Name of the Course: Bonsai Art

60 Hours Credits:02

Course Objectives (CO):

- CO 1. To enable the students, know different types of containers, tools and accessories used in bonsai.
- CO 2. To enable the students, identify suitable plants, soil and media for Bonsai.
- CO 3. To enable the students, learn Bonsai management practices and their care techniques.
- CO 4. To enable the students, prepare different styles of Bonsai.
- CO 5. To enable the students, gain knowledge about Insect pest and diseases and their control.

Course Outcomes (OC): Learner will be able to

- OC 1. Select different types of containers, tools and accessories used in bonsai.
- OC 2. Identify suitable plants, soil and media for Bonsai.
- OC 3. Perform bonsai management practices and their care techniques.
- OC 4. Prepare different styles of Bonsai.
- OC 5. Deal with Insect pest and diseases and their control.

List of Practicals:

1. Study of Different types of containers used in bonsai.
2. Study of tools and accessories used in Bonsai making.
3. Study of best suitable plants for Bonsai.
4. Selection of soil and media for bonsai
5. Bonsai management practices: Media Potting, Re-Potting and watering.
6. Bonsai care techniques: Pruning, pinching and defoliation.
7. Study of upright (formal styles) in Bonsai.
8. Study of Upright (Informal style) in Bonsai.
9. Preparation of Bonsai: Cascade, Semi-cascade.
10. Preparation of Bonsai: Forest style.
11. Insect pest and diseases and their control.
12. Visit to Bonsai exhibition/Nursery.

Reference Books

1. Dr. N. Mangadevi, Bonsai-Emesco Books publisher

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Vocational Skill Courses

Name of the Course: Plant Propagation Practices

60 Hours Credits:02

Course Objectives (CO):

- CO 1. To enable the students, identify garden implements and suitable potting mixture.
- CO 2. To train the students, in potting, repotting techniques, and preparation of nursery beds.
- CO3. To enable the students, learn methods of seed treatment and application of growth hormones.
- CO 4. To enable the students, in the skills of plant propagation.

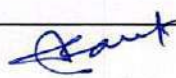
Course Outcomes (OC): Learner will be able to

- OC 1. Identify garden implements and suitable potting mixture.
- OC 2. Perform potting, repotting and preparation of nursery beds.
- OC 3. Apply methods of seed treatment and application of growth hormones for Plant Propagation.
- OC 4. Perform plant propagation practices.

List of Practicals:

1. Study of Garden implements.
2. Preparation of Potting Mixture.
3. Potting & Repotting techniques.
4. Preparation of nursery beds.
5. Methods of Seed Treatment.
6. Application & methods of plant growth regulators.
7. Perform various methods of cutting.
8. Perform various methods of layering.
9. Perform various methods of grafting.
10. Perform various methods of budding.
11. Perform propagation by specialized structure- rhizome, suckers, runners, offset, bulb, corm, tuber, etc.
12. Visit to Plant nursery.




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Vocational Skill Courses

Name of the Course: Marine Botany

60 Hours Credits:02

Course Objectives (CO):

- CO1. To enable students, understand the characteristics features of the marine phytoplanktons and marine fungi.
- CO 2. To enable students, study the value-added products and medicinal uses of marine algae.
- CO 3. To enable students, identify mangrove plants.
- CO4.To enable students, comprehend the characteristic features of Mangroves, mangrove associates and sea grasses.
- CO 5. To enable students, realise the ecological importance and medicinal uses of mangroves.

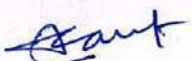
Course Outcomes (OC): Learner will be able to

- OC 1. Understand the characteristics features of the marine phytoplanktons and marine fungi.
- OC 2. Study the value-added products and medicinal uses of marine algae.
- OC 3. Identify mangrove plants.
- OC 4. Comprehend the characteristic features of Mangroves, mangrove associates and sea grasses.
- OC 5. Realise the ecological importance and medicinal uses of mangroves.

List of Practicals:

1. Study of marine phytoplanktons.
2. Study of characteristic features (Morphological, Photosynthetic pigments, reserve food material) of Chlorophyta (*Enteromorpha*, *Chaetomorpha*, *Ulva*, *Caulerpa*- any two).
3. Study of characteristic features (Morphological, Photosynthetic pigments, reserve food material) of Phaeophyta (*Padina*, *Dictyota*, *Sargassum*- any two)
4. Study of characteristic features (Morphological, Photosynthetic pigments, reserve food material) of Rhodophyta (*Gracilaria*, *Gelidium*, *Hypnea* - any two).
5. Study of marine fungi.




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Skill Enhancement Courses

Name of the Course: Field Study Techniques

60 Hours

Credits:02

Course Objectives (CO):

- CO 1. To develop skill among the first-year botany students, focusing on essential field study techniques in botany.
- CO 2. To enable students, to Understand basics of biodiversity analysis and measurement
- CO 3. To inculcate skills that can pave the way for a promising career in field and environmental botany.
- CO 4. To provide hand on training and experiential learning of various aspects of field survey techniques.

Course Outcomes (OC): Learner will be able to

- OC 1. Understand vegetation type and analyze vegetation.
- OC2. Develop skill useful for forest Mensuration for programs like tree census etc.
- OC 3. Understand basic parameters of soil profiling
- OC 4. Calculate diversity using Simpson's index and comment on biodiversity status of the studied area.
- OC 5. Analyse water samples for hydrobiological assessments

List of Practicals:

Module 1: Field visit and Vegetation Analysis

- Vegetation study by field visit for habit and habitat study
- Study of quadrat Method (List quadrat and Chart quadrat)
- Line and Belt Transect Studies (demonstration)
- Data collection using questionnaires
- Photography technique (Geo tag photographs) and Use of GPS for Field Survey and Plant location

Module 2: Forest Mensuration

- Keys for Identification of trees
- Measurement of Diameter of trees in field
- Measurement of height of trees in field
- Volume measurement of trees

Module 3: Soil analysis

- Soil profiling using pH meter and thermometer

Module 4: Biodiversity Indexing

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Skill Enhancement Courses

Name of the Course: Organic Farming

60 Hours

Credits:02

Course Objectives (CO):

- CO 1. To spread knowledge about organic agriculture.
- CO 2. To provide information and abilities needed to engage in organic food production and sustainable agriculture.
- CO 3. To create awareness about certification process, packaging, and marketing of organic products.
- CO 4. To spread idea of an organic ecosystem and educate oneself on biological magnification and its relevance in the modern world.

Course Outcomes (OC): Learner will be able to

- OC 1. Get comprehensive knowledge and practical skills in organic farming practices
- OC 2. To Understand various methods of organic compost preparation,
- OC 3. Acquire skills to control pest and disease using botanicals, natural pesticides.
- OC 4. Get hands on training and experiential learning on vermiculture techniques, bio-pesticide application, and sustainable post-harvest management.

List of Practicals:

Module 1: Organic Compost Making and analysis

- 1.1 Aerobic Composting Methods
- 1.2 Anaerobic Composting Techniques
- 1.3 Physicochemical properties of compost

Module 2: Green Manures and its application

- 2.1 Different plants used as green manures and their applications

Module 3: Biofertilizers and bio inoculants

- 3.1 Different types of biofertilizers and Methods of Biofertilizer Applications
- 3.2. Types of bioinoculants and their applications

Module 4: Pest and Disease Control using biological methods



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B.Sc (H) CHEMISTRY**Course Outcomes**

Paper No.	Paper Name
CC - I	Inorganic Chemistry I: Atomic Structure & Chemical Bonding (Theory)
CO-1	<ul style="list-style-type: none"> Introduction of quantum mechanical model of the atom, quantum numbers, electronic configuration, radial and angular distribution curves and shapes of various orbitals
CO-2	<ul style="list-style-type: none"> Learn to draw the plausible structures and geometries of molecules using Radius Ratio Rules, VSEPR theory and molecular orbital diagrams
CO-3	<ul style="list-style-type: none"> Understand the importance and application of chemical bonds, inter-molecular and intramolecular weak chemical forces and their effect on melting points, boiling points, solubility and energetics of dissolution
CO-4	<ul style="list-style-type: none"> Learn the concept and periodic trends in atomic radii, ionic radii, ionization energy and electron affinity of elements
CO-5	<ul style="list-style-type: none"> Understand the concept of lattice energy
CO-6	<ul style="list-style-type: none"> Learn Band theory and its application in rationalizing the conductivity of metals, semiconductors and insulators
CC - I	Inorganic Chemistry I: Atomic Structure & Chemical Bonding (Practical)
CO-1	<ul style="list-style-type: none"> Learn the calibration and use of apparatus
CO-2	<ul style="list-style-type: none"> Learn to prepare solutions of titrants of different Molarity/Normality
CO-3	<ul style="list-style-type: none"> Learn the principles of acid-base titrations and redox titrations
CO-4	<ul style="list-style-type: none"> Learn to determine strength of solutions
CO-5	<ul style="list-style-type: none"> Basic understanding of various common indicators and their selection criterion
CC-II	Physical Chemistry I: States of Matter & Ionic Equilibrium (Theory)
CO-1	<ul style="list-style-type: none"> To understand the basics and advanced concepts related to state of matter i.e. Gaseous State, Liquid State and Solid State
CO-2	<ul style="list-style-type: none"> To understand the basics of Acids and Bases and calculate the pH of various acidic and Basic solutions
CO-3	<ul style="list-style-type: none"> To understand the concept of Buffer Solutions and can prepare the Buffer solutions as per the requirement
CO-4	<ul style="list-style-type: none"> To derive the various mathematical expressions to define the physical properties of Solids, Liquids and Gases
CO-5	<ul style="list-style-type: none"> To derive the various equations dealing with the calculation of pH of Acids and Bases, Buffer Solutions
CC-II	Physical Chemistry I: States of Matter & Ionic Equilibrium (Practical)
CO-1	<ul style="list-style-type: none"> To determine the Surface tension of Unknown Liquids using Stalagmometer
CO-2	<ul style="list-style-type: none"> To determine the Viscosity of Unknown Liquids using Viscometer
CO-3	<ul style="list-style-type: none"> To determine the pH of different unknown solution using pH-meter
CO-4	<ul style="list-style-type: none"> To determine the concentration of unknown Acid using pH-meter
CO-5	<ul style="list-style-type: none"> To prepare different Buffer Solutions



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CO-6	<ul style="list-style-type: none"> To determine the Surface tension of Unknown Liquids using Stalagmometer
CC-III	Organic Chemistry I: Basics & Hydrocarbons (Theory)
CO-1	<ul style="list-style-type: none"> Understand the basic concepts in Organic Chemistry to be used in the subsequent semesters.
CO-2	<ul style="list-style-type: none"> Learn the details of hybridization, electronic displacement and their applications.
CO-3	<ul style="list-style-type: none"> Detailed study of the chemistry of hydrocarbons aliphatic and aromatic.
CO-4	<ul style="list-style-type: none"> Enhance the knowledge on various reaction mechanisms through correlation with the fundamental properties of the reactants.
CO-5	<ul style="list-style-type: none"> Learn about free radical substitution, electrophilic addition and electrophilic aromatic substitution.
CO-6	<ul style="list-style-type: none"> Familiarize with the stereochemical aspects which will help in understanding the actual course of reaction.
CC-III	Organic Chemistry I: Basics & Hydrocarbons (Practical)
CO-1	<ul style="list-style-type: none"> Hands on experience on organic preparations namely nitration, bromination.
CO-2	<ul style="list-style-type: none"> Develop an understanding on techniques like crystallization, melting point determination, boiling point determination along with the hands on experience.
CO-3	<ul style="list-style-type: none"> Development of the ability to do separation of mixtures of amino acids, sugars by various chromatographic techniques.
CO-4	<ul style="list-style-type: none"> Develop the skills on the detection of extra elements in the unknown organic compounds which has application in the subsequent semesters.
CO-5	<ul style="list-style-type: none"> Learn the separation technique, thin layer chromatography (TLC) for the separation of a mixture of o-and p-nitrophenol and o-and p-aminophenol.
CO-6	<ul style="list-style-type: none"> Aware of the effect of impurities on the melting point – mixed melting point of two unknown organic compounds.
CC-IV	Physical Chemistry II: Chemical Thermodynamics & its Applications (Theory)
CO-1	<ul style="list-style-type: none"> Understand the Laws of Thermodynamics, State Functions, Path Functions, Intensive & Extensive variables
CO-2	<ul style="list-style-type: none"> To derive the various mathematical expressions of First Law, Second Law, Third Law, ΔU, ΔH, ΔS, ΔG, ΔA for ideal and real gases under different conditions
CO-3	<ul style="list-style-type: none"> Explain and derive the mathematical relations for partial molar properties
CO-4	<ul style="list-style-type: none"> Understand and derive the thermodynamic relations explaining colligative properties and their applications
CO-5	<ul style="list-style-type: none"> Explain various Enthalpies of reactions and derive the mathematical relations for these enthalpies of reaction.
CC-IV	Physical Chemistry II: Chemical Thermodynamics & its Applications (Practical)
CO-1	<ul style="list-style-type: none"> To determine the heat capacity of beaker for different volume of water using calorimeter



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CO-2	<ul style="list-style-type: none"> To determine the enthalpy of Neutralization and Ionization for Acids and Bases.
CO-3	<ul style="list-style-type: none"> To determine the basicity of diprotic acids
CO-4	<ul style="list-style-type: none"> To determine the enthalpy of hydration
CO-5	<ul style="list-style-type: none"> To determine the effect of concentration on elevation in boiling point, variation in elevation in boiling point by adding electrolytes and non-electrolytes
CC-V	Inorganic Chemistry II: s- and p-Block elements (Theory)
CO-1	<ul style="list-style-type: none"> Understanding the principles of different metallurgical procedures with respect to different metals.
CO-2	<ul style="list-style-type: none"> Comparison of different properties of s and p block elements. Intergroup and intragroup comparison.
CO-3	<ul style="list-style-type: none"> Comparative study of listed compounds of s and p block elements.
CO-4	<ul style="list-style-type: none"> Detailed study of specific compounds of p block elements mentioned in the syllabus w.r.t. their synthesis, structure, properties, bonding and uses
CC-V	Inorganic Chemistry II: s- and p-Block elements (Practical)
CO-1	<ul style="list-style-type: none"> To understand the principle of Iodometry and Iodimetry
CO-2	<ul style="list-style-type: none"> Estimation of different oxidizing and reducing agents by the above methods
CO-3	<ul style="list-style-type: none"> Introduction of complexometric titrations using EDTA solutions
CO-4	<ul style="list-style-type: none"> Estimation of different metals like Zinc, Calcium, Magnesium by complexometry
CO-5	<ul style="list-style-type: none"> Preparing inorganic compounds
CO-6	<ul style="list-style-type: none"> Chromatographic separation of cations
CC-VI	Organic Chemistry II: Halogenated Hydrocarbons and Oxygen Containing Functional Groups (Theory)
CO-1	<ul style="list-style-type: none"> Provides better understanding of the organic functional groups and their reactivity.
CO-2	<ul style="list-style-type: none"> Helps in designing the synthesis of molecules of synthetic utility by functional group transformation.
CO-3	<ul style="list-style-type: none"> Learn about halogenated hydrocarbon, alcohol, phenol, ether, epoxides, carbonyl compounds, carboxylic acids and their derivatives.
CO-4	<ul style="list-style-type: none"> Detailed study of important name reactions.
CO-5	<ul style="list-style-type: none"> Description of tautomerism and synthetic application of diethyl malonate and ethyl acetoacetate.
CC-VI	Organic Chemistry II: Halogenated Hydrocarbons and Oxygen Containing Functional Groups (Practical)
CO-1	<ul style="list-style-type: none"> Hands-on practice on organic synthesis discussed theoretically in theory course.
CO-2	<ul style="list-style-type: none"> Understanding the problem faced during the said procedure and precautions needs to be adopted.
CO-3	<ul style="list-style-type: none"> Learning tests of various functional groups such as alcohols, phenols carbonyl compounds carboxylic acids which has further applications.




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CO-4	<ul style="list-style-type: none"> Learn organic synthesis such as acetylation, benzoylation, oxidation, selective reduction of m- dinitro benzene etc.
CO-5	<ul style="list-style-type: none"> Preparation of semicarbazone, s-benzyl isothiuronium salt.
CO-6	<ul style="list-style-type: none"> Learn about carrying out Aldol condensation.
CC-VII	Physical Chemistry III: Phase Equilibrium and Electrochemical Cells (Theory)
CO-1	<ul style="list-style-type: none"> To impart the students the knowledge on phase rule, its applications and alloys, their importance, composition and applications.
CO-2	<ul style="list-style-type: none"> To demonstrate the application of spectroscopic and electrochemical methods in mechanistic studies of photochemical reactions
CO-3	<ul style="list-style-type: none"> To make students familiar with a broad variety of photochemical systems and their applications
CC - VII	Physical Chemistry III: Phase Equilibrium and Electrochemical Cells (Practical)
CO-1	<ul style="list-style-type: none"> Basic learning of the laboratory procedure for the determination of critical solution temperature and composition at CST of the phenol water system
CO-2	<ul style="list-style-type: none"> To study the effect of impurities of sodium chloride and succinic acid on CST of the phenol water system
CO-3	<ul style="list-style-type: none"> Learning of the procedure to construct the phase diagram using cooling curves
CO-4	<ul style="list-style-type: none"> Perform experiment for distribution of acetic/ benzoic acid between water and chloroform or cyclohexane
CO-5	<ul style="list-style-type: none"> Experiments of Potentiometric titrations of various types
CC-VIII	Inorganic Chemistry III: Coordination Chemistry (Theory)
CO-1	<ul style="list-style-type: none"> Understanding the general chemistry of transition elements with reference to electronic configuration, oxidation state, electrode potential, colour, electronic spectra. Complex formation tendency etc.
CO-2	<ul style="list-style-type: none"> Study the chemistry of some transition elements like Cr, Fe and Mn in reference to its compound for ex. Peroxo compounds, potassium permanganate, potassium ferrocyanide, potassium ferricyanide, sodium nitroprusside and sodium cobaltinitrite.
CO-3	<ul style="list-style-type: none"> Understanding the concept of bonding in transition elements
CO-4	<ul style="list-style-type: none"> Study various theories of bonding like valence bond theory, crystal field theory, ligand field theory and molecular field theory.
CO-5	<ul style="list-style-type: none"> Understanding the application of crystal field theory.
CO-6	<ul style="list-style-type: none"> To study the chemistry of lanthanides and actinides.
CO-7	<ul style="list-style-type: none"> Understanding the inorganic reaction mechanisms like substitution reactions in square planar complexes, trans- effect, theories of trans effect. thermodynamic and kinetic stability of complexes
CC -VIII	Inorganic Chemistry III: Coordination Chemistry (Practical)
CO-1	<ul style="list-style-type: none"> Understanding the basic principles of gravimetry, chemistry involved in gravimetry analysis, terms applied in gravimetric analysis like co-precipitation, post precipitation, digestion etc.
CO-2	<ul style="list-style-type: none"> Understanding the application of gravimetric analysis in estimation of




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	Nickel as bis(dimethyl glyoximate)nickel(II)
CO-3	<ul style="list-style-type: none"> Understanding the application of gravimetric analysis in estimation of Cu as CuSCN
CO-4	<ul style="list-style-type: none"> Understanding the application of gravimetric analysis in estimation of iron as Fe₂O₃ by precipitating iron as Fe(OH)₃
CO-5	<ul style="list-style-type: none"> Understanding the basic principles of UV-vis spectrophotometer.
CO-6	<ul style="list-style-type: none"> Understanding the application of spectrophotometer in calculation of 10Dq and verification of spectrochemical series.
CO-7	<ul style="list-style-type: none"> Study the application of reaction mechanism with reference to reaction of ammine complexes of Ni(II)
CO-8	<ul style="list-style-type: none"> Understanding the synthesis of some co-ordination compounds like Tetraamminecopper (II) sulphate, [Cu(NH₃)₄]SO₄ .H₂O, Acetylacetonate complexes of Cu²⁺/Fe³⁺, Tetraamminecarbonatocobalt (III) nitrate and Potassium tri(oxalato)ferrate(III)
CC-IX	Organic Chemistry III: Nitrogen Containing functional groups, Polynuclear Hydrocarbons, Heterocyclic Chemistry, Alkaloids and Terpenes (Theory)
CO-1	<ul style="list-style-type: none"> Understanding chemistry of nitrogen containing functional groups, polynuclear hydrocarbons, heterocyclic compounds and natural compounds.
CO-2	<ul style="list-style-type: none"> Learn about chemistry of amines, diazonium salt, nitro compounds, nitriles and isonitriles.
CO-3	<ul style="list-style-type: none"> Detailed study of polynuclear hydrocarbon such as naphthalene, anthracene and phenanthrene.
CO-4	<ul style="list-style-type: none"> General method of synthesis of furan, pyrrole, thiophene, pyridine, indole, quinoline & isoquinoline & their reactions.
CO-5	<ul style="list-style-type: none"> Study of Hoffmann's exhaustive methylation & Emde's method.
CO-6	<ul style="list-style-type: none"> Illustration of structural elucidation of organic compound which are very helpful in future studies in chemistry.
CO-7	<ul style="list-style-type: none"> Structure elucidation of nicotine.
CC-IX	Organic Chemistry III: Nitrogen Containing functional groups, Polynuclear Hydrocarbons, Heterocyclic Chemistry, Alkaloids and Terpenes (Practical)
CO-1	<ul style="list-style-type: none"> Qualitative analysis of unknown organic compounds such as alcohols, carboxylic acids etc. Students get an idea how to identify an unknown organic compound, which is very useful in subsequent semesters.
CO-2	<ul style="list-style-type: none"> Systematic analysis involves alcohols, carboxylic acid, phenols, carbonyl compounds and esters.
CO-3	<ul style="list-style-type: none"> Isolation of natural compound, which is useful in further studies.
CO-4	<ul style="list-style-type: none"> Learn about extraction of caffeine from tea leaves.
CO-5	<ul style="list-style-type: none"> Understand quantitative organic chemistry experiments.
CO-6	<ul style="list-style-type: none"> Learn about aniline estimation by acetylation & bromate-bromide method.
CC - X	Physical Chemistry IV: Conductance & Chemical Kinetics (Theory)
CO-1	<ul style="list-style-type: none"> To explain the conductance and its variation with dilution, molar and equivalent conductance




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CO-2	<ul style="list-style-type: none"> To explain migration of ions under the influence of external potential
CO-3	<ul style="list-style-type: none"> To explain and derive the mathematical expressions of different rate laws
CO-4	<ul style="list-style-type: none"> Learn the basics and theories of rate of reaction and enzyme catalyzed reactions
CO-5	<ul style="list-style-type: none"> Have an understanding of laws of absorption of light energy and reactions catalyzed by light i.e. photochemical reactions
CC - X	Physical Chemistry IV: Conductance & Chemical Kinetics (Practical)
CO-1	<ul style="list-style-type: none"> To use colorimeter for the determination of conductance of different solutions.
CO-2	<ul style="list-style-type: none"> Demonstrate the application of colorimeter for studying various acid - base titrations
CO-3	<ul style="list-style-type: none"> To carry out different experiments in laboratory to study the kinetics of acid hydrolysis
CO-4	<ul style="list-style-type: none"> Experimentally study the kinetics of Iodine -persulphate reaction
CO-5	<ul style="list-style-type: none"> Experimentally Study the kinetics of saponification
CO-6	<ul style="list-style-type: none"> Carry out experiments to compare the strength of different acids, hydrolysis constants
CO-7	<ul style="list-style-type: none"> To demonstrate the effect of change of concentration of reactants and effect of temperature on rate of reactions
CC - XI	Organic Chemistry IV: Biomolecules (Theory)
CO-1	<ul style="list-style-type: none"> Understand and demonstrate how structure of biomolecules determine their reactivity and biological functions. Learn about Enzymes, cofactors and their actions and functions.
CO-2	<ul style="list-style-type: none"> Understand the structure and functions of DNA and RNA. Learn the concept of heredity through the study of genetic code, replication, transcription and translation.
CO-3	<ul style="list-style-type: none"> Demonstrate understanding the metabolic pathways, their interrelationship, regulation and energy production from biochemical processes
CO-4	<ul style="list-style-type: none"> Learn about the structure, synthesis, properties and functions of proteins and their precursors.
CO-5	<ul style="list-style-type: none"> Learn about the class of molecules which complete our basic needs i.e. food, shelter and clothing.
CO-6	<ul style="list-style-type: none"> Be able to understand the structure and properties of oils and fats and their precursors.
CC - XI	Organic Chemistry-IV: Biomolecules (Practical)
CO-1	<ul style="list-style-type: none"> Learn about the estimation of glucose by Fehling's solution.
CO-2	<ul style="list-style-type: none"> Understand the titration curve of amino acid (glycine).
CO-3	<ul style="list-style-type: none"> Learn how to estimate protein by Lowry's method.
CO-4	<ul style="list-style-type: none"> Understand the action of salivary amylase on starch under optimum conditions.
CO-5	<ul style="list-style-type: none"> Learn how to isolate and estimate DNA from plant source e.g. onion, peas, cauliflower.
CO-6	<ul style="list-style-type: none"> Learn how to determine Saponification value and Iodine value of any oil or fat and their significance also.



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CC - XII	Physical Chemistry V: Quantum Chemistry & Spectroscopy (Theory)
CO-1	<ul style="list-style-type: none"> Developing understanding of matter and energy beyond classical notion to explore at atomic and subatomic level
CO-2	<ul style="list-style-type: none"> Understanding the shortcomings and inadequacies of classical mechanics
CO-3	<ul style="list-style-type: none"> Providing tools and techniques of problem solving in quantum chemistry
CO-4	<ul style="list-style-type: none"> Honing abilities to compare spectroscopy and quantum chemistry
CC - XII	Physical Chemistry V: Quantum Chemistry & Spectroscopy (Practical)
CO-1	<ul style="list-style-type: none"> Basic understanding of the colorimeter and its working
CO-2	<ul style="list-style-type: none"> To perform various experiments based on the Lambert-Beer's Law
CO-3	<ul style="list-style-type: none"> Kinetic studies using spectroscopic method
CO-4	<ul style="list-style-type: none"> Understanding of the Spectrophotometer and various experiments related to it
CO-5	<ul style="list-style-type: none"> To use colorimeter to study rate of reactions
CC - XIII	Inorganic Chemistry IV: Organometallic Chemistry & Bioinorganic Chemistry (Theory)
CO-1	<ul style="list-style-type: none"> Understanding of the basic principles of qualitative inorganic analysis
CO-2	<ul style="list-style-type: none"> Rationalization of the stability of metal carbonyls and related species
CO-3	<ul style="list-style-type: none"> Understand the nature, structure and reactivity of metal carbonyls, Zeise's salt and ferrocene
CO-4	<ul style="list-style-type: none"> Identify important structural features of the metal alkyls tetrameric methyl lithium and dimeric trialkyl aluminium and explain the concept of multi-center bonding in these compounds
CO-5	<ul style="list-style-type: none"> Introduction to important features of catalysis and mechanisms of Wilkinson's catalyst, Zeigler- Natta catalyst and manufacturing of synthetic gasoline by Fischer-Tropsch process
CO-6	<ul style="list-style-type: none"> Basic knowledge of sources, effects of excess and deficiency of trace metals. Understanding the toxicity of certain metal ions, reasons for toxicity and their antidotes.
CO-7	<ul style="list-style-type: none"> Basic understanding of the use of chelating agents in medicine and the role of cisplatin in cancer therapy
CO-8	<ul style="list-style-type: none"> Learn the applications of iron in biological systems with particular reference to haemoglobin, myoglobin, ferritin and transferrin
CO-9	<ul style="list-style-type: none"> Understand the functioning of sodium-potassium pump in organisms
CO-10	<ul style="list-style-type: none"> Understand and describe the active sites and action cycles of the metalloenzymes carbonic anhydrase and carboxypeptidase
CC - XIII	Inorganic Chemistry IV: Organometallic Chemistry & Bioinorganic Chemistry (Practical)
CO-1	<ul style="list-style-type: none"> Understanding the basic principles of qualitative inorganic analysis
CO-2	<ul style="list-style-type: none"> Identification of different anions and cations present in a mixture
CO-3	<ul style="list-style-type: none"> Identification and removal of interfering ions in a mixture
CC - XIV	Organic Chemistry-V: Spectroscopy and Applied Organic Chemistry (Theory)
CO-1	<ul style="list-style-type: none"> Understand the basic principles of UV-Visible, IR and NMR Spectroscopic techniques



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CO-2	<ul style="list-style-type: none"> Know how to use spectroscopic techniques to determine structure and stereochemistry of known and unknown compounds
CO-3	<ul style="list-style-type: none"> Develop a sound understanding of the structure of pharmaceutical compounds. They will also understand the importance of different classes of drugs and their applications for treatment of various diseases.
CO-4	<ul style="list-style-type: none"> Learn about the chemistry of natural and synthetic polymers and polymerization including fabrics and rubbers
CO-5	<ul style="list-style-type: none"> Understand the chemistry of biodegradable and conducting polymers and appreciate the need of biodegradable polymers with the emphasis on basic principles.
CO-6	<ul style="list-style-type: none"> Learn about the theory of colour and constitution as well as the chemistry of dyeing.
CO-7	<ul style="list-style-type: none"> Know applications of various types of dyes including those in foods, medicines and textiles.
CC - XIV	Organic Chemistry-V: Spectroscopy and Applied Organic Chemistry (Practical)
CO-1	<ul style="list-style-type: none"> Learn about the systematic qualitative analysis and identification of the monofunctional organic compounds e.g. aromatic hydrocarbons, aryl halides, carbohydrates, nitro compounds, amines, amides etc.
CO-2	<ul style="list-style-type: none"> Understand the identification of some simple bifunctional organic compounds e.g. salicylic acid, cinnamic acid, nitrophenols.
CO-3	<ul style="list-style-type: none"> Learn about the identification of the simple organic compounds by IR and NMR spectra (if spectra is provided).

DISCIPLINE SPECIFIC ELECTIVE COURSES (DSE)


Paper No.	Paper Name
DSE - II	Inorganic Materials of Industrial Importance (Theory)
CO-1	<ul style="list-style-type: none"> Understand the composition and application of different kinds of glass. Also get learning about glazing of ceramics and the factors affecting their porosity. Develop an understanding about the manufacturing of cement and the mechanism of setting of cement.
CO-2	<ul style="list-style-type: none"> Understand the suitability of fertilizers for different kinds of crops and soil.
CO-3	<ul style="list-style-type: none"> Student will learn the process of formulation of paints and the basic principle behind the protection offered by the surface coatings.
CO-4	<ul style="list-style-type: none"> Understand the principle, working and applications of different types of batteries.
CO-5	<ul style="list-style-type: none"> This topic lists and explains the properties of engineering materials for mechanical construction used in day to day life.
CO-6	<ul style="list-style-type: none"> Learn about the synthesis and properties of nano-dimensional materials, various semiconductors, superconducting oxides and their applications in different industries.
DSE - II	Inorganic Materials of Industrial Importance (Practical)
CO-1	<ul style="list-style-type: none"> Enable the students to synthesize pigments and nanoparticles in laboratory.



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CO-2	<ul style="list-style-type: none"> Hands on experiments for the qualitative estimation of ions in fertilizers and alloys.
CO-3	<ul style="list-style-type: none"> Hands on experiments for the extraction of ions from alloys and their quantitative estimation
CO-4	<ul style="list-style-type: none"> Learn about the analysis of one or more ions by different quantitative estimation methods like gravimetry, iodometry, complexometry and potentiometry.
DSE-III	Application of Computers in Chemistry (Theory)
CO-1	<ul style="list-style-type: none"> Get accustomed with computer and programming skills
CO-2	<ul style="list-style-type: none"> Application of algorithm and various mathematical methods to solve problems of chemistry computationally using BASIC languages
CO-3	<ul style="list-style-type: none"> Handling the data and graphical representation in Excel, Q-Basic and other softwares
DSE -III	Application of Computers in Chemistry (Practicals)
CO-1	<ul style="list-style-type: none"> To write computer programs for using Q-Basic for different problems based on solving roots of equation in chemistry
CO-2	<ul style="list-style-type: none"> To write programs using different numerical methods
CO-3	<ul style="list-style-type: none"> To write programs on least square curve fitting method
CO-4	<ul style="list-style-type: none"> To write computer programs for graphical display of various chemistry related problems such as vander waals isotherm, compressibility and pressure curves, pH metric titrations, conductometric titrations, lambert beer law and many more
CO-5	<ul style="list-style-type: none"> To use excel for handling and manipulating data
DSE -IV	Analytical Methods in Chemistry (Theory)
CO-1	<ul style="list-style-type: none"> To enable the students to perform experiments with accuracy and precision
CO-2	<ul style="list-style-type: none"> Basic understanding of method development for analysis of different samples
CO-3	<ul style="list-style-type: none"> Understand basic principle and working of important instruments like Flame Photometer, UV-vis spectrophotometer and thermal analyser
CO-4	<ul style="list-style-type: none"> Estimation of metal ions from aqueous solution using UV-vis spectrophotometer
CO-5	<ul style="list-style-type: none"> Estimation of macronutrients using Flame photometry
CO-6	<ul style="list-style-type: none"> Learn separation of analytes by chromatography
CO-7	<ul style="list-style-type: none"> Learn extraction of different components using solvent extraction
CO-8	<ul style="list-style-type: none"> Learn basic principle of electroanalytical methods and titrations
DSE - IV	Analytical Methods in Chemistry (Practical)
CO-1	<ul style="list-style-type: none"> Learning method development for analysis of different samples
CO-2	<ul style="list-style-type: none"> Learn separation of analytes by chromatography
CO-3	<ul style="list-style-type: none"> Learn to separate amino acids from organic acids by ion exchange chromatography
CO-4	<ul style="list-style-type: none"> Learn to determine exchange capacity of cation and anion exchange resins
CO-5	<ul style="list-style-type: none"> Learn extraction of components using solvent extraction
CO-6	<ul style="list-style-type: none"> Learn to estimate metal ions from aqueous solution using UV-vis spectrophotometer




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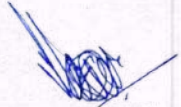
CO-7	<ul style="list-style-type: none"> Learn to determine the composition of soil
DSE - V	Molecular Modelling & Drug Design (Theory)
CO-1	<ul style="list-style-type: none"> Understand the basics of molecular modelling
CO-2	<ul style="list-style-type: none"> Compare the computational and experimental results
CO-3	<ul style="list-style-type: none"> Aware of quantum mechanical, molecular dynamics and monte carlo simulations
CO-4	<ul style="list-style-type: none"> Learn QSAR role in drug designing and cheminformatics
CO-5	<ul style="list-style-type: none"> Hands-on through Argus lab and other softwares for geometry optimization of the molecules and solving related problems
CO-6	<ul style="list-style-type: none"> Understand the basics of molecular modelling
DSE - V	Molecular Modelling & Drug Design (Practical)
CO-1	<ul style="list-style-type: none"> To optimize the geometrical parameters of molecules like shape, Bond length, bond angle using Argus Lab using different basis sets
CO-2	<ul style="list-style-type: none"> To plot HOMO, LUMO and ESP maps and explain the electron rich and deficient sites
CO-3	<ul style="list-style-type: none"> To perform conformational analysis of different molecules
CO-4	<ul style="list-style-type: none"> To compare the basicity of different compounds using mulliken charges and ESP maps
CO-5	<ul style="list-style-type: none"> To compute enthalpy of hydrogenation and Resonance
CO-6	<ul style="list-style-type: none"> Docking studies using Argus Lab
DSE - 8	Green Chemistry (Theory)
CO-1	<ul style="list-style-type: none"> Learn environment pollution and its impact
CO-2	<ul style="list-style-type: none"> Learn causes of environmental pollution such as depletion of natural resources, climate change, ozone depletion, heaps and heaps of landfills piling up.
CO-3	<ul style="list-style-type: none"> Role of chemistry in environment pollution
CO-4	<ul style="list-style-type: none"> Need to develop sustainable practices to remove the negative aspects of conventional chemistry.
CO-5	<ul style="list-style-type: none"> Enhance the industrial as well as economic and societal growth.
CO-6	<ul style="list-style-type: none"> Learn different aspects of green chemistry to enhance innovative skills, critical thinking and valuable skills to solve various environmental issues.
CO-7	<ul style="list-style-type: none"> Learn to develop environmentally efficient and benign reformations for conventional protocols.
CO-8	<ul style="list-style-type: none"> Learn green chemistry concepts such as twelve principles of green chemistry to develop the basic understanding of toxicity, hazard and risk of chemical substances.
CO-9	<ul style="list-style-type: none"> Understand the concept of stoichiometric calculations and relate them to green chemistry metrics, atom economy and their difference from percentage yield.
CO-10	<ul style="list-style-type: none"> Learn, to design safer chemical, products and processes, as compared to conventional alternatives to prevent accidents.
CO-11	<ul style="list-style-type: none"> Use of renewable feed stock for energy efficient process and protection of the environment, renewable energy sources,
CO-12	<ul style="list-style-type: none"> Learn important reactions in various green solvents.



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CO-13	<ul style="list-style-type: none"> Learn various green alternatives of energy such as Microwave, ultrasound for chemical reactions.
CO-14	<ul style="list-style-type: none"> Understand the role of catalyst and bio catalyst, photocatalyst.
CO-15	<ul style="list-style-type: none"> Learn to enhance profits and productivity, without generation of waste.
CO-16	<ul style="list-style-type: none"> Learn success stories and real world cases which motivate to practice green chemistry.
CO-17	<ul style="list-style-type: none"> Learn various career opportunities generated using Green chemistry.
DSE - 8	Green Chemistry (Practical)
CO-1	<ul style="list-style-type: none"> Learn about Safer starting materials such as preparation and characterization of metal nanoparticles using plant extracts.
CO-2	<ul style="list-style-type: none"> Learn to prepare biodiesel using renewable resources
CO-3	<ul style="list-style-type: none"> Learn to use of enzymes as catalysts as an alternative of toxic and harmful chemical catalysts.
CO-4	<ul style="list-style-type: none"> Learn to use green solvents such as liquid CO₂ generated from dry ice to extract d-limonene from orange peel.
CO-5	<ul style="list-style-type: none"> Learn to perform mechanochemical solvent free, solid-solid synthesis of azomethine
CO-6	<ul style="list-style-type: none"> Learn to utilize alternative sources of energy such as microwave, photocatalytic reactions to carry out different chemical reactions
CO-7	<ul style="list-style-type: none"> Also learn to utilize various and by products obtained in above preparations as starting materials for new reactions like use of nanoparticles as catalyst for a reaction, conversion of glycerol a byproduct of biodiesel into a useful product.
DSE - 9	Industrial Chemicals & Environment (Theory)
CO-1	<ul style="list-style-type: none"> Study in detail the listed industrial chemicals and gases w.r.t. production, uses, storage and hazards
CO-2	<ul style="list-style-type: none"> Introduction to different segments of environment and their importance
CO-3	<ul style="list-style-type: none"> Understand different chemical aspects of pollution. viz: air, water, energy etc
CO-4	<ul style="list-style-type: none"> Considering the sources, effects and controlling measures for different pollutants
CO-5	<ul style="list-style-type: none"> Industrial effluents and their treatment methods.
CO-6	<ul style="list-style-type: none"> Details of topics as biocatalysis, green chemistry and their applicability
DSE - 9	Industrial Chemicals & Environment (Theory)
CO-1	<ul style="list-style-type: none"> Measurement of different water quality parameters - DO, BOD, COD
CO-2	<ul style="list-style-type: none"> Analysis of bleaching powder
CO-3	<ul style="list-style-type: none"> Measurement of other water quality parameters--alkalinity, dissolved CO₂, chloride ion, sulphate ion
CO-4	<ul style="list-style-type: none"> Preparation of boric acid





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SKILL ENHANCEMENT ELECTIVE COURSES (SEC)

Paper No	Paper Name
SEC 1	IT Skills for Chemists (Theory)
CO-1	<ul style="list-style-type: none"> Understanding of mathematical techniques and basic computer skills in order to solve chemistry problems.
CO-2	<ul style="list-style-type: none"> Learning the concept of uncertainty and error in experimental data.
CO-3	<ul style="list-style-type: none"> Provides understanding of different software for data tabulation, calculation, graph plotting, data analysis and document preparation.
CO-4	<ul style="list-style-type: none"> Understanding of mathematical techniques and basic computer skills in order to solve chemistry problems.
SEC 1	IT Skills for Chemists (Practical)
CO-1	<ul style="list-style-type: none"> Hands on exercises on computers that helps in preparing a word processing document having tables, chemical structures and chemical equations.
CO-2	<ul style="list-style-type: none"> Solving chemistry problems and simulating graphs using basic computer skills.
CO-3	<ul style="list-style-type: none"> Usage of software for tabulating data, plotting graphs and charts, carry out statistical analysis of the data.
CO-4	<ul style="list-style-type: none"> Hands on exercises on computers that helps in preparing a word processing document having tables, chemical structures and chemical equations.
SEC 3	Chemical Technology and Society (Theory)
CO-1	<ul style="list-style-type: none"> To understand the basic concept of technology for societal benefits
CO-2	<ul style="list-style-type: none"> Prepare hypothesis for introduction clean technology
CO-3	<ul style="list-style-type: none"> Identify the consequences of technology to society and mitigate problems caused by technology
CO-4	<ul style="list-style-type: none"> To modernize aerospace using chemical technology.
CO-5	<ul style="list-style-type: none"> To understand the technology used in industries
CO-6	<ul style="list-style-type: none"> To know about various applications of chemical technology in medicinal chemistry
CO-7	<ul style="list-style-type: none"> The use of chemical technology in green chemistry
SEC 4	Cheminformatics (Theory)
CO-1	<ul style="list-style-type: none"> An Understanding of History of Cheminformatics and Molecular modelling
CO-2	<ul style="list-style-type: none"> To represent molecules and reactions using notations like SMILES, Matrix representations etc.
CO-3	<ul style="list-style-type: none"> To understand the importance of Molfiles and Sdfiles
CO-4	<ul style="list-style-type: none"> To carry out search for chemical structures using sub-structure, full structure, similarity search, three dimension search using different softwares available predict the properties of compounds using LEFR, QSAR, QSPR and Toxicity
CO-5	<ul style="list-style-type: none"> To understand the structure spectra correlation
CO-6	<ul style="list-style-type: none"> To understand the basics of Drug designing and apply that for prediction of good candidates for drug discovery
SEC 4	Cheminformatics (Practical)




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CO-1	<ul style="list-style-type: none"> To perform data mining using online databases
CO-2	<ul style="list-style-type: none"> To represent chemical information using SMILES, InChi and other In-silico representation
CO-3	<ul style="list-style-type: none"> To draw molecules using softwares like ChemDraw, MarvinSketch, ORTEP, Chimera, Rasmol and Pymol
CO-4	<ul style="list-style-type: none"> To carry out drug designing using molecular modelling tool, Structure - Homology modelling tools, Docking and screening tools
CO-5	<ul style="list-style-type: none"> To Build a ligand and asses its activity and toxicity
SEC 6	Intellectual Property Rights (Theory)
CO-1	<ul style="list-style-type: none"> Understand the theoretical concepts of Intellectual Property Laws, and to differentiate between the different kinds of IP.
CO-2	<ul style="list-style-type: none"> They will come to know the existing legal framework relating to IP in India.
CO-3	<ul style="list-style-type: none"> Comprehend the importance of IP and its significance in their respective domains.
CO-4	<ul style="list-style-type: none"> This course will motivate the students to make their career in multifaceted field of intellectual Property.
CO-5	<ul style="list-style-type: none"> The student learn the Basic concept of Intellectual Property.
CO-6	<ul style="list-style-type: none"> The students will get familiar about The World Intellectual Property Organization (WIPO), WTO and TRIPS Agreement.
CO-7	<ul style="list-style-type: none"> The students will have the brief Introduction and will understand the Criteria for obtaining patents.
CO-8	<ul style="list-style-type: none"> The students will understand the meaning of mark and Trademark, the various Categories of Trademark.
CO-9	<ul style="list-style-type: none"> The students will understand the concept of Geographical Indication.
CO-10	<ul style="list-style-type: none"> The students with get knowledge about the Plant Variety Protection and Farmer's Right.
CO-11	<ul style="list-style-type: none"> We will teach students the Enforcement of Intellectual Property Rights.
CO-12	<ul style="list-style-type: none"> Understand the theoretical concepts of Intellectual Property Laws, and to differentiate between the different kinds of IP.
SEC 7	Analytical Clinical Biochemistry (Theory)
CO-1	<ul style="list-style-type: none"> To understand the structure of biomolecules and determines their reactivity and biological uses.
CO-2	<ul style="list-style-type: none"> Gain an insight into concept of heredity through biological processes like replication, transcription and translation
CO-3	<ul style="list-style-type: none"> Understand the application of chemistry in biological systems
CO-4	<ul style="list-style-type: none"> Demonstrate an understanding of the biochemistry of diseases.
CO-5	<ul style="list-style-type: none"> Understand the basic principles of drug-receptor interaction and structure activity relation (SAR).
CO-6	<ul style="list-style-type: none"> To understand in brief about the different forms of lipid in our body like membrane lipids, cholesterol, lipoproteins, liposomes etc.
SEC 7	Analytical Clinical Biochemistry (Practical)
CO-1	<ul style="list-style-type: none"> Gain insight into qualitative analysis of lipids ad proteins
CO-2	<ul style="list-style-type: none"> Understand the concept of saponification number, iodine number and acid



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	value of different lipids sample
CO-3	• Estimation of DNA sample using diphenylamine method
CO-4	• Estimation of proteins by Lowry's method
CO-5	• Demonstrate the methods to determine the enzyme activity
SEC 8	Green Methods in Chemistry (Theory)
CO-1	• Learn the concept of environmental pollution and its impact.
CO-2	• Role of chemistry in environment pollution
CO-3	• Need to develop good practices in chemistry to remove the negative aspects of conventional chemistry
CO-4	• Learn the positive, less hazardous and beneficial aspects of chemistry.
CO-5	• Understand the concept of toxicity, hazard and risk of chemical substances, environmental law.
CO-6	• Learn green methods that aid to design and develop materials and processes to reduce the use and generation of hazardous substances in industry.
CO-7	• Understand various green chemistry concepts such as twelve principles of green chemistry
CO-8	• Understand to utilize renewable resources for sustainable development.
CO-9	• Learn to develop and utilize safer starting materials and synthetic routes for less hazardous substances
CO-10	• Learn to develop biodegradable materials such as plastics, antifoulants etc.
CO-11	• Learn to use green solvents as potential alternative of conventional solvents.
CO-12	• Learn important energy efficient reactions using green methods.
CO-13	• Learn to understand the role of different types of catalysts.
CO-14	• Learn success stories and real world cases which motivate to practice green chemistry.
SEC 8	Green Methods in Chemistry (Practical)
CO-1	• Learn to Prepare and characterize nanoparticles using plant extracts.
CO-2	• Learn to Prepare biodiesel from vegetable oil.
CO-3	• Learn to extract of D-limonene from orange peel using liquid CO ₂ prepared from dry ice.
CO-4	• Learn to perform mechanochemical solvent free, solid-solid synthesis of azomethine
CO-5	• Learn to perform solvent free, microwave assisted one pot synthesis of phthalocyanine complex of copper(II).
CO-6	• Also learn to perform design an experiment by utilizing the products and by-products obtained in above preparations which become waste otherwise if not used.
SEC 9	Pharmaceutical Chemistry (Theory)
CO-1	• Gain insight into retro-synthesis approach in relation to drug design and drug discovery.



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CO-2	<ul style="list-style-type: none"> Learn synthetic pathways of major drug classes
CO-3	<ul style="list-style-type: none"> Understand the fermentation process and production of ethanol, citric acids, antibiotics and some classes of vitamins
CO-4	<ul style="list-style-type: none"> Information about the sources of drugs like marine, biological, minerals and plant tissue culture
CO-5	<ul style="list-style-type: none"> Study of pharmaceutical aids like talc, diatomite, kaolin, bentonite, gelatin and natural colours
SEC 9	Pharmaceutical Chemistry (Practical)
CO-1	<ul style="list-style-type: none"> Understand the method of synthesis of drugs (Aspirin, Paracetamol, sulphacetamide, Ibuprofen)
CO-2	<ul style="list-style-type: none"> Gain insight into the methods of qualitative analysis of drugs and their properties
CO-3	<ul style="list-style-type: none"> Demonstrate the method for the determination of alcohol content in liquid drug
CO-4	<ul style="list-style-type: none"> Understand difference between the iodometric and iodimetric titrations
CO-5	<ul style="list-style-type: none"> Learn the steps for the analysis of Vitamin C tablet available commercially
SEC 10	Chemistry of Cosmetics & Perfumes (Theory & Practical)
CO-1	<ul style="list-style-type: none"> Learn basic of cosmetics, various cosmetic formulation, ingredients and their roles in cosmetic products.
CO-2	<ul style="list-style-type: none"> Learn the use of safe, economic and body-friendly cosmetics
CO-3	<ul style="list-style-type: none"> Prepare new innovative formulations.

GENERIC ELECTIVES (GE)

Paper No	Paper Name
GE - 1	Atomic Structure, Bonding, General Organic Chemistry & Aliphatic Hydrocarbons (Theory)
CO-4	<ul style="list-style-type: none"> Solving the conceptual questions by applying the learnt concepts about the quantum mechanical model of the atom, quantum numbers, electronic configuration, radial and angular distribution curves, s, p, and d orbital shapes, and periodicity in atomic radii, ionic radii, ionisation energy, and electron affinity of elements
CO-5	<ul style="list-style-type: none"> Constructing viable molecular shapes and geometries (homo- & hetero-nuclear diatomic molecules)
CO-6	<ul style="list-style-type: none"> To understand how to Solve the conceptual questions using the knowledge gained by studying the quantum mechanical model of the atom, quantum numbers, electronic configuration, radial and angular distribution curves, shapes of s, p, and d orbitals, and periodicity in atomic radii, ionic radii, ionization energy and electron affinity of elements.
CO-7	<ul style="list-style-type: none"> Understand the Shapes of s, p and d atomic orbitals, nodal planes, discovery of spin, spin quantum number (s) and magnetic spin quantum number (ms).
CO-8	<ul style="list-style-type: none"> Rules for filling electrons in various orbitals, electronic configurations of the atoms, stability of half-filled and completely filled orbitals, concept of



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	exchange energy, relative energies of atomic orbitals, anomalous electronic configurations.
CO-9	<ul style="list-style-type: none"> Know about the Draw the plausible structures and geometries of molecules using radius ratio rules, VSEPR theory and MO diagrams (homo- & hetero-nuclear diatomic molecules).
CO-10	<ul style="list-style-type: none"> Understand about the hybridization in inorganic complex with suitable examples of linear, trigonal planar, square planar, tetrahedral, trigonal bipyramidal and octahedral arrangements.
CO-11	<ul style="list-style-type: none"> Understand the concept of resonance and resonating structures in various inorganic and organic compounds.
CO-12	<ul style="list-style-type: none"> Learn and understand the fundamental concepts of organic chemistry
CO-13	<ul style="list-style-type: none"> To write mechanism of different organic reactions
CO-14	<ul style="list-style-type: none"> To understand the stereochemistry of organic compounds
CO-15	<ul style="list-style-type: none"> Understand and explain the preparation, Physical properties and chemical reactions associated with Aliphatic hydrocarbons
GE - 1	Atomic Structure, Bonding, General Organic Chemistry & Aliphatic Hydrocarbons (Practical)
CO-1	<ul style="list-style-type: none"> Understanding the basic concept of titrimetric analysis
CO-2	<ul style="list-style-type: none"> Carrying out redox, acid base titrations for understanding the principles of the above titrations.
CO-3	<ul style="list-style-type: none"> Carry out purification via crystallization and distillation of organic compound and confirm same using melting point and boiling point
CO-4	<ul style="list-style-type: none"> Carry out chromatography for separation of mixtures and sugars
CO-5	<ul style="list-style-type: none"> Separate the components in a mixture of two amino acids
GE - 3	Solutions, Phase Equilibrium, Conductance, Electrochemistry & Functional Group Organic Chemistry (Theory)
CO-1	<ul style="list-style-type: none"> Understanding thermodynamic aspects of equilibria between phases.
CO-2	<ul style="list-style-type: none"> Learning the concept of conductance and its variation with dilution, migration of ions in solutions and applications of conductance measurement.
CO-3	<ul style="list-style-type: none"> Understanding the applications of thermodynamic principles to solutions.
CO-4	<ul style="list-style-type: none"> Illustration of Nernst distribution law and its applications.
CO-5	<ul style="list-style-type: none"> Understanding the concept of EMF and calculating thermodynamic properties and other parameters from the EMF measurements.
CO-6	<ul style="list-style-type: none"> Understanding the relevance of structure of biomolecules and to determine chemical properties, reactivity and biological uses.
CO-7	<ul style="list-style-type: none"> Designing synthetic routes for various organic compounds
GE - 3	Solutions, Phase Equilibrium, Conductance, Electrochemistry & Functional Group Organic Chemistry (Practical)
CO-1	<ul style="list-style-type: none"> To construct phase diagram of simple eutectic systems
CO-2	<ul style="list-style-type: none"> To determine CST of Phenol-water impurities and study the effect of impurities on CST
CO-3	<ul style="list-style-type: none"> To perform conductometric titrations
CO-4	<ul style="list-style-type: none"> To perform potentiometric titrations



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CO-5	<ul style="list-style-type: none"> To find the functional group present in a organic compound using systematic analysis
GE - 4	Chemistry of s- and p-block elements, states of matter and Chemical Kinetics (Theory)
CO-1	<ul style="list-style-type: none"> Understanding the most common modes of metal occurrence based on typical electrode potentials
CO-2	<ul style="list-style-type: none"> Developing a thorough understanding Ellingham diagrams for metal oxide reduction with carbon as the reducing agent.
CO-3	<ul style="list-style-type: none"> Understanding of the metallurgical processes like cyanide method for silver and gold. Electrolytic, oxidative refining, van Arkel-de Boer procedure, and Mond's process and all methods for purifying metals (Al, Pb, Ti, Fe, Cu, Ni, Zn)
CO-4	<ul style="list-style-type: none"> Critical thinking skills for understanding the concepts of Electronic configuration, atomic and ionic size, ionisation enthalpy, electronegativity (Pauling, Winker, and Allred-Rochow scales) all such aspects of periodicity in s- and p-block elements.
CO-5	<ul style="list-style-type: none"> Understanding of concepts of Inert pair effect, diagonal relationship, and anomalous behaviour of the first member of each group), oxidation states with reference to elements in unusual and rare oxidation states like carbides and nitrides), inert pair effect, diagonal relationship, and anomalous behaviour of the first member of each group s- and p-Block Elements Compounds Diborane and the multicentre bonding idea
CO-6	<ul style="list-style-type: none"> Understanding following compounds' structure, bonding, and essential features such as oxidation/reduction, acidic/basic nature, and uses in industrial and environmental chemistry : Nitrogen hydrides, Phosphorous and Sulphur halides and oxahalides
CO-7	<ul style="list-style-type: none"> Understanding and deriving the mathematical expressions for ideal gas law, real gas law and comment on deviation from ideal behaviour
CO-8	<ul style="list-style-type: none"> Derive and explain the Maxwell Boltzman distribution, critical constants and viscosity of gases
CO-9	<ul style="list-style-type: none"> Explain and derive mathematical equations to explain properties of liquids
CO-10	<ul style="list-style-type: none"> Understand symmetry elements in Solid state
CO-11	<ul style="list-style-type: none"> Understand rate of reaction and derive different rate of equation, theories of reaction rates and explain experimental observations
GE - 4	Chemistry of s- and p-block elements, states of matter and Chemical Kinetics (Practicals)
CO-1	<ul style="list-style-type: none"> To perform semi-micro qualitative analysis to determine the anion and cation in a mixture
CO-2	<ul style="list-style-type: none"> To use stalagmometer to determine the surface tension of unknown liquids
CO-3	<ul style="list-style-type: none"> To use viscometers to determine the viscometer of unknown liquids
CO-4	<ul style="list-style-type: none"> To study the kinetics of reaction using different methods
GE - 5	Chemistry of d-block elements, Quantum Chemistry and Spectroscopy (Theory)
CO-1	<ul style="list-style-type: none"> Understand the chemistry of d & f block elements, Latimer diagrams, VBT and CFT



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CO-2	<ul style="list-style-type: none"> Understanding the basic principles of quantum mechanics: operators
CO-3	<ul style="list-style-type: none"> Provides understanding of basic concepts of microwave
CO-4	<ul style="list-style-type: none"> Illustration of Lambert-Beer's law
GE -5	Chemistry of d-block elements, Quantum Chemistry and Spectroscopy (Practical)
CO-1	<ul style="list-style-type: none"> Learn about the Estimation of the amount of nickel present in a given solution as bis - (dimethylglyoximate) nickel(II) or aluminium as oxinate in a given solution gravimetrically.
CO-2	<ul style="list-style-type: none"> Understand about the Estimation of (i) Mg^{2+} or (ii) Zn^{2+} by complexometric titrations using EDTA.
CO-3	<ul style="list-style-type: none"> Learn about the Estimation of total hardness of a given sample of water by complexometric titration.
CO-4	<ul style="list-style-type: none"> Determination of the composition of the Fe^{3+} - salicylic acid complex / Fe^{2+} - phenanthroline complex in solution by Job's method.
CO-5	<ul style="list-style-type: none"> Verify Lambert-Beer's law and determine the concentration of $CuSO_4/KMnO_4/K_2Cr_2O_7/CoSO_4$ in a solution of unknown concentration
CO-6	<ul style="list-style-type: none"> Know about the chemical Kinetics; Study the kinetics of the following reactions. 1. Initial rate method: Iodide-persulphate reaction 2. Integrated rate method: Saponification of ethyl acetate.
GE -6	Organometallic, Bioinorganic chemistry, Polynuclear hydrocarbons and UV, IR Spectroscopy (Theory)
CO-1	<ul style="list-style-type: none"> Inorganic chemistry topics, organometallics and bioinorganic chemistry were discussed in detail, and students accomplished better insights about basic terminology involved.
CO-2	<ul style="list-style-type: none"> Students were excited and curiously learned about basic concepts on structure elucidation of various polynuclear aromatic compounds and their important reactions.
CO-3	<ul style="list-style-type: none"> They were explained about active methylene compounds, particularly ethylacetoacetate.
CO-4	<ul style="list-style-type: none"> An extensive discussions were made on the basic spectroscopic techniques and their usage in structure elucidation of known compounds.
CO-5	<ul style="list-style-type: none"> Based on the discussion and assignments attempted by the students, the course played an important role to obtain better insight about polynuclear, heteronuclear aromatic compounds, and spectral analysis.
GE -6	Organometallic, Bioinorganic chemistry, Polynuclear hydrocarbons and UV, IR Spectroscopy (Practical)
CO-1	<ul style="list-style-type: none"> Students were exposed to the basic/preliminary separation technique, paper chromatography, which plays an important role while isolation or divorce of metal ions or organic compounds.
CO-2	<ul style="list-style-type: none"> A few inorganic preparations were dictated and discussed in detail, in turn students revealed their insightful questions, which were further elaborated with appropriate responses by the class teachers.
CO-3	<ul style="list-style-type: none"> An extensive discussions were made on the basic spectroscopic techniques and their usage in structure elucidation of known compounds.
CO-4	<ul style="list-style-type: none"> Separately, systematic qualitative analysis of organic compounds was



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	explained, performed and demonstrated to the students.
CO-5	<ul style="list-style-type: none"> Students were exposed to the basic/preliminary separation technique, paper chromatography, which plays an important role while isolation or divorce of metal ions or organic compounds.
GE - 7	Molecules of Life (Theory)
CO-1	<ul style="list-style-type: none"> Learn and demonstrate how the structure of biomolecules determines their chemical properties, reactivity and biological uses.
CO-2	<ul style="list-style-type: none"> Gain an insight into mechanism of enzyme action and inhibition.
CO-3	<ul style="list-style-type: none"> Know and understand the basic principles of drug-receptor interaction and SAR.
CO-4	<ul style="list-style-type: none"> Understand biological processes like replication, transcription and translation.
CO-5	<ul style="list-style-type: none"> Demonstrate an understanding of metabolic pathways, their inter-relationship, regulation and energy production from biochemical processes.
GE - 7	Molecules of Life (Practical)
CO-1	<ul style="list-style-type: none"> Learn about separation of amino acids by paper chromatography
CO-2	<ul style="list-style-type: none"> Understand the titration curve of amino acid (glycine)
CO-3	<ul style="list-style-type: none"> Learn how to estimate protein by Lowry's method.
CO-4	<ul style="list-style-type: none"> Understand the action of salivary amylase on starch under optimum conditions.
CO-5	<ul style="list-style-type: none"> Learn how to determine Saponification value and Iodine value of any oil or fat and their significance also.
CO-6	<ul style="list-style-type: none"> Learn how to isolate and estimate DNA from plant source e.g. onion, cauliflower.
CO-7	<ul style="list-style-type: none"> Learn to perform qualitative test for presence of carbohydrates such as Molisch Test, Rapid furfural test, Tollen's test and Fehling's Test




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B.Sc (H) Chemistry

After completing this programme as per CBCS, a student will have conceptual understanding of the basics of chemistry covering various principles and aspects. This course will also provide a brief introduction to recent frontiers and tools required in research in chemistry. This course will not only help in developing interdisciplinary knowledge but will also inculcate critical thinking ability in students.


Program Outcomes

- Developing a holistic approach in understanding basic principles and fundamentals of pure and applied branch of chemistry
- Forming an integrated perspective which is inclusive of Inorganic, Organic and Physical Chemistry.
- Exploring complex theories in a miniature form through laboratory experience.
- Orienting analytical insights to relate chemistry to wider spectrum of scientific disciplines.

Program Specific Outcomes

- Abilities to conduct experiments in researchable areas and applied fields.
- Solid theoretical grounding in Chemistry.
- Providing exposure to wider application of chemistry in Agriculture, Industry, Services and Environmental fields.
- Developing inter and intra disciplinary knowledge within the various branches of chemistry and the ways chemistry is related to other scientific disciplines.
- Bridging the connection between theory and application through elaborate design of laboratory experiments.
- Providing training to conduct practical's in Laboratory environment.
- Developing computational skill through programming and simulation of data derived from experiments in chemistry.




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Course Outcome

B.Sc. Statistics

Programme	Semester	Course Code	Course	Outcome
F.Y.B.Sc.	Sem I	USST101	Descriptive Statistics-I	This course is designed to introduce the student to elementary concepts in Statistics. Clarity of these concepts would enable the student to realize their relevance to the practical world and to build on these concepts to acquire a deeper understanding of analytical methods to be used in varied fields of study
		USST102	Statistical Methods-I	This course is designed to introduce the student to the concept and calculation of probability which forms the basis of all theoretical knowledge of statistics. As also random variable and their probability distributions. With this knowledge, student is able to classify data of any real life phenomenon into some or the other distribution and develop a deeper understanding of the underlying patterns in nature.
F.Y.B.Sc.	Sem II	USST201	Descriptive Statistics-II	This course is designed to introduce the student to elementary concepts in Statistics. Clarity of these concepts would enable the student to realize their relevance to the practical world and to build on these concepts to acquire a deeper understanding of analytical methods to be used in varied fields of study
		USST202	Statistical Methods-II	This course is designed to introduce the student to the concept and calculation of probability which forms the basis of all theoretical knowledge of statistics. As also random variable and their probability distributions. With this knowledge, student is able to classify data of any real life phenomenon into some or the other distribution and develop a deeper understanding of the underlying patterns in nature.
S.Y.B.Sc.	Sem I	USST301	Probability Distributions	Having introduced the students to the concept of probability distribution, other advanced characteristics are introduced related to discrete probability distributions to the students so as to develop in them a deeper understanding of various aspects of the natural patterns and thereby formulating and calculating their values mathematically.
		USST302	Sampling Techniques	Statistical Investigation about any phenomenon is dependent upon the collection of numerical information called as data. Data collection involves a process called as Sampling which enables the investigator to study the entire population from a small portion of it. This course is designed to enable



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				the student to know various sampling techniques, and to employ them effectively for estimating unknown parameters of the larger population
		USST303	Operations Research - I	A branch of Statistics called as Operations Research deals with techniques to be applied to problems in a number of organizations so as to optimize the output in the face of limiting factors or constraints. This course is designed to study the application of these techniques to problems in industry, transportation, assignment, sequencing, etc
S.Y.B.Sc.	Sem II	USST401	Probability and Sampling Distributions	In this course, continuous probability distributions are introduced to the students so as to develop in them a deeper understanding of various aspects of the natural patterns and thereby formulating and calculating their values mathematically.
		USST402	Analysis of Variance and Designs of Experiments	This course enables the student to appreciate the variance in natural phenomenon while understanding its causes and studying its mathematical formulation and analysis. Also, planning of experiments so as to arrive at reliable conclusions is studied under the topic called Designs of Experiments.
		USST403	Operations Research - II	A branch of Statistics called as Operations Research deals with techniques to be applied to problems in a number of organizations so as to optimize the output in the face of limiting factors or constraints. This course is designed to study the application of these techniques to problems in Project Management, Decision making and Game Theory.
T.Y.B.Sc.	Sem I	USST501	Probability and Distribution Theory	
		USST502	Theory of Estimation	A branch of Statistics that deals with the development and application of methods for estimating unknown parameters in a statistical model. This course is designed for students to gain knowledge about the various techniques of estimation
		USST503	Bio-Statistics	This course is designed for students to know the application of statistical theory in the study of biological sciences. In this Course, topics such as Epidemic theory, BioAssays, Clinical Trials and Bioequivalence have been dealt with from a statistician's perspective.
		USST504A	Regression Analysis using R Software	This course is designed to introduce students to the basics of R software which is highly efficient in computing of statistical measures. In this course, Regression Analysis is also studied through the use of R software.
T.Y.B.Sc.	Sem II	USST601	Distribution Theory and Stochastic Processes	
		USST602	Testing of	Testing of hypothesis is a statistical method used to



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			Hypothesis	make inference or draw conclusions about a population based on sample data. This course enables students to know the technique of formulating hypotheses, collecting and analyzing data and then drawing conclusions about the population based on the results.
		USST603	Operations Research Techniques	A branch of Statistics called as Operations Research deals with techniques to be applied to problems in a number of organizations so as to optimize the output in the face of limiting factors or constraints. This course is designed to study the application of these techniques to problems in Advanced Linear Programming, Replacement Theory, Reliability and Simulation Models
		USST604A	Acturial Science	Acturial Science is the application of probability and statistical techniques to life insurance. Concepts such as Assurance and Annuities are also important aspects in life insurance. This course is designed to introduce students to above branch of study also from the point of view of career opportunities in the field of Life Insurance.

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B.Sc.(Physics)

Class	Sem	Course	Outcome
F YBSc	SemI	Classical Physics	<ol style="list-style-type: none"> 1. Understand Newton's laws and apply them in calculations of the motion of simple systems 2. Use the free body diagram to analyze the forces on the object. 3. Understand the concepts of friction and the concepts of elasticity, fluid mechanics and be able to perform calculations using them 4. Understand the concepts of lens system and interference 5. Apply the laws of thermodynamics to formulate the relations necessary to analyze a thermodynamic process 6. Demonstrate quantitative problem solving skills in all the topics covered
		Modern Physics	<ol style="list-style-type: none"> 1. Understand nuclear properties and nuclear behavior 2. Understand the type isotopes and their applications 3. Demonstrate and understand the quantum mechanical concepts 4. Demonstrate quantitative problem solving skills in all the topics covered
F YBSc	SemII	Mathematica I Physics	<ol style="list-style-type: none"> 1. Understand the basic mathematical concepts and application of them in physical situations 2. Demonstrate quantitative problem solving skills in all the topics covered
		Electricity and Electronic s	<ol style="list-style-type: none"> 1. Understand the alternating current theory, AC bridges & circuit theorem 2. Understand Digital electronics, DC power supply 3. Understand static electric and magnetic fields
SYBSc	SemIII	Mechanics and Thermodynamics	<ol style="list-style-type: none"> 1. Understand the concepts of mechanics & properties of matter & to apply them to problems. 2. Comprehend the basic concepts of



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			<p>thermodynamics&itsapplicationsi n physicalsituation.</p> <p>3. Learnaboutsituationsinlowtemperature.</p> <p>4. Demonstrate tentativeproblem solving skillsinallabovareas</p>
		Vectorcalculus, AnalogElectronic s	<p>1. Understandthebasicconceptsof mathematicalphysicsandtheirapplicationsin physicalsituations.</p> <p>2. Understand the basic laws of electrodynamicsandbe able toperform calculationsusingthem.</p> <p>3. Understand thebasics of transistor biasing, operational amplifiers,their applications.</p> <p>4. Understand the basic concepts of oscillators and be able to perform calculations using them.</p> <p>5. Demonstrate quantitative problem solving skillinallthetopics covered.</p>
		AppliedPhysics-I	<p>1. AppreciatetheroleofPhysicsin 'interdisciplinaryareas relatedtomaterials,Bio Physics,Acousticsetc.</p> <p>2. Understandthescopeofthesubject in Industry&Research.</p>
SYBSc	SemIV	OpticsandDigital Electronics	<p>1. Understandthediffractionandpolarizatio n processes andapplications of them in physicalsituations.</p> <p>2. Understandtheworkingofdigitalcircuits</p> <p>3. UseIC555timeforvariousustiming applications.</p> <p>4. Demonstrate quantitative problem solving skillinallthetopics covered.</p>
		QuantumPhysics	<p>1. Understandthepostulatesofquantum mechanics andtounderstanditsimportancein explainingsignificantphenomenainPhysics.</p> <p>2. Demonstrate quantitative problem solving skillinallthetopics covered.</p>
		AppliedPhysics-II	<p>1. Understandtheconceptsofgeophysics.</p> <p>2. Understand 8085microprocessor,basic assembly language programming, instructionsetof8085microprocessor</p> <p>3. Writeprogramsfor8085microprocessor</p> <p>4. Understand theconcept of radiation, its typesandthe conceptofradio communication</p>
F YBSc		PracticalCourse	1. Tounderstandandpracticetheskillswhile



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& SYBSc	Sem I,II,III,IV		<p>doing physics practical</p> <ol style="list-style-type: none"> 2. To understand the use of apparatus and their use without fear 3. To correlate their physics theory concepts through practical 4. Understand the concepts of errors and their estimation
TYBSc	Sem V	Mathematical, Thermal and Statistical Physics	<ol style="list-style-type: none"> 1. Learn some mathematical techniques required to understand the physical phenomena at the undergraduate level 2. Get exposure to important ideas of statistical mechanics 3. Solve simple problems in probability, understand the concept of independent events and work with standard continuous distributions. 4. Get idea of the functions of complex variables; solve non homogeneous differential equations and partial differential equations using simple methods.
		Solid State Physics	<ol style="list-style-type: none"> 1. Understand the basics of crystallography, Electrical properties of metals, Band Theory of solids, demarcation among the types of materials, Semiconductor Physics and Superconductivity. 2. Understand the basic concepts of Fermi probability, distribution function, Density of states, conduction in semiconductors and BCS theory of superconductivity. 3. Demonstrate quantitative problem solving skills in all the topics covered.
		Atomic and Molecular Physics	<ol style="list-style-type: none"> 1. The application of quantum mechanics in atomic physics 2. The importance of electron spin, symmetric and antisymmetric wavefunctions and vector atom model 3. Effect of magnetic field on atoms and its application 4. Learn Molecular physics and its applications.
		Electrodynamics	<ol style="list-style-type: none"> 1. Understand the laws of electrodynamics and be able to perform calculations using them. 2. Understand Maxwell's electrodynamics and its relation to relativity. 3. Understand how optical laws can be derived from electromagnetic principles. 4. Develop quantitative problem solving skills.



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TYBSc	Sem V	Elective I Applied Component Electronic Instrumentation	<ol style="list-style-type: none"> 1. Understand the difference between a transducer and a sensor. 2. Understand the construction, working and uses of different types of transducers. 3. Understand the concept of signal conditioning, devices used and their operations. 4. Get acquainted with the measuring instruments used in laboratory. 5. Get the insight of the modern medical instruments in principle, which are used in day today life.
TYBSc	Sem VI	Classical Mechanics	<ol style="list-style-type: none"> 1. Understand the kinds of motion that can occur under a central potential and their application to planetary orbits. 2. Learn the concepts needed for the important formalism of Lagrange's equations and derive the equations using D'Alembert's principle. 3. Appreciate the drastic effect of adding nonlinear correction to usual problems of mechanics and nonlinear mechanics can help understand their regularity we observe around us in nature.
		Electronics	<ol style="list-style-type: none"> 1. Understand the basics of semiconductor devices and their applications. 2. Understand the basic concepts operational amplifier: its prototype and applications as instrumentation amplifier, active filters, comparators and waveform generation. 3. Understand the basic concept of timing pulse generation and regulated power supplies 4. Understand the basic electronic circuits for universal logic building blocks and basic concepts of digital communication. 5. Develop quantitative problem solving skills in all the topics covered.
		Nuclear Physics	<ol style="list-style-type: none"> 1. Understand the fundamental principles and concepts governing classical nuclear and particle physics 2. Have knowledge of their applications interactions of ionizing radiation with matter the key techniques for particle accelerator the physical processes involved in nuclear power generation.



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			3. Understand the fundamental constituents of matter and lay foundation for the understanding of unsolved questions about dark matter, antimatter and other research oriented topics.
		Special Theory of Relativity	<ol style="list-style-type: none"> 1. Understand the significance of Michelson Morley experiment and failure of the existing theories to explain the null result 2. Understand the importance of postulates of special relativity, Lorentz transformation equations and how it changed the way we look at space and time, Absolutism and relativity, Common sense versus Einstein concept of Space and time. 3. Solve problems based on length contraction, time dilation, velocity addition, Doppler effect, mass energy relation and resolve paradoxes in relativity like twin paradox etc.
		Elective II Applied Component Electronic Instrumentation	<ol style="list-style-type: none"> 1. Analyze/design and implement combinational logic circuits. 2. Develop assembly language programming skills and real time applications of microprocessor. 3. Illustrate how to interface the I/O peripheral (PPI) with 8085 microprocessor 4. Understand architecture, instruction set, programming and interfacing of 8051 microcontroller. 5. Develop the programming skills in programming Language C++. 6. Train their practical knowledge through lab experiments.
TYBSc	Sem V & VI	Practical Course Core & Applied Component	<ol style="list-style-type: none"> 1. Understanding relevant concepts. 2. Planning of the experiments 3. Layout and adjustment of the equipments 4. Understanding designing of the experiments 5. Attempts to make the experiments open ended 6. Recording of observations and plotting of graphs 7. Calculation of results and estimation of possible errors in the observation of results



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M.Sc	Sem-I&II	Classical Mechanics	<p>At the end of the course, the learner is able to</p> <ol style="list-style-type: none"> 1. Understand the principle of virtual work and the concepts of least action, the formalisms of Lagrange and Hamiltonian (CO1) 2. Describe the motion of a system in Lagrangian and Hamiltonian formalisms (CO2) 3. Understand the features of motion under central force, periodic motion, small oscillations as they appear in other areas of Physics (CO3) 4. Use the Poisson brackets in Hamiltonian dynamics and solve related problems (CO4) 5. Understand the linkages of the techniques of Classical Mechanics in solving problems in areas of Statistical Mechanics (Phase space), Molecular Physics (CO5)
		QUANTUM MECHANICS I	<p>At the end of the course, the learner is able to</p> <ol style="list-style-type: none"> 1. Understand the basic principles of Quantum mechanics and the need for its formalism (CO1) 2. Understand the Uncertainty Principle and formulation of Schrodinger equation (CO2) 3. Understand the importance of Dirac formalism, vector spaces and apply the same in solving problems of potential barrier, square well potential (CO3) 4. Apply the techniques of solving differential equations using various special functions as they appear in the solution of Schrodinger equation for Hydrogen atom problem (CO4) 5. Solve the various boundary value and potential problems using the techniques of quantum mechanics
		MATHEMATICAL METHODS IN PHYSICS	<p>At the end of the course the learner will be able to</p> <ol style="list-style-type: none"> 1. Solve eigenvalue problems using matrices as they appear in Classical and Quantum Mechanics (CO1) 2. Apply tensor analysis to understand the formulation of relativistic electrodynamics and other areas of Physics (CO2) 3. Apply residue theorem of complex variables to solve real and definite integrals (CO3) 4. Understand the emergence of special functions as solutions of differential equations and to solve problems in physics (CO4) 5. Solve partial differential equations using integral transforms in boundary value problems




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		Introduction to Programming	<p>At the end of the course, the learner can</p> <ol style="list-style-type: none"> 1. Understand the use of programming language and write simple programs for mathematical problems (CO1) 2. Develop flowcharts for analyzing a given mathematical problem and solve them numerically (CO2) 3. Apply the techniques of numerical methods in interpolation to generate difference tables of a given data set (CO3) 4. Analyze a given data set and fit them to a suitable polynomial equation and present them graphically (CO4) 5. Simulate models for a given mathematical problem by techniques of Monte Carlo and other related techniques (CO5)
		QUANTUM MECHANICS II	<p>At the end of the course, the learner can</p> <ol style="list-style-type: none"> 1. Gain understanding of the mathematical foundations of the angular momenta of a system of particles (CO1) 2. Apply the concept of non-relativistic Hamiltonian for an electron with spin and perform calculation using angular momentum techniques (CO2) 3. Apply various approximation methods in the solution of time independent and time dependent Schrodinger equations (CO3) 4. Apply the perturbation theory to various forms of Schrodinger equation in scattering theory and partial wave analysis (CO4) 5. Apply the quantum mechanical principles to
		NUCLEAR PHYSICS	<p>se Outcome: At the end of the course, the learner</p> <ol style="list-style-type: none"> 1. Gains knowledge about the nuclear properties such as mass, size, spin and the methods adopted for their estimation 2. Gains awareness of safety and regulatory norms adopted in the nuclear programme in the country 3. Understands the various nuclear models, 4. Understands the nuclear reactions with the ideas of decay mechanisms, interaction of radiation with matter and the experimental methods of analysis 5. Gains insight into the basics of Particle Physics with introductory ideas of the fields of Quantum Electrodynamics and Quantum




Head of Physics Department
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Programme Name: Bachelor of Science

Course Name: Mathematics.

1.Aims and Objectives:

- (i) Give the students a sufficient knowledge of fundamental principles, methods and a clear perception of innumerable power of mathematical ideas and tools and know how to use them by modeling, solving and interpreting.
- (ii) Reflecting the broad nature of the subject and developing mathematical tools for continuing further study in various fields of science
- (iii) Enhancing students' overall development and to equip them with mathematical modeling various kinds of employment.
- (iv) A student should get adequate exposure to global and local concerns that explore them many aspects of Mathematical Sciences.

2.Programme Outcomes:

- (i) Enabling students to develop positive attitude towards mathematics as an interesting and valuable subject.
- (ii) Enhancing students overall development and to equip them with mathematical modeling, abilities, problem solving skills, creative talent and power of communication.
- (iii) Acquire good knowledge and understanding in advanced areas of mathematics and physics.

3.Course outcomes:

1. Calculus (Sem I & II): This course gives introduction to basic concepts of Analysis with rigor and prepares students to study further courses in Analysis. Formal proofs are given lot of emphasis in this course which also enhances understanding of the subject of Mathematics as a whole. The portion on first order, first degree differentials prepares learner to get solutions of so many kinds of problems in all subjects of Science and also prepares learner for further studies of differential equations and related fields.
2. Algebra I (Sem I) & Discrete Mathematics (Sem II): This course gives expositions to number systems (Natural Numbers & Integers), like divisibility and prime numbers and their properties. These topics later find use in advanced subjects like cryptography and its uses in cyber security and such related fields.



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(i) Multivariable Calculus II (Sem V): In this course students will learn the basic ideas, tools and techniques of integral calculus and use them to solve problems from real-life applications including science and engineering problems involving areas, volumes, centroid, Moments of mass and center of mass Moments of inertia. Examine vector fields and define and evaluate line integrals using the Fundamental Theorem of Line Integrals and Green's Theorem; compute arc length.

(ii) Complex Analysis (Sem VI): Students Analyze sequences and series of analytic functions and types of convergence, Students will also be able to evaluate complex contour integrals directly and by the fundamental theorem, apply the Cauchy integral theorem in its various versions, and the Cauchy integral formula, they will also be able to represent functions as Taylor, power and Laurent series, classify singularities and poles, find residues and evaluate complex integrals using the residue theorem.

(iii) Group Theory, Ring Theory (Sem V, Sem VI) Students will have a working knowledge of important mathematical concepts in abstract algebra such as definition of a group, order of a finite group and order of an element, rings, Euclidean domain, Principal ideal domain and Unique factorization domain. Students will also understand the connection and transition between previously studied mathematics and more advanced mathematics. The students will actively participate in the transition of important concepts such as homomorphisms & isomorphisms from discrete mathematics to advanced abstract mathematics

(iv) Topology of metric spaces (Sem V), Topology of metric spaces and real analysis (Sem VI):

This course introduces students to the idea of metric spaces. It extends the ideas of open sets, closed sets and continuity to the more general setting of metric spaces along with concepts such as compactness and connectedness. Convergence concepts of sequences

and series of functions, power series are also dealt with. Formal proofs are given a lot of emphasis in this course. This course serves as a foundation to advanced courses in analysis. Apart from understanding the concepts introduced, the treatment of this course will enable the learner to explain their reasoning about analysis with clarity and rigour.

(v) Number Theory and its applications I and II (Sem V, Sem VI):

The student will be able to

- a) Identify and apply various properties of and relating to the integers including primes, unique factorization, the division algorithm, and greatest common divisors.
- b) Understand the concept of a congruence and use various results related to congruences including the Chinese Remainder Theorem. Investigate Pseudo-primes, Carmichael number, primitive roots.
- c) Identify how number theory is related to and used in cryptography. Learn to encrypt and decrypt a message using character ciphers. Learn to encrypt and decrypt a message using Public-Key cryptology.
- d) Express a rational number as a finite continued fraction and hence solve a linear diophantine equation. Express a given repeated continued fraction in terms of a



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surd. Expand a surd as an infinite continued fraction and hence find a convergent which is an approximation to the given surd to a given degree of accuracy. Solve a Pell equation from a continued fraction expansion.

- e) Solve certain types of Diophantine equations. Represent a Primitive Pythagorean Triples with a unique pair of relatively prime integers.
- f) Identify certain number theoretic functions and their properties. Investigate perfect numbers and Mersenne prime numbers and their connection. Explore the use of arithmetical functions, the Mobius function, and the Euler function.




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Programme/Courses

Under Graduate programme- Zoology

- F.Y.B.Sc.
- S.Y.B.Sc.
- T.Y.B.Sc.

Programme specific outcomes

PSO1: Gain the comprehensive knowledge and understanding of major concepts, theoretical

principles and experimental findings in Zoology and its different subfields

PSO2: Learn a wide range of approaches, from genetics to molecular and cellular biology, as well as physiological processes and anatomy, and diseases

PSO3: Spread awareness about wildlife and ecology as well as the environment and its conservation in the society

PSO4: Gain knowledge of Agro based Small Scale industries like sericulture, aquaculture and vermicomposting.

PSO5: Develop the interest and employability, program includes learning experiences which offer opportunities for higher studies and research at reputed laboratories

PSO6: Understand the concept of research and its type along with basic knowledge of qualitative research techniques, data collection and process of scientific documentation.

PSO7: Analyse the ethical aspects of research and evaluate the different methods of scientific writing and reporting by appropriate documentations and presentations.

Course outcomes



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Course Outcomes

Class: F.Y.B. Sc. Zoology

Semester I

Course (Paper) Name and No.: Kingdom Animalia, Wonders of Animal World, Biodiversity and its Conservation

CO1	Curiosity will be ignited in the mind of learners, to know more about the fascinating world of animals which would enhance their interest and love for the subject of Zoology.
CO2	Learner would come to know about basic of systematic and the hierarchy in invertebrates. Learner would have knowledge about different phyla with their respective examples.
CO3	Learners would appreciate treasure of Biodiversity, its importance and hence would contribute their best for its conservation

Course (Paper) Name and No.: Laboratory safety units and measurement, Instrumentation and Animal biotechnology

CO1	Learners would work safely in the laboratory and avoid occurrence of accidents (mishaps) which will boost their scholastic performance and understanding of economy in use of materials/chemicals during practical sessions.
CO2	Learner would be able to select and operate suitable instruments for the studies of different components of Zoology. Further learner would be skilled in the area of research.
CO3	Learner would understand the recent advances in the subject, its applications for the betterment of mankind; and that the young minds would be tuned to think out of the box

Semester II

Course (Paper) Name and No.: Laboratory safety units and measurement, Instrumentation and Animal biotechnology



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CO1	This lesson explores the classification system used to identify animals. This unit is specifically designed to move quickly beyond the knowledge level to high-level thinking.
CO2	Learners will grasp the concept of interdependence and interaction of physical, chemical and biological factors in the environment and will lead to better understanding about implications of loss of fauna specifically on human being.
CO3	Learners would be inspired to choose career options in the field of wild life conservation, research, photography and ecotourism.

Course (Paper) Name and No.: Laboratory safety units and measurement, Instrumentation and Animal biotechnology

CO1	Healthy dietary habits would be inculcated in the life style of learners in order to prevent risk of developing health hazards in younger generation due to faulty eating habits.
CO2	Learners will be able to promptly recognize stress related problems at initial stages and would be able to adopt relevant solutions which would lead to psychologically strong mind set promoting positive attitude important for academics and would be able to acquire knowledge of cause, symptoms and precautions of infectious diseases



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Class: S.Y.B. Sc. Zoology

Semester III

Course (Paper) Name and No.: Fundamentals of Genetics, Chromosomes and Heredity, Nucleic acids

CO1	Learner shall comprehend and apply the principles of inheritance to study heredity. Learner will understand the concept of multiple alleles, linkage and crossing over
CO2	Learner will comprehend the structure of chromosomes and its types. Learner shall understand the mechanisms of sex determination. Learner would be able to correlate the disorders linked to a particular sex chromosome.
CO3	Learner will understand the importance of nucleic acids as genetic material. The learner shall comprehend and appreciate the regulation of gene expressions.

Course (Paper) Name and No.: Study of Nutrition and Excretion, Respiration and circulation, Control and coordination, Locomotion and Reproduction

CO1	Learner would understand the increasing complexity of nutritional, excretory and osmoregulatory physiology in evolutionary hierarchy.
CO2	Learner would be able to
CO3	Learner would understand the increasing complexity of respiratory and
CO4	Learner would be able to correlate the habit
CO5	Learner would understand the process of control and coordination by nervous and endocrine regulation.
CO6	Learner would be fascinated by various locomotory structures found in the animal kingdom.
CO7	Learner would be acquainted with various reproductive strategies present in animals.



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Course (Paper) Name and No.: Ethology, Parasitology, Economic Zoology

CO1	Learners would gain an insight into different types of animal behavior and their role in biological adaptations. Learners would be sensitized to the feelings instrumental in social behavior.
CO2	Learners would understand the general epidemiological aspects of parasites that affect humans and apply simple preventive measures for the same. Learners would comprehend the life cycle of specific parasites, the symptoms of the disease and its treatment
CO3	Learners would gain knowledge on animals useful to mankind and the means to make the most of it. Learners would learn the modern techniques in animal husbandry. Learners would be pursuing entrepreneurship as careers

Semester IV

Course (Paper) Name and No.: Origin and Evolution of Life, Population and Evolutionary Genetics, Scientific Attitude, Methodology, Scientific Writing and Ethics in Scientific Research

CO1	Learner will gain insight about origin of life. Learner will ponder and critically view the different theories of evolution.
CO2	Learner would understand the forces that cause evolutionary changes in natural populations. Learner would comprehend the mechanisms of speciation. Learner will be able to distinguish between microevolution, macroevolution and megaevolution.
CO3	The learner shall develop qualities such as critical thinking and analysis.
CO4	The learner will imbibe the skills of scientific communication and he/she will understand the ethical aspects of research.



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Course (Paper) Name and No.: Cell biology, endomembrane system and biomolecule

CO1	Learner would acquire insight of transport mechanisms for the maintenance and composition of cell.
CO2	Learner would appreciate the intricacy of endomembrane system. Learner would understand the interlinking of endomembrane system for functioning of cell
CO3	The learner will realize the importance of biomolecules and their clinical significance

Course (Paper) Name and No.: Comparative Embryology, Aspects of Human Reproduction, Pollution and its effect on organisms

CO1	Learner will be able to understand and compare the different pre- embryonic stages
CO2	Learner will be able to appreciate the functional aspects of extra embryonic membranes and classify the different types of placentae.
CO3	Learners will able to understand human reproductive physiology.
CO4	Learners will become familiar with advances in ART and related ethical issues
CO5	The learners will be sensitized about the adverse effects of pollution and measures to control it




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Class: T.Y.B. Sc. Zoology

Semester V

Course (Paper) Name and No.: Course 11 Principles of Taxonomy, Modern Trends in Taxonomy and study of invertebrates

CO1	Learners will understand the basics concept of taxonomy and learn to classify animals on the basis of their relation to other animals by body structure, external characters and development
CO2	Learners will apply the International rules of Nomenclature to give a scientific name to animals which are found during research.
CO3	Learners will understand the gradual development and evolutionary history of different kinds of living organisms from earlier forms over several generations
CO4	Learners will understand and demonstrate the internal anatomy of various animals, biodiversity and related indices
CO5	Learners can learn about the historical development of systematic biology from 18th century to the present

Course (Paper) Name and No.: Course 12 Haematology and Immunology

CO1	Learners can achieve proficiency in the skills necessary for the study of haematology
CO2	Learners will be better equipped for taking any further pathological course or working in a diagnostic laboratory
CO3	Learners can identify the major cellular and tissue components which comprise the innate and adaptive immune system.
CO4	Learners would realize the significant role of immune system in giving resistance against diseases
CO5	Learners shall understand immune related pathologies and the principles and applications of vaccines

Course (Paper) Name and No.: Course 13 Histology, Biostatistics



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CO1	The students can learn about various aspects of enzymological assays and their applications in industries
CO2	The students can study basics histological techniques
CO3	The learners will gain a broad understanding of different areas of toxicology
CO4	Present course will also develop critical thinking and assist students in preparation for employment in pharmaceutical industry and related areas.
CO5	Learners will know basic concepts of probability and statistics which help them to describe statistical methods and probability distributions relevant for biological data analysis.

Course (Paper) Name and No.: Course 14 Integumentary system, Human Osteology and Endocrinology

CO1	Learners can understand the basic concepts of Integumentary system, Human osteology and Endocrinology.
CO2	Learners will be able to understand the importance of epidermal and dermal derivatives and their functions.
CO3	Learners will be able to understand the structure, types and functions of human skeleton.
CO4	Learners can understand the basic concepts of endocrinology and learn about the hypothalamus and hypophysial axis, endocrine glands and mechanism of hormone action.
CO5	Learners shall be able to understand the types & secretions of endocrine glands and their functions

Course (Paper) Name and No.: Applied Component: Oceanography, Aquaculture Practices, Marketing and Finance

CO1	Learner shall understand and learn about the use of sea safety, navigational equipment's and oceanographic instruments
CO2	Learner shall comprehend boat building techniques and design of engines used in mechanized



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	boats
CO3	Learner will gain knowledge about how to breed and rear ornamental fishes and commercially viable fish species
CO4	Learner shall comprehend the value of maintaining and taking sanitary precautions during the processing and packaging operations
CO5	Learner shall acquire knowledge about traditional marketing practices and role of cooperatives in selling fish

Semester VI

Course (Paper) Name and No.: Course 15 Phylum Chordata, Group Euchordata- I, Group Euchordata II and Type study - Shark

CO1	Learners will get an idea of origin of Chordates, its taxonomy up to class with reference to phylogeny and their special features
CO2	Learners will understand the characteristic features and examples of class of Reptilia, Aves and Mammalia.
CO3	Learners will get an idea of vertebrate animal life after studying one representative animal Shark.

Course (Paper) Name and No.: Course 16 Molecular Biology, Genetic Engineering, Human Genetics and Bioinformatics

CO1	Learner shall get an insight into the intricacies of chemical and molecular processes that affect genetic material
CO2	The course shall prepare learner to recognize the significance of molecular biology as a basis for the study of other areas of biology and biochemistry
CO3	Learner shall also understand related areas in relatively new fields of genetic engineering and biotechnology
CO4	Learners shall understand the concepts, mechanisms, evolutionary significance and relevance of molecular biology in the current scenario



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CO5	Learners will know the theory behind fundamental bioinformatics analysis methods and acquire knowledge of various databases of proteins, nucleic acids, primary, secondary and composite databases like BLAST, FASTA etc.
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Course (Paper) Name and No.: Course 17 Developmental biology

CO1	Learners can familiarize with early and later stages of development.
CO2	Learners can understand embryo development by studying the important process of cell differentiation, stages of development and morphogenesis
CO3	Learners get acquainted with process of early and late embryonic development in animals.
CO4	Learners get acquainted with post Embryonic Development and Implications of Developmental Biology.
CO5	Learners will be able to understand the processes involved in embryonic development and its application.

Course (Paper) Name and No.: Course 18 Environment and Wildlife management, Bioprospecting, Zoopharmacognosy and Zoogeography

CO1	Learners will understand about environment and Wildlife management
CO2	Learners will understand the basic concepts of bioprospecting, zoopharmacognosy and Zoogeography
CO3	Learners will understand the different factors affecting environment, its impact and environment management laws
CO4	Learners will be able to understand the wildlife habitat projects for animal protection.
CO5	Learners will understand the paradigms of discovery and commercialization of biological resources and knowledge gained by self-medication by animals.

Course (Paper) Name and No.: Applied Component: (Fishery Biology) Marine resources, Post-harvest and Farm Engineering

CO1	Learner shall understand and learn about the use of sea navigational equipments and oceanographic instruments
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CO2	Learner will understand breeding techniques and skills for culture of major carps and comprehend hatchery and nursery management of major carps
CO3	Learner will be equipped to carry out entrepreneurial operations or gain confidence to work in freshwater prawn unit and also gain knowledge about how to breed and rear ornamental fishes and commercially viable fish species
CO4	Learner shall understand deep sea and coastal fishes, crustacean and molluscan fisheries and its commercial potential.
CO5	Learners will acquire the knowledge and would put in to practice the preservation and processing techniques for commercial ventures
CO6	Learner will gain sound knowledge about the fish by-products and value-added products as well as explore good manufacturing practices while manufacturing these products.



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COURSE OUTCOMES

Course: Programming with Python- I (SEM-I)

UNIT NO & NAME	UNIT OUTCOMES	COURSE OUTCOMES
<u>UNIT 1:</u> Reasons for Python as the learner's first programming language. Introduction to the IDLE interpreter (shell) and its documentation. Expression evaluation: similarities and differences compared to a calculator; expressions and operators of types in, float, Boolean. Built-in function type. Operator precedence. Enumeration of simple and compound statements. The expression statement. The assert statement, whose operand is a Boolean expression (values true or false). The assignment statement, dynamic binding of names to values, (type is associated with data and not with names); automatic and implicit declaration of variable names with the assignment statement; assigning the value None to a name. The del (delete) statement. Input/output with print and input functions. A statement list (semicolon separated list of simple statements on a single line) as a single interpreter command.	1) Students should be able to understand the concepts of programming before actually starting to write programs. 2) Students should be able to develop logic for Problem Solving	1) Students should be able to understand the concepts of programming before actually starting to write programs. 2) Students should be able to develop logic for Problem Solving. 3) Students should be made familiar about the basic constructs of programming such as data, operations, conditions, loops, functions etc.




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<p>The import statement for already-defined functions and constants. The augmented assignment statement. The built-in help () function. Interactive and script modes of IDLE, running a script, restarting the shell.</p> <p>The compound statement def. to define functions; the role of indentation for delimiting the body of a compound statement; calling a previously defined function.</p> <p>Compound data types stir, tuple and list (enclosed in quotes, parentheses and brackets, respectively). Indexing individual elements within these types. Strings and tuples are immutable, lists are mutable. Built-in functions min, max, sum. Interactive solution of model problems, (e.g., finding the square root of a number or zero of a function), by repeatedly executing the body of a loop (where the body is a statement list).</p>		<p>4) Students should be able to apply the problem solving skills using syntactically simple language i.e.</p>
<p><u>UNIT 2:</u></p> <p>Advantages of functions, function parameters, formal parameters, actual parameters, global and local variables.</p> <p>The range function, the iterative for statement. The conditional statements if, if-else. The iterative statements while, while-else, for-else. The continue statement to skip over one iteration of a loop, the break statement to exit the loop. Nested compound statements. Dictionaries: concept of key-value pairs, techniques to create, update and delete dictionary items. Problem-solving using compound types and statements.</p>	<p>1. Students should be made familiar about the basic constructs of programming such as data, operations, conditions, loops, functions etc.</p> <p>2. Students should be able to apply the problem solving skills using syntactically simple</p>	



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	language i.e. Python (version: 3.X or higher)	
UNIT 3: Anonymous functions. List comprehensions. Gentle introduction to object-oriented programming; using the built-in dir. () function, enumerate the methods of strings, tuples, lists, dictionaries. Using these methods for problem-solving with compound types.		



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Course: Digital Systems & Architecture (SEM-I)

UNIT NO & NAME	UNIT OUTCOMES	COURSE OUTCOMES
<u>UNIT 1:</u> Boolean algebra, Logic Gates, Simplification of Logic Circuits: Algebraic Simplification, Karnaugh Maps. Combinational Circuits: Adders, Mux, De-Mux, Sequential Circuits: Flip-Flops (SR, JK & D), Counters: synchronous and asynchronous Counter Comparison of Computer Organization & Architecture, Computer Components and Functions, Interconnection Structures. Bus Interconnections, Input / Output: I/O Module, Programmed I/O, Interrupt Driven I/O, Direct Memory Access.	1. Student should be able to learn about mathematical and logical operation in computer. 2. Student should be able to understand how circuit work in device. 3. Student should be able to understand about how to design circuit.	1. Student should be able to learn about how computer systems work and underlying principles. 2. Student should be able to understand the basics of digital electronics needed for computers. 3. Student should be able to understand the basics of instruction set architecture for reduced and complex instruction sets.
<u>UNIT 2:</u> Classification and design parameters, Memory Hierarchy, Internal Memory: RAM, SRAM and DRAM, Interleaved and Associative Memory. Cache Memory: Design Principles, Memory mappings, Replacement Algorithms, Cache performance, Cache Coherence. Virtual Memory, External Memory: Magnetic Discs, Optical Memory, Flash Memories, RAID Levels Instruction	1. Students come to know how data communicate between device and User.	4. Student should be able to understand the basics of



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Formats, Instruction Sets, Addressing Modes, Addressing Modes Examples with Assembly Language [8085/8086 CPU], Processor Organization, Structure and Function. Register Organization, Basic Microprocessor operations: Data Transfer (Register /Memory) Operations, Arithmetic & Logical Operations, Instruction Cycle, Instruction Pipelining. Introduction to RISC and CISC Architecture, Instruction Level Parallelism and Superscalar Processors: Design Issues	2.Students come to know Solve problems based on algorithm. 3.Students come to know How design architecture.	processor structure and operation 5.Student should be able to understand how data is transferred between the processor and I/O devices
<u>UNIT 3:</u> Micro-Operations, Functional Requirements, Processor__Control, Hardwired Implementation, Micro-programmed Control._Parallel Architecture: Classification of Parallel Systems, Flynn"s Taxonomy, Array Processors, Clusters, and NUMA Computers. Multiprocessor Systems:_Structure & Interconnection Networks, Multi-Core Computers: Introduction, Organization and Performance.	1.Students come to know about Flynn"s Taxonomy, Parallel and serial circuit design	

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Course: Soft Skills(SEM-I)

UNIT NO & NAME	UNIT OUTCOMES	COURSE OUTCOMES
<p><u>UNIT 1:</u></p> <p>Introduction to Soft Skills and Hard Skills Personality Development: Knowing Yourself, Positive Thinking, Johari's Window, Communication Skills, Non-verbal Communication, Physical Fitness Emotional Intelligence: Meaning and Definition, Need for Emotional Intelligence, Intelligence Quotient versus Emotional Intelligence Quotient, Components of Emotional Intelligence, Competencies of Emotional Intelligence, Skills to Develop Emotional Intelligence Etiquette and Mannerism: Introduction, Professional Etiquette, Technology Etiquette Communication Today: Significance of Communication, GSC's 3M Model of Communication, Vitality of the Communication Process, Virtues of Listening, Fundamentals of Good Listening, Nature of Non-Verbal Communication, Need for Intercultural Communication, Communicating Digital World</p>	<p>1.To understand the communication skills, Emotional Intelligence and the skills to develop to be fit.</p> <p>2.To explore various technologies in today's world to be able to communicate in this digital world</p>	<p>1) To know about various aspects of soft skills and learn ways to develop personality.</p> <p>2) Understand the importance and type of communication in personal and professional environment.</p> <p>3) To provide insight into much needed technical and non-technical qualities in career planning.</p>
<p><u>UNIT 2:</u></p> <p>Academic Skills Employment Communication: Introduction, Resume, Curriculum Vitae, Schnabel Resume, Developing an Impressive Resume, Formats of Resume, Job Application or Cover Letter Professional Presentation: Nature of Oral Presentation, Planning a Presentation, Preparing the Presentation, Delivering the Presentation Job Interviews: Introduction, Importance of Resume, Definition of Interview, Background Information, Types of Interviews, Preparatory Steps for Job Interviews, Interview Skill Tips, Changes in the Interview Process, FAQ During</p>	<p>1.To have a good knowledge on creating resume for any kind of job application</p> <p>2. To explore various steps in the interview and types, techniques to face the group discussion</p>	<p>4) Learn about Leadership, team building, decision making and stress management</p>



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Interviews Group Discussion: Introduction, Ambience/Seating Arrangement for Group Discussion, Importance of Group Discussions, Difference between Group Discussion, Panel Discussion and Debate, Traits, Types of Group Discussions, topic based and Case based Group Discussion, Individual Traits		
<u>UNIT 3:</u> Professional Skills Creativity at Workplace: Introduction, Current Workplaces, Creativity, Motivation, Nurturing Hobbies at Work, The Six Thinking Hat Method Ethical Values: Ethics and Society, Theories of Ethics, Correlation between Values and Behavior, Nurturing Ethics, Importance of Work Ethics, Problems in the Absence of Work Ethics Capacity Building: Learn, Unlearn and Relearn: Capacity Building, Elements of Capacity Building, Zones of Learning, Ideas for Learning, Strategies for Capacity Building Leadership and Team Building: Leader and Leadership, Leadership Traits, Culture and Leadership, Leadership Styles and Trends, Team Building, Types of Teams, Decision Making and Negotiation: Introduction to Decision Making, Steps for Decision Making, Decision Making Techniques, Negotiation Fundamentals, Negotiation Styles, Major Negotiation Concepts Stress and Time Management: Stress, Sources of Stress, Ways to Cope with Stress.	1. To understand the skills required to be a good employee at workplace. 2. To learn ethics and correlation between values and behavior	



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Course: Database Systems(SEM-II)

UNIT NO & NAME	UNIT OUTCOMES	COURSE OUTCOMES
<u>UNIT 1:</u> 1. Introduction to DBMS, 2. Data model 3. Entity Relationship Model 4. DDL Statements. DML Statements	1. Students should gain a comprehensive understanding of Database Management Systems (DBMS), data models, Entity Relationship (ER) modelling, and practical skills in using Data Definition Language (DDL) and Data Manipulation Language (DML) statements. The unit aims to equip students with the foundational knowledge and skills required for effective database design and management.	1.To make students understand the basic principles of algorithm design 2.To give idea to students about the theoretical background of the basic data structures 3.To familiarize the students with fundamental problem-solving strategies like searching, sorting, selection, recursion and help them to evaluate efficiencies of various algorithms.
<u>UNIT 2:</u> 1. Relational data model 2. Relational Algebra 3. Functions 4. Joining Tables 5. Subqueries	1. Upon completion of this unit, students should have a solid understanding of the relational data model, be proficient in performing basic operations using relational algebra, master joining tables, and be able to use subqueries effectively. The unit aims to provide students with	4. To teach students the important algorithm design paradigms and how they can be used to solve various real world problems.



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	the foundational skills necessary for working with relational databases and querying data using SQL.	
<u>UNIT 3</u> 1. Schema refinement and Normal forms 2. Database Protection 3. Views 4. DCL Statements 5. Index Structures of Files	1. Upon completion of this unit, students should have a solid understanding of schema refinement, normalization, database protection measures, views, DCL statements, and index structures. The unit aims to equip students with the knowledge and skills required to design and manage secure and efficient databases.	



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Course: Design & Analysis of Algorithms(SEM-II)

UNIT NO & NAME	UNIT OUTCOMES	COURSE OUTCOMES
<u>UNIT 1:</u> Introduction to algorithms - Ethical Values Introduction to Data Structures ER to Table	1. Students should have a solid foundation in understanding algorithms, their analysis, and the fundamentals of data structures. 2. They should be able to analyze and compare algorithms, estimate their performance, and implement basic data structures for various applications. 3. The unit aims to provide a comprehensive introduction to algorithmic thinking and data organization.	1. To make students understand the basic principles of algorithm design 2. To give idea to students about the theoretical background of the basic data structures. 3. To familiarize the students with fundamental problem-solving strategies like searching, sorting, selection, recursion and help them to evaluate efficiencies of various algorithms.
<u>UNIT 2:</u> 1. Recursion 2. Basic Sorting Techniques 3. Searching Techniques 4. Selection Techniques 5. String Algorithms	Students should acquire a deep understanding of recursion, basic sorting techniques, searching techniques, selection techniques, and string algorithms. They should be able to analyze and implement these algorithms, comparing their efficiency in various scenarios. The unit aims to equip students with fundamental problem-solving skills in algorithm design and analysis.	4. To teach students the important algorithm design paradigms and how they can
<u>UNIT 3:</u>		



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<ol style="list-style-type: none">1. Algorithm Design Techniques2. Greedy Technique3. Divide-n-Conquer4. Dynamic Programming5. Backtracking Programming	<ol style="list-style-type: none">1. Students should be able to distinguish between different algorithm design techniques, understanding their classifications and criteria.2. Students should understand the concept of Greedy Technique and be able to Discuss advantages and disadvantages of the Greedy approach. Identify applications where Greedy algorithms are suitable. Implement the Greedy Technique to solve practical problems, such as the file merging problem.3. Students should grasp the concept of Divide and Conquer and be able to. Implement Backtracking techniques for specific problems, such as the N-Queen Problem.4. Students should have a comprehensive understanding of various algorithm design techniques, their respective advantages and disadvantages, and be capable of implementing these techniques to solve specific problems.5. The unit aims to equip students with problem-solving skills using different algorithmic paradigms.	<p>be used to solve various real world problems.</p> <p><i>Delake</i> Coordinator Computer Science Department Government of Maharashtra Ismail Yusuf College of Arts, Science & Commerce, Jogeshwari (East), Mumbai - 400 060.</p>
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Course: Programming with Advanced Python- I(SEM-II)

UNIT NO & NAME	UNIT OUTCOMES	COURSE OUTCOMES
<p>UNIT 1:</p> <p>Working with files: Files, opening and closing a file, working with text files containing strings, knowing whether a file exists or not, working with binary files, the 'with' statement, the seek () and tell () methods, random accessing of binary files, zipping and unzipping files, working with directories, running other programs from python program</p> <p>Regular expressions: What is a regular expression? sequence characters' in regular expressions, quantifiers in regular expressions, special characters' in regular expressions, using regular expression on files, retrieving information from an html file, Threads in python: Difference between process and thread, types of threads, benefits of threads, creating threads, single tasking and multitasking, thread synchronization, deadlock in threads, daemon threads</p> <p>Date and time in python: Date and time now, combining date and time, formatting dates and times, finding durations using "time delta", comparing two dates, sorting dates, stopping execution temporarily, knowing the time taken by a program, calendar module.</p>	<p>1.Students will learn about Files, Opening, and Closing.</p> <p>2. Also Define what regular expressions are and their applications.</p> <p>3. How multiple processes handle by Thread Synchronization and Deadlock.</p> <p>4. How to work with Calendar Module</p>	<p>1.After successful completion of this course, students would be able to.</p> <p>2.Ability to implement O concepts in Python includ Inheritance and Polymorphism.</p> <p>3. Ability to work with files and perform operations on it using Python.</p> <p>4. Ability to implement regular expression and concept of threads for developing efficient Program.</p> <p>5.Ability to implement exception handling in Python applications for error handling.</p>



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UNIT 2:

Database in python: Using SQL with python, retrieving rows from a table, inserting rows into a table, deleting rows from a table, updating rows in a table, creating database tables through python, Exception handling in databases. Exceptions in python: Errors in a python program, compile & run-time errors, logical error, exceptions-exception handling, types of exceptions, the except block, the assert statement, user-defined exceptions, logging the exceptions Networking: Protocols, server-client architecture, tcp/ip and up communication Graphical user interface: Creating a GUI in python, Widget classes, working with Fonts and Colors, working with Frames, Layout manager, Event handling.

1. Understand the integration of Python with SQL databases.
2. Learn to execute SQL queries using Python.
3. Handle database-related exceptions in Python.
4. Implement error-catching mechanisms for robust database interactions.
5. Develop graphical user interfaces using Python with various widgets.

6. Knowledge of working with databases, designing GUI in Python and implement networking in Python.

UNIT 3:

OOPs in python: Features of Object Oriented Programming system (oops)-classes and objects, encapsulation, abstraction, inheritance, polymorphism, constructors and destructors Classes and objects: Creating a class, the self-variable, types of variables, namespaces, types of methods, instance methods, class methods, static methods, passing members of one class to another class, inner classes Inheritance and polymorphism: Inheritance in python, types of inheritance- single inheritance, multilevel inheritance,

1. Understand the fundamental concepts of classes and objects.
2. Define and create classes in Python.
3. Define and create classes with attributes and methods.




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hierarchical inheritance, multiple inheritance, constructors in inheritance, overriding super class constructors and methods, the super() method, method resolution order (mro), polymorphism, duck typing, operator overloading, method overloading, method overriding, Abstract classes and interfaces: Abstract class, abstract method, interfaces in python, abstract classes vs. Interface	4. Understand the structure of a class in Python. 5. Define abstract classes and abstract methods in Python.	
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Course: Database System(SEM-II)

UNIT NO & NAME	UNIT OUTCOMES	COURSE OUTCOMES
<u>UNIT 1:</u> Introduction to DBMS – Database, DBMS – Definition, Overview of DBMS, Advantages of DBMS, Levels of abstraction, Data independence, DBMS Architecture Data models - Client/Server Architecture, Object Based Logical Model, Record Based Logical Model (relational, hierarchical, network) Entity Relationship Model - Entities, attributes, entity sets, relations, relationship sets, Additional constraints (key constraints, participation constraints, weak entities, aggregation / generalization, Conceptual Design using ER (entities VS attributes, Entity Vs relationship, binary Vs ternary, constraints beyond ER) Relational data model– Domains, attributes, Tuples and Relations, Relational Model Notation, Characteristics of Relations, Relational Constraints - primary key, referential integrity, unique constraint, Null constraint, Check constraint ER to Table- Entity to Table, Relationship to tables with and without key constraints.	1.To understand the fundamental principles and components of database systems. 2.To explore various models, constraints and conceptual design and conversion of ER to table.	1)To evaluate business information problem and find the requirements of a problem in terms of data. 2) To design the database schema with the use of appropriate data types for storage of data in database. 3) To create, manipulate, query and back up the databases.



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UNIT 2:

Schema refinement and Normal forms: Functional dependencies, first, second, third, and BCNF normal forms based on primary keys, lossless join decomposition. Relational Algebra operations (selection, projection, set operations union, intersection, difference, cross product, Joins – conditional, equip join and natural joins, division) DDL Statements - Creating Databases, Using Databases, datatypes, Creating Tables (with integrity constraints – primary key, default, check, not null), Altering Tables, Renaming Tables, Dropping Tables, Truncating Tables, Backing Up and Restoring databases DML Statements – Viewing the structure of a table insert, update, delete, Select all columns, specific columns, unique records, conditional select, in clause, between clause, limit, aggregate functions (count, min, max, avg, sum), group by clause, having clause.


1.To create Scheme, refine the scheme and perform normalization

UNIT 3:

Functions – String Functions (concept, instar, left, right, mid, length, laces/lower, ukase/upper, replace, strum, trim, trim, trim), Math Functions (abs, ceil, floor, mod,

1. To solve the queries and understand functions ,create tables perform all data operations along with database protection




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pow, sort, round, truncate) Date Functions (add date, datediff, day, month, year, hour, min, sec, now, reverse) Joining Tables – inner join, outer join (left outer, right outer, full outer) Subqueries – subqueries with IN, EXISTS, subqueries restrictions, Nested subqueries, ANY/ALL clause, correlated subqueries Database Protection: Security Issues, Threats to Databases, Security Mechanisms, Role of DBA, Discretionary Access Control Views (creating, altering dropping, renaming and manipulating views) DCL Statements (creating/dropping users, privileges introduction, granting/revoking privileges, viewing privileges

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Course: E-Commerce & Digital Marketing(SEM-II)

UNIT NO & NAME	UNIT OUTCOMES	COURSE OUTCOMES
<u>UNIT 1:</u> Introduction to E-Commerce and E- Business: Definition and competing in the digital economy, Impact of E-Commerce on Business Models, Factors Driving e-commerce and e-Business Models, Economics and social impact of e-Business, opportunities and Challenges, e-Commerce vs m Commerce, Different e-Commerce Models (B2B, B2C, C2B, C2C, B2E), e-Commerce Applications: e-Trading, e-Learning, e-Shopping, Virtual Reality & Consumer Experience, Legal and Ethical issues in e-Commerce. Overview of Electronic Payment systems: Types of Electronic payment schemes (Credit cards, Debit cards, Smartcards, Internet banking), E checks, E-Cash Concepts and applications of EDI and Limitation Introduction & origin of Digital Marketing: Traditional v/s Digital Marketing. Digital Marketing Strategy, The P-O-E-M Framework, Segmenting & Customizing Messages, The Digital landscape, Digital Advertising Market in India. Skills required in Digital Marketing. Digital Marketing Plan.	<ol style="list-style-type: none">1. Student should be able to learn about Introduction to E-Commerce and E- Business.2. Student should be able to understand Overview of Electronic Payment systems.3. Student should be able to understand about Introduction & origin of Digital Marketing.	<ol style="list-style-type: none">1. Student should be able to understand the core concepts of E-Commerce.2. Student should be able to understand the various online payment techniques.3. Student should be able to understand the core concepts of digital marketing and the role of digital marketing in business.4. Student should be able to understand how to apply digital marketing strategies to increase sales and growth of business.5. Student should be able to understand how Apply digital marketing through different channels and platforms.6. Student should be able to understand the significance of Web Analytics



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<p><u>UNIT 2:</u> Social Media Marketing: Meaning, Purpose, types of social media websites, Social Media Engagement, Target audience, Facebook Marketing: Business through Facebook Marketing, Creating Advertising Campaigns, 15 Page 48 of 49 Adverts, Facebook Marketing Tools, LinkedIn Marketing</p> <p>Importance of LinkedIn Marketing, Framing LinkedIn Strategy, Lead Generation through LinkedIn, Content Strategy, Analytics and Targeting, Twitter Marketing: Framing content strategy, Twitter Advertising Campaigns, YouTube Marketing: Video optimization, Promoting on YouTube, Monetization, YouTube Analytics Email Marketing: Types of Emails, Mailing List, Email Marketing tools, Email Deliverability & Email Marketing automation Mobile Marketing: Introduction, Mobile Usage, Mobile Advertising, Mobile Marketing Types, Mobile Marketing Features, Mobile Campaign Development, Mobile Advertising Analytics Content Marketing: Introduction, Content marketing statistics, Types of Content, Types of Blog posts, Content Creation, Content optimization, Content Management & Distribution, Content Marketing Strategy, Content creation tools and apps, Challenges of Content Marketing.</p>	<ol style="list-style-type: none">1. Students come to know how Social Media Marketing.2. Students come to know Email Marketing.3. Students come to know Email Marketing, Mobile Marketing and Content Marketing.	<p>and Google Analytics and apply the same.</p>
<p><u>UNIT 3:</u> Search Engine Optimization: Meaning, Common SEO techniques, Understanding Search Engines, basics of</p>	<ol style="list-style-type: none">1. Students come to know about Search Engine Optimization.	




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Keyword search, Google rankings, Link Building, Steps to optimize website, On-page and off-page optimization Search Engine Marketing: Introduction to SEM, Introduction to Ad Words - Google Ad Words, Ad Words fundamentals, Ad Placement, Ad Ranks, Creating Ad Campaigns, Campaign Report Generation, Display marketing, Buying Models: Cost per Click (CPC), Cost per Milli (CPM), Cost per Lead (CPL), Cost per Acquisition (CPA). Web Analytics: Purpose, History, Goals & objectives, Web Analytic tools & Methods. Web Analytics Mistakes and Pitfalls. Google Analytics: Basics of Google Analytics, Installing Google Analytics in website, Parameters of Google Analytics, Reporting and Analysis.	<ol style="list-style-type: none">2. Students come to know about Search Engine Marketing.3. Students come to know Web Analytics and Google Analytics.	
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Course: Programming with Python- II(SEM-II)

UNIT NO & NAME	UNIT OUTCOMES	COURSE OUTCOMES
<u>UNIT 1:</u> Python File Input-Output: Opening and closing files, various types of file modes, reading and writing to files, manipulating directories. Inerrable, iterators and their problem solving applications. Exception handling: What is an exception, various keywords to handle exceptions such try, catch, except, else, finally, raise. Regular Expressions: Concept of regular expression, various types of regular expressions, using match function	1.Students will know about Reading and writing to files: Use the read (), write (), and read lines () methods for reading and writing data to files. 2. Students should be able to understand error handling using Keywords like try, except, else, finally, and raise are used for handling exceptions.	1. Students will know about Reading and writing to files: Use the read (), write(), and read lines() methods for reading and writing data to files. 2. Students should be able to understand error handling using Keywords like try, except, else, finally, and raise are used for handling exceptions. 3. Students will come to know how to work with Network Connectivity in Python.
<u>UNIT 2:</u> GUI Programming in Python (using Tkinter/wx Python/Qtr.) What is GUI, Advantages of GUI, Introduction to GUI library. Layout management, events and bindings, fonts, colors, drawing on canvas (line, oval, rectangle, etc.) Widgets such as: frame,	1. Students should be made familiar for Layout Management, fonts and Colors, Drawing on Canvas: etc.	4. Database Connectivity to read, insert and update , delete data for further use.



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label, button, check button, entry, list box, message, radio button, text, spin box etc.		
UNIT 3: Database connectivity in Python: Installing my SQL connector, accessing connector module, using connect, cursor, execute & close functions, reading single & multiple results of query execution, executing different types of statements, executing transactions, understanding exceptions in database connectivity. Network connectivity: Socket module, creating server-client programs, sending email, reading from URL	1. Students will come to know how to work with Network Connectivity in Python: 2. Database Connectivity to read, insert and update, delete data for further use	



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Course: Programming with C(SEM-II)

UNIT NO & NAME	UNIT OUTCOMES	COURSE OUTCOMES
<u>UNIT 1:</u> Structure of C program: Header and body, Use of comments. Interpreters vs compilers, Python vs C. Compilation of a program. Formatted I/O: print f (), scan f (). Data: Variables, Constants, data types like: int. float char, double and void, short and long size qualifiers, signed and unsigned qualifiers. Compare with datatypes in Python. Compare static typing in C vs dynamic typing in Python Variables: Declaring variables, scope of the variables according to block, hierarchy of data types. Compare explicit declarations in C with implicit declarations in Python. Types of operators: Arithmetic, relational, logical, compound assignment, increment and decrement, conditional or ternary, bitwise and comma operators. Precedence and order of evaluation, statements and Expressions. Automatic and explicit type conversion. Iterations: Control statements for decision making: (i) Branching: if statement, else. if	1. Illustrate the flowchart and design an algorithm for a given problem and to develop IC programs using operators 2.To understand the branching statements	1) To write, compile and debug programs in C language. 2) To use different data types in a computer program. 3) To design programs involving decision structures, loops and functions. 4) To explain the difference between call by value and call by reference. 5) To understand the dynamics of memory by the use of pointers. 6) To use different data structures and create/update basic data files.



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<p>statement, (does the writer mean if-else or nested ifs) switch statement.</p> <p>(ii) Looping: while loop, do while, for loop.</p> <p>(iii) Jump statements: break, continue and go to.</p>		
<p><u>UNIT 2:</u></p> <p>Arrays: (One and two dimensional), declaring array variables, initialization of arrays, accessing array elements. Compare array types of C with list and tuple types of Python. Data Input and Output functions: Character I/O format: getch(), getche(), getchar(),getc(), gets(), putchar(), putc(), puts(). Manipulating Strings: Declaring and initializing String variables, Character and string handling functions. Compare with Python strings.</p> <p>Functions: Function declaration, function definition, Global and local variables, return statement, calling a function by passing values. Recursion: Definition, Recursive functions.</p>	<ol style="list-style-type: none">1. Develop conditional and iterative statements to write C programs.2. Develop Arrays, Strings and functions in C.3. Exercise user defined functions to solve real time problems	




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UNIT 3:

Pointer: Fundamentals, Pointer variables, Referencing and de-referencing, Pointer Arithmetic, Using Pointers with Arrays, Using Pointers with Strings, Array of Pointers, Pointers as function arguments, Functions returning pointers.

Dynamic Memory Allocation: malloc(), calloc(), realloc(), free() and size of operator. Compare with automatic garbage collection in Python.

Structure: Declaration of structure, reading and assignment of structure variables, Array of structures, arrays within structures, structures within structures. Compare C structures with Python tuples.

Unions: Defining and working with unions. File handling: Different types of files like text and binary, Different types of functions: fopen(), fclose(), fgetc(), fputc(), fgets(), fputs(), fscanf(), fprintf(), getw(), putw(), fread(), fwrite(), fseek().

1. Inscribe C programs that use Pointers to access arrays, strings and functions

2. Inscribe C programs using pointers and to allocate memory using dynamic memory management functions



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Course: Data Structure(SEM-III)

UNIT NO & NAME	UNIT OUTCOMES	COURSE OUTCOMES
UNIT 1: 1. Abstract Data Type 2. Linked Structures 3. Stacks 4. Queues 5. Etiquette and Mannerism 6. Ethical Values	Upon completion of this unit, participants will: 1. Have a deep understanding of various data types and their applications. 1. Recognize different data structures and classify them based on organizational principles. 2. Understand Abstract Data Types (ADT) and create user-specific ADTs. 3. Demonstrate proficiency in operations related to linked structures, stacks, and queues. 4. Analyze the advantages and disadvantages of linked structures, stacks, and queues.	1. Students will have acquired a well-rounded skill set in data types, data structures, graph theory, and hashing. 2. They will be equipped with the knowledge and practical experience necessary for effective problem-solving and algorithmic thinking in both academic and professional contexts



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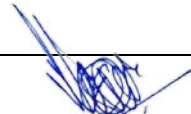
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	5. Apply these data structures to real-world problems, such as polynomial equations, balanced delimiters, postfix notation conversion, and job scheduling.	
<u>UNIT 2:</u> 1. Doubly Linked list 2. Trees 3. Priority Queues & Heap	Upon completion of this unit, participants will: 1. Have a deep understanding of various data types and their applications. 2. Recognize different data structures and classify them based on organizational principles. 3. Understand Abstract Data Types (ADT) and create user-specific ADTs. 4. Demonstrate proficiency in operations related to linked structures, stacks, and queues. 5. Analyze the advantages and disadvantages of linked structures, stacks, and queues. 6. Apply these data structures to real-world problems, such as polynomial	




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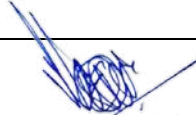
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	equations, balanced delimiters, postfix notation conversion, and job scheduling.	
<u>UNIT 3:</u> 1. Graph 2. Hashing	Upon completion of this unit, participants will: 1. Understand the fundamentals of graphs, including their structure and terminology. 2. Comprehend the Abstract Data Type (ADT) for graphs and perform operations like insertion and deletion. 3. Demonstrate proficiency in graph representation using adjacency matrix and adjacency list. 4. Conduct graph traversals using Breadth-First Search (BFS) and Depth-First Search (DFS). 5. Explore practical applications of graphs, specifically in the context of shortest path algorithms. 6. Understand the Hash Table ADT, its advantages, and the concept of hashing. 7. Analyze collision issues in hashing and explore collision avoidance techniques.	




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	8. Recognize the applications of hashing in various contexts, including efficient data storage and retrieval.	
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Course: Web Technologies (SEM-III)

UNIT NO & NAME	UNIT OUTCOMES	COURSE OUTCOMES
<u>UNIT 1</u> 1. HTML5 2. CSS	Upon completion of this unit, participants will have acquired: 1.The knowledge and skills to effectively structure and style web content using HTML5 and CSS. 2.They will be able to create visually appealing and interactive web pages, incorporating multimedia elements and applying design principles for a seamless user experience.	1.Students will possess a comprehensive skill set in web development, from structuring and styling web content to implementing dynamic and interactive features using various technologies. 2.The course prepares participants to design and build effective web applications that meet modern standards and user expectations.
<u>UNIT 2</u> 1. JavaScript 2. XML	1.proficiency in using JavaScript for web development, including programming fundamentals, functions, and interactions with browser objects. 2.Additionally, participants will understand the basics of XML, its structure, and how to work with	



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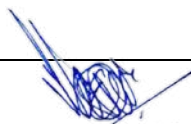
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	<p>XML documents, along with the transformation.</p> <p>3.capabilities provided by XSLT. These skills will enable participants to enhance the interactivity and data representation of web applications.</p>	
<p>UNIT 3</p> <ol style="list-style-type: none">1. Graph2. Hashing	<p>1.well-rounded set of skills in web development.</p> <p>2.They will understand the AJAX model, be proficient in handling asynchronous requests using the XML Http Request object, and possess practical experience in PHP for variables, operators, program flow, arrays, file operations, database interactions, and working with cookies, sessions, and headers.</p> <p>3. Additionally, participants will have a solid introduction to jQuery, gaining knowledge in its fundamentals, selectors, attribute</p>	




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	manipulation, DOM traversal, and event handling. 4. These skills collectively prepare participants for building dynamic and interactive web applications.	
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Course: Advanced Data Base(SEM-III)

UNIT NO & NAME	UNIT OUTCOMES	COURSE OUTCOMES
<u>UNIT 1:</u> Overview of PL/SQL: Advantages of PL/SQL, Main Features of PL/SQL, Architecture of PL/SQL Fundamentals of PL/SQL: Character Sets, Lexical Units, Declarations, References to Identifiers, Scope and Visibility of Identifiers, Assigning Values to Variables, Expressions, Error-Reporting Functions, Data Types. Control Statements: Conditional Selection Statements, LOOP Statements, Sequential Control Statements, GOTO, and NULL Statements. Sequences: creating sequences, referencing, altering, and dropping a sequence. Stored Procedures and Functions: Procedures: Types and benefits of stored procedures, creating stored procedures, executing stored procedures, altering stored procedures, viewing stored procedures. Functions: Calling function and recursion function.	1. develop understanding of concepts and techniques for data management and learn 2. learn out widely used systems for implementation and usage.	1. Students will learn about what are the concepts of Master concepts of stored procedure, functions, cursors and triggers and its use are implements and helpful in real life. 2. Students will also Learn about using PL/SQL for data management. 3. Also they will learn about Use Efficiently Collections and records. 4. Also students will Understand concepts and implementations of transaction management and crash recovery When any failure occurs.



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UNIT 2:

Collections and Records: Associative Arrays, Varra (Variable-Size Arrays), Nested Tables, Collection Constructors, Assigning Values to Collection Variable Multidimensional Collections, Collection Comparisor Collection Methods, Collection Types Defined in Packa Specifications, Record Variables, Assigning Values Record Variables. Error Handling: Compile-Tir Warnings, Overview of Exception Handling, Internal Defined Exceptions, Predefined Exceptions, User Defin Exceptions, Declared Predefined Exceptions, Raisi Exceptions Explicitly, Exception Propagation, Unhandl Exceptions. Cursors: Overview of Cursor, Types cursors, Invalid cursor Exception. Static and Dynam SQL: Static SQL: Description of Static SQL, Cursc Overview, Processing Query Result Sets, Cursor Variable CURSOR Expressions, Transaction Processing a Control, Autonomous Transactions. Dynamic SQL: Nati Dynamic SQL, DBMS_SQL Package, SQL Injection.

1. To develop understanding of Transaction management and crash recovery




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UNIT 3:

Triggers: Overview of Triggers, implementing triggers – creating triggers, Insert, delete, and update triggers, nested triggers, viewing, deleting, and modifying triggers, and enforcing data integrity through triggers. Packages: Overview of a Package. Need of Packages, Package Specification, Package Body, Package Instantiation and Initialization. Transaction Management: ACID Properties, Serializability, Two-phase Commit Protocol, Concurrency Control, Lock Management, Lost Update Problem, Inconsistent Read Problem, Read-Write Locks, Deadlocks Handling, Two Phase Locking protocol. Crash Recovery: ARIES algorithm. The log-based recovery, recovery related structures like transaction and dirty page table, Write-ahead log protocol, check points, recovery from a system crash, Redo and Undo phases

1.To develop concepts of programming concepts of database



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Course: Green Technologies. (SEM-III)

UNIT NO & NAME	UNIT OUTCOMES	COURSE OUTCOMES
<u>UNIT 1:</u> Green IT Fundamentals: Information Technology and Environment, Business, Environment, and Green Enterprise Characteristics, Green Vision and Strategic Points, Green Value, Green IT Opportunity, Challenges of a Carbon Economy, Environmental Intelligence, Envisioning the Green Future Green IT Strategies: Green strategic alignment, Green IT Drivers-Cost, Regulatory and Legal, Sociocultural and Political, Business ecosystem, New market opportunities, Green IT Business Dimensions, KPIs in Green Strategies Environmentally Responsible Business: Developing ERBS, Policies, Practices, and Metrics, Mobility and Environment, Green It Metrics and Measurements, Green IT Readiness and CMM, Context Sensitivity and Automation in Green IT Measures Green Assets: Introduction, Green Assets, Green IT Hardware, Green Data Centers and ICT Equipment, Server and Data Strategy	1. Student should be able to learn about Green IT Fundamentals: Business, IT, and the Environment. 2. Student should be able to understand Green IT Strategies. 3. Student should be able to understand Environmentally Responsible Business.	1.Student should be able to learn about Explain drivers and dimensions of change for Green Technology. 2.Student should be able to learn about the learner will be able to appreciate Virtualization; smart meters and optimization in achieving green IT. 3.Student should be able to learn about the learner will be able to develop Gain knowledge about green assets, green processes, and green enterprise architecture. 4.Student should be able to learn about the learner will be able to ISO 14001 and related standards for Audit for Green Compliance.
<u>UNIT 2:</u> Green Assets and emerging Trends: Data Servers Optimization and Virtualization, Physical Data Server Organization and Cooling, Cloud Computing and Data	1.Students come to know Green Assets and emerging Trends.	



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<p>Centers, Networking and Communications Infrastructure, End-User Devices, Smart Meters in Real-Time, Managing Devices for Central Green Services, Devices and Organizational Boundaries for Measurements, Mobile Devices, and Sustainability Green Business Process Management: Introduction, Green Reengineering, Green Process, Green BPM and standards, Green Business Analysis, Green Requirements Modelling, Green IT Governance, Green Business Process and Applications, QoS, Achieving green BPM, Green Mobile Business Process, Digital Library Green Enterprise Architecture: Green IT and organizational Systems, Aspects of Green Solutions Architecture, Contents and Integration with Service-Oriented Architecture, Green Supply Chain Management, Green Portals in Green Enterprise Architecture, Environmental Intelligence.</p>	<p>2.Students come to know how to implement Green Business Process Management.</p> <p>3.Students come to know Green Enterprise Architecture</p>	
<p><u>UNIT 3:</u></p> <p>Green Information Systems(GIS): Design and Development Models: Describing GIS, GIS Requirements Sociocultural Aspects of Green IT: Green IT's Social Impact, Learning Organization, Green Social Stakeholders, Role-Based View of Green IT, Green User Practices, Attitude and Subjectivity in Green IT, Green IT Ethics and Code of Conduct, Privacy and Security of Green Information, Green Washing, Communications in Green Transformation Projects, Green HR and Changing Organizational Structures, Green-Collar Workers: Roles and Skill Sets, Green Virtual Communities Green</p>	<p>1.Come to know implementation of Green Information Systems(GIS): Design and Development Models.</p> <p>2.To know implementation of Sociocultural Aspects of Green IT.</p> <p>3.Student Come to know implementation of Green Compliance: Protocols, Standards, and Audits.</p>	



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Compliance: Protocols, Standards, and Audits: Protocols and Standards, ISO 14000-2004 Standard, Various initiatives by stakeholders, Green Audits and types, Audit and use of Carbon emission management software Emerging Carbon Issues: Technologies and Future: Future Carbon Landscape, Green ICT and Technology Trends, Cloud Computing, Nanotechnology, Quantum computing, Renewable energies, eco-design, Collaborative environmental intelligence.		
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Course: Java based Application Development(SEM-III)

UNIT NO & NAME	UNIT OUTCOMES	COURSE OUTCOMES
<u>UNIT 1:</u> Introduction: History, Features of Java, Java Development Kit, Java Application Programming Interface, Java Virtual Machine Java Program Structure, Java Tokens. OOPS: Introduction, Class, Object, Static Keywords, Constructors, this keyword, Inheritance, Inner class, Anonymous Inner class, super keyword, Polymorphism (overloading and overriding), Abstraction, Encapsulation, Abstract Classes, Interfaces Packages: Introduction to predefined packages, User Defined Packages, Access specifiers Exception Handling: Introduction, Pre-Defined Exceptions, try-catch-finally, throws, throw, User Defined Exceptions Multithreading: Thread Creations, Thread Life Cycle, Life Cycle Methods, Synchronization, wait() notify() notify all() methods	1.Student should be able to learn about java virtual machine and java awt program. 2.Student should be able to understand Event handling in java. 3.Student should be able to understand thread concept	1. Student should be able to learn about design basic application in java using Graphical User Interface. 2.Student should be able to learn about the learner will be able to develop applications using swings 3.Student should be able to learn about the learner will be able to develop web based applications using servlet and jsp. 4.Student should be able to learn about the learner will be able to connect databases with java through.
<u>UNIT 2:</u> Collection Framework: Introduction, java. until Package interfaces, List, Set, Map, List interface & its classes, Set interface & its classes, Map interface & its classes.	1.Students come to know how to design interface. 2.Students come to know how to implement application using Swing.	




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<p>Introduction to JFC and Swing- Features of the Java Foundation Classes, Swing API Components, Component Class, Windows, Dialog Boxes, and Panels, Labels, Buttons, Check Boxes, Menus, Toolbars, Implementing Action interface, Pane, JScrollPane, Desktop pane, Scrollbars, Lists and Combo Boxes, Text-Entry Components, Colors and File Choosers, Tables and Trees, Printing with 2D API and Java Print Service API. Event Handling: Delegation Event Model, Events, Event classes, Event listener interfaces, Using delegation event model, adapter classes.</p> <p>JDBC: Introduction, JDBC Architecture, JDBC Drivers, JDBC Connectivity Model, java.sql package, Using Statement, Prepared Statement, Callable Statement, Result Set, Scrollable and Updatable Result Set, Navigating and manipulating data, Result Set Meta Data, Managing Transactions in JDBC, JDBC Exception classes, BLOB & CLOB</p>		<p>5. Student should be able to learn about the learner will be able to perform programs using JSON objects.</p>
<p>UNIT 3:</p> <p>Servlets: Introduction, Servlet Life Cycle, Types of Servlet, Servlet Configuration with Deployment Descriptor, working with Servlet Context and Servlet Config Object, Attributes in Servlet, Response and Redirection using Request Dispatcher and using send Redirect Method, Filter API, Manipulating Responses using Filter API, Session Tracking: using Cookies, HTTP Session, Hidden Form Fields and URL Rewriting,</p>	<p>1. Come to know implementation of servlet.</p> <p>2. To know implementation of jsp app.</p> <p>Come to know implementation of Jason app.</p>	




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Types of Servlet Event: Context Level and Session Level.
Java Server Pages (JSP): Introduction to JSP, Comparison with Servlet, JSP Architecture, JSP Life Cycle, JSP Scripting Elements, JSP Directives, JSP Action, JSP Implicit Objects, JSP Expression Language, JSP Standard Tag Libraries, JSP Custom Tag, JSP Session Management, JSP Exception Handling, JSP CRUD Applications **JSON:** Overview, Synta



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Course: Operating System(SEM-III)

UNIT NO & NAME	UNIT OUTCOMES	COURSE OUTCOMES
<u>Unit 1:</u> Introduction and Operating-Systems Structures: Definition of Operating system, Operating System's role, Operating-System Operations, Functions of Operating System, Computing Environments Operating-System Structures: Operating-System Services, User and Operating-System Interface, System Calls, Types of System Calls, Operating-System Structure Processes: Process Concept, Process Scheduling, Operations on Processes, Interposes Communication Threads: Overview, Multicore Programming, Multithreading Models	1.To learn the fundamentals of Operating Systems and its types. 2.Analyse the structure of OS and basic architectural components involved in OS design	1. To provide an understanding of operating system, its structures and functioning. 2.Develop and master understanding of algorithms used by operating systems for various purposes.
<u>Unit 2:</u> Process Synchronization: General structure of a typical process, race condition, The Critical-Section Problem, Peterson's Solution, Synchronization Hardware, Mutex Locks, Semaphores, Classic Problems of Synchronization, Monitors CPU Scheduling: Basic Concepts, Scheduling Criteria, Scheduling Algorithms (FCFS, SJF, SRTF, Priority, RR, Multilevel Queue Scheduling, Multilevel Feedback Queue Scheduling), Thread Scheduling	1. To learn the mechanisms of OS to handle processes and threads and their communication. 2. To gain knowledge on distributed operating system concepts that includes architecture, Mutual exclusion algorithms, deadlock detection algorithms and agreement protocols.	




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Deadlocks: System Model, Deadlock Characterization, Methods for Handling Deadlocks, Deadlock Prevention, Deadlock Avoidance, Deadlock Detection, Recovery from Deadlock	<p>3. Analyse and design the applications to run in parallel either using process or thread models of different OS.</p> <p>4. Understand the Mutual exclusion, Deadlock detection and agreement protocols of Distributed operating system</p>	
<p><u>Unit 3:</u></p> <p>Main Memory: Background, Logical address space, Physical address space, MMU, Swapping, Contiguous Memory Allocation, Segmentation, Paging, Structure of the Page Table Virtual Memory: Background, Demand Paging, Copy-on-Write, Page Replacement, Allocation of Frames, Thrashing Mass-Storage Structure: Overview, Disk Structure, Disk Scheduling, Disk Management File-System Interface: File Concept, Access Methods, Directory and Disk Structure, File-System Mounting, File Sharing File-System Implementation: File-System Structure, File System Implementation, Directory Implementation, Allocation Methods, Free-Space Management.</p>	<p>1.To learn the mechanisms involved in memory management in contemporary OS.</p> <p>2. Analyse the various device and resource management techniques for timesharing and distributed systems.</p>	



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Course: IoT Technologies(SEM-IV)

UNIT NO & NAME	UNIT OUTCOMES	COURSE OUTCOMES
UNIT 1: Fundamentals of IoT System on Chip Different types of IoT/SoC Platforms	Upon completion of this unit, participants will: 1.These unit outcomes are designed to ensure that students gain a comprehensive understanding of IoT fundamentals, SoC principles, and different platforms, with an emphasis on practical applications, problem-solving, critical analysis, and effective communication. 2.Assessment methods may include exams, hands-on projects, presentations, and practical demonstrations to evaluate students' achievement of these outcomes.	1.students will be well-equipped with the knowledge and practical skills needed to design, implement, and secure IoT systems, ensuring effective communication, efficient data management, and robust interfacing with various platforms. 2.The course outcomes emphasize not only theoretical understanding but also the ability to apply concepts in real-world scenarios and address advanced challenges in the IoT domain.
UNIT 2: 1. Interfacing with IoT Platforms 2. Using Sensor & Actuators 3. IoT and Protocols IoT Security	Upon completion of this unit, participants will: 1.These unit outcomes aim to demonstrate that students not only acquire practical skills but also	



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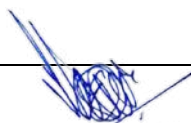
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	<p>exhibit advanced proficiency in interfacing with IoT platforms, utilizing sensors and actuators effectively, and implementing robust security measures in IoT systems.</p> <p>2. Assessment methods may include advanced hands-on projects, in-depth performance analysis reports, advanced security audits, and comprehensive documentation evaluations to gauge students' achievement of these outcomes.</p>	
<p><u>UNIT 3:</u></p> <ol style="list-style-type: none">1. IoT & Web2. IoT Applications3. Edge Computing	<p>Upon completion of this unit, participants will:</p> <p>1. These unit outcomes are designed to ensure that students gain a holistic understanding of integrating IoT with web technologies, developing diverse IoT applications, and implementing edge computing solutions.</p> <p>2. Assessment methods aim to measure students' theoretical</p>	




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	knowledge, practical skills, and the ability to apply these concepts in real-world scenarios.	
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Course: Advanced Application Development(SEM-IV)

UNIT NO & NAME	UNIT OUTCOMES	COURSE OUTCOMES
<u>Unit 1:</u> Node.js (N): Introduction to Node.js. Installing Node.js. The package. js on File. The Node.js Event Loop. The I/O Cycle. The Anatomy of a Node.js Module. Creating Node Modules. Exploring the Node.js HTTP Module. Creating an HTTP Webserver with Node.js. Responding to HTTP Requests. Routing in Node.js. Creating a Sample Node.js Application. MongoDB(M): Introduction to MongoDB. Installing MongoDB. Using MongoDB Compass. Using Mongo Shell Interface. Connecting to MongoDB. Creating Schemas and Models. Querying Documents Using find (). Inserting Documents Using create (). Updating Documents Using Find One and Update (). Deleting Documents Using Find One and Delete () & delete Many ()	1. understand all the necessary and important technologies such as MongoDB, Express. 2. Define Node.js and its role in server-side development. 3. Build a basic HTTP server using Node.js. Insert, update, delete, display data using MongoDB No Sql Concept.	1. Store the data in NoSQL, document-oriented MongoDB database that brings performance and scalability. 2. Use Node.js and Express Framework for building fast, scalable network applications. 3. Use AngularJS framework that offers declarative, two-way data binding for web applications. 4. Integrate the front-end and back-end components of the MEAN stack.
<u>Unit 2:</u> Server-Side Development with Express (E): Introduction to the Express Framework. Installing and Testing Express. Creating a Node.js Express App. Restructuring an Express App. Creating Templates. Using Express Middleware Functions. Creating the List Page. Creating the Details Page. Creating the Edit Page. Creating the Add Page. Deleting	1. To understand all the necessary and important technologies such as AngularJS, and Node.js	5. Develop robust mobile applications using Flutter.




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Data. REST API Basics. Testing REST APIs. Refactoring APIs. Understanding Angular.JS(A): Getting Started with Angular. Creating an Angular Application. Angular Project File Structure. Anatomy of an Angular Component. One-way Data Binding. Two-way Data Binding. Using NgIf Directive. Using Ng for of Directive. Angular Modules. Creating Ng Modules Using Angular Router. Configuring Templates. Creating Navigations. Working with Template-driven Forms. Working with Reactive Forms. Validating Form Data. Services Dependency Injection (DI). Reading Data from Database. Inserting Data into Database. Updating Data in the Database. Delete Data from Database.

Unit3:

Understanding Flutter: Importance of Flutter, Flutter Framework, Android Studio, Flutter SDK, Installing and Configuring Flutter SDK. Dart Programming: main () function, Dart Variables, Dart Data Types, Dart Conditional Operators, Control Flow & Loops. Dart Functions - Functions, Function Structure, creating a Function, Function Returning Expression. Object-Oriented Programming (OOP) - Creating a Class, Adding Methods to Classes, Class — Getters and Setters, Class Inheritance, Abstract Class. Flutter Widgets Fundamentals: Scaffold Widget, Image Widget, Container Widget, Column and Row Widgets, Icon Widget, Layouts in Flutter, Card Widget, Hot Reload and Hot Restart, tasteful and Stateless Widgets Navigation and Routing: Button Widget, App Structure and

1.To understand modern app development (like mobile and web development) using Flutter




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Navigation, navigate to a New Screen and Back, navigate with Named Routes, Send and Return Data among Screens, Animate a Widget across Screens, Web View Widget in Flutter.		
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Course: Android Application Development(SEM-IV)

UNIT NO & NAME	UNIT OUTCOMES	COURSE OUTCOMES
<u>UNIT 1:</u> Introduction to Kotlin: Basics of Kotlin, type conversions, comments, Kotlin operators, variables in Kotlin, packages, visibility modifiers, control flow statements, Concept of OOPS in Kotlin, classes in Kotlin, delegation and extension functions, the companion object, Advanced Concepts in Kotlin: declaring and calling functions, parameters, and arguments in Kotlin, default argument, variable number of arguments, unit-returning function, explicit return type, lambda expression, coroutines, Collections in Kotlin, Mutable and Immutable Collections, Ranges, type Checks, casting concept, this expression, Null safety, exception handling, annotations App Development with Android Studio: Android Architecture, Android Application Framework, Android Virtual Device, Creating and running First Android Application, working with Physical Android Device, Adding Kotlin Files in Android Studio Basics Of Android- Application Components: Activities, Intent, and Broadcast Receiver, Services, Fragment, Activity Life Cycle, Content Provider, Widgets, and Notifications.	<ol style="list-style-type: none">1. Student should be able to learn about Kotlin language program.2. Student should be able to understand how to use android studio with kotlin.3. Student should be able to understand basics of android.	<ol style="list-style-type: none">1.Student should be able to learn about how to Build useful mobile applications using Kotlin language on Android.2.Students should be able to learn about the learner and will be able to Install and configure Android Studio for application development.3.Students should be able to learn about Master basic to intermediate concepts of Kotlin required for mobile application development.4.Students should be able to learn about Use built-in widgets and components, work with the database to store data.5. Students should be able to learn about Master key Android



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UNIT 2:

Designing Android UI: User Interface (UI), Layout and Its Types, Layout Attribute, working with Views, Android UI Controls, Styles and Themes, Event Handler, setting up themes in Manifest and from the application, dialog in activity, using intents, fragments Handle Images, ListView And Menu: ImageView, ImageSwitcher, ListView, Menu, and its types, Designing menu in XML, Option menu, Context menu, popup menu, Screen Navigation, RecyclerView, Interaction of Views Data binding in Android-AdapterView, Spinner, Gallery view, AutotextCompleteView, screen orientation, Design the view dynamically Implementing Data Persistence: Data Storage-Shared Preference, Internal And External Storage Storing Data Using SQLite Databases, Content Provider, Firebase Real-Time Data

1.Students come to know how to design android UI.

2.Students come to know how to handle images, List view and Menu.

3.Students come to know how to handle Data binding in Android.
Students come to know how to Implementing Data Persistence.

programming concepts and deploy the application on Google Play

UNIT 3:

Graphics, Animations, and Integrating Media in Android: Draw able Class, Animation in Android, Media Player API and in Android, Media player and Audio Manger Class, Interacting With Camera and input gestures: Android Camera, Input gestures-multiple touch, swipe, drag, scroll, zoom, Recording Gathering

1.Students come to know Graphics, Animations, and Integrating Media in Android.

2.Students come to know Interacting with Camera and input gestures.

3.Students come to know Gathering Location Data.




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Location Data: Managing Background Tasks: Broad caste Receivers, Services, Threads and Process, A sync Task, Job Scheduler, Manage device Awake State Deploying Android applications on Google Play- Publishing/Deploy the application, Versioning, signing Application.		
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Course: Fundamentals of Algorithms(SEM-IV)

UNIT NO & NAME	UNIT OUTCOMES	COURSE OUTCOMES
Unit 1: Introduction to algorithm, why to analysis algorithm, running time analysis, how to Compare Algorithms, Rate of Growth, Commonly Used Rates of Growth, Types of Analysis, Asymptotic Notation, Big-O Notation, Omega- Ω Notation, Theta- Θ Notation, Asymptotic Analysis, Properties of Notations, Commonly used Logarithms and Summations, Performance characteristics of algorithms, Master Theorem for Divide and Conquer, Divide and Conquer Master Theorem: Problems & Solutions, Master Theorem for Subtract and Conquer Recurrences, Method of Guessing and Confirming	1.Able to Argue the correctness of algorithms using inductive proofs and Analyse worst-case running times of algorithms using asymptotic analysis.	1.Understand the concepts of algorithms for designing good program. 2. Implement algorithms using Python.
Unit 2: Tree algorithms: What is a Tree? Glossary, Binary Trees, Types of Binary Trees, Properties of Binary Trees, Binary Tree Traversals, Generic Trees (N-ary Trees), Threaded Binary Tree Traversals, Expression Trees, Binary Search Trees (BSTs), Balanced Binary Search Trees, AVL (Adelson-Velskii and Landis) Trees Graph Algorithms: Introduction, Glossary, Applications of Graphs, Graph Representation, Graph Traversals, Topological Sort, Shortest Path Algorithms,	1.Analyze the asymptotic performance of algorithms. 2. Ability to analyze asymptotic runtime complexity of algorithms including formulating recurrence relations.	



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Minimal Spanning Tree Selection Algorithms: What are Selection Algorithms? Selection by Sorting, Partition-based Selection Algorithm, Linear Selection Algorithm - Median of Medians Algorithm, Finding the K Smallest Elements in Sorted Order.

Unit 3:

Algorithms Design Techniques: Introduction, Classification, Classification by Implementation Method, Classification by Design Method Greedy Algorithms: Introduction, Greedy Strategy, Elements of Greedy Algorithms, Advantages and Disadvantages of Greedy Method, Greedy Applications, Understanding Greedy Technique Divide and Conquer Algorithms: Introduction, what is Divide and Conquer

Strategy? Divide and Conquer Visualization, Understanding Divide and Conquer, Advantages of Divide and Conquer, Disadvantages of Divide and Conquer, Master Theorem, Divide and Conquer Applications Dynamic Programming: Introduction, what is Dynamic Programming Strategy?

Properties of Dynamic Programming Strategy, Problems which can be solved using Dynamic Programming, Dynamic Programming Approaches, Examples of Dynamic Programming Algorithms, Understanding Dynamic Programming, Longest Common Subsequence

1. Use greedy approach to solve an appropriate problem for optimal solution.
2. Apply dynamic programming approach to solve suitable problems
3. Understand the limitations of algorithm power and study how to cope with the limitations of algorithm power for various problems

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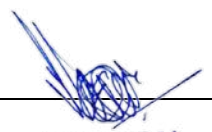




Course: Theory of Computation(SEM-IV)

UNIT NO & NAME	UNIT OUTCOMES	COURSE OUTCOMES
<u>UNIT 1:</u> Automata Theory: Defining Automaton, Finite Automaton, Transitions and Its properties, Acceptability by Finite Automaton, Nondeterministic Finite State Machines, DFA and NDFA equivalence, Mealy and Moore Machines, Minimizing Automata. Formal Languages: Defining Grammar, Derivations, Languages generated by Grammar, Chomsky Classification of Grammar and Languages, Recursive Enumerable Sets, Operations on Languages, Languages and Automata.	1.Student should be able to learn about Automata Theory. 2.Student should be able to understand how to use Formal Languages.	1.Student should be able to learn about how to understand Grammar and Languages. 2.Students should be able to learn about Automata theory and its application in Language Design. 3.Learn about Turing Machines and Pushdown Automata.
<u>UNIT 2:</u> Regular Sets and Regular Grammar: Regular Grammar, Regular Expressions, Finite automata and Regular Expressions, Pumping Lemma and its Applications, Closure Properties, Regular Sets and Regular Grammar Context Free Languages: Context-free Languages, Derivation Tree, Ambiguity of Grammar, CFG simplification, Normal Forms, Pumping Lemma for CFG Pushdown Automata: Definitions, Acceptance by PDA, PDA and CFG.	1.Students come to know how to design Regular Sets and Regular Grammar. 2.Students come to know how to use Context Free Languages. 3.Students come to know how to do Pushdown Automata	4.Students should be able to learn about Understand Linear Bound Automata and its applications.
<u>UNIT 3:</u> Linear Bound Automata: The Linear Bound Automata Model, Linear Bound Automata and Languages. Turing	1.Students come to know Linear Bound Automata.	




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Machines: Turing Machine Definition, Representations, Acceptability by Turing Machines, Designing and Description of Turing Machines, Turing Machine Construction, Variants of Turing Machine, Undesirability: The Church-Turing thesis, Universal Turing Machine, Halting Problem, Introduction to Unsolvability Problems.	2. Students come to know Turing Machines 3. Students come to know Undesirability.	
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Course: Artificial Intelligent(SEM-V)

UNIT NO & NAME	UNIT OUTCOMES	COURSE OUTCOMES
<u>UNIT 1:</u> Introduction to AI and Intelligent Agents What Is AI: Foundations, History and State of the Art of AI Intelligent Agents: Agents and Environments, Nature of Environments, Structure of Agents. Problem Solving by searching: Problem-Solving Agents, Uninformed Search Strategies, Informed (Heuristic) Search Strategies	1.Understand the foundations, history, and state of the art of AI. 2.Learn about intelligent agents, their environments, and the structure of agents.	1) Demonstrate knowledge of the foundations and key concepts in the field of AI. 2) Analyze and design intelligent agents for specific environments. 3)Apply problem-solving techniques and algorithms to find solutions to different types of problems.
<u>UNIT 2:</u> Knowledge Representation, Reasoning, and Machine Learning 15 Page 6 of 63 Knowledge Representation and Reasoning: Knowledge Representation and different forms, Reasoning, Planning, Uncertainty in Knowledge Fuzzy Logic & Russification Machine Learning: Forms of Learning, Parametric & Non-Parametric Models, Classification, Regression, Regularization, Decision Trees, SVM, Artificial Neural Networks, Ensemble Learning, Boosting, K-NN, Gradient Descent	1.Explore different problem-solving strategies, including uninformed and informed search techniques. 2. Gain knowledge of knowledge representation and reasoning methods, and apply them to solve complex problems	4) Construct knowledge representation models and use reasoning 5)techniques to derive new knowledge. Implement machine-learning algorithms and evaluate their performance for classification and regression tasks.
<u>UNIT 3:</u> Probabilistic Models, Unsupervised Learning, and Reinforcement Learning Probabilistic models: Statistical	1.Develop an understanding of machine learning techniques,	



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Learning, Learning with Complete Data, Naive Bayes Classifier, Learning with Hidden Variables: The EM Algorithm Unsupervised Learning: Concept of Unsupervised learning,, Association Rule Mining Reinforcement learning: Concept of Reinforcement learning, Q-Learning, Hidden Markov Model	including classification, regression, and ensemble learning	
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Course: Information & Network Security(SEM-V)

UNIT NO & NAME	UNIT OUTCOMES	COURSE OUTCOMES
<u>UNIT 1:</u> Introduction: Security Trends, The OSI Security Architecture, Security Attacks, Security Services, Security Mechanisms Classical Encryption Techniques: Symmetric Cipher Model, Substitution Techniques, Transposition Techniques, Steganography, Block Cipher Principles, The Data Encryption Standard, The Strength of DES, AES (round details not expected), Multiple Encryption and Triple DES, Block Cipher Modes of Operation, Stream Ciphers Public-Key Cryptography and RSA: Principles of Public-Key Cryptosystems, The RSA Algorithm	<ol style="list-style-type: none">1. Student should be able to learn about steganography.2. Student should be able to understand types of security attack.3. Student should be able to understand encryption and Decryption Process.	<ol style="list-style-type: none">1. Student should be able to learn about analyze and evaluate security trends, attacks, and mechanisms, and propose effective security solutions based on the OSI security architecture.2. Student should be able to learn about apply classical encryption techniques, such as substitution and transposition ciphers, to encrypt and decrypt messages and analyze their security implications.3. Student should be able to learn about implement public-key cryptography
<u>UNIT 2:</u> Key Management: Public-Key Cryptosystems, Key Management, Diffie-Hellman Key Exchange Message Authentication and Hash Functions: Authentication Requirements, Authentication Functions, Message Authentication Codes, Hash Functions, Security of Hash Functions and Macs, Secure Hash Algorithm, HMAC Digital Signatures and Authentication: Digital Signatures, Authentication Protocols, Digital Signature	<ol style="list-style-type: none">1. Students come to know how to design key-exchange.2. Students come to know how to implement message authentication code.	



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Standard Authentication Applications: Kerberos, X.509 Authentication, Public-Key Infrastructure	<ol style="list-style-type: none">3. Students come to know how to implement hash algorithm.4. Students come to know how to implement security certificates.	algorithms, including RSA, and demonstrate the ability to securely exchange keys and establish secure communication channels.
<u>UNIT 3:</u> Electronic Mail Security: Pretty Good Privacy, S/MIME IP Security: Overview, Architecture, Authentication Header, Encapsulating Security Payload, Combining Security Associations, Key Management Web Security: Web Security Considerations, Secure Socket Layer and Transport Layer Security, Secure Electronic Transaction Intrusion: Intruders, Intrusion Techniques, Intrusion Detection Malicious Software: Viruses and Related Threats, Virus Countermeasures, DDOS Firewalls: Firewall Design Principles, Types of Firewalls	<ol style="list-style-type: none">1. To know how to implement IP security.2. Students come to know how to implement key management.3. Students come to know how to working of firewall.4. Students come to know how to understand Types of virus.	<ol style="list-style-type: none">4. Student should be able to learn about Design and implement secure authentication mechanisms, including message authentication codes and digital signatures, to ensure data integrity and non-repudiation.5. Student should be able to learn about Evaluate and implement various security measures, such as IP security, web security protocols (e.g., SSL/TLS), intrusion detection systems, and



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		firewall configurations, to protect networks and systems from unauthorized access and attacks.
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Course: Project Management(SEM-V)

UNIT NO & NAME	UNIT OUTCOMES	COURSE OUTCOMES
UNIT 1: 1. Introduction to Project Management 2. Introduction to Project Management 3. Project Selection, Initiation and scope Management 4. Project Time & Cost Management	1. participants will have acquired the knowledge and skills necessary for effective project management. 2. They will understand the key concepts of project selection, initiation, and scope management, as well as time and cost management. 3. Participants will be equipped to apply project management processes and tools. 4. to successfully plan, execute, and control projects.	Participants completing the entire course will have: 1. developed a comprehensive and advanced skill set in project management. They will be well-prepared to handle the challenges of diverse projects, demonstrating proficiency in both traditional and Agile. 2. project management methodologies. The course aims to empower participants to lead successful projects, navigate complex team.
UNIT 2: 1. Project Execution and Control 2. Project Resource & Procurement Management 3. Project Integration Management	1. participants will have acquired comprehensive knowledge and skills in project quality and risk management, resource and procurement management, as well as project integration management. 2. They will be prepared to execute and control projects effectively, ensuring quality deliverables, managing risks,	3. dynamics, and adhere to ethical standards in project governance,



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	optimizing team performance, and successfully closing out projects with valuable lessons learned.	contributing to their overall effectiveness as project managers in today's dynamic work environment.
<u>UNIT 3</u> 1. Advanced Topics in Project Management 2. Agile Project & Management in the Digital Age 3. Project Governance and Ethics	1. participants will have acquired advanced knowledge and skills in Agile project management, effective people management, and project governance with a focus on ethics. 2. They will be equipped to lead projects in the digital age, foster a positive team environment, engage stakeholders effectively, and ensure governance structures align with ethical considerations and professional responsibility.	Expectations.



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Course: Cyber Law (SEM-VI)

UNIT NO & NAME	UNIT OUTCOMES	COURSE OUTCOMES
UNIT 1: 1. Introduction to Cyber Laws and Technology 2. Legal Framework and Regulations 3. Key Issues in Cyber Laws	1. These are designed to guide students in acquiring a comprehensive understanding of the legal aspects of cyberspace, from foundational. 2. principles to practical applications. Assessment methods, such as exams, case studies, and projects, can be aligned with these outcomes to gauge students' mastery of the material.	1. These course outcomes aim to provide students with a comprehensive skill set, including legal analysis, ethical considerations, and practical application of knowledge in the fields of cyber laws, enforcement, and intellectual property rights. 2. Assessment methods such as exams, case studies, projects, and presentations can be employed to measure students' attainment of these outcomes.
UNIT 2: 1. Cyber Crimes and Enforcement 2. Emerging Issues and Legal Considerations 3. Jurisdiction and Privacy	1. These unit outcomes are structured to provide students with a comprehensive understanding of cybercrime. 2. enforcement mechanisms, and the legal considerations associated with emerging threats. 3. The outcomes also address the challenges related to jurisdiction, privacy, and ethical considerations in	




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	4.the context of cybercrime enforcement. Assessment methods, such as case studies, simulations, and research projects, can be used to evaluate students' proficiency in these areas.	
<u>UNIT 3:</u> 1. Intellectual Property Rights and Online Regulations 2. Intellectual Property Rights (IPRs), Copyrights & Patents 3. Disputes and Resolution	 1.These unit outcomes are designed to provide students with a comprehensive understanding of intellectual property rights, online regulations, and the resolution of disputes in the digital domain. 2.They encompass legal principles, practical applications, and emerging issues related to copyrights, patents, and other forms of intellectual property. Assessment methods may include case analyses, research projects, and discussions to evaluate students' mastery of the material.	



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Course: Fundamentals of Algorithms(SEM-VI)

UNIT NO & NAME	UNIT OUTCOMES	COURSE OUTCOMES
Unit 1: Introduction to algorithm, why to analysis algorithm, Running time analysis, How to Compare Algorithms, Rate of Growth, Commonly Used Rates of Growth, Types of Analysis, Asymptotic Notation, Big-O Notation, Omega- Ω Notation, Theta- Θ Notation, Asymptotic Analysis, Properties of Notations, Commonly used Logarithms and Summations, Performance characteristics of algorithms, Master Theorem for Divide and Conquer, Divide and Conquer Master Theorem: Problems & Solutions, Master Theorem for Subtract and Conquer Recurrences, Method of Guessing and Confirming	1. Able to Argue the correctness of algorithms using inductive proofs and Analyze worst-case running times of algorithms using asymptotic analysis.	1. Understand the concepts of algorithms for designing good program. 2. Implement algorithms using Python
Unit 2: Tree algorithms: What is a Tree? Glossary, Binary Trees, Types of Binary Trees, Properties of Binary Trees, Binary Tree Traversals, Generic Trees (N-ary Trees), Threaded Binary Tree Traversals, Expression Trees, Binary Search Trees. (BSTs), Balanced Binary Search Trees, AVL (Adelson-Velskii and Landis) Trees Graph Algorithms: Introduction, Glossary, Applications of Graphs, Graph Representation, Graph Traversals, Topological Sort, Shortest Path Algorithms, Minimal Spanning Tree Selection Algorithms: What are Selection Algorithms? Selection by	1. Analyze the asymptotic performance of algorithms. 2. Ability to analyze asymptotic runtime complexity of algorithms including formulating recurrence relations.	



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Sorting, Partition-based Selection Algorithm, Linear Selection Algorithm - Median of Medians Algorithm, Finding the K Smallest Elements in Sorted Order.

Unit 3:

Algorithms Design Techniques: Introduction, Classification, Classification by Implementation Method, Classification by Design Method Greedy Algorithms: Introduction, Greedy Strategy, Elements of Greedy Algorithms, Advantages and Disadvantages of Greedy Method, Greedy Applications, Understanding Greedy Technique Divide and Conquer Algorithms: Introduction, what is Divide and Conquer Strategy? Divide and Conquer Visualization, Understanding Divide and Conquer, Advantages of Divide and Conquer, Disadvantages of Divide and Conquer, Master Theorem, Divide and Conquer Applications Dynamic Programming: Introduction, what is Dynamic Programming Strategy? Properties of Dynamic Programming Strategy, Problems which can be solved using Dynamic Programming, Dynamic Programming Approaches, Examples of Dynamic Programming Algorithms, Understanding Dynamic Programming, Longest Common Subsequence

1. Use greedy approach to solve an appropriate problem for optimal solution.
2. Apply dynamic programming approach to solve suitable problems.
3. Understand the limitations of algorithm power and study how to cope with the limitations of algorithm power for various problem.

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Course: Ethical Hacking.(SEM-VI)

UNIT NO & NAME	UNIT OUTCOMES	COURSE OUTCOMES
UNIT 1: Introduction: Terminology, Hacking Technology Types, Ethical Hacking Phases, Hacktivism, Hacker Classes, Skills Required for an Ethical Hacker, Vulnerability Research, Ways to Conduct Ethical Hacking Foot printing: Definition, Information Gathering Methodology, Competitive Intelligence, DNS Enumeration, Who is and ARIN Lookups, Types of DNS Records, Traceroute in Foot printing, E-Mail Tracking Social Engineering: Common Types Of Attacks Scanning and Enumeration: Port Scanning, Network Scanning, Vulnerability Scanning, CEH Scanning Methodology, Ping Sweep Techniques, Nap Command Switches, SYN, Stealth, XMAS, NULL, IDLE, FIN Scans, Anonymizers, HTTP Tunneling Techniques, IP Spoofing Techniques, SNMP Enumeration, Steps Involved in Enumeration.	1.Student should be able to learn about Introduction of ethical hacking. 2.Student should be able to understand Foot printing. 3.Student should be able to understand Scanning and Enumeration.	1. Students should be able to learn about, analyze and evaluate how to apply ethical hacking methodologies to conduct comprehensive security assessments and penetration tests. 2. Students should be able to learn about Perform effective foot printing and reconnaissance techniques to gather critical information about target systems 3. Students should be able to learn about Identify and exploit vulnerabilities in various network and system components using appropriate tools and techniques. 4. Students should be able to learn about Design and implement, evaluate the security posture of web servers, web applications, and wireless networks, and recommend appropriate countermeasures.
UNIT 2: System Hacking: Password-Cracking Techniques, Types of Passwords, Key loggers and Other Spyware Technologies, Escalating Privileges.	1.Students come to know System Hacking. 2.Students come to know Sniffers, Denial of Service.	



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<p>Rootkits Sniffers: Protocols Susceptible to Sniffing, Active and Passive Sniffing, ARP Poisoning, MAC Flooding, DNS Spoofing Techniques, Sniffing Countermeasures Denial of Service: Types of DoS Attacks, Working of DoS Attacks, BOTs/BOTNETs, “Smurf” Attack, “SYN” Flooding, DoS/DDoS Countermeasures Session Hijacking: Spoofing vs. Hijacking, Types, Sequence Prediction, Steps, Prevention Hacking Web Servers: Web Server Vulnerabilities, Attacks against Web Servers, Patch Management Techniques, Web Server Hardening.</p>	<p>3. Students come to know how to implement Session Hijacking.</p> <p>4. Students come to know how to implement Hacking Web Servers.</p>	<p>5. Students should be able to demonstrate an understanding of ethical and legal considerations in conducting ethical hacking activities and adhere to professional codes of conduct.</p>
<p>UNIT 3: Web Application Vulnerabilities: Web Application Hacking, Web Application Threats, Google Hacking, Countermeasures Web-Based Password Cracking Techniques: Authentication Types, Password Crackers, Countermeasures SQL Injection: Steps, SQL Server Vulnerabilities, Countermeasures Buffer Overflows: Types, Stack-Based Buffer Overflows, Mutation Techniques Wireless Hacking: WEP, WPA Authentication Mechanisms, and Cracking Techniques, Wireless Sniffers, Rogue Access Points, Wireless Hacking Techniques, Securing Wireless Networks Penetration Testing Methodologies: Methodologies, Steps, Automated Tools, Pen-Test Deliverables.</p>	<p>1. Students come to know Web Application Vulnerabilities.</p> <p>2. Students come to know Web-Based Password Cracking Techniques.</p> <p>3. Students come to know Buffer Overflows.</p> <p>4. Students come to know about Wireless Hacking.</p>	<p><i>Delake</i> Coordinator Computer Science Department Government of Maharashtra's Ismail Yusuf College of Arts, Science & Commerce, Jogeshwari (East), Mumbai - 400 060.</p>





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Course: Information Retrieval (SEM-VI)

UNIT NO & NAME	UNIT OUTCOMES	COURSE OUTCOMES
<u>UNIT 1:</u> Foundations of Information Retrieval Introduction to Information Retrieval (IR) systems: Definition and goals of information retrieval, Components of an IR system, Challenges and applications of IR Document Indexing, Storage, and Compression: Inverted index construction and compression techniques, Document representation and term weighting, Storage and retrieval of indexed documents, Retrieval Models: Boolean model: Boolean operators, query processing, Vector space model: TF-IDF, cosine similarity, query-document matching, Probabilistic model: Bayesian retrieval, relevance feedback Spelling Correction in IR Systems: Challenges of spelling errors in queries and documents, Edit distance and string similarity measures. Performance Evaluation: Evaluation metrics: precision, recall, F-measure, average precision, Test collections and relevance judgments, Experimental design and significance testing	1.To understand the fundamental principles and components of information retrieval systems. 2.To explore various techniques for document indexing, storage, and retrieval.	1.Explain the key components and principles of information retrieval systems. 2.Apply indexing, storage, and retrieval techniques to efficiently retrieve relevant documents. 3.Compare and contrast different retrieval models and select appropriate models for specific search scenarios. 4.Develop practical skills in implementing and evaluating information retrieval systems. 5. Demonstrate an understanding of advanced topics in information retrieval, including web search and machine learning techniques.
<u>UNIT 2:</u>	1.To analyze and compare different retrieval models and	



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<p>Advanced Topics in Information Retrieval Text Categorization and Filtering: Text classification algorithms: Naïve Bayes, Support Vector Machines, Feature selection and dimensionality reduction, Applications of text categorization and filtering.</p> <p>Text Clustering for Information Retrieval: Clustering techniques: K means, hierarchical clustering, Evaluation of clustering results, clustering for query expansion and result grouping Web Information Retrieval: Web search architecture and challenges, Crawling and indexing web pages, Link analysis and PageRank algorithm Learning to Rank: Algorithms and Techniques, Supervised learning for ranking: Rank SVM, Rank Boost, Pairwise and list wise learning to rank approaches Evaluation metrics for learning to rank Link Analysis and its Role in IR Systems: Web graph representation and link analysis algorithms, HITS and PageRank algorithms, Applications of link analysis in IR systems</p>	<p>understand their strengths and limitations.</p> <p>2.To gain practical experience in implementing and evaluating information retrieval systems.</p>	
<p><u>UNIT 3:</u></p> <p>Advanced Topics in Information Retrieval Crawling and Near-Duplicate Page Detection: Web page crawling techniques: breadth-first, depth-first, focused crawling, Near-duplicate page detection algorithms, Handling dynamic web content during crawling.</p>	<p>1.To explore advanced topics in information retrieval, such as web information retrieval and machine learning techniques.</p>	




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Advanced Topics in IR: Text Summarization: extractive and abstractive methods, Question Answering: approaches for finding precise answers, Recommender Systems: collaborative filtering, content-based filtering Cross-Lingual and Multilingual Retrieval: Challenges and techniques for cross-lingual retrieval, Machine translation for IR, Multilingual document representations and query translation, Evaluation Techniques for IR Systems User-based evaluation: user studies, surveys, Test collections and benchmarking, Online evaluation methods: A/B testing, interleaving experiments		
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B.Sc. (Biotechnology) Programme Outcomes

PSO No.	Program Specific Outcomes(PSOs) Upon completion of this programme the student will be able to
PSO1	Academic competence: (i) Demonstrate comprehensive knowledge, imparted by highly qualified and competent faculty, and develop interdisciplinary skills in the fields of Biotechnology. (ii) Acquire good experimental and laboratory skills applied in biotechnology and allied subjects in well-equipped and state of the art laboratories. (iii) Understand the scope and applications of biotechnology and acquire competence in the domain of Biotechnology to enable bright future prospects.
PSO2	Personal and Professional Competence: (i) Demonstrate conceptual learning through systematic thinking and self-study and life- long learning that helps to solve scientific problems in the field of Biotechnology. (ii) Apply appropriate tools and techniques in biotechnology, to design and perform experiments proficiently and become competent to pursue higher studies or join the industry sector. (iii) Acquire good oral and written communication skills. (iv) Discuss the upcoming fields of Biotechnology. (v) Experience opportunity to participate in/manage/curate many co and Extracurricular activities for overall development.
PSO3	Research Competence: (i) Acquire an ability to identify, formulate, analyze and solve scientific problems in various areas of Biotechnology and allied fields. (ii) Demonstrate appropriate skills in design of experiments with proper scientific approach. (iii) Develop ability to apply scientific research methodology and achieve ethical research aptitude.
PSO4	Entrepreneurial and Social competence: (i) Employ skills and knowledge acquired in skill imparting and entrepreneurial courses in upcoming fields of Biotechnology (ii) Develop a sense of environmental, social, ethical and professional responsibility.



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COURSE OUTCOMES

FYBT - SEMESTER I

Title of the course	Course credit	Course outcome
Basic Chemistry I	2	To acquaint the students with basic concepts of Chemistry like Classification and Nomenclature of Chemical compounds and to impart hands-on skills in preparation of Buffers and Solutions.
Basic Chemistry II	2	To acquaint students with Concepts of Stereochemistry and to impart knowledge of Titrimetric and Volumetric Estimations and handling of basic Analytical Techniques like Chromatography and Calorimetry
Basic Life Sciences-I : Biodiversity and Cell Biology	2	To acquaint students with concept of Biodiversity and Cell Biology and to impart skill in handling and culture of Microorganisms
Basic Life Sciences-II : Microbial Techniques	2	To acquaint students with basic techniques in Staining and Sterilization and to impart the knowledge of growth of microorganisms
Basic Biotechnology-I : Introduction to Biotechnology	2	To acquaint students with various fields of Biotechnology and their applications and to impart the knowledge of Food Technology and Fermentation Techniques
Basic Biotechnology-II : Molecular Biology	2	To acquaint students with DNA Replication, Repair and Genetic Engineering and to Impart the knowledge of molecular Biology Techniques
Societal Awareness	2	To acquaint the students with concepts of Societal Awareness and to impart knowledge of Society and make students aware about the Problems in Society



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FYBT - SEMESTER II

Title of the course	Course credit	Course outcome
Chemistry-I : Bioorganic Chemistry	2	To acquaint students with Bioorganic Molecules and to impart the knowledge of Classification, Structure and Characterization of Biomolecules
Chemistry-II : Physical Chemistry	2	To acquaint students with concepts in Thermodynamics, Kinetics and Redox Reactions and to impart skills in Kinetics and Chemical Reactions

Life Sciences-I : Physiology and Ecology	2	To acquaint students with Physiological Processes in Plants and Animals and to impart the knowledge of Physiology and Ecology
Life Sciences-II : Genetics	2	To acquaint students with concepts in Genetics and to impart skills in Techniques in Genetic Analysis and Population Genetics
Biotechnology-I : Tissue Culture & Scientific Writing and Communication Skills	2	To acquaint students with Techniques of Plant and Animal Tissue Culture and to impart the skills of PTC, ATC and Science Communication
Biotechnology-II : Enzymology, Immunology and Biostatistics	2	To acquaint students with concepts in Enzymology, Immunology and Biostatistics and impart the skills in Enzyme Kinetics, Immunological Techniques and Biostatistics
Globalization, Ecology and Sustainable Development	2	To acquaint the students with concepts of Globalization, Ecology and Environment and to impart knowledge of Globalization make students aware about the Problems in Society



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SYBT - SEMESTER III

Title of the course	Course credit	Course outcome
Biophysics	2	Develop an understanding of the different aspects of classical Physics. Be able to relate principles of Physics to applications and techniques in the field of Biology such as Microscopy, Spectroscopy and Electrophoresis.
Applied Chemistry -I	2	<ol style="list-style-type: none">1. Develop an understanding of the different aspects of Organic and Green Chemistry.2. Discuss role of Organic Compound sin Biology and Synthesis of Organic Compounds.3. Discuss role of Green Chemistry and its application in Industry.
Immunology	2	<ol style="list-style-type: none">1. Understand the role of different types of Cells, Effector Molecules and Effector Mechanisms in Immunology.2. Understand the principles underlying various Immune techniques.
Cell Biology and Cytogenetics	2	<ol style="list-style-type: none">1. Develop an understanding of the Cytoskeleton and Cell Membrane.2. Discuss the structure of Chromosomes and types of Chromosomal Aberrations.3. Discuss the principles underlying Sex Determination, Linkage and Mapping.
Molecular Biology	2	<ol style="list-style-type: none">1. Discuss the mechanisms associated with Gene Expression at the level of Transcription and Translation.4. Discuss the mechanisms associated with Regulation of Gene Expression in Prokaryotes and Eukaryotes



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Bioprocess Technology	2	5. 1. Develop an understanding of the various aspects of Bioprocess Technology. Develop skills associated with screening of Industrially Important Strains. Understand principles underlying design of Fermenter and Fermentation Process.
Research Methodology	2	1. Understand basic principles of Research Methodology and identify a Research Problem. 6. Understand a general definition of Research Design. Identify the overall Process of Designing a Research Study from its inception to its Report.



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SYBT - SEMESTER IV

Title of the course	Course credit	Course outcome
Biochemistry	2	<ol style="list-style-type: none">1. Discuss the Metabolic Pathways of Carbohydrates, Amino Acids, Lipids and Nucleotides.2. Explain the Role of Energy Rich Molecules in Metabolism.
Applied Chemistry -II	2	<ol style="list-style-type: none">1. Develop an understanding of the different aspects of Analytical Chemistry.2. Gain knowledge of Natural Product Chemistry and related acquired skills. Gain an understanding of basic concepts in Polymer Chemistry and Nanomaterials.
Medical Microbiology	2	<ol style="list-style-type: none">1. List the factors playing a role in causing a disease.2. Discuss the various aspects of Systemic Infections including Causative Agents, Symptoms and Prophylaxis.3. Gain the technical capability of handling, isolating and identifying various Bacteria.
Environmental Biotechnology	2	<ol style="list-style-type: none">1. Gain an understanding of the causes, types and control methods for Environmental Pollution.2. Application of different life forms in Environmental Remediation.
Bioinformatics and Biostatistics	2	<ol style="list-style-type: none">1. Gain an understanding of the basic concepts of Bioinformatics and Biostatistics.2. Understand the tools used in Bioinformatics.3. Apply the various Statistical Tools for Analysis of Biological Data.



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Molecular Diagnostics	2	<ol style="list-style-type: none">1. Gain an understanding of the basic Principles used in Molecular Diagnosis.2. Gain critical thinking and analytical skills to understand new Diagnostic Methods.3. Apply the knowledge and skills gained in the course should be useful in developing new Diagnostic Kits.
Entrepreneurship Development	2	<ol style="list-style-type: none">1. Develop an Understanding of the systematic process to select and screen a Business Idea.2. Design strategies for successful implementation of ideas.3. Write a Business Plan.



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TYBT SEMESTER V

Title of the course	Course credit	Course outcome
Cell Biology	2.5	<ol style="list-style-type: none">1. Gain knowledge about the cell multiplication and death at molecular level.2. Understand the molecules involved in cell signaling.3. Gain an understanding of the basic concepts of events during fertilization and early embryonic development.4. Gain insight into the biology of cancer cells.
Medical Microbiology and Instrumentation	2.5	<ol style="list-style-type: none">1. By the end of the course the student will be able to:2. Learn the different type of virus cultivation3. Understand the development and mode of action of antimicrobial, antifungal and antiviral drugs.4. Get an insight into the various spectroscopic methods used in biological studies.5. Understand the principle and applications of chromatographic and tracer techniques.
Genomics and Molecular Biology	2.5	<ol style="list-style-type: none">1. By the end of the course the student will be able to:2. Use molecular biology tools and techniques in the field of biotechnology.3. Gain knowledge regarding recent developments in genome sequencing and editing.4. Understand the basis of gene cloning and development of transgenic animals and plants.
Marine Biotechnology	2.5	<ol style="list-style-type: none">1. By the end of the course the student will be able to:2. Gain insight in the field of marine biotechnology.



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TYBT SEMESTER VI

Title of the course	Course credit	Course outcome
Biochemistry	2.5	<ol style="list-style-type: none">1. By the end of the course the student will be able to:2. Understand the biosynthetic pathways and regulation of biomolecules like carbohydrates and lipids.3. Learn the various functioning of endocrine gland secretions with their associated disorders.4. Understand the functioning of vitamins and minerals in the body and gain an insight in the concept of nutrition.
Industrial Microbiology	2.5	<ol style="list-style-type: none">1. By the end of the course the student will be able to:2. Gain insight in the various processes involved in production of commercially available dairy products.3. Have an in depth understanding of downstream processes.4. Understand and gain insight in the various processes involved in production of commercial products. Understand the importance of GMP and its relevance in bioprocesses.
Basic pharmacology and Neuro chemistry	2.5	<ol style="list-style-type: none">1. By the end of the course the student will be able to:2. Understand the mechanisms of drug delivery and action in the body.3. Get an understanding in the concepts of bioavailability and distribution.4. In depth knowledge on toxic substances and poisons5. Understand the biochemistry of nerve impulses and brain functioning
Environmental Biotechnology	2.5	<ol style="list-style-type: none">1. By the end of the course the student will be able to:2. Get an insight on the different traditional and new sources of renewable energy.3. Understand the principles and practices involved in treatment of industrial effluent4. Gain an insight in the management and treatment of wastewater. Understand the disposal of waste from different industries



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PROGRAMME OUTCOMES

The College is affiliated to the University of Mumbai. Thus, the college follows the guidelines and syllabus prescribed by the Affiliated University.

PROGRAMME: MASTER OF COMMERCE

Programme Outcomes

On completion of the M.Com. (Advance Accountancy) degree the graduates will be able to:

PO1: Building a strong foundation of knowledge in different areas of accountancy.

PO2: Employability as per the requirements of industry

PO3: Creative thinking and analytical skills to solve problems

PO4: Understanding of the current topics in Modern Accounting and Finance

PO5: Developing the skill of applying accounting concepts and techniques used in business and an attitude for working effectively and efficiently in an enterprise.

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CA Navneet Gokani
Co-Ordinator (Advanced Accountancy)



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Course Outcomes

Masters in Commerce (M. Com)

M.Com. (Accountancy) Specialization in M.com (Accountancy)

▪ **First Year - SEMESTER I**

Sr. No.	Name of the Course	Outcomes
1	Cost and Management Accounting	<ul style="list-style-type: none">The learner shall be able to comprehend the concept of Cost and management accounting and its significance in the businessLearners shall possess the knowledge of developing, preparing and presenting the financial report and Cost Report in the business corporates.The learner shall be able to apply the techniques of costing in the decision making in the business corporates
2	Business Ethics & Corporate Social Responsibility	<ul style="list-style-type: none">Identify and address common ethical issues that arise for individuals, managers, and organizations.Engage in logically sound discussion about moral dilemmas using the language of business ethics.Explain how organizational and cultural variables can influence ethical conduct.Identify key organizational tools, policies, systems, and laws that apply to managing ethical conduct specifically in the business environment.Demonstrate a multi-stakeholder perspective in viewing CSR issues

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		<ul style="list-style-type: none">• Compare and contrast the multiple viewpoints and trade-offs that exist in the area of CSR.
3	Economics for Business Decision	<ul style="list-style-type: none">• The students will be acquainted with economic concepts and models of International trade• Students will become aware about international trade bloc and their importance.• To provide an insight into a broad range of economic aspects of the European Union.• To allow students to have better understanding of the regional trade regimes• Critically comment on and participate in current debates on international economic policy.
4	Strategic Management	<ul style="list-style-type: none">• To expose students to various perspectives and concepts in the field of Strategic Management• The course would enable the students to understand the principles of strategy formulation, implementation and control in organizations.• To help students develop skills for applying these concepts to the solution of business problems• To help students master the analytical tools of strategic management• PG-FAA-204 Financial Markets• Students will understand the Meaning of Financial Services and Types of Financial Services including their Significance in India

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		<ul style="list-style-type: none">The students will know about the various Categories of Financial Products and understand the Marketing Mix for Financial Services.The students will understand the Mutual fund Industry in India, its Different Schemes and valuation method.The students will learn to evaluate the different Strategies for portfolio management
▪ First Year - SEM-II		
1	Corporate Finance	<ul style="list-style-type: none">The learner shall be able to develop the objectives of Financial Management and comprehend the various sources of Finance.Learners shall possess the knowledge to understand, develop and apply the techniques of investment in the financial decision making in the business corporates.The learner shall be able to analysed and interpret the financial statements.
2	E-Commerce	<ul style="list-style-type: none">The students will have insights to the fundamental concept of e-commerce and the importance of e-commerce in today's business environment.The students can benefit from their own ecommerce website, where they can sell their own products or services.Students can learn ecommerce as a flexible solution for both businesses and buyers.

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		<ul style="list-style-type: none">Students will be made aware of existing problems and concerns in E-commerce.Students will build the awareness towards different businesses modelsStudents will receive an overview on various issues of legal and regulatory framework and other environmental challenges related to E-commerce
3	Research Methodology	<ul style="list-style-type: none">Learners are expected to demonstrate an understanding of research methodologies.Identify the overall process of designing a research study from its inception to the report stage.Imbibe data collection, analysis, and interpretation and presentation skills at par with globally accepted standards.It provides a solid foundation for development of rational problem solving skills and analytical thinking that can last throughout their education and subsequent professional careers.
4	Macro Economics Concepts & Application	<ul style="list-style-type: none">
	• Second Year - SEM-III	
1	Advanced Financial Accounting	<ul style="list-style-type: none">Understand & Interpret banking company accountsUnderstand & interpret Insurance company accounts

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		<ul style="list-style-type: none">• Provide accounting treatment of Non-Banking Finance Companies & Foreign Currency Conversion transactions.
2	Advanced Auditing	<ul style="list-style-type: none">• Understand Company audit, audit process with computerized auditing and various concerns of audit• Understand audits of various concerns: - educational institutions, audit of hospital and audit of bank• Perform the compliance and audit functions.• Understand the audit control with respect to internal control especially procedure controls and facility controls; techniques of audit of EDP output
3	Direct Tax	<ul style="list-style-type: none">• Compute total income and tax payable by Assessee.• Preparation of Income Tax Return• Calculation of Advance Tax, and Tax deducted at Source• Procedure of Assessments & Appeals & Tax Collection Authorities under the Income Tax Act, 1961.• Understand Income Tax system properly, and interpret different tax provisions including international taxation
4	Project Work – I	<ul style="list-style-type: none">• Understand the areas of Business Research Activities with reference to the electives.• Conduct the research in the field of electives offered.

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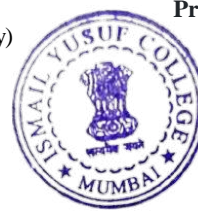
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		<ul style="list-style-type: none">• Develop the most appropriate methodology for their research studies.• Use different research methods and techniques to conduct data analysis• Drive a valid conclusion after detailed analysis
	• Second Year - SEM-IV	
1	Advance Financial Accounting	<ul style="list-style-type: none">•
2	Financial Management	<ul style="list-style-type: none">• Understand risks involved in the Financial Management function• Interpret Business Finance and the background of Accounting and Management• Awareness about challenges and opportunities of Financial Management
3	Indirect Tax-Introduction to Goods & Services Tax Act	<ul style="list-style-type: none">• Understand Input Tax Credit and exemptions• Compute GST Liability and Know about TDS, TCS & E-way bill under GST• Prepare and file GST returns• Understand different types of assessment and Audit Procedure.
4	Project Work - II	<ul style="list-style-type: none">• Understand the areas of Business Research Activities with reference to the electives.

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	<ul style="list-style-type: none">• Conduct the research in the field of electives offered.• Develop the most appropriate methodology for their research studies.• Use different research methods and techniques to conduct data analysis• Drive a valid conclusion after detailed analysis.
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M.com (Management) - Core Courses

1	Entrepreneurial Management	<ul style="list-style-type: none">Sharpen creative, innovative and problem solving skills of the learnerEquip the learners with life skills and prepare them to tackle failures and uncertaintiesOverview on women and social entrepreneurshipClear understanding on entrepreneurial environment and its relevance
2	Human Resource Management	<ul style="list-style-type: none">Learners understand the challenges and issues faced by Human Resource Manager while performing functional activitiesStudents learn skills and knowledge required to successfully implement an effective talent management systemBetter Stress management in daily lives and organization leading high levels of performance.Role of technology in recruitment, selection, career progression and other function of human resource management.Learners to study the strategies induced to manage talent and engage them to the fullest.

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Narkhede
Co-Ordinator (Business Management)

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Prof. (Dr.) Vijay
Principal





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3	Organizational Behavior	<ul style="list-style-type: none">To understand the applicability of the concept of organizational behavior to understand the behavior of people in the organization.Demonstrate the applicability of analysing the complexities associated with management of individual behavior in the organization.Analyse the complexities associated with management of the group behavior in the organization.Demonstrate how the organizational behavior can integrate in understanding the motivation (why) behind behavior of people in the organization.
4	Project Work – I	<ul style="list-style-type: none">Understand the areas of Business Research Activities with reference to the electives.Conduct the research in the field of electives offered.Develop the most appropriate methodology for their research studies.Use different research methods and techniques to conduct data analysisDrive a valid conclusion after detailed analysis.
• Second Year - SEM-IV		

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1	Sales & Distribution Management	<ul style="list-style-type: none">The course imparts the knowledge needed to understand the concept and relevance of Advertising and sales Management in the modern eraEnable learners to understand the scope and complexity of advertising creativity and sales management.Gather an overview about advertising agencies, various Media, Regulatory framework of advertising, Sales force management, Structure and steps in Developing a Sales Organisation, Methods and Types of Sales QuotaHighlighting the role of IT in sales management.
2	Retail Management	<ul style="list-style-type: none">Define retail business and identify its working mechanismsExplain the retail business model for brick and mortar formats in detailThis course provides an insight to the students regarding various issues associated with store operation, visual merchandising, merchandising, inventory management, retail sales etc
3	Management of Business Relations	<ul style="list-style-type: none">The course provides detailed knowledge in the field of business relationships and network management with special emphasis on relationship dynamics.The learner will gain specific knowledge of managing customer relationships, supplier

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		<p>relationships, employee relationships and channel relationships.</p> <ul style="list-style-type: none">• The learner will have greater insights in customer relationship management and will understand how the use of technology in customer relationship management can bring greater value to customer and build in corporate image as course emphasizes more on E- CRM and its benefits to marketers and customers.• The course helps developing competencies of strategizing and developing important business relationships and managing its network.
4	Project work -II	<ul style="list-style-type: none">• Understand the areas of Business Research Activities with reference to the electives.• Conduct the research in the field of electives offered.• Develop the most appropriate methodology for their research studies.• Use different research methods and techniques to conduct data analysis• Drive a valid conclusion after detailed analysis.

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M.Sc	Sem-I&II	Classical Mechanics	At the end of the course, the learner is able to 1. Understand the principle of virtual work and the concepts of least action, the formalisms of Lagrange and Hamiltonian (CO1) 2. Describe the motion of a system in Lagrangian and Hamiltonian formalisms (CO2) 3. Understand the features of motion under central force, periodic motion, small oscillations as they appear in other areas of Physics (CO3) 4. Use the Poisson brackets in Hamiltonian dynamics and solve related problems (CO4) 5. Understand the linkages of the techniques of Classical Mechanics in solving problems in areas of Statistical Mechanics (Phase space), Molecular Physics (CO5)
		QUANTUM MECHANICS I	At the end of the course, the learner is able to 1. Understand the basic principles of Quantum mechanics and the need for its formalism (CO1) 2. Understand the Uncertainty Principle and formulation of Schrodinger equation (CO2) 3. Understand the importance of Dirac formalism, vector spaces and apply the same in solving problems of potential barrier, square well potential (CO3) 4. Apply the techniques of solving differential equations using various special functions as they appear in the solution of Schrodinger equation for Hydrogen atom problem (CO4) 5. Solve the various boundary value and potential problems using the techniques of quantum mechanics
		MATHEMATICAL METHODS IN PHYSICS	At the end of the course the learner will be able to 1. Solve eigenvalue problems using matrices as they appear in Classical and Quantum Mechanics (CO1) 2. Apply tensor analysis to understand the formulation of relativistic electrodynamics and other areas of Physics (CO2) 3. Apply residue theorem of complex variables to solve real and definite integrals (CO3) 4. Understand the emergence of special functions as solutions of differential equations and to solve problems in physics (CO4) 5. Solve partial differential equations using integral transforms in boundary value problems



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		Introduction to Programming	<p>At the end of the course, the learner can</p> <ol style="list-style-type: none"> 1. Understand the use of programming language and write simple programs for mathematical problems (CO1) 2. Develop flowcharts for analyzing a given mathematical problem and solve them numerically (CO2) 3. Apply the techniques of numerical methods in interpolation to generate difference tables of a given data set (CO3) 4. Analyze a given data set and fit them to a suitable polynomial equation and present them graphically (CO4) 5. Simulate models for a given mathematical problem by techniques of Monte Carlo and other related techniques (CO5)
		QUANTUM MECHANICS II	<p>At the end of the course, the learner can</p> <ol style="list-style-type: none"> 1. Gain understanding of the mathematical foundations of the angular momenta of a system of particles (CO1) 2. Apply the concept of non-relativistic Hamiltonian for an electron with spin and perform calculation using angular momentum techniques (CO2) 3. Apply various approximation methods in the solution of time independent and time dependent Schrodinger equations (CO3) 4. Apply the perturbation theory to various forms of Schrodinger equation in scattering theory and partial wave analysis (CO4) 5. Apply the quantum mechanical principles to
		NUCLEAR PHYSICS	<p>se Outcome: At the end of the course, the learner</p> <ol style="list-style-type: none"> 1. Gains knowledge about the nuclear properties such as mass, size, spin and the methods adopted for their estimation 2. Gains awareness of safety and regulatory norms adopted in the nuclear programme in the country 3. Understands the various nuclear models, 4. Understands the nuclear reactions with the ideas of decay mechanisms, interaction of radiation with matter and the experimental methods of analysis 5. Gains insight into the basics of Particle Physics with introductory ideas of the fields of Quantum Electrodynamics and Quantum



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