DEPARTMENT OF COMMERCE AND MANAGEMENT

BBA PROGRAM

BBA PROGRAM OUTCOMES

- Exhibit broad range of managerial capabilities acquired through functional areas of business, critical thinking through case analysis, management games and personality development sessions.
- Attain conceptual and problem-solving skills in accounting, finance, quantitative aptitude and taxation to fetch professional knowledge.
- Develop a deeper understanding about various legal aspects of business, labor legislations and latest business trends.
- Apply various management theories to tackle business situations that focus on business and consumer needs.
- Technical knowledge and Experiential learning through field surveys/Projects and industrial visits inculcates research aptitude and job specific skills.
- Adaptable diverse careers in global management, administration and entrepreneurship.
- Blended learning with co-scholastic activities promotes leadership abilities, soft skills for effective decision making in organisations.
- Foster young minds that is sensitive to societal needs and issues by understanding personal ethics and resolving ethical dilemmas individually and in teams.
- The life skill and skill development courses accompanied with core curriculum enhances analytical skills, social responsibility and environmental consciousness.
- Personal transformation program and value education courses promotes values for good living in a challenging world.
- The holistic BBA program instils in the young minds to overcome the challenges and promote personal empowerment to evolve into responsible managers.

SPECIFIC OUTCOMES OF BBA PROGRAM

- PSO1: To apply foundational knowledge of functional areas of business for effective decision making.
- PSO2: To exhibit broad range of managerial capabilities, critical analytical thinking and effective communication.
- PSO3: To demonstrate specialized knowledge and competencies in the areas of concentration, growth risk bearing (finance, HR, and marketing) through effective analytical and problem-solving skills.
- PSO4: To contribute to the society ethically, legally, socially, and technically through distinguished seamless leadership skills.
- PSO5: To demonstrate conceptual and entrepreneurial skills, through projects, case studies, industrial visits, and personality development sessions.

COURSE OBJECTIVES AND OUTCOMES

SEM	COURSE CODE (WITH NO OF CREDITS)	COURSE NAME	COURSE OBJECTIVES	COURSE OUTCOMES

I	BBA 1101(4)	Principles of Management	• To enable the students to have an understanding on nature and principles of management. • To acquire knowledge on planning and how to make decisions through different forecasting techniques. • To understand different types of organizational structures and its importance in the organization. • To enable the students to understand concepts of controlling, directing and staffing.	CO1. Students will be able to assess the procedures in the organization. CO2. Students can apply the roles and responsibilities of an efficient manager in the organization. CO3.Students will have a thorough knowledge regarding the functioning of the management in every organization. CO4. Students can analyze the delegation of authority based on the organizational structures of different companies or organizations. CO5. Students will prioritize the importance of project management and the role of a project manager.
I	BBA 1201(4)	Financial Accounting	• To make the students understand the basic concepts and conventions of accounting. • To make the students understand the accounting practices adopted by various concerns. • To familiarize students on accounting practices adopted by profitable and non-profitable concerns	The students will be able to: CO1:Integrate fundamental concepts of accounting for decision making. CO2:Apply problem solving skills in drafting final accounts (assignments) CO3: Interpret information for exploring business opportunities. CO4: Apply problem solving skills in computation of final accounts of non-profit organizations (written assignments) CO5: Apply problem solving skills in identifying the profits ofsingle-entry concerns (written assignments)
I	BBA 1301(4)	Information Technology for Managers	• To understand the concepts and terminologies in information technology • To understand the role of IT in the organization • To know the different hardware devices and software systems • To review the technical aspects of telecommunication system and internet • To know the new technologies in the present modern organization	Students will be able to CO1: apply basic concepts of information systems at different organizational levels to evaluate the organizational activities. CO2: identify and classify the different computer hardware and software devices and their functions. CO3: execute the computer application skills at project work in order to meet the academic and organizational activities. CO4: demonstrate and monitor the functions of telecommunication systems and networks. (Presentations) CO5: evaluate the new techniques and applies the appropriate techniques to solve the organizational problems.

II	BBA 2101(4)	Managerial Economics	• To familiarize the students with basic economic concepts. • To make the students understand the various theories of economics that influence business decisions. • To identify the various theories of business cycles and how businesses are influenced.	The students will be able to: CO1: integrate micro economic concepts for business decision making. CO2: analyze demand for the products through various determinants (assignments, discussions) CO3: apply production theories for achieving profitable production targets CO4: identify distinguished pricing strategies in different markets (discussion forums) CO5: integrate effect of business cycles in operating activities (written assignments)
II	BBA 2201(4)	Business Environment	• To make the students understand different facets of business environment • To analyze the business environment and evaluate its various components • To understand the Indian Economy policies and challenges • To understand the role and responsibility of business towards the society • To acquire knowledge on present and future trends in the business world	Students will be able to CO1: analyze the impact of macro and micro business environmental factors in the business organization. CO2: describe the structure of Indian economy and economic policies that influence the business organization. CO3: demonstrate the impact of political institutions involvement in the for the development of business organizations. CO4: identify and recommend the role of ethical behavior and corporate social responsibilities of business organizations towards the society. (Role plays, Group Discussions) CO5: Specify the emerging trends in Indian business environment. (Presentations)
II	BBA 2301(4)	Business Mathematics and Statistics	• To provide the students with a mathematical basis for personal and business financial decisions through probability and matrices computation • To apply statistical representation of data and correlation methods in business decision making • To expose students to apply the statistical measures to indentify the needs of business and thereby take business decisions • To enable the students to present data in the most acceptable manner	CO1. Students will have a clear Idea regarding the concept of probability in business. CO2. Students will be able to use this knowledge for data collection purposes. CO3. Students will be able to apply various statistical techniques and decision making. CO4. Students will apply the concept of correlation and the different methods used in research when needed. CO5. Students will be able to analyze the data in pictorial form.

III	BBA 3101(4)	Marketing Management	• To gain knowledge on fundamental concepts of marketing • To understand the behavior of consumer • To acquire knowledge on various types of promotion • To understand emerging trends in marketing	CO1. Students will be able to estimate the importance of marketingfor any product and for any organization. CO2. Students will be able to analyze internal and external marketing environment in context to an organization. CO3. Students will be able to evaluate the importance of communication for the proper coordination among employees in an organization. CO4. Students will be able to analyze the factors that will influence the pricing strategies of a product in the market. CO5. Students will exhibit proper procedure to use the rights of being a consumer.
III	BBA 3201(4)	Human Resource Management	• To familiarize the students with the processes and mechanism of managing humanresources • To describe the Human Resource planning procedure • To know the different recruitment and selection techniques • To acquire the knowledge on compensation benefits provided by the organizations	Students will be able to CO1: explain the concept Human Resource Management and describe the competencies needed to become effective human resource manager to resolve the HR challenges. (Case Study) CO2: develop the human resource planning and identify how to information of job analysis is used in HR practices.(Role Play) CO3: outline the sources and techniques of recruitment and selection. CO4: describe the effective training and development programs and performance appraisal techniques that are currently employed in the organizations.(Group Discussions) CO5: conduct research work; prepare project reports in human resource practices.
III	BBA 3301(4)	Organizational Behaviour	• To understand the human interactions in an organization, find what is driving it and influence it for getting better results in attaining business goals • To describe how people behave in different situation in doing work within an organization • To understand why people behave in different way in doing their works in different situations • To predict future employee behaviour. • To influence and control employees behaviour, skill development, term effort and productivity.	CO1 Students will be able to comply with work culture. CO2 Students will have harmonious relations at work place by the learning of behavioral theories. CO3Students will handle the group behavior dynamically and implements the group decision techniques. CO4 Students will be able to handle organizational conflicts and manage the performance at the organization.(Role Play) CO5 Students will transform as successful leaders by the theories in their respective workplace.

IV	BBA 4101(4)	Business ethics and Corporate Governance	• To gain knowledge on basic concepts of business ethics and corporate governance • To enable the students to learn about the emerging trends in corporate governance • To incorporate knowledge on various theories of corporate governance • To inculcate knowledge on corporate social responsibility	CO1. Students will start valuing the importance of ethics in business. CO2. Students will be able to evaluate the organizations based on the knowledge of ethical organization. CO3. Students will be able to recognize the standards of the organizations based on the corporate social responsibility of the organization. CO4. Students will be able to relate the role of SEBI in corporate governance. CO5. Students will be able to analyze the corporate governance in every organization.
IV	BBA 4201(4)	Financial Management	• To make the students understand the need and relevance of financial management. • To expose the students to the fundamental aspects of finance. • To understand and estimate the various financial requirements of an organization. • To develop an understanding on the tools that are used for valuing investment proposals.	CO1: identify various sources of finance (observation study) CO2: analyse the short term and long-term financial needs of the organization. CO3: apply quantitative techniques for evaluating projects (problem solving and case analysis) CO4: analyse dividend theories for efficient dividend decisions (case analysis)
IV	BBA 4301(4)	Operations Management	• To provide an insight into operations management and its relation with other functional areas • To understand the concept of production planning and its significance • To find out different types of layouts and its features • To gain knowledge on the essentials of quality control and importance of TQM • To know the techniques of inventory control	The students will be able to: CO1: identify production system and functional areas of production (discussion forums) CO2: develop constructive production plans (case analysis) CO3: analyze and interpret key factors of efficient plant layout (industrial visits and observation study) CO4: identify and explore various quality control techniques (assignments) CO5: analyze the need for material handling.
V	BBA 5101(4)	Business Law	• To make the students understand the basic concepts of law. • To develop an understanding on the essentials of entering into a contract. • To develop an understanding on various acts that are prominent in business • To equip the students with various business laws and apply them in real life situations.	CO1 Students efficiently learns the concepts regarding laws of business. CO2 Students executes all the essentials of contract while entering a contract. CO3 Students will be able to differentiate between sale and agreement to sell. CO4 Students will enable the learners to focus on contract act and trade practices. CO5 Students will acquire knowledge on consumer protection act where they can imply whenever needed.

V	BBA 5201(4)	E-Commerce	• To familiarize the students with the concept of E-commerce and understand it's various applications • To understand the types of business models related to e-business • To know the methods and benefits of e-payment systems • To acquire the knowledge on current and future trends in on-line business • To equip the students with relevant practical knowledge	CO1: distinguish E-Commerce and E- Business and identify the different business models to gain practical knowledge to build E- Business models. CO2: review the security issues and procedures regarding e- payment transactions and suggestions to mitigate the threats. CO3: demonstrate and implement E- Business applications in their daily life. CO4: use ICT tools and the services of internet in the development of online education. CO5: explain the risk and security barriers in adoption of Mobile Commerce.
V	BBA 5301(4)	Taxation	• To enable the students to know the concept of Income Tax Act 1961. • To make the students familiar in understanding different tax concepts. • To understand the how income is assessed under the five heads. • To make the students understand the relevance and importance of income tax in real life.	Students will be able to CO1: apply conceptual skills of Income tax to come to reasoned conclusions in assessing residential status of an individual. CO2:identify various sources of income and compute Gross Total Income (written assignments) CO3: apply critical thinking skills in identifying possible deductions that reduces tax burden. CO4: apply problem solving skills to compute and assess incomes of an individual under various heads of income (assignments) CO5: compute the taxable income of an individual.
V	BBA -A1-5101(4)	Strategic Financial Management	• To familiarize students with financial management concepts with strategic perspective. • To understand various techniques of strategic financial management. • To apply financial management theories and techniques for strategic decision making. • To bring awareness on how strategic investments decisions have to be made under risk and uncertainties. • To understand and analyze the reasons for corporate failure and develop strategies to meet financial crisis	The students will be able to: CO1: analyse the importance of developing financial models strategically (discussion forums) CO2: apply quantitative methods for analysing risk to enhance investment decisions (case analysis) CO3: evaluate investments through capital rationing (assignments) CO4:critically analyse the impact of pre-merger and post-merger effect (case analysis) CO5: develop strategies to revive sick units(case analysis)

V	BBA -A2-5201(4)	International Finance	• To familiarize the students in understanding the structure, direction and growth of international finance and markets.	CO1: Inspect the Importance of international finance and International monetary systems CO2: Identify and recognize the of an overview of international capital & Money markets instruments. CO3: Express basic thoughtful of foreign exchange market and exchange rates. (Case studies) CO4: Shows that how to use foreign exchange derivatives and other techniques to manage foreign exchange exposures of firms. CO5: Categorize the range of hedging strategies including forward rate hedging and contingent hedging
V	BBA -A3-5301(4)	Project	• To enable the students to acquire knowledge about specialized areas in organization. • To familiarize the students with distinguished functions carried in the organization.	CO1: students will acquire the ability to make links across different areas of knowledge. CO2: Students will acquire the skills to communicate effectively and to present ideas clearly. CO3: Students will acquire collaboration skills through working in a team. CO4: Students will be able to identify on their own, reflect on their learning and take appropriate actions to improve it.
V	BBA -B1-5101(4)	Retail Management	• To make the students familiar with the concepts of retail management. • To manage the retail chains and understand the retail customer's behaviour • To have an overview of various retail formats and gain knowledge on emerging retail formats. • To gain knowledge on retail shop management and retailing decisions with respect to price, promotion and place.	Students will be able to CO1: acquire the knowledge on overview of global retailing and impact of Indian policies on retails. CO2: distinguish the differences between organized and unorganized retail formats. CO3: identify the retail decisions regarding price, locations and logistics. CO4: analyze and evaluate the behavior of retail shoppers. CO5: resolve the practical challenges and issues in Retail Management.
	BBA -B2-5201(4)	Advertising and Media Management	• To enlighten the students with the Concepts and Practical applications of advertising and brand management. • To Gain knowledge on various aspects of advertising and brand management. • To understand and develop strategies for advertising and brand positioning. • To formulate necessary budgets for advertising and analyze its effectiveness.	CO1. Students will be able to analyze the intention behind an advertisement. CO2. Students will be able to evaluate the different types of advertising appeals. CO3. Students will be aware of the role of media in marketing. CO4.Students will be able to compare the concept of brand building with the products in the market. CO5.Students can imply their knowledge in effective advertising concepts and agencies.

V	BBA -B3-5301(4)	Project	• To enable the students to acquire knowledge about specialized areas in organization. • To familiarize the students with distinguished functions carried in the organization.	CO1: students will acquire the ability to make links across different areas of knowledge. CO2: Students will acquire the skills to communicate effectively and to present ideas clearly. CO3: Students will acquire collaboration skills through working in a team. CO4: Students will be able to identify on their own, reflect on their learning and take appropriate actions to improve it.
V	BBA -C1-5101(4)	Labour legislation	• To inculcate the knowledge among students on labour legislations and its impact on labor and employer. • To gain knowledge about industrial jurisprudence. • To acquire knowledge on industrial disputes acts. • To acquire knowledge on labour welfare acts.	CO1.Students will be well informed regarding the provisions in an organization. CO2. Students will have anawareness regarding handling the issues of sexual harassment of women at workplace. CO3. Students will be able to compare and calculate the different maternity benefits in different organization. CO4. Students will be able to evaluate the redressal machinery for the settlement of industrial disputes in an organization. CO5.Students will be able to apply the knowledge regarding ILO and various conventions.
V	BBA -C2-5201(4)	Strategic Management	• To make the students learn theoretically about the various human resources strategies • To enable the student to have an understanding of concept of strategy and human resource environment. • To gain knowledge on strategic hr planning and how to implement in a strategic way • To have an understanding on high performance practices and negotiation skills.	CO1: Strategic management concepts will result in managing personnel CO2: Analytical skills regarding the policy making in strategic management process CO3: Develop the proactive nature in formulating and implementing the strategies (Case Study) CO4: Students indulge in systematic planning so as to achieve desired outcomes CO5: Identify the leadership nature in working phenomena
V	BBA -C3-5301(4)	Project	• To enable the students to acquire knowledge about specialized areas in organization. • To familiarize the students with distinguished functions carried in the organization.	CO1: students will acquire the ability to make links across different areas of knowledge. CO2: Students will acquire the skills to communicate effectively and to present ideas clearly. CO3: Students will acquire collaboration skills through working in a team. CO4: Students will be able to identify on their own, reflect on their learning and take appropriate actions to improve it.

VI	BBA 6101(4)	International Business	• To understand the current conceptual and theoretical models, issues, and concerns in international business administration • To be able to describe current practices, issues, and concerns in international business administration. • To be capacitated to apply current business practices to the management of international businesses. • To know the significant differences in business practices in different parts of the world and understand how these differences affect managing companies in various countries. • To understand various factors affecting the Foreign Exchange and various participants of Forex	CO1 Students will achieve analysis on both international business and domestic business. CO2 Students develops knowledge in international trade and the factors relating to foreign exchange remains supreme. CO3 Students will learn to execute the payment mechanisms and financing techniques in international trading. CO4 Students will be It will be fetched to apply all the global marketing strategies. CO5 Students gets creative in Branding for international market.
VI	BBA 6201(4)	Business Research Methodology	• To make the students understand the need and importance of research in business. • To familiarize the students in understanding the basics of research and identification of research problem • To expose the students in identifying and developing a research design. • To make the students understand the different forms of report writing and draft a report. • To expose the students in using different statistical tools for research	Students will be able to CO1: acquire the theoretical knowledge of research and distinguish the various kinds of social research methods. CO2: define the research problem for the development of working hypothesis to prove whether the hypothesis is accepted or rejected. CO3: describe the different sources of data collection, data analysis and can draft a report to meet the requirements of academic and organizational projects. CO4: appreciate and implement the various statistical and scaling techniques to interpret the research data. CO5: apply the comprehensive skills, knowledge and tools to resolve the real business situations.(Case study)
VI	BBA 6301	Medium and Small Enterprise Management	• To enable the students to acquire the awareness on various aspects of medium and small scale industries • To identify the importance of MSEs in the countries with economies in transition to ensure balanced regional development • To become aware of the barriers and challenges faced by MSEs • To develop the specific organization and management models for smart MSEs to generate new employment opportunities and to increase the income of the poor • To recognize the importance MSEs sector in contributing towards the growth of GDP	CO1: describe the Role of Government promoting small and medium enterprise. CO2: recognize the projects report preparation and location of units. CO3: outline the management functions in small and medium enterprises effectively implemented. CO4: compare the conditions, causes and remedial measures of sickness in small and medium enterprises. CO5: identify the problems and prospects of ancillary industries and rural industries. (case studies and exercises)

VI	BBA -A1-6101	Merchant Banking	• To enable the students to understand the functions of merchant banker. • Identify the pre issue and post issue activities and capital structure decisions	CO1: Identify and recognize the nature, scope and functions of merchant banker. CO2: Restate Financial Services management as an important and contemporary area of financial management. (Case studies and Exercises) CO3: Investigate the various financial services and their future. CO4: Predict the most suitable financial service Factoring. CO5: Examine the students get familiarized with Mutual Funds. How to invest the money in mutual funds.
VI	BBA -A2-6201	Investment and Portfolio Management	• To introduce students to the area of investment and portfolio management. • To be able to apply financial theory to issues faced by portfolio managers and investors in general. • To understand and analyse the element of risk associated with returns.	The students will be able to: CO1: analyse and interpret information related to investment instruments (case analysis) CO2: analyse different types of risks associated with returns (discussion forums) CO3: efficiently develop market hypothesis through fundamental, technicaland economical analysis (case analysis) CO4: strategically assess and evaluate investments and prioritize investments through application of portfolio theories CO5: apply CAPM techniques in pricing the risk of an asset (assignments)
VI	BBA -A3-6301	Project	• To enable the students to acquire knowledge about specialized areas in organization. • To familiarize the students with distinguished functions carried in the organization.	CO1: students will acquire the ability to make links across different areas of knowledge. CO2: Students will acquire the skills to communicate effectively and to present ideas clearly. CO3: Students will acquire collaboration skills through working in a team. CO4: Students will be able to identify on their own, reflect on their learning and take appropriate actions to improve it.
VI	BBA -B1-6101	Service Marketing	• To enlighten the students with the Concepts and Practical applications of Services • Marketing. • To bring awareness on market segmentation and service positioning and designing. • To lay down emphasis on service quality management, pricing and distribution of services. • To identify service deficiencies and lay suitable strategies for effective marketing	Students will be able to CO1: acquire the knowledge on concept of service marketing. CO2: predict the consumer behavior services and can design the effective service product. CO3: summarize and evaluate the key elements regarding total quality service marketing and pricing strategies. CO4: analyze how to manage and distribute the services in different market segmentations. CO5: apply the comprehensive skills and knowledge to solve consumer grievances related to services marketing

VI	BBA -B2-6201	Global Marketing	• To enlighten the students with the Concepts and Strategies of Global Marketing. • To understand the various factors that influence a business globally. • To Lay down emphasis on global perspectives of marketing and need of marketing research. • To lay emphasis on global marketing strategies and decisions	CO1. Students will be able to apply the conceptual knowledge to compare the global markets. CO2.Students can relate to how the segmentation process of global market is working. CO3.Students will be able to analyze the channels of distributions on a global mode. CO4.Students will be able to recognize the differences between the functioning of domestic and global markets. CO5.Students will be able to evaluate the intention behind global advertising.
VI	BBA -B3-6301	Project	• To enable the students to acquire knowledge about specialized areas in organization. • To familiarize the students with distinguished functions carried in the organization.	CO1: students will acquire the ability to make links across different areas of knowledge. CO2: Students will acquire the skills to communicate effectively and to present ideas clearly. CO3: Students will acquire collaboration skills through working in a team. CO4: Students will be able to identify on their own, reflect on their learning and take appropriate actions to improve it.
VI	BBA -C1-6101	Global Human Resource Management	• To enable thestudentsto learn about the concepts of global perspectives of human resource management. • T0 acquire knowledge on recruitment and selection with international perspective. • To gain knowledge on performance management in MNC'. • To understand the concept of training and development with international context. • To acquire knowledge on various concepts in international compensations.	CO1. Students will be able to apply the knowledge of global human resource management to view the benefits of different MNC's in the market. CO2. Students will be able to analyze different recruitment methods used in MNCs. CO3. Students will be able to identify different types of appraisals in MNCs. CO4. Students will have a broader opinion regarding the training process of expatriates. CO5. Students will be able to relate to what is a social security system which is followed across the countries.

VI	BBA -C2-6201	Industrial Relations	• To understand the concept of Industrial evaluation and progress of Industrial Relations • To acquire knowledge on manifestations of Industrial Disputes and settlement procedures • To gain insight into the functions of trade unions in different forms of industries • To gain knowledge on Participative Management applications in different countries • To understand the concept of collective bargaining and negotiation procedure	CO1: Develop the concept of industrial relations (Case Study) CO2: Awareness of industrial disputes and grievance redressal procedures in industries CO3: Identify the trade union system in organizational practices CO4: Discuss the participatory nature of working in domestic and global organizations (Case Study) CO5: Disputes resolving techniques are identified in their work place
VI	BBA -C3-6301	Project	• To enable the students to acquire knowledge about specialized areas in organization. • To familiarize the students with distinguished functions carried in the organization.	CO1: students will acquire the ability to make links across different areas of knowledge. CO2: Students will acquire the skills to communicate effectively and to present ideas clearly. CO3: Students will acquire collaboration skills through working in a team. CO4: Students will be able to identify on their own, reflect on their learning and take appropriate actions to improve it.

DEPARTMENT OF COMMERCE AND MANAGEMENT

B Com PROGRAM

B Com PROGRAM OUTCOMES

- Develop a strong understanding of core commerce enabled with computer courses in order to pursue higher education.
- Technical knowledge and Experiential learning through field surveys/projects and industrial visits inculcates research aptitude and job specific skills.
- Attain comprehensive and problem-solving skills in accounting, quantitative aptitude and taxation to fetch professional knowledge.
- Demonstrate managerial functions and identify geographical frontiers, financial necessities for promoting a broad range of business activities.
- Attain technical knowledge in specialized areas of computers to take up challenging career options in commerce and IT sector.
- Develop a deeper understanding about various legal aspects of business and related audit procedures.
- The life skill and skill development courses accompanied with core curriculum, enhances analytical skills, social responsibility and environmental consciousness.
- Personal transformation program and value education courses promotes values for good living in a challenging world.
- Apply conceptual accounting skills through Tally software for meeting accounting needs in the business.
- Adaptable diverse careers in administration and entrepreneurship.
- The holistic BCOM program instils in the young minds to overcome the challenges and build self-esteem to evolve into responsible citizens in the society.

SPECIFIC OUTCOMES OF B Com PROGRAM

PSO1: Students will gain thorough systematic and subject skills within various disciplines of commerce, accounting, economics, auditing and marketing. An ability to apply knowledge of commerce and Computer application using various programming constructs, Analyze to solve the problems. (Financial accounting, business organisation and management, Business Economics, Business Statistics, Auditing, Income Tax, E-commerce, Tally, programming with C, Database Management System, Web Technologies).

PSO2: An ability to apply the concepts of commerce and computer applications to the current techniques, skills and tools.

PSO3: Ability to work an individual project in auditing, financial accounting, economics, marketing etc.,

COURSE OBJECTIVES AND OUTCOMES

SEM	COURSE CODE (WITH NO OF CREDITS)	COURSE NAME	COURSE OBJECTIVES	COURSE OUTCOMES

I	COM 1101/ CO 1801(4)	Financial Accounting - I	To enable the students to- 1. Acquire fundamental knowledge of accounting principles. 2. Apply the principles of accounting to manage the accounts of firms.	CO1: recognize the events that which are needed for accounting records. CO2: acquires a knowledge on Preparation of financial statements in accordance with generally accepted accounting principles. CO3: To analyze financial data as well as the effects of differing financial accounting methods on the financial statements. CO4: Define the needs of the various users of accounting data and demonstrate the ability to communicate such data effectively, as well as the ability to provide knowledge recommendations. CO5: apply appropriate judgement derived from knowledge of accounting theory, to financial analysis and decision making.
I	COM 1201(4)	Business Economics	To enable the students to- - Understand the Macro and Micro Economic concepts for business decision making. - Apply Economic techniques.	CO 1: Inspect the concept of price and output decisions of firms under various market structures. CO 2: Investigate how demand of a product fluctuates depending on different factors and their elasticity. CO 3: Categorize the concept of cost, nature of production and its relationship to business applications. CO 4: Through workshops, students seminars it enables to relate economics particularly its applications and foster the development of their own skills in economic analysis. CO 5: Identify the role of WTO in International trade.
I	COM 1302(4)	Business Analytics	To enable a student to understand about Business Analytics process and data analysis, data management and latest applications.	CO1: Identify and recognize the Business Analytics Process and Business Analytics Life Cycle. CO2: Create & Design a Layout of data analysis using tabulation and cross tabulation. CO3: Outline and identify the practical aspects of the data analysis tools and testing hypothesis. CO4: Predict the business data management along with data extraction, data mining and data marts. CO5: Examine the SPSS package to calculate the data analysis in research works.

II	COM 2101(4)/CO 2801(4)	Financial Accounting - II	1. To acquire fundamental knowledge of accounting principles. 2. To apply the principles of accounting to manage the accounts of firms.	CO 1: recognize the concepts of depreciation, methods of depreciation and its calculations. CO2: identify the valuation of consignment stock with invoice price and cost price. CO 3: preparation of Joint venture account in the Joint ventures. CO 4: Preparation of statement of affairs under single entry system. CO5: preparation of receipts and payments accounts for non trading concerns
II	COM 2201(4)	Business Statistics	To enable the students to – 1. acquire knowledge of business statistics. 2. apply the principles of quantitative techniques in decision making. 3. apply information technology in Business World.	CO 1: Able to interpret the relevance of statistical findings for business problem solving and decision making. CO 2: Demonstrate the awareness of the benefits and pitfalls of empirical techniques. CO 3: Produce appropriate graphical and numerical descriptive statistics for different types of data. CO 4: Apply basic statistical processes using real business data, it includes linear regressions, time series analysis and index numbers. CO 5: Apply the procedures to analyse and make recommendations on a range of practical business problems.
II	COM 2302(3)	Computer Fundamentals and Photo-shop	To enable the students- 1. To know the fundamentals of computers 2. To acquire the skills of using Photoshop 3. To have a knowledge of editing images and Photoshop	• Bridge the fundamental concepts of computers with the present level of knowledge of the students. • Use basic selection tools and edge refinement to isolate and edit parts of an image. • Manipulate layers through ordering, positioning, scaling, rotation, and adjustments.
II	COM 2352(2)	Computer Fundamentals and Photo-shop Practical	To enable the students- To acquire the skills of using Photoshop To have a knowledge of editing images and Photoshop	• Use basic selection tools and edge refinement to isolate and edit parts of an image. • Manipulate layers through ordering, positioning, scaling, rotation, and adjustments.

III	COM 3101(4)	Corporate Accounting	To enable the students to- 1. Know the concepts accounting applications to various forms of organization 2. Understand the relevance and importance of the terms various corporate accounts 3. Apply the concepts to realize the practical implications especially through application of computer techniques in corporate in corporate accounts.	students will be able to CO 1: synthesize the knowledge of accounting standards. CO 2: impart knowledge about amalgamation, absorption and reconstruction of a company. CO 3: examine the advanced issues in accounting for assets, liabilities and owner's equity. CO 4: categorize accounting principles followed by different companies. CO 5: identify the significance of merging of two or more companies.
III	CO 3801(4)/COM 3201(4)	Business Organization and Management	The students will 1. Know the concepts in Business, industry, commerce, Trade and management . 2. Understand the relevance and importance of the terms in the broader context of industrialization. 3. Apply the concepts to realize the practical implications through visits to firms and organization.	CO1: Recognize the types of business organizations and functions of business, need of joint stock companies in the present scenario. CO2: identify the concept of plant, industry and optimum size of the firm. CO3: learn about Industrial policies and its significance. CO4: can identify the sources of finance for Industries and importance of Working capital and fixed capital. CO5: able to determine the Concept of management, planning and organizing.
III	COM 3302(4)	Enterprise Resource Planning	To enable a student to understand about: - Enterprise systems - Its functional modules. - Its implementation.	CO1: Outline and Identify the use of Enterprise software, and its role in integrating business functions CO2: Discuss the ERP Solutions and Functional Modules in an organization (case studies and exercises) CO3: Create & Design a Layout of the ERP implementation strategies. CO4: Investigate the business process and reengineering for successful ERP implementation. CO5: Identify the latest trends in Enterprise Resource Planning systems.
IV	COM 4101 (4)/CO 4801(4)	Business Law	The students will be able to - Know the concepts of statutory provisions that affect the business decisions. - Understand the relevance and importance of the terms in the broader context of Business Laws. - Apply the concepts to realize the practical implications especially through visits to firms and organizations which provide basic knowledge of business laws and their application to practical situations.	CO 1: impart students with the knowledge of fundamentals of company law and provisions of companies act 1956. CO 2: intends to provide a basic understanding of the mechanism of business contract with respect to contract act 1872. CO 3: Gives the basic elements of forming an enforceable contract and agreement. CO 4: impart knowledge of Sale of Goods act. CO 5: enlightens the students regarding the rights of consumers and different redressal committees.

IV	COM 4201(4)	Banking and Financial Services	The students will 1. Know the concepts of Banking and its activities. 2. Understand the relevance and importance of the terms in the broader context of industrialization. 3. Apply the concepts to realize the practical implications especially through visit to financial institutions.	CO1: Outline and identify the concepts of Banking and banking services. CO2: Examine the nationalization of banks and banking sector reforms (case studies and exercises) CO3: Prioritize the state financial institutions and central financial institutions & theirs services. CO4: Compare the growth and importance of primary & secondary markets. CO5: Recommended the credit appraisals of various forms of loans & advances.
IV	COM 4302(3)	Structured Programming through 'C'	To enable the students to: 1. To impart knowledge on the need of programming languages and problem solving techniques. 2. To develop programming skills using the fundamentals of C Language. 3. To enable effective usage of arrays, structures, functions, pointers and to implement the memory management concepts. 4. To teach the issues in file organization and the usage of file systems.	Upon successful completion of the course, a student will be able to: 1. Design flowchart, write algorithm parallel with control statements to understand flow of program execution. 2. Implement about the code reusability with the help of user defined functions and file handling mechanism that is essential in database management systems. 3. Develop skills in students to learn dynamic memory allocation using pointers and understand programming skills like Arrays, Strings, Structure and union.
IV	COM 4352(2)	Structured Programming through 'C' Practical	To enable the students to: • Learn a Programming language. • Learn Problem solving techniques. • Teach the student to write programs in C and to solve the problems.	After Completion of this course the student would be able to: • Develop the ability to analyze a problem, develop an algorithm to solve it. • Read, understand and trace the execution of programs written in C language. • Demonstrate the role of Functions involving the idea of modularity. • Implement Programs with pointers and arrays and perform operations using derived data types.
V	COM 5101(4)	Commercial Geography	1. To acquire knowledge about natural resources, their utilization and protection,challenges and opportunities from a commercial point of view. 2. To understand the impact on the Indian economy and measures to be implemented	CO1: Identify and recognize the natural resources, their utilization and Measures to be taken to protection activities related to the earth. CO2: Categorized the need of protection and conservation of different landforms(case studies) CO3: Examine the Agriculture and assess the major Problems and Prospects in agriculture sector. CO4: Outline and Identify the scope and content of Commercial Geography in relation to spatial distribution of agriculture, forest resources and industrial production CO5: Identify and recognize the role and importance of foreign trade.

V	CO 5801(4) /COM 5201(4)	Cost Accounting	To enable them to - To know the concepts of costing systems and cost control methods. - To understand the relevance and importance of the terms in the broader contest of costing systems in different firms. - To apply the concepts to gain an expert knowledge of costing systems and cost control methods and application by way of solving problems.	CO1:Learn basic concepts of Cost, Costing and its methods. CO2: students will able to prepare cost sheets. CO3: equip the knowledge the material issues and learn the levels of issue and pricing methods of materials like FIFO, LIFO etc. CO4: Recognize the calculation of wages and bonus under Halsey and Rowan's Plan. CO5: Learn to preparation of process accounts, preparation of marginal costing techniques and its implementation
V	CO 5802(4)/COM 5301(4)	Income Tax	1. Know the concept of Income Tax Act 1961 and also different tax concepts. 2. Understand the relevance and importance of income tax in real life. 3. Apply the tax laws to certain simple situations like helping working women with income tax calculations.	CO1: To develop an experience in identifying tax issues and applying the Income tax laws to arrive at reasoned solutions by identifying the Indian taxation system. CO2: To apply critical thinking and problem-solving skills to resolve Income Tax issues related to Income from salary and House Property. CO3: Applying the relevant laws to arrive at reasonable conclusions related to taxable income CO4: computation of taxable income of an individual. CO5: Post review and learning the students would be able to gain insight into Tax Administration, understand the roles and responsibilities of the Tax Authorities.
V	COM-C1-5301 (3)	DBMS	To enable the students to: • Understand the different issues involved in the design and implementation of a database system. • To understand and use data manipulation language to query, update, and manage a database.	Upon successful completion of the course, a student will be able to: • Develop and design database application and therefore enhance entrepreneurship skills. • Design entity relationship and convert entity relationship diagrams into RDBMS and formulate SQL queries on the respect data. • Design and implement a Database Schema for a given Problem-domain.
V	COM-C1-5351(2)	DBMS Practical	To enable the students to: • Describe the basics of SQL and construct queries using SQL. • Know query languages associated with relational models	After Completion of this course the student would be able to: • Design and implement a database schema for a given problem. • Design and implement queries using SQL.
V	COM-C2-5301 (3)	Web Technologies	• The main objective of the course is to expose the students to different web technologies and prepare them to design and develop and maintain a website. • Describe and explain the relationship among HTML, CSS, JavaScript and other web technologies. • Create and Publish advanced HTML pages with the help of frames and script languages and CSS.	Upon successful completion of the course, a student will be able to: • Evaluate interactive web pages using html and style sheets. • Analyze the concepts of HTML & WWW that make the web-based Applications. • Perform validations using JAVA Script.

V	COM-C2-5352 (2)	Web Technologies Practical	• The main objective of the course is to expose the students to different web technologies and prepare them to design and develop and maintain a website. • Describe and explain the relationship among HTML, CSS, JavaScript and other web technologies. • Create and Publish advanced HTML pages with the help of frames and script languages and CSS.	Upon successful completion of the course, a student will be able to: • Evaluate interactive web pages using html and style sheets. • Analyze the concepts of HTML & WWW that make the web-based Applications. • Perform validations using JAVA Script.
V	COM-SK-5101 (2)	Personal Finance	To enable a student to understand about investments, shares, security analysis and various investment alternatives & Risk on securities.	CO 1: Can identify the benefits of using personal finance planning techniques in managing your finances. CO 2: Will be benefited in investment diversification towards good and safe returns. CO 3: Be aware of risk and returns and can analyse.
VI	COM 6101(4)	Auditing	The students will be able to - Know the concept of audit in connection with firms, organization and companies. - Understand the relevance and importance of Audit in companies. - Apply the concepts to realize the practical implications especially through visits to companies.	CO1: The learning would inculcate a deeper understanding about audit procedures, vouching; the students would be able to differentiate between vouching and valuation in the context of auditing. CO2: The module would equip the students about internal controls, valuation of items in the financial statements, audit sample that would enable them to understand the impact of such measures in the accounting spheres and relate the same to the business world. CO3: Help the students to gauge the rights, remuneration, powers and duties of an Auditor and their significance in the business world and adherence to the business laws and statutes. CO4: Procedural steps involved in removal of an auditor in compliance to the laws based on the evidence. CO5: enhance the requirements of an True and Fair View Report as per the guidelines laid down by the Companies Act 2013
VI	COM 6201(4)	Marketing	The student will know 1. Know the concepts in Marketing, Product and selling concept. 2. Understand the relevance and importance of the terms in the broader context of Marketing, product management and Promotion.	CO1: Identify and recognize the marketing concepts and its evolution. CO2: Compare the marketing mix decisions and its role in business CO3: Contrast the consumer behavior and their decision making process (case studies) CO4: Categorized and analyze the product Design, Branding, Packaging and Labeling. CO5: Inspect the product Promotion and Distribution.

VI	COM 6301 (4)/CO 6801(4)	Management Accounting	The students will be able to - Know the concept of management accounting. - Understand the relevance and importance of the tools and techniques of management in decision making. - Apply the tools and techniques of decision making in management accounting.	CO1: identify the importance of management accounting and decision making. CO2: Analyzing the financial statements by using different types of analysis like horizontal, vertical and trend analysis. CO3: preparation of budgets and budgetary control. CO4: illustrating funds flow analysis, significance and preparation. CO5: illustrates the cash flow analysis, significance and preparation of cash flow analysis.
VI	COM-A1-6102(4)	Tally	Student will able to understand 1. Computerized accounting, creation of ledgers, vouchers by using Tally software . 2. The customization of reports by using Tally software.	CO 1:develop computer skills of recording financial transactions, preparation of annual accounts and reports using Tally. CO 2: illustrate the accounting transactions in computerized format and find the financial result of a concern. CO 3: apply the knowledge of quantitative tools and techniques in the interpretation of data for managerial decision-making. CO 4: interpret financial statements as well as evaluation of stock st the end. CO 5: Possesses required skill and can also be employed as Tally data entry operator.
VI	COM-A2-6102(4)	E-Commerce	Students will able to understand 1. The importance of electronic commerce and its models. 2. Use of electronic payment systems. 3. Infrastructure for electronic commerce	CO1: Outline and identify the foundations and importance of E-commerce. CO2: Examine the impact of E-commerce on business models and strategy (Case studies and exercise). CO3: Discuss the key features of Internet, Intranets and Extranets and explain how they relate to each other. CO4: Outline the infrastructure for E-commerce Internet Protocols and Multimedia delivery. CO5: Investigate the adequate knowledge about E-Commerce practices to buy and sell the products.
VI	COM-A3-6301(4)	Project	• To enable the students to acquire knowledge about specialized areas in organization. • To familiarize the students with distinguished functions carried in the organization.	CO1: Develop the project formulation and preparation of project report. CO2: Depict project evaluation methods. CO3: recognize the value of the project. CO4: Learn any specific technical skills required by their topic and apply them to the project work. CO5: Learn the relevant project related skills including oral and written communication and apply these in the project work.

VI	COM-SK-6102(2)	Accounting Software	• Students will able to understand the accounting software packages, applications of spreadsheet and different accounting procedures.	CO 1: Prepare accounting vouchers, ledgers and various reports CO 2: Get exposed in maintenance of inventory features. CO 3: Acquire reasonable hands on knowledge of accounting software. CO 4: Possesses the required skill set of working in M.S.Excel spreadsheet and use various formulas for calculation. CO 5: Prepare and reconcile bank statements, do accrual adjustments.

DEPARTMENT OF BIO CHEMISTRY

BSC PROGRAM WITH BIO CHEMISTRY

BSC PROGRAM OUTCOMES

The knowledge intensive and skill-oriented curriculum of BSc programme in the three major modeis designed and deployed in the CBCS pattern at SJCW(A) envisaging the following outcomes

- Comprehensive domain specific knowledge provides the necessary intellectual competencies to progress to higherlevels of learning and research
- Exhaustive laboratory training augments comprehension of theoretical principles and ignites scientific temper
- Experiential learning through internships/on the job training/surveys/field studies/live projects etc.ensures problem solving and job skills
- Thehard and soft skills acquired in the form ofLSRW/verbal/analytical/numerical/reasoning/programming/coding attributes, contribute to success in National and International level tests for admission and recruitment
- Individual and group projects and assignments kindle research aptitude
- Autodidactic learning tasks induce critical thinking and lead to optimal utilisation and creation of e resources on the net
- The mandatory life skills courses nurture ethical behaviour, social responsibility and environmental consciousness
- Leadershiptraining, entrepreneurship education courses hone leadership skills and groom entrepreneurial tendencies fostering future leaders and job providers
- Selective perusal ofpersonality developmentcourses and participation in extra andco-curricular activitiesensurephysical andpsychological fitness leading to personal empowerment and responsible citizenship
- The holistic BSc programme at SJCW(A), in toto, strengthens the strengths of the learners, weakens their weaknesses, helps them to overcome challenges and creates opportunities for them to evolve into socially responsive members of society

SPECIFIC OUTCOMES OF BSC PROGRAM WITH CHEMISTRY

PSOs : Students after graduating with Biochemistry as one of the core subjects will:

PSO 1: Be able to demonstrate basic knowledge in the core areas of Biochemistry (Human Physiology, Bio molecules, and Intermediary Metabolism Immunology etc).

PSO 2: Provide hands on experience in Qualitative and Quantitative analysis of Biomolecules and different types of assay methods

PSO 3: Enhance the ability among the students to do project and write the research papers

PSO 4: Be able to apply knowledge gained in biochemistry to environmental issues.

COURSE OBJECTIVES AND OUTCOMES

SEM	COURSE CODE (WITH NO OF CREDITS)	COURSE NAME	COURSE OBJECTIVES	COURSE OUTCOMES
I	BCH 1801 (3)	HUMAN PHYSIOLOGY	To enable students to-: • Correlate functional relationships between organ systems and understand homeostatic mechanisms. • Describe the distribution and composition of body fluids. • Classify people based on Blood groups. • Illustrate Blood coagulation mechanism. • Elucidate transfer of action potential in nerves and muscles.	Students will be able to • Gain enhanced knowledge on the normal functions of all the organ systems • Recognize the relative contribution of each organ system in the maintenance of the milieu of interior (homeostasis). • Correlate knowledge of physiology of human cardiovascular system, digestive system and excretory system to physiological responses • Explain the physiology of Nervous system, respiration and excretion • Illustrate integration of human systems

I	BCH1851 (2)	HUMAN PHYSIOLOGY PRACTICALS	To enable students to – • Identify characteristic features of various tissues by observing the mounted slides • Implement the gained knowledge in identifying unknown tissue specimens • Develop skills to assess biological parameter- temperature, Blood pressure, arterial pulse rate etc. • Well versed in determining blood grouping and percentage of Hemoglobin • Gain expertise in basics of enzyme assay	Student will be able to • Classify Proteins based on solubility, shape and behavior in solution with respect to salts • Describe and recognize amino acid structure, classification, physical and chemical properties • Explain the structure of peptide bond formation, and levels of protein structure. • Synthesize peptides and learn the protein sequencing method which has much importance in research field • State the central dogma of molecular biology; recognize the structure of nucleic acids compare and contrast -DNA and RNA
II	BCH 2801(3)	Biomolecules-1	To enable the students to- • Use various solvents, prepare different types of buffers based on need • Identify and classify carbohydrates based upon their properties. • Learn and interpret the various polysaccharides and mucopolysaccharides of nature • Identify lipids and understand their physiological role • Illustrate ways to analyze quality of lipids and appreciate their biological significance.	Students will be able to • Correlate the Physico - Chemical properties of Biomolecules to their structures • Compare and contrast the structure and functions of oligosaccharides and polysaccharides • Identify and establish the functional groups of Biomolecules such as Carbohydrates and Lipids • Differentiate between saturated, monounsaturated, polyunsaturated fatty acids. • Classify lipids and Illustrate their biological role
II	BCH 2851 (2)	Biochemistry Practical IB	To enable students to •Prepare and use buffers to suit needs •Analyze biomolecules - qualitative and quantitative techniques •Interpret the data and draw logical conclusions •Isolate and purify biomolecules using simplest of the procedures •Separate biomolecules using chromatographic techniques	Students will be able to • Able to Interpret Experimental / Investigative data • Isolate and characterize carbohydrates and lipids • Apply estimation techniques to analyze quality of lipids • Separate carbohydrate mixtures and identify unknown ones • Extract lipids from suitable sources
III	BCH 3801 (3)	Biomolecules- II	To enable students to : •Identify and classify amino acids based upon their properties. •Recognize the physical structure and biological importance of peptides and their synthesis. •Learn and interpret the various organizations of protein structure •Correlate knowledge on nucleic acids with their physiological role •Analyze quality of porphyrins and appreciate their biological significance.	Student will be able to • Classify Proteins based on solubility, shape and behavior in solution with respect to salts • Describe and recognize amino acid structure, classification, physical and chemical properties • Explain the structure of peptide bond formation, and levels of protein structure. • Synthesize peptides and learn the protein sequencing method which has much importance in research field • State the central dogma of molecular biology; recognize the structure of nucleic acids compare and contrast -DNA and RNA

III	BCH 3851 (2)	Biochemistry Practical IIA	To enable the students to- • Qualitatively and quantitatively analyze biomolecules • Determine the concentrations of amino acids and proteins • Determine pK value of amino acids and use it in proteins isolations • Estimate Nucleic acids and quantify DNA and RNA in a given mixture • Separate and identify amino acids in an unknown samples	The students will be able to • Develop hands on experience in estimation of proteins which is required in medical lab diagnostics • Learn usage of scientific instrument - pH meter in establishing Isoelectric point of unknown proteins • Estimate nucleic acids and distinguish DNA and RNA in biological specimens like forensics sciences • Well versed with chromatographic separation techniques- paper chromatography • Fractionate and estimate proteins in food samples
IV	BCH 4801 (2)	Enzymology	To enable the students to- • Comprehend basic concepts of enzymology • Evaluate enzyme kinetics and effects of inhibitors on rate of reaction • Recognize the importance of cofactors in biocatalytic reactions • Interpret and use enzyme purification techniques • Apply the knowledge in Industries and Clinical processes	The students will be able to • Describe the chemical nature of enzymes and use appropriate nomenclature • Correlate enzyme kinetics to recognize Enzyme action and binding site significance • Realize the significance of cofactors in, both Invivo and Invitro processes • Purify enzyme from any given biological source • Immobilize enzymes and recognize their importance in industrial to medical fields
IV	BCH 4851 (2)	Biochemistry Practical IIB	To enable the students to: • Learn basic concepts of enzyme assays • Identify the various factors that regulate enzyme catalysis • Optimize different physical and chemical parameters for getting maximum enzyme turnover rate • Determine affinity of substrate to active site for various enzymes • Isolate and assay enzymes from various sources and apply the knowledge of enzyme to Industrial and Clinical processes.	Students will be able to • Able to assay different types of Enzymes • Determine the activity of enzymes by varying physical and chemical variables • Establish the parameters that influence enzyme activity • Use enzyme kinetics to evaluate enzyme activities and their regulation • Assay Enzymes like phosphatases, amylases and ureases that are of industrial and clinical significance
V	BCH 5801 (3)	Intermediary Metabolism-I	To enable the students to: • Realize importance of Bioenergetic with respect to physiological processes • Prove how the cells extract and utilize energy through numerous enzyme-catalyzed reactions. • Sketch the entire carbohydrate metabolism and its energetics •nComprehend lipid metabolism and its role in human body maintenance • Identify reasons for inborn errors of metabolism of carbohydrates and lipids	Students will be able to • Identify major pathways of carbohydrate and lipid metabolism •: Quantify bioenergetics and elaborate physiological adaptations of plants and animals • Appreciate compartmentalization of major metabolic pathways • Emphasize the role of ATP coupled reactions • Discuss how disruptions can lead to diseases

V	BCH 5851 (2)	Biochemistry Practical IIIA	To enable the students to • Estimate important biomolecules in metabolism • Learn to identify critical biomolecules and assay them in physiological fluids • Understand how the biomolecules are utilized in the body • Analyze carbohydrates and lipids of physiological significance • Apply knowledge about the various metabolic processes to assay metabolites	Students will be able to • Comprehend the functioning metabolic pathways • Gain expertise in determination of reducing sugars which has importance in research and pharmaceutical industries • Handle with expertise scientific equipment • Estimate Phosphorus in biological fluids with accuracy and precision • Estimate lipids in biological samples which is of importance in medical labs
V	BCH 5802 (3)	Intermediary Metabolism II	To Enable students to: • Comprehend amino acid metabolism, and learn the process of urea formation • Explain Nucleic acid metabolism and interpret its usage in cancer therapy • Relate porphyrin metabolism to liver disorders • Realize the importance of Vitamins in physiological functions • Correlate physiological disorders with Nutritional deficiencies	Students will be able to • Define major pathways of amino acids, nucleic acid and porphyrin metabolisms • Implement feedback mechanism and inhibitor concepts in drug designing for cancer therapy • Be equipped with knowledge on vitamins, sources and functions • Enumerate energy requirements for various individuals based on age and determine the calorific value of different bio molecules like proteins, fats and carbohydrates • Identify and suggest diet for individuals suffering from protein energy malnutrition
V	BCH 5852 (2)	Biochemistry Practical IIIB	To enable students to- • Estimate the amount of toxic nitrogen compounds in urine samples • Estimate minerals in serum • Isolate nucleic acids from natural sources which has importance in molecular biology studies • Quantify intermediary metabolites of biological importance •Extract oils from plant sources and estimate their quantity	Students will be able to- • Skilled in Estimation of Urea and Uric acid which is requires in diseases like Gout and Uricemia • Estimate citric acid content in fruits • Isolate casein from milk and estimate its calcium content • Develop ability Extract lipids from various sources • Determine the degree of unsaturation in oils
VI	BCH-E1-6801 (3)	Immunology & Clinical Biochemistry	To enable students to • Be aware of the components of immune system and their role in immunity • Describe antigen- antibody reactions of clinical significance • Identify various methods of sample collection and storage • Evaluate biological fluids for enzymes in diseased states • Correlate levels of ions, enzymes and proteins for their role in disorders	Students will be able to- • Display enhanced knowledge on concepts of Immune system • Explain the diversity of antibodies at genetic level and understand the insights of hybridoma technology • Incorporate the concepts of clinical biochemistry for sample collection and storage • Interpret the role of clinically important enzymes in disease states • Utilize knowledge on disorders of carbohydrates, few proteins and lipids in disease diagnosis

VI	BCH-E1-6851 (2)	Biochemistry Practical IV	To enable the students to - • Develop competence in Immuno-techniques • Acquire concepts of quantification of antigens and antibodies • Conduct serum- antibody quantification methods • Determine activity of serum enzyme of clinical importance • Quantify aldoses and ketoses in urine samples	The students will be able to • Demonstrate the methods of immunization • Conduct antigen- antibody reactions based on desired sensitivity • Demonstrate precipitation reactions • Quantify variables in biological fluids •: Interpret diagnostic reports of metabolites to enzymes for clinical disorders
VI	BCH-E2-6801 (3)	Pharmaceutical Biochemistry	To enable the students to-- •Imbibe the concepts of biopharmaceutics •Reflect upon the role of receptor mediated drug absorption •Acquire insights into drug clearance and xenobiotics •Narrate role of anticancer drugs •Pronounce reasons for drug induced side effects	Students will be able to • Reflect upon concepts in biopharmaceutics and pharmacokinetics • Describe the process of drug absorption, distribution, metabolism and elimination • Design and evaluate dosage regimens • Identify potential drugs for cancer therapy. • Critically evaluate reasons for side effects of drugs
VI	BCH-E2-6851(2)	Biochemistry Practical IV	To enable the students to - • Develop competence in Immuno-techniques • Acquire concepts of quantification of antigens and antibodies • Conduct serum- antibody quantification methods • Determine activity of serum enzyme of clinical importance • Quantify aldoses and ketoses in urine samples	The students will be able to • Demonstrate the methods of immunization • Conduct antigen- antibody reactions based on desired sensitivity • Demonstrate precipitation reactions • Quantify variables in biological fluids •: Interpret diagnostic reports of metabolites to enzymes for clinical disorders
VI	BCH-E3-6801 (3)	Plant Biochemistry & Medicinal Plants	To enable the students to-- •Imbibe concepts of cell biology and plant physiology •Gain insights into biochemical and physiological processes in higher plants •Interpret the role of plant growth regulators •Classify role of secondary plant products •Summarize role of secondary metabolites in native medicinal therapies	Students will be able to • Comprehend different fundamental concepts related to plant cell organelles • Reflect upon the physiology of photosynthesis, respiration, plant hormone to stress physiology • Analyze the structure and functioning of various phytohormones • Classify secondary metabolites and develop methods to identify them • Appreciate the role of secondary metabolites in Ayurveda and native treatments
VI	BCH-E3-6851 (2)	Biochemistry Practical IV	To enable the students to - • Develop competence in Immuno-techniques • Acquire concepts of quantification of antigens and antibodies • Conduct serum- antibody quantification methods • Determine activity of serum enzyme of clinical importance • Quantify aldoses and ketoses in urine samples	The students will be able to • Demonstrate the methods of immunization • Conduct antigen- antibody reactions based on desired sensitivity • Demonstrate precipitation reactions • Quantify variables in biological fluids •: Interpret diagnostic reports of metabolites to enzymes for clinical disorders

VI	BCH-A1-6801 (3)	Introduction to Food Technology	To enable the students to- •Explore the evolution of food processing. •Imbibe knowledge on the structure, composition, nutritional quality and post harvest changes of various cereals, pulses, millets •Classify oils for their types and characteristics •Asses quality of meat, fish and poultry products and evaluate reasons for food spoilage •Highlight on processing of fruits and vegetables harvest; milk and milk products processing	The students will be able to • Gain exhaustive knowledge on food processing methods • Analyze oils to establish their composition • Gain insights on harvest and post harvest modifications in fruits and vegetables • Realize the importance of dairy and fishery industries • Apply relevant food processing techniques
VI	BCH-A1-6851 (2)	Biochemistry Practical IV A1	To enable students to •Understand estimation techniques of adulterants in foods. •Identify the contaminants in wide variety of foods •Analyze milk and milk products for adulterants •Conduct tests on confectioneries for adulterants •Determination of shelf life for flesh foods and vegetables	Students will be able to • Analyze the adulterants in food samples • Determine shelf life • Establish the presence of adulterants in milk • Identify post harvest changes in fruits and vegetables • Gain hands-on experience in sampling
VI	BCH-A2-6801 (3)	Food Processing & Engineering	To enable students to •Identify cold storage processing methods for foods •Recognize the role of dehydration on shelf life •Appreciate the importance of Food irradiation •Explore packaging methods •Correlate role of Thermal processing in preventing microbial contamination	The students will be able to • Comprehend food preservation methods • Identify dehydration methods for food samples •Well versed in methods of packaging •: Analyze upon food contaminants. •Describe principles of thermal processing
VI	BCH-A2-6851 (2)	Biochemistry Practical IV A2	To enable students to •Analyze available cold storage processing methods for foods •Assess shelf life of food items •Work upon food canning methods •Demonstrate osmotic dehydration of fruits and vegetables •Perform thermal processing of foods to prevent microbial contamination	Students will be able to • Use microwave processing of food • Perform freezing techniques. •Conduct dehydration process to improve shelf life of foods •Learn canning methods •Test packaged foods.
VI	BCH-A3-6801 (3)	Food Safety & Quality Management	To enable students to- •Analyze food hazards and learn the importance of food safety •Comprehend the impact of hazards and indicator organisms associated with food •Identify the importance food laws and food safety management systems •Recognize the quality attributes of food and dynamics associated with Agri-food management systems •Identify food additives and their limits of usage	The students will be able to • Evaluate quality of food and feed products • Use the concept of Process Quality Management to maintain food quality • Implement total quality management and Hazard Analysis Critical Control Point (HACCP) systems •Correlate role of risk analysis in the development of Food Safety Objectives (FSOs) • Discuss the Agri food management systems

VI	BCH-A3-6851 (2)	Biochemistry Practical IV A3	To enable students to- •Conduct procedures for identification of microbial contaminants in food •Assess water samples for Enterobacteriaceae members •Differentiate bacteria using IMViC tests •Conduct food sample analysis- qualitatively and quantitatively •Estimate pesticides and chemical residues in food	The students will be able to • Analyze food and water samples for microbial contamination • Estimate microbial contaminants in food, milk and water samples • Conduct survey for surface sanitation of various area and identify microbial count • Inspect pulses, cereals and spices for their quality • Estimate sulphur residues in beverages

DEPARTMENT OF BIO TECHNOLOGY

BSC PROGRAM WITH BIO TECHNOLOGY

BSC PROGRAM OUTCOMES

- **Comprehensive domain specific knowledge provides the necessary intellectual competencies to progress to higherlevels of learning and research**
- **Exhaustive laboratory training augments comprehension of theoretical principles and ignites scientific temper**
- **Experiential learning through internships/on the job training/surveys/field studies/live projects etc.ensures problem solving and job skills**
- **Thehard and soft skills acquired in the form ofLSRW/verbal/analytical/numerical/reasoning/programming/coding attributes, contribute to success in National and International level tests for admission and recruitment**
- **Individual and group projects and assignments kindle research aptitude**
- **Autodidactic learning tasks induce critical thinking and lead to optimal utilisation and creation of e resources on the net**
- **The mandatory life skills courses nurture ethical behaviour, social responsibility and environmental consciousness**
- **Leadershiptraining, entrepreneurship education courses hone leadership skills and groom entrepreneurial tendencies fostering future leaders and job providers**
- **Selective perusal ofpersonality developmentcourses and participation in extra andco-curricular activitiesensurephysical andpsychological fitness leading to personal empowerment and responsible citizenship**
- **The holistic BSc programme at SJCW(A), in toto, strengthens the strengths of the learners, weakens their weaknesses, helps them to overcome challenges and creates opportunities for them to evolve into socially responsive members of society.**

SPECIFIC OUTCOMES OF BSC PROGRAM WITH BIO TECHNOLOGY

PSOs : Students after graduating with Biotechnology as one of the core subjects will:

PSO 1: Proficient to exhibit basic knowledge in the core areas of biotechnology (cell biology and genetics, techniques in biotechnology, molecular biology, microbiology, genetic engineering, plant and animal biotechnology, industrial, medical agricultural and environmental biotechnology).

PSO 2: Be versatile in classical laboratory techniques, use instrumental methods for analysis as well as synthesis and follow standardized procedures and regulations in handling and disposal of biological samples.

PSO 3: Be able to access, explore and use the standard biology manuals and also able to be a constituent of the team.

PSO 4: Proficient in knowledge generation and gained logical approach in Biotech filed of General education courses.

COURSE OBJECTIVES AND OUTCOMES

SEM	COURSE CODE (WITH NO OF CREDITS)	COURSE NAME	COURSE OBJECTIVES	COURSE OUTCOMES

I	BTH 1701 (3)	CELL BIOLOGY, GENETICS & BIOSTATISTICS	To enable the students to – • Understand the scope of Biotechnology • Know the principles of microscopy • Understand the ultra structure of cells & cell division • Understand the applications of statistics in Biology	• CO1:.be acquainted with various types of microscopies and realizestheir importance in identification of microbial forms. • CO2: be familiar with the ultra-structure of microbial forms and complexity of cell wall structure. • CO3: differentiate between prokaryote & eukaryote. • CO4: Be acquaintance with classical genetics and evaluate the any deviated ratios of genetics. Identify the deviations from classical genetic ratios • CO5: Acquired the basic concepts on genetic recombination and sex determination. Also evaluate the available basic statistical methods and identify the suitable one
	BTH 1751 (2)	CELL BIOLOGY, GENETICS & BIOSTATISTICS	Students are enabled to • observe different microscopy • prepare different phases of mitosis and meiosis • be proficient in solving the problems in genetics. • appraise the problem in biostatistics.	• CO1:becompetent with different microscopy. • CO2: be capablein chromosome slide preparation and counting. • CO3: proficient in analyzing the heredity data with karyotyping. • CO4: be able to integrate statistical analysis to any kind of population studies.
II	BTH 2701 (3)	TECHNIQUES IN BIOTECHNOLOGY	To enable the students to – • Develop familiarity with important biochemical & biophysical techniques employed in characterization of various molecules.	• CO1: Be differentiate the properties of a light radiation with reference to Beer's law and Lambert's law. • CO2: Proficient to characterize the molecules with regard to their size, shape and interaction with other molecules. • CO3: Able to confer the quantitative/qualitative evaluation of the molecules in accord to their charge/mass ratio. • CO4: Acquire the proficiency on radio labeled compounds. • CO5: Be granted to separate the compounds with the available methods in centrifugation.
	BTH 2751 (2)	TECHNIQUES IN BIOTECHNOLOGY	To enable the students to – • To acquire the knowledge in techniques & instrumental handling in biotechnology.	• CO1: Attain knowledge in quantitative estimation of biomolecules. • CO2: Be proficient in separation of molecules with regard to their physico-chemicalcriterion. • CO3: Be skillful in osmosis, for concentrated molecules.

III	BTH 3701 (3)	MOLECULAR BIOLOGY	To empower the students • To understand the organization and function of DNA and RNA at molecular level. • To comprehend the concepts of gene expression and regulation of gene expression. • To understand the molecular basis of mutations.	• CO1: Be proficient at structure and functions of nucleic acids with regard to double helical model of DNA. • CO2: Acquainted with the ultrastructure of nucleus and its organization. • CO3: Be expertise in DNA replication & repair, transcription, translation and gene expression (Operon concepts) of both prokaryotes and eukaryotes. • CO4: Acquire a knowledge on various mutations and selection with reference to genetic variation.
	BTH 3751(2)	MOLECULAR BIOLOGY	To enable the students to – • Gain skills necessary for study of molecular biology.	• CO1: get hands on experience with isolation of different nucleic acid sources. • CO2: Be expert in quantification of nucleic acids • CO3: Familiar with Polymerase Chain Reaction (PCR).
IV	BTH 4701 (3)	MICROBIOLOGY	To enable the students to • Comprehend the diversity of microorganisms. • Know the technique of culturing and studying Microorganisms. • be aware of the applications of microbiology. • Understand the organization, replication and economic importance of viruses.	• CO1: Be consciousness in microbial world & expertise in Ultra structure and physiology. • CO2: Be skillful in bio-safety guidelines. • CO3: Be approved in characterization of microbial forms with the available methods. • CO4: Endowed in evaluating the microbial growth kinetics. • CO5: bolster about viruses and bacteriophages.
	BTH 4751 (2)	MICROBIOLOGY	To enable the students acquire skills necessary to – • handle equipment needed for study of microorganisms • culture microbial study. • identify the staining techniques.	• CO1: Get hands on experience on bio-safety instruments • CO2: Be proactive at characterization of microbes. • CO3: Be strengthened in assessing the various food & water samples.
	BTH 5701 (3)	GENETIC ENGINEERING	To enable the students to – • Learn enzymes used in recombinant DNA technology • Understand the usage of cloning vectors • Know various gene transfer techniques in r-DNA technology. • Understand the concepts of blotting techniques, DNA fingerprinting, DNA sequencing methods.	• CO1: Accustomed with the tools and techniques of genetic engineering molecular cloning and expression vectors. • CO2: conversant with ligation, restriction and digestion of various genetic materials. • CO3: Be knowledgeable in manipulating the genetic material at productive modes. • CO4: Validate the genetic material's authenticity in various fields with the available techniques. • CO5: Proficient in variety of bioinformatic tools to analyze the available data.

V	BTH 5751 (2)	GENETIC ENGINEERING	• To enable the students to learn the techniques of Genetic engineering	• CO1: Accomplish the compatible molecules with the available genetic engineering tools. • CO2: Be able to convergence of two different source genetic materials. • CO3: Be attentive on reliability of molecular tools • CO4: Get awareness on production of consistent copy numbers of genetic material. • CO5: Be able to spot factual evidences in parenthood disagreement and as well as in crime situation.
	BTH 5702 (3)	PLANT & ANIMAL BIOTECHNOLOGY	To enable the students to – • acquire knowledge about Plant tissue culture its uses and techniques involved in tissue culture • Learn animal biotechnology which includes artificial insemination, in vitro fertilization and embryo transfer.	• CO1: Capable to identify the economized protocols for both the classical & hybrid varieties, with the available tissue culture concepts. • CO2: Acquaint in generating the virus free stocks, flexible to current agriculture practice. • CO3: Be abundant in producing transgenic plants • CO4: Able to evaluate animal culture media constituents and their role to manufacture the desired products • CO5: Familiarize with In-vitro fertilization with regard to transgenic animal production.
	BTH 5752 (2)	PLANT & ANIMAL BIOTECHNOLOGY	• To acquire the techniques and inoculation methods in plant tissue culture	• CO1: Be expertise in formulating the concentrations of tissue culture media constituents • CO2: Capable to identify the economized protocols for both the classical & hybrid varieties, with the available tissue culture concepts. • CO3: Able to breed the haploid cultivars and enhance vegetative propagation, Virus free stocks, flexible to current agriculture practice.
VI	BTH 6701 (3)	INDUSTRIAL, MEDICAL, AGRICULTURAL & ENVIRONMENTALBIOTECHNOLOGY	To enable the students to - • Understand the role of biotechnology in industries. • Know the use of microbes in the preparations of food and dairy product. • Understand the role of biotechnology in the environment such bioremediation.	• CO1: Get the insight about the function and organization of industry. • CO2: Be trained for industrial solvents production, with acquired basic design & fermenter operation. Also skilful in verification of protocols for dairy. • CO3: Be proficient on health care products. Also be familiarized in generation and protection of patents, copyrights and trademarks. • CO4: Be apprise the importance of enhancing the green and clean environment. • CO5: Be familiarize with microbial action on crop productivity.

	BTH 6751 (2)	INDUSTRIAL, MEDICAL, AGRICULTURAL & ENVIRONMENTALBIOTECHNOLOGY	• To enable the student to apply the different principles of Biotechnology in the preparation of different industrial products	• CO1: Get hands-on training to produce industrial beverages on a productive scale. • CO2: Proficient in checking the quality of industrial beverages and water. • CO3: Expertise in the area of soil fertility and known about plant-microbe interactions.

DEPARTMENT OF BOTANY

BSC PROGRAM WITH BOTANY

BSC PROGRAM OUTCOMES

The knowledge intensive and skill-oriented curriculum of BSc programme in the three major modeis designed and deployed in the CBCS pattern at SJCW(A) envisaging the following outcomes

- Comprehensive domain specific knowledge provides the necessary intellectual competencies to progress to higherlevels of learning and research
- Exhaustive laboratory training augments comprehension of theoretical principles and ignites scientific temper
- Experiential learning through internships/on the job training/surveys/field studies/live projects etc.ensures problem solving and job skills
- Thehard and soft skills acquired in the form ofLSRW/verbal/analytical/numerical/reasoning/programming/coding attributes, contribute to success in National and International level tests for admission and recruitment
- Individual and group projects and assignments kindle research aptitude
- Autodidactic learning tasks induce critical thinking and lead to optimal utilisation and creation of e resources on the net
- The mandatory life skills courses nurture ethical behaviour, social responsibility and environmental consciousness
- Leadershiptraining, entrepreneurship education courses hone leadership skills and groom entrepreneurial tendencies fostering future leaders and job providers
- Selective perusal ofpersonality developmentcourses and participation in extra andco-curricular activitiesensurephysical andpsychological fitness leading to personal empowerment and responsible citizenship
- The holistic BSc programme at SJCW(A), in toto, strengthens the strengths of the learners, weakens their weaknesses, helps them to overcome challenges and creates opportunities for them to evolve into socially responsive members of society

SPECIFIC OUTCOMES OF BSC PROGRAM WITH BOTANY

- Be able to demonstrate basic knowledge in the core areas of Botany (Plant Diversity I, II, III, Plant Physiology & Metabolism, Cell Biology, Genetics & Plant Breeding, Ecology & Phytogeography, Biological Instrumentation, Plant Tissue Culture& its BiotechnologicalApplications and Mushroom Cultivation Technology)

- Be versatile in classical laboratory techniques, use instrumental methods for analysis and follow standardised procedures and regulations in handling and disposal of biological and chemical materials.

- Be able to access and use the botanical literature and also able to work singly as well as in team.

- Be able to integrate knowledge gained in Botany to General education courses.

COURSE OBJECTIVES AND OUTCOMES

SEM	COURSE CODE (WITH NO OF CREDITS)	COURSE NAME	COURSE OBJECTIVES	COURSE OUTCOMES
I	B 1101 (3)	PLANT DIVERSITY - I	To enable the students to – • Understand importance of prokaryotes • Classify and Understand the systematic position of the different groups namely Viruses, Bacteria, Algae, Fungi & Lichens. • Realize the economic importance of Algae and fungi and Bacteria. • Understand the symbiotic association of Algae & fungi by study of lichens and their economic importance. • Identify and understand the disease cycle of some of the important plant disease and their control measures.	• Develop skills in microscopic methods • Identify microbial diversity • Compare and contrast various Algal, Fungal divisions. • Realize the economic importance of algae, Fungi and Lichens. • Study and grow different algae in the local ecosystems • identify and nurture the local vegetation to protect them from the plant diseases

I	B 1151 (2)	PLANT DIVERSITY-1 MICROBIAL DIVERSITY, ALGAE, FUNGI &PLANT PATHOLOGY) PRACTICAL – I A	To enable the students to – • Acquire the skills on laboratory techniques • Identify and distinguish between the different types of algal, fungal & prokaryotic species included in the syllabus. • Identify some important plant diseases through their symptoms.	•Learn basics of biosafety and good lab practices like safe chemical handling, Hazardous waste disposal •Learn about the principles of various basic and advanced microscopic techniques •Advanced learning of Algae, Fungi specimens under Microscope withhands on experience. •Familiarize with the external and internal structure of lower group organism. • Identify plant diseases and prevent them.
II	B 2101 (3)	PLANT DIVERSITY – II DIVERSITY OF ARCHIGONIATES & PLANT ANATOMY	To be able to • Know the systematic position of two cryptogamic groups and their classification •Understand the life history of bryophyta and pteridophyte through the study of representative types • Asses the phylogenetic aspects of two groups • Get an insight into geological timescale • Understand the plant anatomy like tissue, tissue systems in the plant body	•: compare and contrast various Bryophytes and pteridophytes. •: Study and impart knowledge on the occurrence, distribution, structure and life history of lower •plants such as a, Bryophytes, Pteridophytes, gymnosperms and wood yielding plants. •Classify and characterize, ultra- structure of Bryophytes, Pteridophytes and Gymnosperms •Comprehend Fossilization and types of fossils, Bennettitales general account. •CO5: Realize geological time scale process. •CO6: Familiarized to enlist some common wood yielding Plants of India.
II	B 2151 (2)	PLANT DIVERSITY - II PRACTICLE	•Acquire and practice the laboratory techniques of section cutting, slide preparation etc. for the study of Bryophyta, Pteridophyta & Gymnosperms. •Understand the aspects of structure and reproduction of representative forms •Identify the specimens and slides related to structure and reproduction of representative forms. •Make suitable preparations / handmade slides in the laboratory for the study of the anatomy of the plant organs. •Learn the double staining technique.	•Use basic and advanced microscopy methods. •Gain hands on experience in preparing slides of Bryophytes, Pteridophytes and Anatomy •Comprehend the external and internal structure of Bryophytes, Pteridophytes and Wood yielding plants. •Perform the double staining technique. •Adopt survey techniques to identify and evaluate the values of different timbers available locally.

III	**B 3101 (3)**	**PLANT DIVERSITY – III ANGIOSPERMS TAXONOMY & EMBRYOLOGY**	**•Understand the modern trends in Plant taxonomy •Realize the diversity of families of angiosperms especially locally available species. •Understand various aspects of embryology of Plants**	**•Apply principles of Taxonomy and recognize the modern trends in classifying plants •Gains the skills to become a Herbarium technician. •Become a member in BSI and establish Botanical gardens. •Apply different types of classification based on natural and evolutionary tendencies. •Acquires the skills to compare and contrast Embryology of Dicots and Monocots.**
III	**B 3151 (2)**	**PLANT DIVERSITY – III Angiosperms – Taxonomy & Embryology PRACTICAL – II A**	· Understand the angiosperm plant diversity • Identify the different stages in reproduction to leading to seed formation in angiosperms	**•Study the structure of plant cell through temporary mounts and cell organelles through Microphotographs •Gain the skills in identifying the different stages of Mitosis, Meiosis and karyotypeby squash preparations of Onion roots and flower buds. •Estimate DNA by Colorimetric method using diphenylamine •Analise and solve Numerical problems in Genetics •Obtain Field skills to perform Emasculation and Hybridization methods in Plant Breeding.**
IV	**B 4101(3)**	**PLANT PHYSIOLOGY & METABOLISM**	•Understand the physical aspects of plant physiology. •Recognize the metabolic processes in plants. •Get an insight into growth and developmental aspects of plants.	**•Realize the importance of mineral nutrition and various metabolic processes of plant.. •Comprehend the importance of solar energy to the process of Photosynthesis, •Recognize stress tolerance mechanism adapted by plants and develop resistance to stress. •Recognize the importance of Plant Growth hormones in various organic and chemical industries.**
IV	**B 4151 (2)**	**PLANT PHYSIOLOGY & METABOLISMPRACTICAL**	**•Perform experiments, record observations, analyze the results and draw logical conclusions of different physiological processes. •Apply the experimental technique related to plant metabolism, growth & development.**	**• Be skilled in handling instruments. •: Recognize the significance of plant metabolism through experimentation and observation •3: apply techniques of plant physiology in research. •: Identify the importance of phyto - hormones in various industries.**

V	B 5101(3)	CELL BIOLOGY, GENETICS & PLANT BREEDING	•Understand the ultra structure of plant cell, nucleus, chromosomes •and cell division. •comprehend the basic principles of heredity •Acquire the knowledge on the intricacies of molecular biology. •Be equipped with concepts, methods and recent trends of Plant Breeding	•understand the life on earth and the unit of cell and its Divisions. •Acquire an insight of molecular biology •compare and contrast the genetically different variations in daily life forms. •comprehend different concepts, methods and recent trends of plant breeding •Acquire practical knowledge to understand the principles and techniques of plant breeding.
V	B 5151(2)	CELL BIOLOGY, GENETICS & PLANT BREEDING PRACTICAL	•Gain the Knowledge on the cytochemical methods of fixation and nuclear staining. •Make suitable cytological preparations for study of mitosis, meiosis and karyotype. •Understand and solve the problems in genetics. •Apply principles and techniques of Plant Breeding	•Study the structure of plant cell through temporary mounts and cell organelles through Microphotographs •Becomes a skilled person in identifying the different stages of Mitosis, Meiosis and karyotype by squash preparations of Onion roots and flower buds. •Able to conduct Colorimetric estimation of DNA by diphenylamine method. •Skilled to solve Numerical problems in Genetics •Demonstrate Field skills to perform Emasculation and Hybridization methods in Plant Breeding.
V	B 5102(3)	Plant ECOLOGY & PHYTOGEOGRAPHY	•understand basic concepts of Ecology and environment. •Identify the morphological, anatomical and physiological responses of plants to the environmental factors. •Comprehend the importance of community ecology and ecological succession. •know the significance of Phytogeography and understand the phtogeographical regions of India	•Deploy Eco-friendly farming techniques with enhanced productivity. •Develop Skills in ecological instrumentation which provide employability in weather forecasting. •Analyze Qualitative and Quantitatively the plant communities to acquire jobs as Vegetation surveyors. •Application of Biodiversity conservation methods provide opportunities as conservationists or work with NGOs and International Organizations. •Conservation of genetic resources help to establish local Seed Banks for sustainable agriculture practices and prevents genetic erosion.
V	B 5152 (2)	Plant ECOLOGY & PHYTOGEOGRAPHY Practical	•learn the quantitative aspects of a plant community by quadrat method •study various aspects of plant communities. •Acquire skills to identify the Phytogeography and biodiversity of the different regions	•Skilled in ecological instrumentation which provide employability in weather •forecasting. •Apply Soil testing methods to determine soil fertility •Conduct Field study of plant communities helps students to acquire skills as Vegetation

VI	B- E1-6102 (3)	ANATOMY, NURSERY, GARDENING AND FLORICULTURE	•Understand the tissues, tissue system in plant body and the anatomy. •Know the wood structure and the features of some local timber yielding plants •Gain knowledge in Nursery management, Gardening and Landscaping methods •Learn methods of propagation and Bonsai technique •Know different types of plants and understand cultivation and harvest practices of flowering crops	•Identify, compare and contrast histological organization of various plant tissues •Realize secondary growth and commercial value of timber yielding plants •Trained in Nursery management, land scape design and lawn making and training in Nursery management, Apply plant propagation methods and Bonsai technique •Undertake cultivation of commercial Floriculture crops, production and marketing •of cut flowers.
VI	B -E1-6152 (2)	ANATOMY, NURSERY, GARDENING AND FLORICULTURE PRACTICLE	•Prepare slides in the laboratory for the study of the anatomy of the plant organs. •Identify important timbers •Develop practical skills in various propagation methods •Design gardens and land scapes •Understand cultivation methods of important Flower crops	•Identify various plant tissues and secondary growth patterns through microscopic studies. •Develop skills in techniques of plant propagation •Design garden layouts •Acquire skills in Land scape design and lawn making. •Apply methods of cultivation of important Floriculture crops
VI	B-E2-6101(3)	PLANT DIVERSITY AND HUMAN WELFARE	•Acquire knowledge in Agrobiodiversity •Get insight into management of Biodiversity •Learn Environmental Impact Assessment on Plant Biodiversity loss •Understand approaches to Crop and Biodiversity conservation •Recognize role of plants in Human welfare	•Apply knowledge of species diversity for livelihood options •Explore methods to conserve Biodiversity in association with National and International organizations. •Conduct Environmental Impact Assessment on local plant diversity •CO4: Enumerate local wild and exotic species and create awareness on sustainable development goals •CO5: Realize the economic importance of plants for human welfare.
VI	B-E2-6151(2)	PLANT DIVERSITY AND HUMAN WELFARE PRACTICLE	•Study diversity of plants •Understand preservation methods of different varieties of fruits •Learn disposal of solid and liquid waste	•Identify and enumerate local plant diversity •Establish a small-scale canning centre •Conduct survey on forest vegetation •Develop skills in safe disposal of biodegradable and non- biodegradable waste

VI	B-A1-6101 (3)	**BIOLOGICAL INSTRUMENTATION AND METHODOLOGY**	**•Understand the Principles of microscopy •Comprehend the structure and functioning of various biological instruments •Be familiar with various biochemical analytical methods**	**•Microscopy and other imaging techniques provide employability as medical lab otechnicians. •Experience in instrumentation Techniques of centrifugation, Sonication, freeze drying and Spectrophotometry enables students to take up positions in Industrial Research & Development. •Skills in Chromatographic techniques help in Drug discovery and Drug design. •Biological Instrumentation skills fetch jobs in Quality & Control Departments of many Food Industries. •Art of Scientific writing enables students to publish their project work**
VI	**B A1 6151(2)**	**BIOLOGICAL INSTRUMENTATION AND METHODOLOGY PRACTICAL**	**• apply the techniques of instrumentation. •observe the instrumentation in industry and research • learn the skills in microscopy and scientific writings.**	**•Microscopy and other imaging techniques provide employability as medical lab technicians. •Experience in instrumentation Techniques of centrifugation, Sonication, freeze drying and Spectrophotometry enables students to take up positions in Industrial Research &Development. •Skills in Chromatographic techniques help in Drug discovery and Drug design. •Biological Instrumentation skills fetch jobs in Quality & Control Departments of many Food Industries.**
VI	**B A2 6101**	**PLANT TISSUE CULTURE AND ITS BIOTECHNOLOGICAL APPLICATIONS**	**•Understand the basic principles of plant tissue culture •Comprehend the applicability of the methods in biotechnology •Get an insight into Recombinant DNA technology and Methods of gene transfer. •Recognize the applications of Biotechnology**	**•Able to develop tissue and organ cultures •Skilled in secondary metabolite production which provides industrial employability opportunities •Apply Genetic engineering techniques to produce genetically tailored •desirable crops •Gain knowledge in Gene transfer techniques useful for Biotechnological Research and development •skilled to improve agronomic traits and produce improved Horticultural crops**
VI	**B A2 6151(2)**	**PLANT TISSUE CULTURE &PLANT BIOTECHNOLOGY PRACTICLE**	**•Understand the basic principles of plant tissue culture •Understand the methods in biotechnology •Get an insight into Recombinant DNA technology and Methods of gene transfer. •Recognize the applications of Biotechnology**	**•Acquire skills in various methods of tissue culture •Apply electroporation, microinjection, and micro projectile techniques to produce Transgenic plants. •Gain skills to produce GM Crops through Genetic Engineering methods •Isolate Plasmid DNA**

VI	B-A3-6101	MEDICINAL BOTANY & PHARMACOGNOCY	•Understand the importance of Medicinal plants in primary health care •Understand the role of medicinal plants in modern medicine •Learn different systems of traditional medicine •Get an insight into identify drug adultration and methods of drug evaluation •Gain knowledge about the production and applications of secondary metabolites	•skilled in identification of Medicinal Plants •understand the role of Modern and traditional medicine •infused with the knowledge of drug adulteration •skilled in applying the evaluation methods in locally available drugs. •skilled in isolation methods of drugs from secondary metabolites.
VI	B-A3-6151 (2)	MEDICINAL BOTANY & PHARMACOGNOCY	•Identify various locally available medicinal plants •Test unorganized drugs •Identification of plant drugs of different sources •Gain hands on experience in using instruments used in drug extraction	•To become more vigilant in identifying the locally available medicinal plants. •To become skilled in testing the unorganized drugs. •The sources of plant drugs are identified. •To grow the locally available medicinal plants.
VI	B-B1-6101 (3)	HORTICULTURE PRACTICES & POST HARVEST TECHNOLOGY	Gain knowledge in Horticultural methods •Know the importance and nutritive value of Horticultural crops •Learn methods of propagation •Be able to identify different types of fruit and vegetable plants •Understand cultivation and post-harvest practices of Horticultural crops	•Identify different types of Horticulture plants •Demonstrate the skills of vegetative propagation techniques •Design garden layout •Master in techniques of post- harvest handling of Horticultural produce •Prepare biofertilizers and apply phytohormones
VI	B-BI-6151(2)	HORTICULTURE PRACTICES & POST HARVEST TECHNOLOGY PRACTICLE	Develop practical skills in various propagation methods •Design Orchards and Nutritional gardens •Identify different plants of Horticultural importance •Understand cultivation methods of important fruit and vegetable crops	•Develop skills in vegetative propagation methods •Become expertise in identifying different types of Horticultural plants •Acquire skills to design layout of orchards and vegetable gardens •Demonstrate skills to enhance post- harvest quality
VI	B-B2-6101(3)	ORGANIC FARMING AND SUSTAINABLE AGRICULTURE	•Understand principles of organic farming •Gain knowledge about Propagation methods and water management •Learn preparation of Organic manures and Green manuring • Understand pesticide and weed management • Develop skills of organic crop production and its marketing strategies	•Realize need, principles, types and requirement for organic farming •Develop skills in plant propagation techniques •Prepare and apply organic manures and biofertilizers. •Comprehend weed management •Demonstrate skills in organic crop production, farm economics and commerce.
VI	B-B2-6151(2)	ORGANIC FARMING AND SUSTAINABLE AGRICULTURE PRACTICLE	•Study pest control methods •Understand nutrient deficiency symptoms •Learn composting methods •Gain skills in methods of green manuring	•Apply pesticides judiciously for crop protection •Compare and contrast deficiency symptoms of nutrients •Prepare and apply organic manures and biofertilizers. •Improve soil fertility
VI	B- B3 6101 (3)	MUSHROOM CULTURE AND TECHNOLOGY	•Understand the importance of mushroom cultivation •Develop knowledge in various methods in mushroom cultivation •Recognize the nutrition value of mushrooms. •Learn different storage and food preparation methods	•Identify edible mushrooms and realize their nutritional value. •Apply various methods in mushroom cultivation •skilled to prepare mother spawn •Prepare Mushroom bed and preserve them •Gain skills in the preparation of different types of foods with mushrooms

VI	B B3 6151(2)	MUSHROOM CULTURE AND TECHNOLOGY PRACTICLE	•Know various types of Mushrooms. •Develop skills in spawn preparation •Recognize the techniques behind the postharvest handling and packing	•CO1: Observe anatomical features of different mushroom Species at microscopic level • prepare Compost and Mushroom beds • skilled in Inoculation and spawning of compost, Incubation and harvesting of mushrooms. • cultivate mushrooms and become an entrepreneur.

DEPARTMENT OF CHEMISTRY

BSC PROGRAM WITH CHEMISTRY

BSC PROGRAM OUTCOMES

The knowledge intensive and skill-oriented curriculum of BSc programme in the three major modeis designed and deployed in the CBCS pattern at SJCW(A) envisaging the following outcomes

- Comprehensive domain specific knowledge provides the necessary intellectual competencies to progress to higherlevels of learning and research
- Exhaustive laboratory training augments comprehension of theoretical principles and ignites scientific temper
- Experiential learning through internships/on the job training/surveys/field studies/live projects etc.ensures problem solving and job skills
- Thehard and soft skills acquired in the form ofLSRW/verbal/analytical/numerical/reasoning/programming/coding attributes, contribute to success in National and International level tests for admission and recruitment
- Individual and group projects and assignments kindle research aptitude
- Autodidactic learning tasks induce critical thinking and lead to optimal utilisation and creation of e resources on the net
- The mandatory life skills courses nurture ethical behaviour, social responsibility and environmental consciousness
- Leadershiptraining, entrepreneurship education courses hone leadership skills and groom entrepreneurial tendencies fostering future leaders and job providers
- Selective perusal ofpersonality developmentcourses and participation in extra andco-curricular activitiesensurephysical andpsychological fitness leading to personal empowerment and responsible citizenship
- The holistic BSc programme at SJCW(A), in toto, strengthens the strengths of the learners, weakens their weaknesses, helps them to overcome challenges and creates opportunities for them to evolve into socially responsive members of society

SPECIFIC OUTCOMES OF BSC PROGRAM WITH CHEMISTRY

- Be able to demonstrate basic knowledge in the core areas of chemistry (analytical, general, inorganic, organic and physical, pharmaceutical, green chemistry, polymer chemistry etc).
- Be versatile in classical laboratory techniques, use instrumental methods for analysis as well as synthesis and follow standardised procedures and regulations in handling and disposal of chemicals.
- Be able to access, scout and use the chemical literature and also able to work as a member of a team.
- Be able to integrate knowledge gained in Chemistry to current environmental issues.

COURSE OBJECTIVES AND OUTCOMES

SEM	COURSE CODE (WITH NO OF CREDITS)	COURSE NAME	COURSE OBJECTIVES	COURSE OUTCOMES
I	CH 1201 (3)	INORGANIC & ORGANIC CHEMISTRY	To enable the students to • Acquire in depth knowledge on some selective compounds of p- block elements - preparations, classification, properties & their structures. • draw and depict molecular structures in their respective spatial arrangements and compare VSEPR theory and Molecular orbital theory. • study the basics of organic chemistry and apply them in understanding organic reactions. • Study the structure and properties of benzene and understand the orientation influence of its substituents. Study the nomenclature, preparation, reactivity and stability of cycloalkanes.	• Identify the trends in the chemical preparations and properties and of P-block elements which are used in the manufacture of various products industrial significance • Apply VSEPR and molecular orbital theories to construct molecular structures and predict properties. • Apply the structural theory of organic chemistry and correlate properties with structures. • Discuss the nomenclature, preparation, and stability of cycloalkanes. • Describe the structure and orientation of benzene to understand the basics of organic chemistry and other aromatic organic compounds.

I	CH 1251 (2)	QUALITATIVE INORGANIC ANALYSIS – I	• To train students in 'semi micro level qualitative analysis' and make them skilful in accurate identification of unknown inorganic salts.	• Adopt & apply standardized procedures to analyze inorganic substances at semimicro level. • Identify unknown salts based on critical observations and logical reasoning. • Optimally utilize the consumable and non consumable laboratory resources without wastage. • Comply with the regulations involved in safe handling and disposal of hazardous chemicals.
II	CH 2201 (3)	GENERAL & ORGANIC CHEMISTRY	To enable the students to • identify toxic chemicals and recognise their effect on environmental quality • To motivate the students to behave in a more socially responsible manner. • Apply the basic concepts of Organic Chemistry and establish the mechanism of organic reactions. • Recognise the utility and apply Grignard reagents, Aceto acetic ester and malonic ester to synthesise organic compounds of choice.	• Identify different types of toxic substances and correlate with their toxicological effects. • Describe water purification and waste treatment processes. • Identify the use and explain the preparation, structure, properties and reaction mechanism of different categories of organic compounds. • synthesize aceto acetic ester & malonic ester and use them in the preparation of industrially important organic compounds • Identify the oxidizing and reducing agents use them in the synthesis of chosen organic compounds - very useful for the establishment of small industries and also for their self employment
II	CH 2251 (2)	QUALITATIVE INORGANIC ANALYSIS – II	• To train students in 'semi micro level qualitative analysis' and develop their skill of identifying the ions in inorganic salt mixtures with interfering anions.	• CO1: Adopt & apply standardised procedures for the semimicro level analysis of inorganic salt mixtures containing more than one anions and cations • CO2: Efficiently eliminate interfering anions • CO3: Identify the anions and cations present in the unknown salt mixture based on critical observation and logical inference • CO4: Optimally utilise the consumable and non consumable laboratory resources without wastage. • CO4: Comply with the regulations involved in safe handling and disposal of hazardous chemicals.

III	CH 3201(3)	PHYSICAL CHEMISTRY	• Apply physical laws to chemical phenomena and derive rate constants for first, second and third order reactions and train them to solve numerical based on kinetics To enable the students to have basic idea about speeds of reactions and to understand higher order reactions and derive their rate constants in order to predict the course of the reaction. • provide the concepts of laws of Photochemistry and photo processes. • enlighten students on the applicability Van Der Waal's equation, reduced equation of state and critical constants in predicting the behaviour of gases and liquids. • introduce and explain the significance of adsorption isotherms, catalytic efficiency, catalytic specificity, turnover number and Michaelis Constant in choosing the appropriate adsorbents and chemical/enzyme catalysts for chosen processes. • critically examine and apply Gibb's Phase Rule Equation and reduced phase rule equationto one and two component heterogeneous equilibria	• Derive Rate constants for I, II and III order reactions and solve numerical problems of first and second order reactions. • Classify different types of colloids and examine the properties of colloids, emulsions, and gels. • Discuss the laws of photochemistry and predict various photo processes from Jablonski diagram. • Predict the behavior of real gases and liquid crystals under varied conditions and use them optimally to match the needs • Select suitable chemical& biochemical catalysts based on their efficiency and apply them to targeted in vivo&in vitro processes • Apply Gibb's phase rule equation to heterogeneous systems at equilibrium and optimise the conditions to generate the desired output
III	CH 3251 (2)	VOLUMETRIC ANALYSIS - I PRACTICAL II A	To enable the students to – • Conduct experiments designed for volumetric analysis • Interpret experimental/investigative data • Apply theory-based tools to solve simple chemical problems related to subject areas	• Calibrate accurately measurement equipment like volumetric flask, pipette, burette etc. • Analyse accurately and estimate precisely the concentrations of solutions of acids, bases, • Conduct volumetric estimations titrimetrically through manual • Optimally utilise the consumable and non consumable laboratory resources without wastage. • Comply with the regulations involved in safe handling and disposal of chemicals.

IV	CH 4201 (3)	INORGANIC CHEMISTRY	• Knowledge of Transition metals & Inner Transition metals, the former having many differences yet grouped together, contrasting with the latter in which separation of the elements is very difficult. Uniqueness in complex formation and very importantly the catalytic ability, which is still a thrust area for research and development. To draw inspiration to synthesize newer elements and stretch the horizon of science. • A colourful intriguing field of compounds, whose study posed problems for long time and continue to do so in some areas even today, is the Coordination Chemistry. An evergreen field of growth and flourish is the world of coordination compounds. To get attracted and to find the solutions for the complex issues. • Knowledge of crystals provides a way of approach for the study of any topic of Chemistry one wants to learn or master.	• To describe general characteristics of solids, classification and imperfections, assessing the packing efficiency of different types of cubic unit cells. • Outline the general characteristics, properties and construct the comparative account of lanthanoids and actinoids and realise their application in laser beam, pacemakers, nuclear power plant and petroleum industry • Explain substitution reaction in octahedral and square planar complexes, significance of trans effect and its applications in synthesis of different metal complexes. • Identify the Significance metal ions in biological processes and correlate with their functional roles including concentration effect and physiological effect on biological systems
IV	CH 4251 (2)	VOLUMETRIC ANALYSIS – II PRACTICAL II B	To enable students acquire the skill of 'quantitative estimation' by deploying manual as well as instrumental volumetric techniques	• Calibrate accurately measurement equipment like volumetric flask, pipette, burette etc. • Analyze accurately and estimate precisely the concentrations of solutions of acids, bases, • Conduct volumetric estimations titrimetrically through manual as well as instrumental techniques • Deploy conductometric methods in quantitative estimations
V	CH 5201(3)	ORGANIC CHEMISTRY	To enable the students to – • Identify the synthetic applications and apply them for the synthesis of various organic compounds. • To gain conceptual knowledge on fundamentals of molecular spectroscopy to identify functionality	• Adopt and apply general reactions for industrial applications of nitro compounds, amines and diazonium salts. • Compare the aromaticity, preparations and electrophilic substitution reactions of Pyrrole furan, thiophene and Pyridine • Explain the structure of Glucose and fructose and use the synthetic procedures for inter conversions of five membered monosaccharides to six membered ones and vise versa • Identify and characterizes the functionality of Organic Compounds by molecular spectroscopic studies - UV, IR, NMR- and be able to apply the skill for qualitative and quantitative determinations
V	CH 5251 (2)	ORGANIC QUALITATIVE ANALYSIS PRACTICAL – III A	• To train students in 'qualitative organic analysis' and equip them with the skill of identifying organic compounds	• Analyse organic compound by deploying standardised procedures • Acquire skills needed for the identification of functional groups • Identify the unknown organic compound through functional group derivatization • Purify as well as ascertain purity through distillation and MP/BP determination • Safely handle and dispose volatile, corrosive & inflammable substances

V	CH 5202 (3)	PHYSICAL & INORGANIC CHEMISTRY	• • To enable them with the theories of electrolytes, transport number, provides skills to sketch a galvanic cell, use of Nernst equation to calculate cell potentials. • 2. To provide the concepts of nomenclature, classification, synthesis, properties and uses of main group organometallics.	• CO1: Use the Nernst equation to calculate cell potentials for reactions occurring under nonstandard conditions. • CO2: Describe the functions of the various components of voltaic and electrolytic cells and Design Hittorf's hypothetical tank to examine electrolysis process. • CO3: Classify different types of organometallics and explain the synthesis and properties of Grignard regent and organolithium reagents. • CO4:Explain the formation of different types of solution, examine concentrations, describing the colligative properties correlating them molar masses of solutes. • CO5:Explain theories involved in bonding in metals, describe conductors, semi conductors and insulators which helps in building their career in battery industry. • CO6: Explain EAN rule, classification, structures and shapes of metal carbonyls which help in the basis of medicinal uses.
V	CH 5252 (2)	PHYSICAL EXPERIMENTS PRACTICAL SYLLABUS – III B	• To equip students with the ability to establish specific temperature dependent physical constants of liquid substances.	• Deploy standardized procedures and optimally utilize equipment for the detection of temperature dependent physical constants. • Determine density, surface tension, viscosity and distribution coefficient of unknown substances. • Deduce the order of a reaction by computing rate constants at definite time intervals in the hit and trial method via hydrolysis of methyl acetate • Conduct project studies on real time samples and establish their physical constants • Handle and dispose chemicals safely
VI	CH-E1-6201 (3)	SOME SPECIAL ASPECTS OF CHEMISTRY	To enable the students to • gain thorough knowledge on advanced topics of Physical Chemistry such as Thermodynamics. • understand the principles of Stereochemistry, the knowledge of which is essential for the understanding of organic reactions mechanism. • Gain an insights on structure and functions of nitrogenous biomolecules	• Deduce and quantify the work done by a system under isothermal, adiabatic, reversible and irreversible conditions. • Correlate the functioning of cooling devices to the inversion temperature of the coolant gas and iso enthalpic nature of the process • Predict process feasibility, extent and also determine the efficiency of a heat engine • Depict, notate and explain stereoisomerism aspects of 3 dimensional molecules on two dimensional surfaces and examine stereospecific & stereoselective reactions that produce desired products in larger yield.

	CH-E1-6251 (2)	PHYSICAL EXPERIMENTS PRACTICAL – IV	• To equip students with the ability to establish specific temperature dependent physical constants of liquid substances	• Deploy standardised procedures and optimally utilise equipment for the detection of temperature dependent p hysical constants. • Determine density, surface tension, viscosity and distribution coefficient of unknown substances. • Deduce the order of a reaction by computing rate constants at definite time intervals in the hit and trial method via hydrolysis of methyl acetate • Conduct project studies on real time samples and establish their physical constants • Handle and dispose chemicals safely
VI	CH-E2- 6201 (3)	ANALYTICAL METHODS IN CHEMISTRY	• Study analytical principles and understand the various steps and mechanisms involved in the conduct of reactions, titrations and –other laboratory processes. • adopt and apply separation techniques in chemical analysis. • Acquire knowledge on the applicability of Chromatography.	• Distinguish between various separation techniques and identify the most appropriate among the available options for a given separation. • Classify and examine various chromatographic techniques and prioritize the most suitable one for identification/separation/estimation etc. tasks. • Correlate, explain and illustrate with examples the principles involved in acid-base, redox, complexometric, iodometric and precipitation titrations used in quantitative estimations. • Identify the most suitable indicator for any given titration based on the theory of indicators. • Examine the utility of gravimetry as an estimation technique and deploy it as and when required.
VI	CH-E2-6251(1)	INSTRUMENTAL ANALYSIS & CHROMATOGRAPHY TECHNIQUES	• Impart the knowledge and skill needed for conducting quantitative estimations by using electric & electronic instruments. • Train the students in IR spectral data analysis & interpretation	• Deduce equivalence point and estimate concentration in acid-base & red-ox titrations using pH Meters & Potentiometers • Determineunknownconcentrations through Colorimetric method by measuring absorbance at known concentrations and calibration graph • Deploy thin layer and column chromatography techniques for separation & estimation

VI	CH-A1-6201 (3)	PHARMACEUTICAL AND MEDICINAL CHEMISTRY	To enable the students to • understand the terminology in pharmaceutical chemistry • gain insights on the salient features of drug synthesis, morphology and physiological activity with respect to some important drugs. • realise importance of Pharmacodynamic and HIV-AIDS drugs	• Recognise the importance of medicinal chemistry in daily life, identify the use of chemical compounds in drug designing and explain drug target interactions of enzymes and receptors . • Classify and name drugs on scientific lines and apply principles of drug administration. • Sketch the step wise mechanism for the synthesis of sulphanilamide, Penicillin G, Erythromycin, Chloroquine, Paracetamol, Salbutamol, diazepam and frusemide • Identify the causes and effects for HIV, identify the most suitable confirmatory test- ELISA and discuss the structures of Nelfinavir and Indivanir. • Use the analytical and synthetic skills for successful careers in production section of pharmaceutical industries.
VI	CH-A1-6251(2)	Volumetric Analysis II	To enable the students to – • Conduct experiments designed for volumetric analysis • Interpret experimental/investigative data • Apply theory-based tools to solve simple chemical problems related to subject areas • Understand the use of conductometers and apply them to estimate the strength of acid • To enable students acquire the skill of 'quantitative estimation' by deploying manual as well as instrumental volumetric techniques To provide the skills of quantitative estimations by deploying instrumental techniques	• CO1: Calibrate accurately measurement equipment like volumetric flask, pipette, burette etc. • CO2: Analyse accurately and estimate precisely the concentrations of solutions of acids, bases, salts and salt mixtures • CO3: Conduct volumetric estimations titrimetrically through manual as well as instrumental techniques • CO4: Deploy conductometric methods in quantitative estimations • CO5: Optimally utilize the consumable and non consumable laboratory resources without wastage. • CO6: Comply with the regulations involved in safe handling and disposal of chemicals.
VI	CH-A2-6201 (3)	GREEN CHEMISTRY	To enable the students to • Gain Knowledge on alternative green synthetic methods incorporating basic principles • Identify and Promote Energy efficient, less arduous reactions in place of conventional ones and apply green solvents, catalyst etc for major pharmaceutical industries and other applied branches	• Apply the twelve basic principles of Green Chemistry and compare the Conventional techniques with Green methods • Differentiate between the conditional Microwave, Sonication and conventional aqueous phase reaction protocols and identify the most appropriate one • Adopt and apply the solvent free, solid supported microwave reactions • Identify the importance of recyclable feed stocks' usage in polymer, textiles, Food and beverage industries • Establish the utility of recyclable feedstock, solvent and catalyst to promote use of biodegradable commodities in wide range of industries

VI	CH-A2-6251(2)	REACTIONS WITH GREEN PROCEDURES PRACTICAL–IV A2	• To enable the students to apply the principles of green chemistry for efficient energy synthesis of organic compounds with minimal times with high yields	• Differentiating the conditional Microwave and conventional aqueous phase reaction protocols and • Adapt skills in standard operating procedures while using Microwave with suitable solid support , Solvent free, catalyst, to promote less time consuming reactions which promotes high yields . • Optimally utilize safe, less hazardous, nontoxic chemicals and disposal eco cautiously.
VI	CH-A3-6201 (3)	POLYMER CHEMISTRY	• To enable students with various principles of polymers - classification, preparation techniques, mechanism, kinetics, and properties. • Prepare them to identify and classify different types of polymers and correlate with their use in daily life. • To provide them practical experience of polymerisation process through polymer industry visit	• Describe various principles of polymers - classification, preparation techniques, mechanism, kinetics, and properties. • Determine the molecular weights of polymers using osmometry, viscometry and light scattering methods. • Apply kinetics to free radical polymerization. • Explain the concept Glass transition temperature and assess the factors effecting Tg • Identify the functions and uses of various types of polymer additives. • Compare and contrast synthetic and biodegradable polymers.
VI	CH-A3-6251 (3)	WATER ANALYSIS PRACTICAL SYLLABUS-IV A3	• To enable students to examine and ascertain water quality through qualitative and quantitative estimation of specific water quality parameters	• CO1: Standardise pH and conductivity meters and use them for the determination of pH and conductance of water samples. • CO2: Estimate the amount of total dissolved solids in water samples by measuring conductivity. • CO3: Establish the temporary, permanent and total hardness along with Ca & Mg in the given sample via complexometric titration. • CO4: Determine total alkalinity by deploying standard titrimetric procedures • CO5: Compute the bicarbonate and carbonate amounts in any given sample • CO6: Ascertain water quality wrt potability and other concerns
VI	CH-B1-6201 (3)	FUEL CHEMISTRY AND BATTERIES	To enable the students to • distinguish between the renewable & non-renewable energy sources and understand their significance • comprehend the principles involved in the working of batteries	• Realize the importance of renewable energy • compare the utility of sustainable and fossil energy resources identify the appropriate one • Classify different types of lubricants and determine their properties. • Differentiate between petroleum, non petroleum and biodegradable fuels and their methods of purification • Distinguish between different types of batteries and identify their uses

VI	CH-B1-6251 (2)	Organic compound Synthesis	• To train students in varied techniques of organic synthesis and equip them with the skill of synthesizing organic compounds with focus on purity, yield and energy efficiency.	• Apply standardized procedures effectively and synthesiseefficientlyorganic compounds • Achieve effective singlestep synthesisoforganiccompounds wherever possible • Purify solid and liquid compounds viarecrystalization, distillation & washing techniques • Optimally utilise the consumable and non consumable laboratory resources without wastage. • Complywith the regulations involved in safe handling and disposal of chemicals
	CH-B2-6201(3)	INORGANIC MATERIALS OF INDUSTRIAL IMPORTANCE	To enable students to – • gain insights on properties of s and p-block elements and the structure of their compounds. • recognise the importance of some industrially important materials with special properties and understand their manufacturing methods. • realise the applicability of various types of surface coatings and alloys	• establish the basic characteristics of S and P block elements used in industry • Relate the use of allotropes of C,Si, and P to their properties • Identify and establish the use of chemical and biofertilizers for increase in agricultural production • Study of paints , drying oils , varnishes can emerge as entrepreneurs by manufacturing these products • study the properties of alloys of aluminium, copper, iron etc which are useful in daily life activities • Identify the use of explosive materials for manufacturing bombs , which in turn are used for rock blasts in quarries , and for military purposes
VI	CH-B2-6251(2)	REACTIONS WITH GREEN PROCEDURES	• To enable the students to apply the principles of green chemistry for efficient energy synthesis of organic compounds with minimal times with high yields	• Differentiate the conditional Microwave and conventional aqueous phase reaction protocols. • Adapt skills in standard operating procedures while using Microwave with suitable solid support , Solvent free,catalyst, to promote less time consuming reactionswhich promotes high yields . • Optimally utilize safe, less hazardous, nontoxic chemicals and disposal eco cautiously
VI	CH-B3-6201 (3)	ANALYSIS OF APPLIED INDUSTRIAL PRODUCTS	To enable the students to understand and examine the • methods involved in the analysis of soaps, paints, oils, fertilizers glass, cement etc. • significance of different quality assurance methods that are used for different industrial process • good manufacturing practices	• Identify the importance of chemical industry. • Classify and identify the utility of various fertilizers. • Identify the suitable methods for analysis of oils and paints. • Compare and contrast the properties of different starches in food. • Understand processes involved in the manufacture of cement, fertilizers, Glass, Soap and Detergents by modern methods.

VI	CH-B3-6251 (2)	WATER ANALYSIS-IV A3	To enable students to examine and ascertain water quality through qualitative and quantitative estimation of specific water quality parameters	• StandardisepH and conductivity metersanduse them for the determination of pH and conductance of water samples. • Estimate the amount of total dissolved solids in water samples by measuringconductivity. • Establishthetemporary,permanentandtotalhardness along with Ca & Mginthegivensampleviacomplexometric titration. • Determinetotalalkalinity by deploying standard titrimetric procedures • Computethebicarbonateandcarbonateamounts in any given sample • Ascertain water quality wrt potability and other concerns

DEPARTMENT OF COMPUTER SCIENCE

BSC PROGRAM WITH COMPUTER SCIENCE

BSC PROGRAM OUTCOMES

The knowledge intensive and skill-oriented curriculum of BSc programme in the three major modeis designed and deployed in the CBCS pattern at SJCW(A) envisaging the following outcomes

- **Comprehensive domain specific knowledge provides the necessary intellectual competencies to progress to higherlevels of learning and research**
- **Exhaustive laboratory training augments comprehension of theoretical principles and ignites scientific temper**
- **Experiential learning through internships/on the job training/surveys/field studies/live projects etc.ensures problem solving and job skills**
- **Thehard and soft skills acquired in the form ofLSRW/verbal/analytical/numerical/reasoning/programming/coding attributes, contribute to success in National and International level tests for admission and recruitment**
- **Individual and group projects and assignments kindle research aptitude**
- **Autodidactic learning tasks induce critical thinking and lead to optimal utilisation and creation of e resources on the net**
- **The mandatory life skills courses nurture ethical behaviour, social responsibility and environmental consciousness**
- **Leadershiptraining, entrepreneurship education courses hone leadership skills and groom entrepreneurial tendencies fostering future leaders and job providers**
- **Selective perusal ofpersonality developmentcourses and participation in extra andco-curricular activitiesensurephysical andpsychological fitness leading to personal empowerment and responsible citizenship**
- **The holistic BSc programme at SJCW(A), in toto, strengthens the strengths of the learners, weakens their weaknesses, helps them to overcome challenges and creates opportunities for them to evolve into socially responsive members of society.**

SPECIFIC OUTCOMES OF BSC PROGRAM WITH COMPUTER SCIENCE

- **Be able to demonstrate basic knowledge in the core areas of computer science (Programming with C, Object Oriented Programming through Java, Data Structures, Operating Systems, Database Management System, Web Technologies, Software Engineering, Data ware house and Data Mining, Computer Networks and Cloud Computing).**
- **Ability to analyze and use a range of programming languages and tools to develop computer programs that are effective to solve the problems in the practical courses.**
- **Ability to work in teams to build software solutions including Web site design and development and database management by applying various technologies .**

COURSE OBJECTIVES AND OUTCOMES

SEM	COURSE CODE (WITH NO OF CREDITS)	COURSE NAME	COURSE OBJECTIVES	COURSE OUTCOMES
I	CS 1601 (3)	PROGRAMMING IN C	To enable the students to: • To impart knowledge on the need of programming languages and problem solving techniques. • To develop programming skills using the fundamentals of C Language. • To enable effective usage of arrays, structures, functions, pointers and to implement the memory management concepts. • To teach the issues in file organization and the usage of file systems.	Upon successful completion of the course, a student will be able to: • Design flowchart, write algorithm parallel with control statements to understand flow of program execution. • Implement code reusability with the help of user defined functions and file handling mechanism that is essential in database management systems. • Develop skills in students to learn dynamic memory allocation using pointers and understand programming skills like Arrays, Strings, Structure and union.

I	CS 1651 (2)	PROGRAMMING IN C LAB	To enable the students to: • Learn a Programming language. • Learn Problem solving techniques. • Teach the student to write programs in C and to solve the problems.	• Develop the ability to analyze a problem, develop an algorithm to solve it. • Read, understand and trace the execution of programs written in C language. • Demonstrate the role of Functions involving the idea of modularity. • Implement Programs with pointers and arrays, perform pointer arithmetic, and perform operations using derived data types.
II	CS 2601 (3)	OBJECT ORIENTED PROGRAMMING USING JAVA	To enable the students to • Gain knowledge about basic Java language syntax and semantics to write Java programs and use concepts such as variables, conditional and iterative execution methods. • Understand the fundamentals of object-oriented programming in Java, including defining classes, objects, invoking methods etc and exception handling mechanisms. • Understand the principles of inheritance, packages and interfaces.	• To recognize how to execute a simple as well as Java application and underlying the principles of Object-Oriented Programming. • Describe and implement various Inheritance and Polymorphism forms using Java Classes and Interfaces. • Implement efficient Java applets, exception handling and multithreading concepts in real life programming domains and hence enhance employability skills.
II	CS 2651 (2)	OBJECT ORIENTED PROGRAMMING USING JAVA LAB	To enable the students to: • Understand the fundamentals of object oriented programming in java, including defining classes, invoking objects along with constructors, arrays and vectors. • Discuss the principles of inheritance, interface and packages.	After Completion of this course the student would be able to: • Use an integrated development environment to write, compile, run and test simple object oriented java programs. • Apply skills using basic control structures, arrays, object oriented principles including encapsulation and information hiding. • Implement multithreaded programs and Exception handling. • Apply the programming concepts as and when required in the future application development.
III	CS 3601	Data Structures Using Java	To enable the students to: • To bring out the importance of data structures in a variety of applications. • Introduce the concept of data structures through ADT including List, Stack and Queues. • Develop application using data structure algorithms.	Upon successful completion of the course, a student will be able to: • Identify the appropriate data structures and algorithms for solving real world problems. • Describe how arrays, linked lists, stacks, queues, trees and graphs are represented in memory and their operations. • Implement operations like searching, insertion, deletion and traversing mechanism on various data structures. • Demonstrate primitive operations on trees and their applications and summarize the concepts of graphs and traversal techniques. • Describe and analyse various sorting algorithms like Bubble Sort, Selection Sort, Insertion Sort and Quick Sort and therefore develop employability skills.

III	CS 3651 (2)	Data Structures Using Java LAB	To enable the students to: • To make the students write various programs and ADTS for all data structures. • Students will learn to write, debug, and test large programs systematically. • Determine which algorithm or data structure to use in different scenarios.	After Completion of this course the student would be able to: • Implement Linear and Non Linear Data Structure. • Apply divide and conquer strategy to searching and sorting problems using iterative and/or recursive solutions. • Choose the appropriate data structure and algorithm design method for a specified application.
IV	CS 4601 (3)	OPERATING SYSTEMS	To enable the students to: • Understand the overall structure and components of operating system. • Analyze the key concept of Process Management and concurrency problem. • Understand different approaches to memory management.	Upon successful completion of the course, a student will be able to: • Demonstrate the structure and design of operating systems. • Compare various algorithms for process scheduling. • Apply various deadlock handling strategies to solve resource allocation problems. • Evaluate the performance of different memory management techniques and page replacement algorithms and therefore develop employability skills. • Describe file concepts and analyse various disk scheduling strategies.
IV	CS 4651 (2)	UNIX LAB	To enable the students to: • Introduce Basic understanding of UNIX OS, UNIX commands and File system and to familiarize students with the Linux environment. • Implement C programming in UNIX editor environment.	After Completion of this course the student would be able to: • Identify the basic UNIX general purpose commands. • Apply and change file permissions using UNIX commands. • Implement shell Scripts and Run various UNIX commands on a standard UNIX/LINUX Operating system.
V	C5601-CS5901-CST5301 (3)	DATABASE MANAGEMENT SYSTEMS	To enable the students to: • Understand the different issues involved in the design and implementation of a database system. • To understand and use data manipulation language to query, update, and manage a database. • To introduce the concepts of transactions and transaction processing.	Upon successful completion of the course, a student will be able to: • Develop and design database application and therefore enhance entrepreneurship skills. • Design entity relationship and convert entity relationship diagrams into RDBMS and formulate SQL queries on the respect data. • Design and implement a Database Schema for a given Problem-domain. • Apply Normalization Techniques on given Database Design to avoid Anomalies. • Understand various transaction processing and concurrency control mechanisms.

V	C5651-CS5951-CST5351 (2)	DATABASE MANAGEMENT SYSTEM LAB	To enable the students to: • Describe the basics of SQL and construct queries using SQL. • Know query languages associated with relational models	After Completion of this course the student would be able to: • Design and implement a database schema for a given problem. • Design queries using SQL. • Apply PL/SQL for processing database.
V	C5602-CS5902-CST5302 (3)	WEB TECHNOLOGIES	To enable the students to: • Understanding the concept of web technologies. • Creating web pages by using HTML. • Applying JavaScript validations. • Understand use of XML, MySQL and PHP in Web Technologies.	Upon successful completion of the course, a student will be able to: • Evaluate interactive web pages using html and style sheets. • Learn real time applications using event handling with validations. • Acknowledge providing database connectivity to web applications with examples. • Learn web page development and build web applications.
V	C5652-CS5952-CST5352 (2)	WEB TECHNOLOGIES LAB	To enable the students to: • To make students to create a Complete Web technology solution. • Applying JavaScript validations. • Understand use of MySQL and PHP in Web Technologies.	Upon successful completion of the course, a student will be able to: • Evaluate interactive web pages using html and style sheets. • Learn real time applications using event handling with validations. • Acknowledge providing database connectivity to web applications with examples. • Learn web page development and build web applications.
VI	CS-E1-6601 (3)	SOFTWARE ENGINEERING	To enable the students to: • To make the learner efficiently work as software engineer. • Design, implement, and evaluate software- based systems or programs of varying complexity that meet desired needs and constraints • Demonstrate accepted design and development principles.	Upon successful completion of the course, a student will be able to: • Describe basic concepts related to software engineering methods. • Analyze the requirements for a given problem • Apply the design paradigms to design simple software system • Demonstrate the testing methods and their procedures to implement in any project.
VI	CS-E1-6651 (2)	COMPUTER SCIENCE PRACTICAL IV	The Software Engineering Lab has been developed by keeping in mind the following objectives: • To impart state-of-the-art knowledge on Software Engineering and UML in an interactive manner. • Present case studies to demonstrate practical applications of different concepts.	Upon successful completion of the course, a student will be able to: • Can produce the requirements and use cases the client wants for the software being produced. • Create and specify such a software design based on the requirement specification that the software can be implemented based on the design.
VI	CS-E2-6601 (3)	DATA COMMUNICATIONS	To enable the students to: • Study basics of data communication systems. • Various types of transmission media • Discuss about multiplexing techniques.	Upon successful completion of the course, a student will be able to: • Understand basic concepts of data communication and layered architecture. • Ability to understand different techniques in transmission media. • Identify various Multiplexing and signal encoding techniques.

VI	CS-E2-6651 (2)	COMPUTER SCIENCE PRACTICAL IV	The Software Engineering Lab has been developed by keeping in mind the following objectives: • To impart state-of-the-art knowledge on Software Engineering and UML in an interactive manner. • Present case studies to demonstrate practical applications of different concepts.	Upon successful completion of the course, a student will be able to: • Can produce the requirements and use cases the client wants for the software being produced. • Create and specify such a software design based on the requirement specification that the software can be implemented based on the design.
VI	CS-E3-6601 (3)	OBJECT ORIENTED ANALYSIS AND DESIGN	To enable the students to: • Understand the importance and basic concepts and of object oriented modeling. • Describe the object-oriented approach to system development, modeling objects, relationships and interactions.	Upon successful completion of the course, a student will be able to: • Analyze the problem and apply to real world problems. • Analyze and design the requirements through use case driven approach. • Apply the UML notations.
VI	CS-E3-6651 (2)	COMPUTER SCIENCE PRACTICAL IV	The Software Engineering Lab has been developed by keeping in mind the following objectives: • To impart state-of-the-art knowledge on Software Engineering and UML in an interactive manner. • Present case studies to demonstrate practical applications of different concepts.	Upon successful completion of the course, a student will be able to: • Can produce the requirements and use cases the client wants for the software being produced. • Create and specify such a software design based on the requirement specification that the software can be implemented based on the design.
VI	CS-A1-6601 (3)	Foundations of Data Science	Modern scientific, engineering, and business applications are increasingly dependent on data, existing traditional data analysis technologies were not designed for the complexity of the modern world. Data Science has emerged as a new, exciting, and fast-paced discipline that explores novel statistical, algorithmic, and implementation challenges that emerge in processing, storing, and extracting knowledge from Big Data.	Upon successful completion of the course, a student will be able to: • Acquire the fundamental concepts and techniques in data science • Apply fundamental algorithmic ideas to process data. • Document and transfer the results and effectively communicate the findings using visualization techniques.
VI	CS-A1-6651 (2)	PROJECT & VIVA-VOCE	To enable the students to: • Motivate them to work in emerging/latest technologies. • To develop ability, apply theoretical and practical tools/techniques.	Upon successful completion of the course, a student will be able to: • Understand the software development process, models and software engineering principles. • Plan, analyze, design and implement a software project using programming languages like C, Java, PHP etc. • Self educate and perseverance in project implementation & completion. • Demonstrate professionalism with ethics.

VI	CS-A2-6601 (3)	Big Data Technology	To enable the students to: • Learn practical foundation level training that enables immediate and effective participation in big data projects. • Understand basic and advanced methods to big data technology and tools, including MapReduce and Hadoop and its ecosystem.	After Completion of this course the student would be able to: • Classify tips and tricks for Big Data use cases. • Use distributed systems with Apache and Hadoop. • Apply Hadoop ecosystem components.
VI	CS-A2-6651 (2)	PROJECT & VIVA-VOCE	To enable the students to: • Motivate them to work in emerging/latest technologies. • To develop ability, apply theoretical and practical tools/techniques.	Upon successful completion of the course, a student will be able to: • Understand the software development process, models and software engineering principles. • Plan, analyze, design and implement a software project using programming languages like C, Java, PHP etc. • Self educate and perseverance in project implementation & completion. • Demonstrate professionalism with ethics.
VI	CS-A3-6601 (3)	Computing for Data Analytics	To enable the students to: Learn fundamental concepts and tools needed to understand the emerging role of business analytics in Organizations.	Upon successful completion of the course, a student will be able to: • Design the statistical procedures which are used by engineers. • Apply the forecasting methods in business applications.
VI	CS-A3-6651 (2)	R PROGRAMMING LAB	• R is a well-developed, simple and effective programming language which includes conditionals, loops; user defined recursive functions and input and output facilities. • R has an effective data handling and storage facility, • R provides a suite of operators for calculations on arrays, lists, vectors and matrices.	Upon successful completion of the course, a student will be able to: • Use R for effective data analysis. • Motivation for learning a programming language • Familiar with loading and unloading of packages.
VI	CS-B1-6601 (3)	Distributed Systems	To enable the students: • To expose the fundamentals of distributed computer systems, assuming the availability of facilities for data transmission. • To discuss multiple levels of distributed algorithms, distributed file systems, distributed databases, security and protection.	Upon successful completion of the course, a student will be able to: • Create models for distributed systems. • Apply different techniques learned in the distributed system like file system and hence enhance employability skills.
VI	CS-B1-6651 (2)	PROJECT & VIVA-VOCE	To enable the students to: • Motivate them to work in emerging/latest technologies. • To develop ability, apply theoretical and practical tools/techniques.	Upon successful completion of the course, a student will be able to: • Understand the software development process, models and software engineering principles. • Plan, analyze, design and implement a software project using programming languages like C, Java, PHP etc. • Self educate and perseverance in project implementation & completion. • Demonstrate professionalism with ethics.

VI	CS-B2-6601 (3)	CLOUD COMPUTING	• Learn various cloud service models. • Understand the concept of Virtualization. • import fundamental concepts in the area of cloud computing	• Compare the strengths and limitations of cloud computing • Identify the architecture, infrastructure of cloud computing • Apply suitable virtualization concept. • Address the core issues related to Security concerns.
VI	CS-B2-6651 (2)	PROJECT & VIVA-VOCE	To enable the students to: • Motivate them to work in emerging/latest technologies. • To develop ability, apply theoretical and practical tools/techniques.	Upon successful completion of the course, a student will be able to: • Understand the software development process, models and software engineering principles. • Plan, analyze, design and implement a software project using programming languages like C, Java, PHP etc. • Self educate and perseverance in project implementation & completion. • Demonstrate professionalism with ethics.
VI	CS-B3-6601 (3)	GRID COMPUTING	The student will learn about the Grid environment, building software systems and components that scale to millions of users in modern internet, Grid concepts capabilities across the various Grid services.	• Frame the concept of grid architecture. • Apply the security models in the grid environment, data management and transfer in Grid environments.
VI	CS-B3-6651 (2)	DISTRIBUTED SYSTEMS LAB	To enable the students: To cover all the aspects of distributed system. It introduce its readers to basic concepts of middleware, states of art middleware technology.	Upon successful completion of the course: • Students will get the concepts of Inter-process communication. • Students will get the concepts of Distributed Mutual Exclusion and Distributed Deadlock Detection algorithm.
VI	CS-C1-6601 (3)	COMPUTER NETWORKS	To enable the students to: • Understand the concepts of computer networks. • Study the functions of different layers. • Make the students to get familiarized with different protocols and network components.	Upon successful completion of the course, a student will be able to: • Enumerate the layers of the OSI model and TCP/IP. • Knows about different topologies, network types and IEEE standards. • Understand and build the skills of routing mechanisms. • Familiarity with the basic protocols of computer networks.
VI	CS-C1-6651 (2)	PROJECT & VIVA-VOCE	To enable the students to: • Motivate them to work in emerging/latest technologies. • To develop ability, apply theoretical and practical tools/techniques.	Upon successful completion of the course, a student will be able to: • Understand the software development process, models and software engineering principles. • Plan, analyze, design and implement a software project using programming languages like C, Java, PHP etc. • Self educate and perseverance in project implementation & completion. • Demonstrate professionalism with ethics.

VI	CS-C2-6601 (3)	CLOUD COMPUTING	• Learn various cloud service models. • Understand the concept of Virtualization. • import fundamental concepts in the area of cloud computing	• Compare the strengths and limitations of cloud computing • Identify the architecture, infrastructure of cloud computing • Apply suitable virtualization concept. • Address the core issues related to Security concerns.
VI	CS-C2-6651 (2)	PROJECT & VIVA-VOCE	To enable the students to: • Motivate them to work in emerging/latest technologies. • To develop ability, apply theoretical and practical tools/techniques.	Upon successful completion of the course, a student will be able to: • Understand the software development process, models and software engineering principles. • Plan, analyze, design and implement a software project using programming languages like C, Java, PHP etc. • Self educate and perseverance in project implementation & completion. • Demonstrate professionalism with ethics.
VI	CS-C3-6601 (3)	DATA WAREHOUSE & DATAMINING	• Learn various cloud service models. • Understand the concept of Virtualization. • import fundamental concepts in the area of cloud computing	• Compare the strengths and limitations of cloud computing • Identify the architecture, infrastructure of cloud computing • Apply suitable virtualization concept. • Address the core issues related to Security concerns.
VI	CS-C3-6651 (2)	WEKA TOOL LAB	To enable the students to: • Understand the overall architecture of a data warehouse and techniques. • Learn Different data mining models and techniques. • Various algorithms in Association rule mining, classification and clustering.	Upon successful completion of the course, a student will be able to: • Understand operational database, warehousing and multidimensional need of database to meet industrial needs. • Ability to apply acquired knowledge for understanding data and select suitable methods for data analysis. • Technically know how to apply Data Mining principles and techniques for real time applications.

DEPARTMENT OF ECONOMICS

BA and BSC PROGRAMS WITH ECONOMICS

BA PROGRAM OUTCOMES:

• Graduates will have greater awarenessand knowledgein all subject areas, understanding concepts, theories and linked aspects, applying them in respective domains and exploring the future career and entrepreneurial opportunities in specific and allied fields.

• Graduates are expected to develop effective oral and written communication with the use of appropriate technology to succeed in career presentations and interviews.Using various forms of business communication, supportedby effective use of appropriate modern technology techniques, logical reasoning, articulation of ideas and presentation.

• Graduates should be able toconceptualize, organize and resolve contemporary problems or issues with a research aptitude gather the relevant data and document the findings.They canapply the perspective of their chosen specialized area of study to develop fully-reasoned opinions on such contemporary issues.

• Graduates are expected to develop skills on analyzing specific data or problems, apply the relevant analysis, generate alternatives and engage in problem solving in functional or practical areas

• Graduates are expected to possess social consciousness, identify the contemporary social problems around the neighbourhoodand beyond State and National boundaries, explore the opportunities for social entrepreneurship, involve themselves in social outreach (NSS, NCC and other platforms and NGO's) and have integrity.

• Graduates are expected to collaborate and lead teams across Departmental boundaries and demonstrate leadership qualities, (Leadership positions in the Student Council, Departmental Associations and Clubs) maximize the usage of diverse skills of team members in the related context, thus catering to harmony within diversity

• The graduates are to demonstrate a global outlook (in consonance with the Vision and Mission Statement of the College)with the ability to identify aspects of the world at large. They are expected to be familiar with the knowledge, skills and attributes needed to live and work in a diverse world.

• Training students and making them 'future course ready' 'job ready' and 'employable' through the 'employability component' in all courses. Graduates are prepared to handle jobs in all sectors like Teaching, Industry, NGO, Service Sector, Hospitality, ITeSetc through varied initiatives.

• Inculcating values for good living in a challenging world through the course in Human Values and Professional Ethics, understanding personal ethics and resolving ethical dilemmas and consequentially through diverse initiatives and platforms and practise them for their own good.

• Taking up lifelong learning Coursesto equip them to the changing environment and be prepared to take up Master programmes, PG Diplomas, Certificate Courses as well as MOOCs, Online Courses and Self Learning Courses for a better future.

BSc Programme Outcomes.

The knowledge intensive and skill-oriented curriculum of BSc programme in the three major modeis designed and deployed in the CBCS pattern at SJCW(A) envisaging the following outcomes

- **Comprehensive domain specific knowledge provides the necessary intellectual competencies to progress to higherlevels of learning and research**
- **Exhaustive laboratory training augments comprehension of theoretical principles and ignites scientific temper**
- **Experiential learning through internships/on the job training/surveys/field studies/live projects etc.ensures problem solving and job skills**
- **Thehard and soft skills acquired in the form ofLSRW/verbal/analytical/numerical/reasoning/programming/coding attributes, contribute to success in National and International level tests for admission and recruitment**
- **Individual and group projects and assignments kindle research aptitude**
- **Autodidactic learning tasks induce critical thinking and lead to optimal utilisation and creation of e resources on the net**
- **The mandatory life skills courses nurture ethical behaviour, social responsibility and environmental consciousness**
- **Leadershiptraining, entrepreneurship education courses hone leadership skills and groom entrepreneurial tendencies fostering future leaders and job providers**
- **Selective perusal ofpersonality developmentcourses and participation in extra andco-curricular activitiesensurephysical andpsychological fitness leading to personal empowerment and responsible citizenship**
- **The holistic BSc programme at SJCW(A), in toto, strengthens the strengths of the learners, weakens their weaknesses, helps them to overcome challenges and creates opportunities for them to evolve into socially responsive members of society.**

SPECIFIC OUTCOMES OF BSC PROGRAM WITH ECONOMICS

PSO 1: Understand the basic concepts of Economics at micro and macro level analysis. (1701 (4), 1701(3).

PSO 2 : Students acquired knowledge about many economic issues like unemployment, poverty, economic and regional imbalances in India as a whole and specially in A.P. Economy. (2701(4), 2701(3), 2751(2), 3701(3), 4701(4), 3702(3), 4701(3)

PSO 3: Applied mathematical and statistical tools to examine the economic analysis in different fields. (5701 (4), 5701(3), 5751(2), 6701, 6751(2)

PSO 4: Gained awareness with government programme adopted both at internal as well as international level to influence economic development of India. (5701 (4), 5701(3), 5751(2), 6701, 6751(2)

COURSE OBJECTIVES AND OUTCOMES

SEM	COURSE CODE (WITH NO OF CREDITS)	COURSE NAME	COURSE OBJECTIVES	COURSE OUTCOMES
I	EC-ECA-ECS 1701	MICRO ECONOMICS-I CONSUMER BEHAVIOUR	To enable the students to • Acquire basic knowledge Micro economic concepts • Understand the behavior of both consumer and producer • Apply economic concepts in real life situations • Skill in the estimation of micro concepts.	• CO1: Understand the subject ECONOMICS deals with what. • CO2: Differentiate the methodologies adopted by classical and modern economists • CO3: Ability to distinguish consumer and producer's behavior which enhances the skill to determine the equilibrium • CO4: Develops critical thinking upon classical and modern approach towards Micro analysis.

I	ECS I751 (2)	MICRO ECONOMICS-CONSUMER BEHAVIOUR Practicals IA	To enable the students to • To acquire basic knowledge of Micro Economic concepts. • To learn the measurement of consumer's equilibrium • To measure elasticity • To understand the classical and modern theory of consumer behavior.	• CO1: Identify the subject ECONOMICS deals with what. • CO2: Differentiate the methodologies adopted by classical and modern economists • CO3: Ability to distinguish consumer and producer's behavior to determine the equilibrium • CO4: Develops critical thinking upon classical and modern approach towards Micro analysis.
II	ÉCA 2701(4)/ECS 2701 (3)	MICRO ECONOMIC-II	• To enable the students to acquire basic knowledge of micro economics • Understand the behavior of both consumer and producer • Apply the economic concepts to real life situations	• Analyze the producer's choices • Explain different market structures • Distribution of rewards for the four factorsof production
II	ECS 2751 (2)	MACRO ECONOMICS Practicals-IB	• To gain practical knowledge on production analysis. • To understand the determinations of price and output in different markets. • To understand why and how much to pay rewards for four factors of production.	• CO1: Examine the importance of Macro Economics in the country as a whole • CO2: Differentiate the role of different sectors in the circulation of income and expenditure • CO3: Asses macroeconomic theories with reference to developing countries • CO4: Analyze the role of banking to implement monetary policy.
III	ECA 3701(4)/ECS 3701(3)	INDIAN AND ANDHRA PRADESH ECONOMY	• To enable the students to understand the concepts of development and growth. • Assessment on Indian economy issues. • Applications of developmental programmers in AP • Skill to analysis contribution of different sectors in Indian economy.	• CO1: Explain the role of Sectoral contribution on Indian Economy • CO2: Recognize the nature and role of NITI Ayog. • CO3: Explain the concept of Sustainable Development and construction of Human Development Index. • CO4: Understand the concepts of Poverty and Unemployment, Government role in poverty elevation and creating employment opportunities. • CO5: Analyses the sectors role in Andhra Pradesh economy.
III	ECS 3751 (2)	INDIAN AND ANDHRA PRADESH ECONOMY	• To understand the concepts related to growth and development. • To acquire knowledge related to planning and its implementation. • To know the nature of Indian and AP Economy	• CO1: Examine the importance formal sources of agricultural finance for rural development. • CO2: Able to identify the industries and its significance role in secondary sector. • CO3: Make an assessment on the policies of NITI Aayog. • CO4: Construct the HDI measurement on Indian states and find out their status in current year. • CO5: Justify the government schemes in response to remove poverty in India.

IV	EC/ECA 4702(4)/ECS 4701 (3)	MACRO ECONOMICS-I	• To acquire knowledge about the importance of commercial and economic geography. • Knowledge on availability of resources in India • Assessment on Urbanization, • Skill to access geographical conditions in India	• CO1: Describe key economic- geographical concept of space, place, scale and recognize their key strengths and weaknesses • CO2: Identify four main theoretical perspectives in economic geography • CO3: To understand how crop diversification impact on economic development and factors affect on cropping pattern in India • CO4: To analyze the classification of industries and industrialization impact on economy • CO5: To analyze service sector role in economic development
IV	ECS 4751 (2)	MACRO ECONOMICS-I Practicals IIB	• Assessment of geographical conditions and economic development • To develop and understand concepts and principals related to economic geography • To acquire practical skills related to different sectors and its development • Skills to evaluate Development of all three sectors in India	• Recognize the relationship between economic activities and geographical environment • Analyze methods of extraction of resources from earth • Identify the methods of conservation of water and forest resources • Recognize the role of Argo based industries in rural economy • Observe the factors that are favorable to expand service sector in Visakhapatnam
V	ECA 5701(4)/ECS 5701(3)	BANKING AND INTERNATIONAL TRADE	• Understand the concepts of banking and non banking financial intuitions. • Acquire basic knowledge about stock market. • To enable the students to understand international trade	• CO1: Understand to make the students ON various services offered and various risks faced by banks • CO2: To make them aware of various banking innovations after nationalization • CO3: To give them an overview about insurance industry that governs the Life General Insurance Contracts • CO4: Compare at the level of formal analysis, the major models of international trade theories. • CO5: Employ the principle of comparative advantage and interpretation within different theoretical models.
V	ECS 5751(2)	BANKING AND INTERNATIONAL TRADE	• Understand the concepts of banking and non banking financial institutions • Acquire basic knowledge of shares and debentures. • To understand the concepts related to International trade	• CO1: Identify the modern functions of banking sector. • CO2: Critically examine the trend analysis of credit control policy by RBI. • CO3: Evaluate the importance of capital and money market in Indian economy. • CO4: Able to compare of trade theories and its impact on developing country like India. • CO5: Examine the trends of balance of payments and government protection policies

V	ECA 5702(4)/ECS 5702(3)	APPLICATION OF MATHEMATICS AND STATISTICS IN ECONOMICS	• Educate them about the role of statistics and basic concepts in economic activity. • Understand the statistical methods and its inter relationships in economic variables. • Impart practical knowledge about to expose economic concepts in statistical format through illustrations in scientific procedure.	• CO1: Recognize the importance of mathematical and statistical tools in economic analyses • CO2: Examine the measures of relations in economic variables • CO3: Evaluate trend in economic activities • CO4: To implement index numbers in different sectors
V	ECS 5752 (2)	APPLICATION OF MATHEMATICS AND STATISTICS IN ECONOMICS-Practicals	• To understand the role of Mathematics in Economics • To understand the importance of statistical tools in economic analysis	• CO1: Identify the importance of mathematical and statistical tools in economic analyses • CO2: Investigate the measures of relations in economic variables • CO3: Evaluate trend in economic activities • CO4: Able to derive the implement index numbers in different sectors
VI	ECA-E1-6701(4)/ECS-E1-6701(3)	AGRICUTURAL ECONOMICS	• To enable the students to understand agricultural economics • To understand the trends in agricultural production • To know the promotional measures taken up by the Government.	• CO1: Recognize the role of Agricultural sector in a developing country like India. • CO2: Examining the nature of formal financial sources of Agriculture sector. • CO3: Critically examine the significance of Agro-based industries.. • CO4: Access the Food processing industries and its impact on Indian economy.
VI	ECS-E1-6751(3)	AGRICUTURAL ECONOMICS-Practicals	• To enable the students to understand agricultural economics • To understand the trends in agricultural production • To know the promotional measures taken up by the Government.	• CO1: Recognize the role of Agricultural sector in a developing country like India. • CO2: Examining the nature of formal financial sources of Agriculture sector. • CO3: Critically examine the significance of Agro-based industries.. • CO4: Access the Food processing industries and its impact on Indian economy.
VI	ECA-E2-6701(4)/ECS-E2-6701(3)	ENTREPRENEURSHIP AND SMALL BUSINESS DEVELOPMENT	• To enable the students to understand opportunity assessment and idea generation • To enable the students to have knowledge on supporting institutions in business enterprises • To have knowledge on objectives of small enterprise launching formalities. • To acquire the skill of preparing a project report related to small business enterprise.	• Identify barriers to entrepreneurship • Frame project methods that are related to net working system. • Utilize the support given by different financial institutions which enhances entrepreneurship

	ECS 6751(3)	ENTREPRENEURSHIP AND SMALL BUSINESS DEVELOPMENT-Practicals	• To enable the students to understand opportunity assessment and idea generation • To enable the students to have knowledge on supporting institutions in business enterprises • To acquire the skill of preparing a project report related to small business enterprise.	• Identify barriers to entrepreneurship • Frame project methods that are related to net working system. • Utilize the support given by different financial institutions which enhances entrepreneurship
VI	ECA-E3-6701(4)/ECS-E3-6701(3)	PUBLIC FINANCE	• To acquire knowledge about public and private finance and components of finance • To understand basic problems of use of resources and income distribution • To gain practical knowledge on union budget and fiscal policy • To get acquaint with changing trends in public revenue, expenditure and public debt.	• CO1: Recognize the role of public sector in a developing country like India. • CO2: Examining the nature of tax and non-tax revenue sources of the government. • CO3: Critically examine public borrowing methods and it's redemption. • CO4: Access to budget preparation and presentation that enhances the skill to participate in budget making in different sectors
	ECS 6751 (2)	PUBLIC FINANCE-Practicals	• To gain practical knowledge about financial operations of the govt • To know the sources of public revenue and its measurement • To gain practical knowledge on Government Budget and its preparation	• CO1: Examining the nature of tax and non-tax revenue sources of the government. • CO2: Critically examine public borrowing methods and it's redemption. • CO3: Access to budget preparation and presentation that enhances the skill to participate in budget making in different sectors
VI	ECA/ECS-A1-6701	AGRIBUSINESS ENVIRONMENT IN ANDHRA PRADESH	• To understand the role of agriculture and its comparison with rest of the economy. • To acquire knowledge of agriculture finance, sources of credit and agriculture marketing in India. • To educate the students on dynamics of agro crop and agro business concepts. • To know the imports and exports of agriculture products	• CO1: Evaluate agricultural development in A.P. and in other states • CO2: Identify the problems involved in Agricultural financial sources in A.P. • CO3: Analyse the growth performance of major agricultural commodities in A.P.
VI	ECA/ECS-A2-6701	AGRICULTURAL OUTPUT MARKETING	• acquire knowledge on agricultural marketing • analyse the problems related to agriculture marketing • Gain knowledge of international trade in agriculture marketing.	• CO1: Examine the regulated markets and co-operative marketing in agricultural sector • CO2: Assess the challenges existed in agricultural marketing • CO3: Critically examine the role of various agencies involved in agricultural price commission • CO4: Analyse the role of international financial institutions with reference to A.P.
VI	ECA/ECS-A3-6701	AGRICULTURAL INPUT MARKETING	• To enable the students • To know the structure of agriculture input marketing • To gain knowledge related to agricultural mechanization	• CO1: Examine two different channels of agricultural inputs • CO2: Identify the problems involved in Fertilizers and Pesticides industries • CO3: Assess the benefits approved due to agricultural mechanization

VI	ECA -B1-6701	RURAL ECONOMY	• To understand the nature of a rural economy in India. • Needs of a rural economy. • Importance of rural infrastructure. • Skill to analyze overall Rural economy in India	• CO1: Identify the basic needs of the Rural Economy • CO2: Implement appropriate technology to develop Rural Economy • CO3: Suggest remedial measures to solve practical problems in Rural Economy.
VI	ECA-B2-6701	RURAL INDUSTRIALISATION	• Role and importance of industrialization in rural sector. • Important policies and programs for the rural development of rural Industries. • Nature of employment and unemployment in rural economy • Skill to analyze Rural industries in India.	• CO1: Identify the need for Rural Industrialization to develop rural areas. • CO2: Analyze the difficulties involved in rural industrial development • CO3: Examine the employment and skill-oriented programs in rural areas.
VI	ECA-B3-6701	RURAL MARKETING	• To understand the nature importance and objectives of rural marketing. • To acquire knowledge of a Government support for rural marketing. • To Awareness of on sources of data related to the rural marketing. • Skill to assess and find solutions to Rural marketing.	• CO1: Classify the rural marketing structure • CO2: Suggest solutions in marketing farm products • CO3: Critical evaluation of co-operative marketing
VI	ECA-C1-6701(4) ECS-C1-6701(3)	INDUSTRIAL ECONOMICS	• To know the structure of Indian industrial economy. • To meet the national requirements, understand the concepts of development indices. • To impart practical knowledge about the circumstances in industrial economy.	• CO1: Identify the role of Industrial Sector in the process of Industrialization. • CO2: Recognize the importance public sector and private sector in Indian Economy • CO3: Explain the concept of Industrial Productivity and elaborate of problems of Industrial Sickness. • CO4: Examine the impact of Liberalization, Privatization and Globalization on Industrial Sector. • CO5: Identify the role of Government sources of Industrial Finance for industrial development.
	ECS-C1 6751 (2)	INDUSTRIAL ECONOMICS-Practical	• To know the relationship between Industry and economic development • To understand the sources of Industrial Finance.	• CO1: Able to recognize the types of industries in closed economy with reference to India. • CO2: Critically examine the performance of public sectors undertakings and its impact • CO3: Investigate the determined factors which enhancing industrial productivity • CO4: Enable to make an assessment the significance of government source of industrial finance.

VI	ECA-C2-6701(4)/ECS-C2-6701(3)	LABOUR ECONOMICS	• Understand the basic problems related to loboures. • Acquire the knowledge about lobour productivity. • Equip labour welfare measures.	• CO1.Able to identify the principles of labour economics and role of labour factor in economic activity • CO2.To analyse issues related to labour market and labour welfare • CO3. Evaluate various wage policies and factor impact on wage differentiation • CO4. Measure of labour productivity and importance of labour productivity • CO5.To understand various labour welfare schemes and measure of labour welfare
	ECS-C2-6752(2)	LABOUR ECONOMICS-Practical	• To acquire knowledge related to problems of labourers working in organized and unorganized sectors • To understand measurement and importances of labour productivity • To acquire knowledge about compensation and incentive schemes.	• CO1.Able to identify the role of labor factor in economic activity. • CO2.To analyze issues related to labor market and labor welfare • CO3. Evaluate various wage policies and factor impact on wage differentiation • CO4. Measure of labour productivity and importance of labor productivity • CO5. Make an assessment on variouslabour welfare schemes and measure of labor welfare
VI	ECA-C3-6701(4)ECS-C3-6701(3)	INDUSTRIAL DEVELOPMENT IN INDIA	• To acquire basic knowledge on Indian industries. • To understand features and objectives of different industries. • To know the recent trend in making India.	• CO1: Recognise the importance of industrial corridors to strengthen the industrial base • CO2: Identify the problems faced by MSME sectors in INDIA. • CO3: Implement Make In India Programe • CO4: Critical evaluation of Foreign Direct Investment in selected sectors.
	ECS-C3-6751 (2)	INDUSTRIAL DEVELOPMENT IN INDIA-Practical	• To analyze Industrial growth over a period of time • To understand the need for project formulation	• CO1: Recognize the importance of industrial corridors to strengthen the industrial base • CO2: Identify the problems faced by MSME sectors in INDIA. • CO3: Critically examine and make a report on Make In India Programe • CO4: Evaluation of Foreign Direct Investment in selected sectors.
VI	ECS-D1-6701	RESEARCH METHODOLOGY	• To gain the knowledge about the importance of research in Economics. • To learn about the formulation of hypothesis • To gain the process of research through selection of sample. • Skill to assess the importance of research methodology in economics.	• CO1: Choose a problem for research • CO2: Formulate hypothesis in research projects • CO3: Adopt computer applications in research which enhance employability
	ECS-D1-6751	RESEARCH METHODOLOGY-Practicals	Students are able to find • A research problem • Estimation of hypothesis testing • Selection of sample	• CO1: Design questionnaire • CO2: Review the literature of the research problems • CO3: Apply computer-based applications which create employability among students.

VI	**ECS-D2-6701**	**APPLICATION OF MATHEMATICS AND STATISTICAL TOOLS IN ECONOMICS-II**	**• To understand the role of mathematics in economic theory. • Statistical methods and its interrelationships in economic variable important. • Practical knowledge about economic concepts in statistical format. • Skill to assess the role of statistics in economics.**	**• CO1: Apply Mathematical and Statistical tools in research projects • CO2: Examine the trend values in different sectors • CO3: Measure cost of living index for different people who reside in different areas**
VI	**ECS-D3-6701**	**RESEARCH PROJECT IN ECONOMICS**	**• To inculcate research activity among the students. • To gain the knowledge to identify the research problem. • Skill to select a sample model in research. • Skill to create a hypothesis in research.**	**• CO1: Select a research project • CO2: Analyze the research projects with appropriate statistical tools • CO3: Frame hypothesis and its testing procedure • CO4: Evaluate the problems involved in data collection.**

DEPARTMENT OF ENGLISH

BA PROGRAM WITH ENGLISH

BA PROGRAM OUTCOMES

1. Graduates will have greater awarenessand knowledgein all subject areas, understanding concepts, theories and linked aspects, applying them in respective domains and exploring the future career and entrepreneurial opportunities in specific and allied fields.

2. Graduates are expected to develop effective oral and written communication with the use of appropriate technology to succeed in career presentations and interviews.Using various forms of business communication, supportedby effective use of appropriate modern technology techniques, logical reasoning, articulation of ideas and presentation.

3. Graduates should be able toconceptualize, organize and resolve contemporary problems or issues with a research aptitude gather the relevant data and document the findings.They canapply the perspective of their chosen specialized area of study to develop fully-reasoned opinions on such contemporary issues.

4. Graduates are expected to develop skills on analyzing specific data or problems, apply the relevant analysis, generate alternatives and engage in problem solving in functional or practical areas

5. Graduates are expected to possess social consciousness, identify the contemporary social problems around the neighbourhoodand beyond State and National boundaries, explore the opportunities for social entrepreneurship, involve themselves in social outreach (NSS, NCC and other platforms and NGO's) and have integrity.

6. Graduates are expected to collaborate and lead teams across Departmental boundaries and demonstrate leadership qualities, (Leadership positions in the Student Council, Departmental Associations and Clubs) maximize the usage of diverse skills of team members in the related context, thus catering to harmony within diversity

7. The graduates are to demonstrate a global outlook (in consonance with the Vision and Mission Statement of the College)with the ability to identify aspects of the world at large. They are expected to be familiar with the knowledge, skills and attributes needed to live and work in a diverse world.

8. Training students and making them 'future course ready' 'job ready' and 'employable' through the 'employability component' in all courses. Graduates are prepared to handle jobs in all sectors like Teaching, Industry, NGO, Service Sector, Hospitality, ITeSetc through varied initiatives.

9. Inculcating values for good living in a challenging world through the course in Human Values and Professional Ethics, understanding personal ethics and resolving ethical dilemmas and consequentially through diverse initiatives and platforms and practise them for their own good.

10. Taking up lifelong learning Coursesto equip them to the changing environment and be prepared to take up Master programmes, PG Diplomas, Certificate Courses as well as MOOCs, Online Courses and Self Learning

SPECIFIC OUTCOMES OF BA PROGRAM WITH ENGLISH

PSO 1: Identify, analyse, interpret and describe the critical ideas, values, and themes that appear in literary and cultural texts and understand the way these ideas, values, and themes inform and impact on culture and society, both now and in the past.

PSO 2: Develop the ability to read works of literary, rhetorical, and cultural criticism, and deploy ideas from these texts in their own reading and writing. They will express their own ideas as informed opinions that are in dialogue with a larger community of interpreters and understand how their own approach compare to the variety of critical and theoretical approaches using analytical thinking and research aptitude.

PSO 3: Write effectively for a variety of professional and social settings in multiple contexts. They will practice writing as a process of motivated inquiry, engaging other writers' ideas as they explore and develop their own consequent to close reading, intertextual analysis. They will demonstrate an ability to revise for content and edit for grammatical and stylistic clarity. Appreciation of various genres and writings is something that will help the students to become writers with their own identity.

PSO 4 : Develop a passion for literature and language. They will appreciate literature's ability to elicit feeling, cultivate the imagination, and call us to account as humans. They will cultivate their capacity to judge the aesthetic and ethical value of literary texts – Global, Indian, American and British and be able to articulate the standards behind their judgments.

COURSE OBJECTIVES AND OUTCOMES

SEM	COURSE CODE (WITH NO OF CREDITS)	COURSE NAME	COURSE OBJECTIVES	COURSE OUTCOMES
I	ELL1201 (4)	ELIZABETHAN AND MILTONIC AGE	To enable the students to •become familiar with plays of William Shakespeare and the poems of the other writers of the Elizabethan and Miltonic Age. •respond to various literary works with knowledge of socio-cultural background. •Do extended reading of the poems of the same period for purpose of comparative study and for deepening their knowledge of the prescribed authors.	•Recall the history of English Literature and inculcate their aesthetic sense and love for English. •Understand the Context of Elizabethan Reign/ Golden era and appreciate globe theatre. •Identify the difference between Shakespeare and other writers. •Compare & Contrast the different genres /writers within the age. •Familiarize with dramatic art and techniques and later may adopt their performing art as vocation
I	LE 1010, (3)	GENERAL ENGLISH-ADVANCED ENGLISH	To enable the students to develop communication skills of reading, writing, liste	•Increase their reading speed and comprehension of academic writings. •Awareness of correct usage of English Vocabulary and Speaking Skills. •Appreciate and critically evaluate the different narrative techniques in writing. •Evaluate the art of note taking and note making •Develop abilities to become critical thinkers ,and writers in the near future

I	LE 1011, (3)	GENERAL ENGLISH- HIGHER ENGLISH	To enable the students to develop communication skills of reading, writing, liste	•Increase their reading speed and comprehension of academic writings •Awareness of correct usage of English Vocabulary and Speaking Skills •Appreciate and critically evaluate the different narrative techniques in writing. •Evaluate the art of note taking and note making •Develop abilities to become critical thinkers, readers and writers in the near future.
I	LE 1012, (3)	GENERAL ENGLISH- BASIC ENGLISH	To enable the students to develop communication skills of reading, writing, liste	•Acquaint with the concepts of LSRW. •Understand the background of the genres in a given text. •Create an Awareness of how to use a dictionary. •Appreciate the usage of correct vocabulary in writing and Speaking. •Learn good English to communicate better and prosper professionally in life
II	ELL 2201 (4)	LANGUAGE & LINGUISTICS	To enable the students to --study the changes and additions in the English language since language is not static. --understand the past and contemporary literary texts – especially now-a-days when close reading of the texts is called for. --study linguistics for help in proper articulation through the study of phonetics, transcription and scansion. ---provide skills necessary for those training to be teachers of English either at the primary or at the secondary level.	•Define the concepts and laws in language and linguistics and understand the impact of language changes from old to modern. •Demonstrate illustrations and create awareness as how language and meaning are shaped by culture and content. •Analyze and apply with confidence intricate complex and unfamiliar linguistic phenomenon. •Communicate clearly and effectively with specialists and general public in the future endeavors. •Evaluate sensitivity and perceptiveness concerning aspects of social, cultural and political realities where language plays an important role and relate the linguistic issues.
II	LE 2010,(3)	GENERAL ENGLISH - ADVANCED ENGLISH	To enable the students to develop communication skills of listening, speaking, reading and writing	•Recall the different genres of literature •Enhance language through task based & learner centric syllabus •Improve the understanding of writers and their works •Critically evaluate the different ways of letter writing •Develop the art of creativity in writing to be a creative writer.

II	LE 2011,(3)	GENERAL ENGLISH-HIGHER ENGLISH	To enable the students to develop communication skills of listening, speaking, reading and writing.	•Awareness of correct usage of English Vocabulary and speaking skills. •Enhance the skill of reading comprehensively. •Cultivate a value-added life to face challenges. •Analyze the different genres in English Language and Literature •Develop language to become a good communicator
II	LE 2012,(3)	GENERAL ENGLISH-BASIC ENGLISH	: To enable the students to develop communication skills of listening, speaking, reading and writing.	•Attain and enhance competence in the four modes of literacy •Enhance the skill of reading comprehensively •Study the formation of new words •Know the beauty of coherence of language •learn the creative art of writing a story
III	ELL 3201 (4)	NEOCLASSICAL AND ROMANTIC AGE	To enable the students to – 1.become acquainted with Neoclassical and Romantic Age through representative selections. 2.familiarize them with the important movements like the French Revolution and Industrial Revolution and its impact on poets. 3.sensitize the students to the literary texts of Neoclassical and Romantic Age. 4.appreciate and enjoy the works prescribed in terms of ideas, language, love for nature etc.	•Label and Illustrate the basic principles of Neo-classicism and Romanticism •Identify Socio-historical and political conditions and explain how these affect individual texts. •Compare and asses Literary works from Neo-Classical to Romantic age. •Foster Critical insight and develop critical imagination •Utilize and apply the knowledge for the future research
III	LE 3010, (3)	GENERAL ENGLISH-ADVANCED ENGLISH	To enable the students to develop communication skills of listening, speaking, reading and writing	•Increase their reading speed and comprehension of academic writings. •Awareness of correct usage of English Vocabulary and Speaking Skills. •Appreciate and critically evaluate the different narrative techniques in writing. •Evaluate the art of note taking and note making •Develop abilities to become critical thinkers ,and writers in the near future Three components
III	LE 3011, (3)	GENERAL ENGLISH- HIGHER ENGLISH	To enable the students to develop communication skills of listening, speaking, re	•Obtain value orientation to living through their study of the text. •Conceptualize a drama through a given extract in a text. •Acquaint with literary genres of prose, poetry and drama. •Critically evaluate the different narrative techniques in writing •Develop their intellectual, personal and professional abilities to become good communicators in work areas.

III	LE 3012 (3)	GENERAL ENGLISH- BASIC ENGLISH	To enable the students to develop communication skills of listening, speaking, re	•Acquaint with the concepts of LSRW. •Understand the background of the genres in a given text. •Create an Awareness of how to use a dictionary. •Appreciate the usage of correct vocabulary in writing and Speaking. •Learn good English to communicate better and prosper professionally in life
IV	ELL 4201 (4)	VICTORIAN AND MODERN AGE	To enable the students to 1. Be introduced to Victorian and Modern Age through representative selections. 2. Familiarize with the important literary movements of the Victorian and Modern Age and the impact of World Wars on poets 3. Develop sensitivity to the literary texts of Victorian and Modern Age 4. Appreciate and enjoy the works prescribed in terms of ideas, languages etc.	•Demonstrate awareness of diverse social, critical, historical and cultural perspectives by reading and responding to the range of literary texts of the period. •Identify and make relevant connections between texts of various historical periods of the age. •Analyze texts of wide range of genres, including poetry drama, fiction and even movies. •Write well-developed and effective organized essays, including in-class and research-based activities. •Undertake further study with the discipline
V	ELL 5201 (4)	CONTEMPORARY BRITISH LITERATURE -1	: To enable the students to -introduce students to contemporary British Literature through representative selections. -sensitize the students to the literary texts of Contemporary British Literature. -facilitate the students to discover the common literary tremds among the different genres of Contemporary British Literature. -Make the students acquire a critical consciousness of Contemporary British thinking and society.	•Learn to raise significant questions, gather relevant Evidences and reach well-reasoned conclusions. • Identify the cause of wars and effect on the literature. •Compare and contrast the different literary figures and texts from various periods till 20th century •Understand and value good human actions, motivations and appreciate differences especially in work areas. •Effectively communicate and introduce ideas related to modern works in research.

V	ELL 5202 (4)	CONTEMPORARY BRITISH LITERATURE -2	: To enable the students to -introduce students to contemporary British Literature through representative selections. -sensitize the students to the literary texts of Contemporary British Literature. -facilitate the students to discover the common literary trends among the different genres of Contemporary British Literature. -Make the students acquire a critical consciousness of Contemporary British thinking and society	•Demonstrate a working knowledge of international fiction, poetry, drama from 20th century. •Identify the distinct features of drama and one act play of the 20th century •Identify and describe the literary characteristics of contemporary drama emphasizing on the changing approaches to theatres as well as social, cultural and implications in representative plays. •Interpret and communicate the ideas related to literary genres of the short stories during class and group activities. CO8: Compose a working knowledge of plays from Ibsen to the present. •Develop a piece of work and contribute to literature.
VI	ELL E-1 6201(4)	Literary Appreciation & Practical Criticism	To enable the students to -become familiar with the different literary forms and devices. -apply the techniques to a given passage or a poem. The paper is divided into 3 parts. POETRY, FICTION AND DRAMA. Each is divided into a) Theory and b) Practical work.	•Extend the ability to read and analyze and compare the genres. •Applying literary terms themselves in analyzing prose and poetry and other genres. •Acquaint with practical training in appreciating the texts individually. •Interpret critically any given text on their own and build an acquaintance to glossary of literary terms. •Apply the literary techniques to writing and in communication.
VI	ELL E-2 6201(4)	Glimpses of World Literature	To enable the students to -introduce students to world literature through representative selections. -sensitize the students to the literary texts of Literature. -facilitate the students to discover the common literary trends among the different genres of world literature. -Make the students acquire a critical consciousness of world thinking and society.	•Understanding world literature in their cultural and historical context and sensitize literary texts. •Facilitate the students to discover the common literary trends among the different genres of world literature. •Analyze the attitudes and values of a text and observe their impact of readers. •Acquire a critical consciousness of the world. •Developing of critical thinking and reading skills so as to enable the students to create original ideas

VI	ELL-A1-6201	AMERICAN LITERATURE -1	To enable the students to •Develop an awareness of the literature of the United States through a selective study. •Appreciate and enjoy the Americanness in terms of ideas, language etc. •Familiarize the students with important literary movements of American Renaissance.	•Recall the different genres of British and compare with American Literature •Demonstrate knowledge of major literary movements figures and works and Exploring American Literary tradition. •Utilize literary texts to life situations and explore American Literary tradition. •Analyze early American writers/works and their representation of human experience. •Employ knowledge of literary traditions to produce imaginative writings.
VI	ELL A-2 6201(4)	AMERICAN LITERATURE -II	To enable the students to •Develop an awareness of the Age of industrialism in American literature through a selective study. •Appreciate the period of Renaissance in terms of ideas, language etc. •Familiarize the students with the period which gave rise to regional writings of American Literature.	•Define the major conventions, themes of Puritans and early American Literature. •Illustrate the major themes of abolition literature and slave narratives. •Analyze the historical context in the given literary work. •Inculcate analytical skills for critical engagement with the texts. •Apply the early works with individual works of the writers as a comparative study for research.
VI	ELL A-3 6201(4)	American Literature-III	To enable the students to •Develop an insight with the modern period in American Literature through a selective study. •Appreciate the Harlem Renaissance in terms of ideas, language etc. •Familiarize the students with Contemporary American Literature.	•Identify and read to interpret and evaluate assigned literary works. •Classify and acquaint with the knowledge of the characteristics of various literary genres in the later Contemporary American Literature. •Compare and contrast American literary works/writers to world literature •Develop analytical skills and critical thinking through reading discussion and written assignments. •Adapt the knowledge of American Literature in the classrooms of our work areas.
VI	ELL B1 6201(4)	INDIAN WRITING IN ENGLISH -1	To enable the students to •acquaint themselves with a wide range of Indian Writing in English and its various forms both in the Pre and Post Independence literature. •relate easily to the texts owing to their cultural familiarity •familiarize the students with the Indian Idiom.	•Recall the history of Indian writings and its origins. •Classify and acquaint with the knowledge of the characteristics of various literary genres related to Indian writings in English. •Identify the use of 'Indianism' in Indian writing in English relating to texts and their contexts. •Compare and contrast pre- and post- Independence and explore the peculiarities in Indian style of writings. •Evaluate the concepts aesthetic writings for future exploration.

VI	ELL B2 6201(4)	INDIAN WRITING IN ENGLISH -II	To enable the students to •acquaint themselves with a wide range of Indian Writing in English and its various forms both in the Pre and Post Independence literature. •relate easily to the texts owing to their cultural familiarity •familiarize the students with the Indian Idiom.	•Define the major conventions, themes of Indian writing in English. •Illustrate the major themes of literary works dealing with. •Understanding the modernization diaspora and India's quest for identity. •Apply the early works with individual works of the writers as a comparative study. •Appreciate the culture and utilize it to spread it through writing.
VI	ELL B-3 6201(4)	INDIAN WRITING IN ENGLISH -III	To enable the students to •acquaint themselves with a wide range of Indian Writing in English and its various forms both in the Pre and Post-Independence literature. •relate easily to the texts owing to their cultural familiarity •familiarize the students with the Indian Idiom.	•Demonstrate knowledge of major literary movements figures and works of Indian Writings •Analyze early Indian writers//works and their representation of human experience. •Interpret major works/ writers of Indian writers within historical and social contexts. •Evaluate the texts and style of Indian English and explore Indian Literary tradition. •Undertake this discipline for further study.
VI	ELL C-1 6201(4)	COMMONWEALTH LITERATURE -I	To enable the students to -introduce students to world literature through representative selections. -sensitize the students to the literary texts of Literature. -facilitate the students to discover the common literary trends among the different genres of world literature. -Make the students acquire a critical consciousness of world thinking and society	•Recall the different writers of Commonwealth literature. •Demonstrate knowledge of major literary movements figures and works of Commonwealth literature. •Understanding the connections among the literary works of the period. •Interpret major works/ writers of Commonwealth literature within historical and social contexts. •Evaluate the texts and style of writings of genres of the period for further use.
VI	ELL C-2 6201(4)	COMMONWEALTH LITERATURE -II	To enable the students to -introduce students to world literature through representative selections. -sensitize the students to the literary texts of Literature. -facilitate the students to discover the common literary trends among the different genres of world literature. -Make the students acquire a critical consciousness of world thinking and society.	•Understanding the connections among the literary work's /writers of the period. •Analyze the Commonwealth literary works and their relation to society and interpret the works/ in relation to social contexts. •Critically appreciate the literary devices used in the works. •Evaluate creative writings of the writers in the Commonwealth Literature. •Utilize the different forms of narrative techniques in creative writing

VI	ELL C-3 6201 (4)	COMMONWEALTH LITERATURE - III	To enable the students to •introduce students to world literature through representative selections. •sensitize the students to the literary texts of Literature. •facilitate the students to discover the common literary trends among the different genres of world literature. •Make the students acquire a critical consciousness of world thinking and society.	•Recall the historical background of Commonwealth Literature. •Understanding the lives of Aboriginals and interpret Literary texts to life situations. •Evaluate the narrative style of writing in fiction in comparison with other Literary movement writers. •Critically appreciate the comparison of the works of the same writer, or other writers of the Era. •Acquire creative skills in writing a review on the works of Commonwealth Literature

DEPARTMENT OF GENERAL EDUCATION

BCOM / BBA / BA / BSC

PROGRAM OUTCOMES

1. Graduates will have greater awarenessand knowledgein all subject areas, understanding concepts, theories and linked aspects, applying them in respective domains and exploring the future career and entrepreneurial opportunities in specific and allied fields.

2. Graduates are expected to develop effective oral and written communication with the use of appropriate technology to succeed in career presentations and interviews.Using various forms of business communication, supportedby effective use of appropriate modern technology techniques, logical reasoning, articulation of ideas and presentation.

3. Graduates should be able toconceptualize, organize and resolve contemporary problems or issues with a research aptitude gather the relevant data and document the findings.They canapply the perspective of their chosen specialized area of study to develop fully-reasoned opinions on such contemporary issues.

4. Graduates are expected to develop skills on analyzing specific data or problems, apply the relevant analysis, generate alternatives and engage in problem solving in functional or practical areas

5. Graduates are expected to possess social consciousness, identify the contemporary social problems around the neighbourhoodand beyond State and National boundaries, explore the opportunities for social entrepreneurship, involve themselves in social outreach (NSS, NCC and other platforms and NGO's) and have integrity.

6. Graduates are expected to collaborate and lead teams across Departmental boundaries and demonstrate leadership qualities, (Leadership positions in the Student Council, Departmental Associations and Clubs) maximize the usage of diverse skills of team members in the related context, thus catering to harmony within diversity

7. The graduates are to demonstrate a global outlook (in consonance with the Vision and Mission Statement of the College)with the ability to identify aspects of the world at large. They are expected to be familiar with the knowledge, skills and attributes needed to live and work in a diverse world.

8. Training students and making them 'future course ready' 'job ready' and 'employable' through the 'employability component' in all courses. Graduates are prepared to handle jobs in all sectors like Teaching, Industry, NGO, Service Sector, Hospitality, ITeSetc through varied initiatives.

9. Inculcating values for good living in a challenging world through the course in Human Values and Professional Ethics, understanding personal ethics and resolving ethical dilemmas and consequentially through diverse initiatives and platforms and practise them for their own good.

10. Taking up lifelong learning Coursesto equip them to the changing environment and be prepared to take up Master programmes, PG Diplomas, Certificate Courses as well as MOOCs, Online Courses and Self Learning Courses for a better future.

B.SC PROGRAM OUTCOMES

- Comprehensive domain specific knowledge provides the necessary intellectual competencies to progress to higherlevels of learning and research
- Exhaustive laboratory training augments comprehension of theoretical principles and ignites scientific temper
- Experiential learning through internships/on the job training/surveys/field studies/live projects etc.ensures problem solving and job skills
- Thehard and soft skills acquired in the form ofLSRW/verbal/analytical/numerical/reasoning/programming/coding attributes, contribute to success in National and International level tests for admission and recruitment
- Individual and group projects and assignments kindle research aptitude
- Autodidactic learning tasks induce critical thinking and lead to optimal utilisation and creation of e resources on the net
- The mandatory life skills courses nurture ethical behaviour, social responsibility and environmental consciousness
- Leadershiptraining, entrepreneurship education courses hone leadership skills and groom entrepreneurial tendencies fostering future leaders and job providers
- Selective perusal ofpersonality developmentcourses and participation in extra andco-curricular activitiesensurephysical andpsychological fitness leading to personal empowerment and responsible citizenship
- The holistic BSc programme at SJCW(A), in toto, strengthens the strengths of the learners, weakens their weaknesses, helps them to overcome challenges and creates opportunities for them to evolve into socially responsive members of society.

COURSE OBJECTIVES AND OUTCOMES

SEM	COURSE CODE (WITH NO OF CREDITS)	COURSE NAME	COURSE OBJECTIVES	COURSE OUTCOMES
1	CSS 1001(2)	Communication & Soft Skills -1	• Enhancing basic skills to become a good communicator. • Recognize and overcome barriers for effective communication. • Speak confidently • Enable the learners to develop the skills efficiently and effectively with help of Language Lab. • To familiarize students with phonetic symbols in order to help them to refer to dictionaries for appropriate pronunciation of English words, phrases and sentences	• Knowing the Barriers of effective communication. • Identify the different English sounds and analyze the use of different phonetic symbols. • Enhancing the art of learning the words correctly through speaking skills. • Neutralizing the accent and recall speech sounds and articulation.
I	VE 1002	Value Education	To train students to be Self- reliant and assume outstanding value based leadership positions in the family and in work spaces	Exhibit positive behavior with good etiquette & positive attitude Be adept at personal grooming and also inculcate the same in others Be able to integrate and apply knowledge on self, self esteem and self discipline. Be able to present themselves as a role model for human values and professional ethics Comprehend and adopt the Nutritional protocols as girls

II	LED 2001(2)	Leadership Education	1. To know and understand the concepts of leadership is education. 2. To analyse the patterns of thinking and perception in individuals and groups. 3. To apply the theories and styles to everyday living in the society. 4. Participating in personal and professional development opportunities	Students will develop critical thinking skills. 2. Students will understand how ethics, morals, and values relate to their leadership dilemmas. 3. Students will gain a greater understanding of their own personal identities and how their identities shape their leadership and followership. 4. Students will develop a comprehensive set of practical skills and tools to rely on through leadership practice. Such skills and tools include time management, meeting management and agenda setting, group dynamics, and team building
III	ICT-3001	Informattion & Communication Technology -1	To enable the students to: • To make them learn about the computer and its fundamentals. • Providing them a good knowledge of preparing a document, presenting a presentation, working with Excel.	• Apply skills and concepts for basic use of a computer. • Identify appropriate tools in MS office to prepare basic documents, charts, spreadsheets and presentations. • Create personal, academic and business documents using MS office.
III	ES 3001 1)	Environmental Studies	• Learn, appreciate and plan to conserve Natural resources • Identify the sensitive aspects of Ecosystem • Appreciate Biodiversity of Nature and steps taken to conserve the same • Narrate types of pollutants and identify individuals role to address this global issue • Address and educate Environmental Ethics	identify their role in Environment studies and in conserving Natural resources CO2: Realize the concepts of Ecosystem and demonstrate energy flow CO3: Comprehend Global Biodiversity and need to conserve endangered species CO4: Classify pollutants and propagate control measures CO5: Devise strategies for sustainable living

III	**AS3002(2)**	**Analytical Skills**	• **Ability to visualize, gather information, articulate, analyze, solve complex problems** • **Analyze the data from the information collected, and come up with a solution to a problem** • **Attempt easily all types of competitive exams**	**Develop the ability to solve problems quickly and effectively** **Make real time decisions by rapidly assessing the facts and assumptions.** **Detect and take definitive action to prevent potential problems which are required at work place.** **Equip them with training in time management and decision making for competitive exams which are time based and attempt easily all types of competitive exams** **Be able to know tools and techniques for identifying root causes of problems**
IV	**AS4002(2)**	**Analytical Skills**	• **Ability to visualize, gather information, articulate, analyze, solve complex problems** • **Analyze the data from the information collected, and come up with a solution to a problem** • **Attempt easily all types of competitive exams**	**Develop the ability to solve problems quickly and effectively** **Make real time decisions by rapidly assessing the facts and assumptions.** **Detect and take definitive action to prevent potential problems which are required at work place.** **Equip them with training in time management and decision making for competitive exams which are time based and attempt easily all types of competitive exams** **Be able to know tools and techniques for identifying root causes of problems**

IV	ES 4001(1)	Environmental Studies	• Learn, appreciate and plan to conserve Natural resources • Identify the sensitive aspects of Ecosystem • Appreciate Biodiversity of Nature and steps taken to conserve the same • Narrate types of pollutants and identify individuals role to address this global issue • Address and educate Environmental Ethics	identify their role in Environment studies and in conserving Natural resources CO2: Realize the concepts of Ecosystem and demonstrate energy flow CO3: Comprehend Global Biodiversity and need to conserve endangered species CO4: Classify pollutants and propagate control measures CO5: Devise strategies for sustainable living
IV	CSS 4003 (2)	Communication & Soft Skills - III	• Enhancing basic skills to become a good communicator. • Recognize and overcome barriers for effective communication. • Speak confidently • Enable the learners to develop the skills efficiently and effectively with the help of language Lab. • To familiarize the students with various situations of English use. • To enhance learners fluency through communicative speaking activities	• Demonstrate their Vocabulary in speaking fluently through activities • Organize themselves to face interview confidently • Motive for Personal grooming in formal and informal situations • Design a good curriculum vitae. • Develop to speak well with the pros and cons of group discussion
IV	ICT- 4001	Information & Communication Technology	To enable the students to: • Exposure the Internet concepts and HTML. • Get Familiar with web terminologies, web browsers and Email Inner workings. • Develop a webpage.	• Describe different types of networks, internet and its applications. • Identify and use Internet tools, E-mail system, browsers features and Social networking sites. • Create web pages using HTML
1V	ED 4001 (2)	Entrepreneur Development	A Generic Course that is intended to inculcate an integrated personal Life Skill to the student	• Identify the various traits of entrepreneurs. • Know various types of financial institutions that help the business at Central, State andLocal Level • Applies the knowledge for generating a broad idea for a starting an enterprise/startup • Preparing a Project Report for a start up and differentiate between financial, technical analysis and business feasibility.

DEPARTMENT OF HISTORY
BA PROGRAM WITH HISTORY
BA PROGRAM OUTCOMES
1. Graduates will have greater awarenessand knowledgein all subject areas, understanding concepts, theories and linked aspects, applying them in respective domains and exploring the future career and entrepreneurial opportunities in specific and allied fields. **2. Graduates are expected to develop effective oral and written communication with the use of appropriate technology to succeed in career presentations and interviews.Using various forms of business communication, supportedby effective use of appropriate modern technology techniques, logical reasoning, articulation of ideas and presentation.** **3. Graduates should be able toconceptualize, organize and resolve contemporary problems or issues with a research aptitude gather the relevant data and document the findings.They canapply the perspective of their chosen specialized area of study to develop fully-reasoned opinions on such contemporary issues.** **4. Graduates are expected to develop skills on analyzing specific data or problems, apply the relevant analysis, generate alternatives and engage in problem solving in functional or practical areas** **5. Graduates are expected to possess social consciousness, identify the contemporary social problems around the neighbourhoodand beyond State and National boundaries, explore the opportunities for social entrepreneurship, involve themselves in social outreach (NSS, NCC and other platforms and NGO's) and have integrity.** **6. Graduates are expected to collaborate and lead teams across Departmental boundaries and demonstrate leadership qualities, (Leadership positions in the Student Council, Departmental Associations and Clubs) maximize the usage of diverse skills of team members in the related context, thus catering to harmony within diversity** **7. The graduates are to demonstrate a global outlook (in consonance with the Vision and Mission Statement of the College)with the ability to identify aspects of the world at large. They are expected to be familiar with the knowledge, skills and attributes needed to live and work in a diverse world.** **8. Training students and making them 'future course ready' 'job ready' and 'employable' through the 'employability component' in all courses. Graduates are prepared to handle jobs in all sectors like Teaching, Industry, NGO, Service Sector, Hospitality, ITeSetc through varied initiatives.** **9. Inculcating values for good living in a challenging world through the course in Human Values and Professional Ethics, understanding personal ethics and resolving ethical dilemmas and consequentially through diverse initiatives and platforms and practise them for their own good.** **10. Taking up lifelong learning Coursesto equip them to the changing environment and be prepared to take up Master programmes, PG Diplomas, Certificate Courses as well as MOOCs, Online Courses and Self Learning**
SPECIFIC OUTCOMES OF BA PROGRAM WITH HISTORY

- **PSO-1: Students gained knowledge in the core areas of Indian history (ancient, medieval, modern period)**
- **PSO2: Developed skills helpful in the study and understanding of Historical events (Map Record, Models preparation).**
- **PSO3: Developed interests in the study of (History) and also to work collectively as a member of a team.**
- **PSO-1: Students gained knowledge in the core areas of Indian history (ancient, medieval, modern period)**

COURSE OBJECTIVES AND OUTCOMES

SEM	COURSE CODE (WITH NO OF CREDITS)	COURSE NAME	COURSE OBJECTIVES	COURSE OUTCOMES
III	HIS 3301 (4)	HISTORY OF MODERN INDIA (1800-1964 A.D)	To enable the student to – - Identify the relate important dates, events, places, persons - Comprehend the nature of events in Modern Indian History - Distinguish between facts and opinions - Formulate valid conclusions regarding specific events. - Compare and contrast situations in a given period of time.	Students will1. Acquire knowledge of how race, gender Class ethnicity and religion create histories rather than a monolithic past. 2. Learn to understand analyze and Evaluate the administrative policies of Europeans in India. 3. Have an insight into the first war of Indian independence –revolt of 1857. 4. Understand the role of Mahatma Gandhi in freedom movement. 5. Be able to appreciate the importance of freedom struggle and sacrifices of leaders
IV	HIS 4301 (4)	HISTORY AND CULTURE OF ANDHRA DESA	To enable the student to – - Understand the geographical setting of Andhra Pradesh. - Identify the cause and effect relationship of events. - Get a holistic picture of the history and culture of Andhra	Students will 1. Acquire knowledge of early kingdoms of Andhra. 2. Able to analyze the glory of Vijayanagara Empire. 3. Learn to evaluate the administration and structure of Qutubshahi dynasty. 4. Be able to communicate the arrival of Europeans and their rule in Andhra to others. 5. Acquaint with the revenue reforms of Europeans and apply them to the present society

DEPARTMENT OF HOME SCIENCE

BSC PROGRAM WITH HOME SCIENCE

BSC PROGRAM OUTCOMES

The knowledge intensive and skill-oriented curriculum of BSc Home Science programme in the three major mode namely Human Development, Foods & Nutrition and Resource Management is designed and deployed in the CBCS pattern at SJCW(A) envisaging the following outcomes

- **Comprehensive domain specific knowledge provides the necessary intellectual competencies to progress to higher levels of learning and research and also acquisition of a scientific perspective about day to day living**
- **Exhaustive laboratory training augments comprehension of theoretical principles and ignites scientific temper, besides resulting in the acquiring of a multitude of life management skills**
- **Experiential learning through internships/on the job training/surveys/field studies/live projects etc. ensures better comprehension of concepts, real world situation resulting in problem solving and job skills**
- **The hard and soft skills acquired in the form of LSRW/verbal/analytical/numerical/reasoning/programming/analysis/sustainable use of resources contribute to success in National and International level tests for admission and recruitment**
- **Individual and group projects and assignments kindle research aptitude**
- **Autodidactic learning tasks induce critical thinking and lead to optimal utilisation and creation of e resources on the net**
- **The mandatory life skills courses nurture ethical behaviour, social responsibility and environmental consciousness**
- **Leadership training, entrepreneurship education courses hone leadership skills and groom entrepreneurial tendencies fostering future leaders and job providers**
- **Selective perusal of personality development courses and participation in extra and co-curricular activities ensure physical and psychological fitness leading to personal empowerment and responsible citizenship**
- **The holistic BSc Home Science Programme at SJCW(A), in toto, strengthens the strengths of the learners, weakens their weaknesses, helps them to overcome challenges and creates opportunities for them to evolve into socially responsive members of society, possessing reasonably good life management skills.**

SPECIFIC OUTCOMES OF BSC PROGRAM WITH HOME SCIENCE

PSOs: On completing the six-semester program, the students shall be acquiring theoretical domain knowledge and practical experience/exposure/hands-on experience and

PSO 1: Be able to learn the physiological, psychological, social, intellectual and cultural influences during different stages of life and helps to build skills in preschool teaching.
PSO 2: Be able to gain knowledge, understand the role of food, nutrition and dietetics in promoting healthy living in the community, and be familiar with different lab techniques related to nutrition.
PSO 3: To enable the students with managerial skills required in day-to-day life situations and acquire knowledge in being a good consumer. Be versatile in designing garments using various surface enrichment techniques.
PSO 4: To be able to develop extra-curricular skills, analytical skills, communication skills, leadership qualities and entrepreneurship skills.

COURSE OBJECTIVES AND OUTCOMES

SEM	COURSE CODE (WITH NO OF CREDITS)	COURSE NAME	COURSE OBJECTIVES	COURSE OUTCOMES

I	HS 1101	COMMUNICATION IN HOME SCIENCE	To enable the students to 1.learn the importance of communication, methods of dissemination of knowledge and skills to the beneficiaries. 2.understand the role of communication in the study of Home Science	On completion of the Course, the student shall 1.Learn about different types of communication. 2.Understand the treatment of message. 3.Acquire knowledge about individual and group contacts in community. 4.Learn the importance of folk art and drama to convey message through traditional art. 5.Acquire skills regarding projected and non- projected techniques. 6.Be eligible to design communication modules using visual and other modes
I	HS 1151	COMMUNICATION IN HOME SCIENCE PRACTICAL	To enable students to 1.Learn the skills and techniques of preparation of various aids used in communication. 2.Learn the use of various aids to efficiently deliver the messages and information to the people.	On completion of the Course, the student shall 1.Be able to prepare visual aids like poster, charts etc. 2. Know to communicate efficiently in one – way and two – way process. 3.Acquire skills to communicate in large gatherings. 4.Be able to prepare puppets for effective communication in a community. 5.Be equipped to develop a content with a message and present in form of a dram in a community. 6.Be qualified to start career in the communication field/preparation of
I	HS 1201	FOOD SCIENCE	To enable the students to 1.Gain knowledge of the nutritive value and properties of different foods. 2.understand the classification foods according to their function 3.Understand the principles underlying the different methods of cooking.	On completion of the Course, the student shall 1.Demonstrate and use the different methods of cooking 2.Understand the composition and nutritive value of animal and plant food 3.Apply the different techniques to improve the storage and shelf life of food 4.Be able to identify different microorganism for the spoilage of food 5.Interpret and demonstrate the importance and functions of food and its nutrients
I	HS 1251	FOOD SCIENCE PRACTICAL	To enable the students to develop skills to prepare recipes. acceptable with reference to appearance, palatability and nutritive value.	On completion of the Course, the student shall 1.Display a knowledge of the Techniques on different cooking methods 2.Acquire skills in methods of germination and fermentation, stages of cookery 3.Develop skills on food preservation techniques 4.Learn techniques of preparing food without losing nutritive value 5.Be equipped with skills to start entrepreneurial activity in the field of food preservation

I	HS1301	RESIDENTIAL SPACE DESIGNING	To enable the students to 1.Recognize the family's housing needs. 2.Be aware of the financial and other implications of owning/ renting/ building a house. 3.Acquire information that will improve the quality of housing available to the family. 4.Understand the principles underlying the selection, operation, use, care and storage of household equipment.	On completion of the Course, the student shall 1.Acquire knowledge about house planning and related areas 2.Learn about the Designing of efficient work centers 3.Acquire skill of planning for elements in landscape design 4.Understand and demonstrate the skill of selection of furniture and material used for constructions
I	HS 1351	RESIDENTIAL SPACE DESIGNING PRACTICAL	To enable the students to 1.Develop skills in household cleaning, maintenance. 2.Plan houses for different income levels.	On completion of the Course, the student shall 1.Understand the plan of single and double bedroom 2.Acquire knowledge of various architectural symbols 3.Equipped with skills regarding the care and maintenance of household equipment 4.Acquire skill of drafting house plans with scale and architectural symbols
II	HS2101	PHYSIOLOGY	To enable students to understand -various tissues and organs of the body and their functions. -different systems of the body and their functions. -importance of hormonal and nervous regulation of body.	On completion of the Course, the student would 1.Understand the mechanism of different organ systems 2.Acquire skill on measuring and assessing selected blood parameters 3.Demonstrate an understanding of the process of hormonal and regulation of the body 4.Demonstrate an ability to relate physiology to the disease conditions
II	HS2152	PHYSIOLOGY PRACTICAL	To enable students 1.To develop skills in techniques of assessing various blood parameters. 2.To acquire skills of qualitative analysis.	On completion of the Course, the student shall 1.Acquire skills and techniques to record blood pressure and blood glucose levels 2.Demonstrate the skill of assessing the level of haemoglobin and blood grouping 3.Identify the different types of tissues. 4.Be eligible to seek placement as a part-timer in a diagnostic laboratory

II	HS 2201	NUTRITION SCIENCE	To enable the students to •Understand the relationship between nutrition and human well-being. •learn the nutritional needs and deficiency symptoms in different age groups and special conditions.	On completion of Course, the student would 1.Understand the concept of interrelationship between nutrition and health 2.Know and be able to identify nutrition deficiency symptoms of different age groups 3.Acquire ability to plan recipes with low cost ingredients 4.Demonstrate skills in various selections of food based on nutrients for healthy and disease conditions 5.Acquire and demonstrate knowledge on developing different nutrient recipes
II	HS 2251	NUTRITION SCIENCE PRACTICAL	To enable the students to -acquire food preparation skills -prepare recipes minimizing loss of nutrients and optimum retention of taste. -Become aware of the local cuisine in order to plan family menus. -Follow recipes available from various sources. -Present food in an attractive and appetizing manner.	On completion of the Course, the student shall 1.Demonstrate the skills of selection of seasonal foods for planning of nutritious foods 2.Acquire skill of planning for different combinations of foods 3.Exhibit reasonable skills of sensory evaluation
II	HS2301	BASICS OF TEXTILES	Gain an understanding about textile fibers and their uses. Judge the quality of textile fibers. Acquire knowledge of fibers and the various processes involved in manufacture of fibers	On completion of the Course, the student shall 1. Know terminologies used in the field of textile fibers and classify them 2.Gain familiarity in economic cultivation and production of natural fibers. 3.Exhibit a knowledge of mechanical and chemical spinning techniques in yarn production and blends and mixtures of textiles fibers and their changes. 4.Acquire skills on demonstrating the action of soaps and detergents on different types of fabrics.
II	HS 2351	BASICS OF TEXTILES PRACTICAL	To enable the students to: -Identify textile fibers by various tests. -Acquire the appropriate skill of using laundry reagents. -Gain knowledge in identifying different types of textiles fibers by various methods. -Acquire a few practical skills of enriching fabric by various embroidery stitches.	On completion of the Course, the student shall 1.Demonstrate ease in the use of washing machine, soaps and detergents on natural and synthetic fibers. 2.Demonstrate the skill of laundering cotton, wool, silk, synthetic, rayon and special articles. 3.Demonstrate the skills of identifying textile fibers and testing color fastness to sunlight 4.Demonstrate the skill in embroidery and fabric enrichment.

III	HS 3101	PSYCHOLOGY	To enable the students to – 1.understand the study of human behavior 2.understand various psychological phenomena. 3.gain knowledge about intelligence & personality.	On completion of the Course, the student shall 1.Understand the concepts, branches and methods of psychology 2.Apply the techniques for assessment of personality test 3.Possess knowledge on the theoretical theories of perspective inside ecology in human behaviour 4.Be able to identify and classify the different levels of intelligence in humans 5.Acquire knowledge on different techniques of learning and memory
III	HS 3151	PHYSIOLOGY PRACTICAL	To enable students 1.To develop skills in techniques of assessing various blood parameters. 2.To acquire skills of qualitative analysis.	On completion of the Course student shall 1.Acquire skills and techniques to record blood pressure and blood glucose levels 2.Conduct test on haemoglobin and blood grouping 3.Identify the different types of tissues. 4.Be qualified to join as an apprentice/assistant in a diagnostic laboratory
III	HS 3201	MICROBIOLOGY	To enable students to: -know about the microbes in the environment, their general characteristics and classification -have information about a few common infectious diseases	On completion of the Course, the student shall 1.Be Able to explore beneficial and harmful activities of microorganism 2.Demonstrate usage of equipment used for sterilization and disinfection 3.Evaluate the different modes of transmission of infection 4.Schedule and carry out immunization schedule 5.Acquire knowledge on methods of study of microorganisms in sewage and water treatment 6.Acquire skills to take up career in a diagnostic laboratory
III	HS 3251	MICROBIOLOGY PRACTICAL	To enable students to: -Learn the use of Microscope -Acquire the skill of staining microorganisms to study them better -Culture bacteria -Appreciate and become aware of the extensive microbial population in the environment	On completion of the Course, the student shall 1.Acquire skills on staining techniques 2.Be able to prepare agar media for study of microorganisms 3.Analyse the pathogens and its importance of microorganism to identify the causative agent 4.Be equipped to start career as an apprentice in a diagnostic laboratory

III	HS3301	FOUNDATION OF ART AND DESIGN	To enable the students to 1.Gain an understanding of basic art principles. 2.Develop an aesthetic sense. 3.Become good art consumers. 4.Develop interiors which are aesthetically satisfying to live in.	On completion of the Course, the student shall 1.Acquire knowledge about the elements of design, styles of furniture, art principles 2.Explore skills on evaluation of furniture 3.Demonstrate skill in applying the principles of interior and exterior and flower arrangement to day to day use and experience 4.Acquire skills in artistic arrangement of interior 5.Acquire skills in arranging flowers artistically 6.Be qualified to launch a career in flower arrangement/interior decoration as an apprentice
III	HS 3351	FOUNDATION OF ART AND DESIGN PRACTICAL	To enable the students to 1.Gain an understanding of basic art principles. 2.Develop an aesthetic sense. 3.Become good art consumers. 4.Develop interiors which are aesthetically satisfying to live in.	On completion of the Course, the student shall 1.Possess skills to judge structural and decorative design 2.Be qualified to make and evaluate flower arrangement using the art principle 3.Acquire skills on colour schemes in designing interiors 4.Be equipped to take up career in interior decoration 5.Be equipped to become an entrepreneur in the field of interior decoration/color planning
IV	HS 4101	PRE AND POST NATAL DEVELOPMENT	To enable students to: -Understand biological and physiological foundations of development. -Create awareness of physical and psychological development of the infant. -Understand major principles and processes of Child development and care.	On completion of the Course, the student shall 1.Gain an understanding of the importance of pre and postnatal development 2.Exhibit an appreciation of natural mode of delivery 3.Be skilled in the care of new born and registrations of birth 4.Display expertise in preparation of baby food
IV	HS 4151	PRE AND POST NATAL DEVELOPMENT PRACTICAL	To enable students to -develop skills of child care. -Learn techniques of observing developmental patterns of children during babyhood.	On completion of the Course, the student shall 1.Acquire the skill of reporting case studies 2.Gain skill of anthropometric measurements of an infant 3.Demonstrate the skill of construction of baby napkins and diaper
IV	HS4201	FOOD SERVICE AND MANAGEMENT	To enable the students to -Understand the process of management in various aspects of Food Service. -Gain knowledge about the various aspects of Food Service Management -Develop skills in meal planning and service.	On completion of the Course, the student shall 1.Gain knowledge on quantity food preparation and planning 2.Acquire skills in food budgeting and calculations of food cost 3.Demonstrate a clear understanding of the working of food service outlets 4.Possess skills in maintaining of materials and store records in food service outlets

IV	HS 4251	BAKING AND CONFECTIONARY PRACTICAL	To enable the students to -Acquire skills in the preparation of varieties of cakes, pastries and other bakery products. -Become familiar with appropriate quality and techniques in baking.	On completion of the Course, the student shall 1.Demonstrate the skill of preparing latest and attractive baking and confectionery recipes 2.Acquire skills in methods of preparation 3.Be eligible to launch an entrepreneurship venture in baking
IV	HS 4302	MANAGEMENT PRINCIPLES	To enable the students to 1.To become better managers. 2.Understand the meaning and implementation of management with special reference to house. 3.Recognize and utilize resources available to them to achieve better quality of life.	On completion of the Course, the student shall 1.Have a clear comprehension about managerial situations in family 2.Acquire decision making skills 3.Display better managerial skills under varied situations 4.Possess various techniques involved in work simplification
IV	HS 4351	MANAGEMENT PRINCIPLES PRACTICAL	To enable the students to 1.To become better managers. 2.Understand the meaning and implementation of management with special reference to house. 3.Recognize and utilize resources available to them to achieve better quality of life. 4.Study the management of time, energy and other resources.	On completion of the Course, the student shall 1.Gain an understanding of skill of time management by using various tools 2.Acquire skill of studying energy management by using various tools 3.Demonstrate the skill of making various household furnishing/decorative items using techniques like quilting patchworks and braiding 4.Demonstrate better managerial skills in household management
V	HS 5101	LIFE SPAN DEVELOPMENT I	To enable students to •Acquire information on Development at various stages of the life cycle up to late childhood. •Become familiar with different types of behavioral patterns of childhood and to understand the child •To compare developmental changes during early and late childhood.	On completion of the Course, the student shall 1. Understand the characteristics and development of early and late childhood 2.Apply knowledge on importance and theories of play 3.Identify the factors influencing early and late childhood 4.Explore and identify the behavioural problems of early and late childhood 5.Analyse the various personality theories of defence mechanism in children
V	HS 5151	LIFE SPAN DEVELOPMENT I PRACTICAL	To enable the students to 1.Acquire skills of measuring and recording various developments of children during childhood and adolescence. 2.Learn indigenous toy – making.	On completion of the Course, the student shall 1. Understand the characteristics and development of early and late childhood 2 . Apply knowledge on importance and theories of play 3. Identify the factors influencing early and late childhood 4. Explore the behavioural problems of early and late childhood 5. Analyse the various personality theories of defence mechanism in children Be qualified to start career as preschool educator/administrator

V	HS 5102	EARLY CHILDHOOD EDUCATION	To enable the student to •Develop awareness regarding the crucial importance of preschool years and the role of preschool. •Become familiar with different types of preschool programme. •Develop an understanding of preschool programme planning.	On completion of the Course, the student shall 1.Understand the importance of preschool education 2.Identify the needs based on preschool children 3.Execute the various approaches of teaching in preschool 4.Evaluate the program of preschool 5.Apply the importance of play and language development in curriculum 6.Be eligible to take up career as Preschool teacher/trainer
V	HS 5152	EARLY CHILDHOD EDUCATION PRACTICAL	To enable the students to 1.Acquire techniques of planning and organizing preschool participation programme. 2.Develop skills of programme evaluation. 3.Learn about various types of preschools in india.	On completion of the Course, the student shall 1.Apply skills on preparation of story AIDS 2.Design a program plan for school going children 3.Execute a teacher parent teacher association 4.Be equipped with skills to start a preschool 5.Be eligible to start a career in preschool education
V	HS 5201	FAMILY NUTRITION	To enable the students to -understand the principles of menu planning -plan diets for various ages, physiological conditions and income levels.	On completion of the Course, the student shall 1.Understand principles of diets, nutrition and meal planning 2.Acquire the skill of meal planning for different age groups 3.Demonstrate the skill of giving nutrition education
V	HS 5251	FAMILY NUTRITION PRACTICAL	To enable the students to - understand the principles of menu planning - plan diets for various ages, physiological conditions and income levels.	On completion of the Course, the student shall 1.Gain knowledge of meal planning 2.Exhibit ability to plan diets for different age groups 3.Be qualified to take up career as nutritionist in fitness centers/voluntary organizations
V	HS5202	COMMUNITY NUTRITION	This course will enable the students to- •Understand the factors that determine the availability and consumption of food. •Be familiar with the common nutritional problems of the community, causes etc.	On completion of the Course, the student shall 1.Understand food availability problems at community level. 2.Identify nutritional problems prevalent in the community. 3.Acquire knowledge on government schemes in operation. 4.Demonstrate the ability to assess nutritional status in community. 5.Gain knowledge on post-harvesting tech. 6.Be eligible to take up careers in Community Nutrition Projects of Central/State governments or NGOs/VOs
V	HS 5252	COMMUNITY NUTRITION PRACTICAL (PROJECT)	This course will enable the students to assess and evaluate the nutritional status of the community.	1.Acquiring technical skills for assessment of nutritional status. 2.Enabling to undertake diet surveys. 3.Visiting various organizations working on community nutrition

V	HS 5301	TEXTILE DESIGN	To enable the students to -become aware of and appreciate art in dress. -be acquainted with the methods of obtaining design in fabrics. -identify and recognize the types of costumes worn in various parts of India.	On completion of the Course, the student shall 1.Gain information about basic operation of power loom and new technologies to produce garments in industries. 2.Demonstrate an appreciation of traditional costumes and jewellery of India. 3.Gain knowledge of weaves and identify types of weaves. 4.Understand the importance of traditional textiles and its contribution to increase Nation economy 5.Apply skills in dyes and printing techniques to enhance the beauty of various fabrics 6.Be qualified to launch an entrepreneurial venture in the area of textile printing and dyeing
V	HS 5351	TEXTILE DESIGN PRACTICAL	To enable students to -Acquire skills in printing and dyeing techniques. -Gain an understanding of changes that occur in fabric after mercerization. -Make different types of weaving and knitting samples.	On completion of the Course, the student shall 1.Identify and make use of various types of weaves and knitting samples. 2.Understand the use and care of sewing machine 3.Construct different types of seams and seam finishes. 4.Design a fabric using different methods of printing like painting, tie and dye. 5.Examine the action of mercerization finish on cotton fabric. 6.Be skilled to take up a career as a textile designer
V	HS 5302	FAMILY ECONOMICS	To enable the students to 1.Recognize the internal and external factors affecting financial decisions of a family. 2.Increase students ability to make wise use of money. 3.Understand the impact of government policies on family spending.	On completion of the Course, the student shall 1.Understand about the importance of economic planning for a family 2.Gain awareness about the economic goals of family 3.Be capable of devising ways to reduce expenditure at household level 4.Be a wise consumer
V	HS 5352	FAMILY ECONOMICS PRACTICAL	To enable the students to 1.Recognize the internal and external factors affecting financial decisions of a family. 2.Increase student's ability to make wise use of money. 3.Understand the impact of government policies on family spending.	On completion of the Course, the student shall 1.Be capable of designing survey to assess economical goals of a family 2.Plan monthly budget for different social economic groups 3.Gain understanding of the various modes of savings and types of taxes 4.Be skilled to take up career in surveying/developing survey tools

VI	HS-E1-6101	FAMILY AND CHILD WELFARE	To enable the students to •Become familiar with the welfare activities for children in India. •Be acquainted with instructions conducting welfare programs.	On completion of the Course, the student shall 1.Understand the rights and needs of children according to UN convention 2.Comprehend the coping techniques in the family 3.Be able to assess different behavioral problems 4.Be equipped to identify the various family crisis 5.Be eligible to take up career in promoting /implementing welfare programs in government and non-government organisations
VI	HS-E1-6151	FAMILY AND CHILD WELFARE PRACTICAL	To enable the students to •Become familiar with the welfare activities for children in India. •Be acquainted with institutions conducting welfare programs.	On completion of the Course, the student shall 1.Gain an understanding of the functioning of rehabilitation centers 2.Develope case studies on various behaviour problem 3.Acquire the skill to analyse the various behaviour problems in children and suggest remedial measures 4.Demonstrate a sensitivity towards the special children and be trained to plan relief and rehabilitation activities for them.
VI	HS-E2-6102	LIFE SPAN DEVELOPMENT II	To enable the students to •Understand the Major concepts of human development. •Understand the dynamics of behavior during adulthood. •Understand the principles underlying family relationship and family dynamics.	On completion of the Course, the student shall 1.Acquire knowledge on characteristics and development of adolescence 2. Identify the problems of adolescence and suggest preventive measures 3.Be able to analyze problems of marriage and its influence on children 4.Examine the needs and problems of old age people 5.Be equipped to take up career with voluntary, National and international organisations for aged people
VI	HS-E2-6152	INTERNSHIP IVI	To enable the students to •Understand the Major concepts of human development. •Understand the dynamics of behavior during adulthood. •Understand the principles underlying family relationship and family dynamics.	On completion of the Course, the student shall 1.Gain an understanding of the problems faced in adolescence, adulthood and old age 2.Display proficiency in designing survey tools in report writing for the survey conducted on different age groups 3.Develop an appreciation of the relationship of family and marital adjustment

VI	HS-E1-6201	BIOCHEMISTRY	To enable the student to •Understand the relationship between Biochemistry and Nutrition. •Understand the chemistry , digestion, absorption and metabolism of nutrients in health.	On completion of the Course, the student shall 1.Gain depth knowledge on human metabolism. 2.Understand and experiment on the principles of bio-chemical methods. 3.Be able to demonstrate through scientific experiments chemistry of nutrients. 4.Be qualified to take up career relating bio-chemistry with nutrition for extensive application
VI	HS-E1-6251	BIOCHEMISTRY PRACTICAL IV2	To enable the student to – •Understand the chemistry of nutrients. •Learn the principles and procedure of food and biochemical analysis.	On completion of the Course, the student shall 1.Be able to evaluate presence of nutrients in various foods. 2.Get acquainted with various food analysis techniques. 3.Gain an understanding of the entrepreneurial avenues in food analysis 4.Develop an interest in pursuing the course at the Master's level
VI	HS-E2-6201	PUBLIC HEALTH AND EPIDEMIOLOGY	This course will enable the students to- •Understand the concept of health from the individual and community perspective. •Know the importance of epidemiology and demography in health.	On completion of the Course, the student shall 1.Possess skills in preparation of nutrition education materials 2.Acquire skills in assessment of nutritional status in community 3.Be skilled to render communication on Communicable and noncommunicable disease 4.Understand and implement the epidemiological approaches
VI	HS-E2-6251	PUBLIC HEALTH AND EPIDEMIOLOGY PRACTICAL IV2	This course will enable the students to- •Understand the concept of health from the individual and community perspective. •Know the importance of epidemiology and demography in health	On completion of the Course, the student shall 1.Be eligible to take up career opportunities in government organisations and NGOs as a nutritionist 2.Be qualified to conduct surveys on public health 3.Be skilled to develop a healthy balanced diet for the community
VI	HS-E1-6301	COMPUTER AIDED RESIDENTIAL DESIGN	To enable the students to 1.Become familiar with computer designing. 2.Gain understanding about computer aided designing.	On completion of the Course, the student shall: 1.Acquire knowledge of using editing commands in designing residential spaces 2.Design 2D sections and elevations from plans 3.Design and render plans of a simple floor plan by using commands 4.Apply knowledge of computer application CAD in designing 5.Demonstrate comprehensive knowledge of all drawing commands in designing interiors of a residential space 6.Be eligible to take up career in designing interiors using AutoCAD 7.Be qualified to take up career as apprentice with interior designing/architect firms

VI	HS-E1-6351	COMPUTER AIDED RESIDENTIAL DESIGN PRACTICAL	To enable the students to 1.Become familiar with computer designing. 2.Gain understanding about computer aided designing.	On completion of the Course, the student shall: 1.Acquire knowledge of using editing commands in designing residential spaces 2.Design 2D sections and elevations from plans 3.Design and render plans of a simple floor plan by using commands 4.Apply knowledge of computer application CAD in designing 5.Demonstrate comprehensive knowledge of all drawing commands in designing interiors of a residential space 6.Be eligible to take up career in designing interiors using AutoCAD 7.Be qualified to take up career as apprentice with interior designing/architect firms
VI	HS-E2-6301	APPAREL DESIGN	To enable the students to -Acquire the skills in tailoring for the family members. -Become aware of the trends that affect family's wardrobe planning.	On completion of the Course, the student shall 1.Obtain knowledge on recording body measurements 2.Gain information about how to plan wardrobe. 3.Obtain skills to stitch adult garments 4.Acquire drafting skills of various collars and sleeves. 5.Learn to construct different types of frocks for children. 6.Be qualified to take up career/entrepreneurship in garment construction
VI	HS-E2-6351	APPAREL DESIGN PRACTICAL IV3	To enable the students to -Acquire the skills in tailoring for the family members. -Become aware of the trends that affect family's wardrobe planning.	On completion of the Course, the student shall 1.Obtain knowledge on recording body measurements 2.Gain information about how to plan wardrobe. 3.Obtain skills to stitch adult garments 4.Acquire drafting skills of various collars and sleeves. 5.Learn to construct different types of frocks for children. 6.Be qualified to take up career/entrepreneurship in garment construction
VI	HS-AI-6101	CHILDREN WITH SPECIAL NEEDS	To enable the students to •Become familiar with the welfare activities for children in India. •Be acquainted with instructions conducting welfare programs.	On completion of the Course, the student shall 1. Identify the needs of special children 2. Display an understanding of the needs and problems of disabled children 3. Have a working knowledge about the training and rehabilitation of disabled children 4. Possess a positive attitude towards disadvantaged children 5. Be eligible to take up employment in any organization working for the welfare of the disadvantaged children

VI	HS-A1-6151	INTERNSHIP IVI - AI	To enable the students to •Become familiar with the welfare activities for children in India. •Be acquainted with instructions conducting welfare programs.	On completion of the Internship, the student shall 1.Acquire knowledge of the various organisations working for special children 2.Demonstrate the ability to identify the mentally retarded children 3.Be aware about the working of a rehabilitation centre for physically disabled children 4.Be equipped to take up a career in the care & rehabilitation of the special children
VI	HS-A2-6101	COUNSELLING AND GUIDANCE	To enable the students to -Have an insight into the needs of counseling children and adolescents. - Help them to understand the techniques used to counsel and guide individuals at different stages.	After completing the Course, the student shall 1.Display familiarity in designing and developing counselling programs 2.Exhibit skills in various counselling technique to handle children and adolescents 3.Acquire skill to identify the common errors in counselling 4.Be equipped with skills and technique of direct and indirect counselling
VI	HS-A2-6151	COUNSELLING AND GUIDANCE PRACTICAL IVIA2	To enable the students to -Have an insight into the needs of counseling children and adolescents. - Help them to understand the techniques used to counsel and guide individuals at different Stages.	On completion of the Course, the student shall 1.Understand the working of a counselling cell 2.Be familiar with the practice and problems in a counseling and guidance cell 3.Demonstrate the knowledge, skills and techniques of a counselor 4.Be eligible to take up a career as a counsellor in a school/educational institute
VI	HS-A3-6101	EXTENSION EDUCATION	To enable the students to understand - 1.the concept of extension 2.the scope of extension in Home Science	On completion of the Course, the student shall 1.Acquire knowledge on usage of digitalization 2.Understand the concept of extension education 3.Demonstrate knowledge on rural administration and national schemes of literacy 4.Display familiarity in report writing in community development and women empowerment
VI	HS-A3-6151	EXTENSION EDUCATION PRACTICAL IVIA3	To enable the students to acquire skills to - 1.apply knowledge of Home Science to community development.	On completion of the Course, the student shall 1.Exhibit skills to work as a project reporter/assistant in government organisation 2.Demonstrate an awareness about the government schemes related to energy, health and development of a woman and the community

VI	HS-B1-6101	FAMILY DYNAMICS	To enable students to: -Become acquainted with the stages in family life and the accompanying changes -Create an awareness about the roles and relationships within the family and to meet them.	On completion of the Course, the student shall -Acquire knowledge on the roles and relationship in the family -Be aware about the cultural relevance of marriage customs and practices in India -Exhibit a knowledge of various crises in family life -Possess a comprehensive knowledge on importance of and methods of family planning -Demonstrate an understanding of various areas of marital adjustment
VI	HS-B1-6151	INTERNSHIP IVIB1	To enable students to: -Become acquainted with the family life -Create an awareness about the roles and relationships within the family and to meet them.	On completion of the Course, the student shall -Understand the functioning of a family counselling center -Display an awareness of crisis in marriage -Exhibit the skill of conducting survey
VI	HS-B2-6101	PRESCHOOL TEACHER TRAINING	To enable the students to achieve skills in organizing and administering preschools.	On completion of the Course, the student shall 1.Acquire knowledge about theme based programme planning 2.Demonstrate the skill of organising and maintaining records pertaining to running a pre school 3.Acquire the skill of conducting PTA 4.Demonstrate expertise in conducting learning activities like cultural and sports for children 5.Exhibit ease in organizing evaluation and assessment techniques in preschool 6.Be equipped to take up a career in Pre School teaching 7.Be qualified to launch an entrepreneurial venture in Pre School Teaching
VI	HS-B2-6151	PRESCHOOL TEACHER TRAINING PRACTICAL IVIB2	To enable the students to achieve skills in organizing and administering preschools.	On completion of the Course, the student shall 1.Acquire knowledge about theme based programme planning 2.Demonstrate the skill of organising and maintaining records pertaining to running a pre school 3.Acquire the skill of conducting PTA 4.Demonstrate expertise in conducting learning activities like cultural and sports for children 5.Exhibit ease in organizing evaluation and assessment techniques in preschool 6.Be equipped to take up a career in Pre School teaching 7.Be qualified to launch an entrepreneurial venture in Pre School Teaching

VI	HS-B3-6101	EXTENSION EDUCATION	To enable the students to understand - 1.the concept of extension 2.the scope of extension in Home Science	On completion of the Course, the student shall 1.Acquire knowledge on usage of digitalization 2.Understand the concept of extension education 3.Demonstrate knowledge on rural administration and national schemes of literacy 4.Display familiarity in report writing in community development and women empowerment
VI	HS-B3-6151	EXTENSION EDUCATION PRACTICALIVIB3	To enable the students to acquire skills to - 1.apply knowledge of Home Science to community development.	On completion of the Course, the student shall 1.Acquire skills to work as a project reporter/assistant in government organisation 2.Demonstrate awareness about the government schemes related to health, resource management of a woman and the community 3.Display sensitivity towards community
VI	HS-A1-6201	DIETETICS	To enable the students to -Understand the role of diet in therapy. -Develop the capacity and aptitude for taking up dietetics as a profession. -Gain knowledge and develop skills and techniques in the planning and preparation of therapeutic diets.	On completion of the Course, the student shall 1.Appreciate dietetics as career opportunity 2.Demonstrate knowledge on preparing therapeutic diets 3.Be skilled to work in capacity of dietician at health care organizations. 4.Be equipped to launch own entrepreneurial venture in the field of dietetics
VI	HS-A1-6251	DIETETICS PRACTICAL IV2A1	To enable the students to -Understand the role of food in treatment of diseases. -Relate the planning of the diet and diet counseling to etiology and symptoms.	On completion of the Course, the student shall 1.Demonstrate the ability to plan hospital diets for different health conditions 2.Be familiar with all clinical condition that impact diet planning. 3.Possess hands-on knowledge of physiology of diseases, to be considered in diet planning under different disease conditions 4.Be qualified to take up career as a diet planner in a hospital
VI	HS-A2-6201	FOOD AND NUTRITION SECURITY	To enable the student to understand – 1.The food and nutrition situation in India. 2.The strategies to develop food and nutrition security in the country.	On completion of the Course, the student would 1.Become aware about the importance of preventing and reducing food losses 2.Understand the comparison of Indian food system to other countries 3.Exhibit knowledge on food and nutrition security and globalisation of food system 4.Acquire skills of safety assessment of food additives 5.Learn the operations involved in warehouse management for storage of grains

VI	HS-A2-6252	FOOD AND NUTRITION SECURITY PRACTICAL IV2A2	To enable the student to learn the food and nutrition security assessment in the country.	On completion of the Course, the student shall 1.Exhibit familiarity with the working of Government in maintaining Food Distribution 2.Be skilled to take up a career in conducting/monitoring surveys conducted by government organisation 3.Be qualified to take up a job in FCI 4.Demonstrate the skill of recording reviews of literature pertaining to food and nutrition in India
VI	HS-A3-6201	FOOD MICROBIOLOGY	To enable the student to understand – 1.the nature of microorganisms involved in food spoilage, food infections and intoxicants. 2.the importance of microorganisms in food microbiology. 3.the principles of various methods used in prevention and control of the microorganisms in foods.	On completion of the Course, the student would 1.Display ability to explore beneficial and harmful activities of microorganism 2.Demonstrate skill in the usage of equipment used for sterilization and disinfectants 3.Exhibit skill in scheduling and types of immunity 4.Acquire skills in studying microorganisms in sewage and water treatment
VI	HS-A3-6253	FOOD MICROBIOLOGY PRACTICAL IV2A3	To enable the student to understand –•Gain deeper knowledge of role of micro-organisms in humans and environment. •Understand the importance of micro-organisms in food spoilage and to learn advanced techniques used in food preservation. •Understand the latest procedures adopted in various food operations to prevent food-borne. Disorders and legal aspects involved in these areas.	On completion of the Course, the student shall 1.Be familiar with the applications of food safety techniques 2.Demonstrate ability to detect the colonies and perform coliform count 3.Demonstrate the skills of analysis of milk and water
VI	HS-B1-6201	CLINICAL NUTRITION	To enable the student to understand – 1.The role of diet in hospitalized patients. 2.Planning and preparation of diets for hospitalized patients.	On completion of the Course, the student shall 1.Display skills of counselling for disease condition 2.Possess skills of planning and executing appropriate nutritious diets for hospitalized patients 3.Exhibit a knowledge of drugs, food and nutrient interaction 4.Acquire the skills required for the job role of a dietitian in a hospital 5.Be equipped with the wherewithal to establish an independent Diet Counselling Center
VI	HS-B1-6251	CLINICAL NUTRITION PRACTICAL IV2B1	Understand the Biochemical and Physiological impairments in diseases ••Understand the role of Nutrition for good health ••Obtain knowledge of dietary factors and dietary management of various diseases ••Develop capacity and attitude for taking up dietetics as a profession	Skilled enough to plan and prepare therapeutic diets. 2.Understanding metabolic changes in degenerated diseases. 3.Learns about pre and post operative diets. 4.Able to plan diets using food exchange list. 5.Acquiring knowledge about diet counseling according to symptoms of disease.

VI	HS-B2-6201	MATERNAL AND CHILD NUTRITION	To enable the student to learn – 1. physiology of pregnancy and lactation. 2.the nutritional needs during these stages. 3.the impact of nutritional deficiencies during these stages on mother's health and growth of the child.	On completion of the Course, the student shall 1.Understand the physiology and nutritional requirement during pregnancy and lactation 2.Be capable of assessing dietary goals for each stage 3.Plan and execute nutritious meals according to RDA for pregnant and lactating women 4.Acquire knowledge on importance of exclusive breastfeeding and supplementary feeding 5.Display skills to evaluate nutritional status of mothers and children
VI	HS-B2-6251	MATERNAL AND CHILD NUTRITION PRACTICAL IV2B2	To enable the student to – 1.plan diets for mother and infants. 2.understand the practical implications of nutrition deficiency on mother and child.	On completion of the Course, the student shall 1.Gain understanding regarding survey on baby foods 2.Be qualified to take up job opportunities in NGOs 3.Demonstrate skills on assessment of mother and child
VI	HS-B3-6201	NUTRITION AND HEALTH COMMUNICATION	To enable the student to understand – 1.The importance and need for nutrition and health communication. 2.To plan and develop messages for easy transmission to the community.	On completion of the Course, the student shall 1.Understand the importance of Assessment of nutritional status 2.Understand the difference in health status of different countries 3.Be equipped to design communication modules to convey messages on nutrition and health 4.Be eligible to take up career in designing and delivering communication
VI	HS-B3-6251	INTERNSHIP IV2B3	To enable the student to develop skillsfor strategic planning and communicationof nutrition and health messages..	1.Participation in health programs conducted by government 2.Skills in communications of nutrition and health through audio visual AIDS 3.Acquire knowledge on conducting health programs in community
VI	HS-A1-6301	COMPUTER AIDED TEXTILE AND CLOTHING	To enable the students to – •Impart skills in computerized design •Mode of visualization in three dimensions so as to make the process of designing	On completion of the Course, the student shall 1.Gain knowledge on computerized designing skills 2.Be able to design 3d fashion figures 3.Acquire skills in draw and edit dimensions of a design 4.Be able to import and export saved files 5.Demonstrate knowledge of various tools used in CAD 6.Be eligible to seek employment in a Designer's Consultancy Office 7.Be qualified to take up freelance designer projects with design firms/clients
VI	HS-A1-6351	COMPUTER AIDED TEXTILE AND CLOTHING PRACTICAL IV3A1	•Imparting new techniques in rendering and presentation by using CAD •Introduction to 3D view designing • Implementing new concept of pattern making using CAD commands	On completion of the Course, the student shall •Demonstrate the skills of using CAD in designing •Be skilled to prepare different patterns using the CAD •Be eligible to take up career as an apprentice with a dress designer/fashion designer

VI	HS-A2-6301	ADVANCED TEXTILE DESIGN	•To impart knowledge about the importance of textile testing in terms of fibre, yarn and fabric properties. •To study different types of dyes and their applicability to differentfibres •To develop knowledge about the traditional textiles of India.	On completion of the Course, the student shall •Gain knowledge on standards of national organization in sampling of textile testing •Acquire information about history and origin of contemporary embroideries of India •Know about various natural dyes and its application to produce eco- friendly textiles. •Apply skills in dyeing, its defect and remedies. •Apply skills in stitching various traditional embroideries and its unique features.
VI	HS-A2-6351	ADVANCED TEXTILE DESIGN PRACTICAL IV3A2	•Create awareness of use of different techniques of colouring textiles. •To impart skills in techniques of embellishing textiles.	On completion of the Course, the student shall 1.Demonstrate the skill of dyeing by applying different techniques 2.Exhibit the skill of designing an article by using embroideries and printing 3.Apply the methods of direct and naphthol dyes for batik and screen printing techniques 4.Exhibit the skill of designing a garment using different yokes, sleeves. 5.Be eligible to launch an entrepreneurial venture in textile designing
VI	HS-A3-6301	EXTENSION EDUCATION	To enable the students to understand - 1.the concept of extension 2.the scope of extension in Home Science	On completion of the Course, the student shall 1.Acquire knowledge on usage of digitalization 2.Understand the concept of extension education 3.Demonstrate knowledge on rural administration and national schemes of literacy 4.Display familiarity in report writing in community development and women empowerment
VI	HS-A3-6351	EXTENSION EDUCATION PRACTICAL IV3A3	To enable the students to acquire skills to - 1.apply knowledge of Home Science to community development.	On completion of the Course, the student shall 1.Exhibit skills to work as a project reporter/assistant in government organisation 2.Demonstrate an awareness about the government schemes related to energy, health and development of a woman and the community

VI	HS-B1-6301	COMPUTER AIDED RESIDENTIAL DESIGN	To enable the students to 1.Become familiar with computer designing. 2.Gain understanding about computer aided designing.	On completion of the Course, the student shall 1.Acquires knowledge of using editing commands in designing residential spaces 2.Display skill in designing 2D sections and elevations from plans 3.Acquire skill of drawing a simple floor plan by using commands 4.Demonstrate ability to apply knowledge of computer application CAD in interior designing 5.Possess a comprehensive knowledge and skill of all drawing commands in designing interiors of a residential space 6.Be qualified to take up the job of a CAD apprentice in a Designer's Firm 7.Be equipped to launch career as an entrepreneur in the field of rendering CAD drawings of Interiors
VI	HS-B1-6351	COMPUTER AIDED RESIDENTIAL PRACTICAL IV3B1	To enable the students to 1.Become familiar with computer designing. 2.Gain understanding about computer aided designing.	On completion of the Course, the student shall 1.Acquires knowledge of using editing commands in designing residential spaces 2.Display skill in designing 2D sections and elevations from plans 3.Acquire skill of drawing a simple floor plan by using commands 4.Demonstrate ability to apply knowledge of computer application CAD in interior designing 5.Possess a comprehensive knowledge and skill of all drawing commands in designing interiors of a residential space 6.Be qualified to take up the job of a CAD apprentice in a Designer's Firm 7.Be equipped to launch career as an entrepreneur in the field of rendering CAD drawings of Interiors
VI	HS-B2-6301	CONSUMER IN THE MARKET	To enable the students 1.To know the rights and responsibilities of consumer. 2.To become better consumers. 3.To understand consumer behaviour.	On completion of the Course, the student shall 1.Know the meaning of consumerism and its importance 2.Understand the consumer behaviour and factors influencing it 3.Become aware of problems faced by consumer in the market 4.Acquire the skills of counselling consumers regarding their rights responsibilities and duties 5.Become better consumers of their resources both personal and community

VI	HS-B2-6351	CONSUMER IN THE MARKET PRACTICAL IV3B2	To enable the students 1.To know the rights and responsibilities of consumer. 2.To become better consumers. 3.To understand consumer behaviour.	On completion of the Course, the student shall 1.Possess the skill of construction of a questionnaire 2.Display a knowledge on the local wholesale and retail markets 3.Be skilled to conduct survey on the different factors influencing consumer decision 4.Demonstrate a sensitivity to various consumer problems
VI	HS-B3-6301	HOUSEHOLD EQUIPMENT	To enable the students to -Recognize basic materials used in the construction of household equipment. -Understand the principles underlying the operation, use, care and storage of household equipment. -Use the criteria for the selection for appropriate equipment for home and suitable material for functionality.	On completion of the Course, the student shall 1.Know the different metals nonmetals used in the manufacture of d household equipment 2.Acquire skills of wise purchase of household equipment 3.Be familiar with the operation and use of commonly used household equipment 4.Be qualifies to promote the use of appropriate technology to contribute to ecosystem 5.Acquire skills of using household equipment 6.Be qualified to take up career in promoting the use of appropriate technology
VI	HS-B3-6351	HOUSEHOLD EQUIPMENT PRACTICAL IV3B3	To enable the students to -Understand the principles underlying the operation, use, care and storage of household equipment. -Use the criteria for the selection for appropriate equipment for home and suitable material for functionality. -Be aware of new trends in equipment in market.	On completion of the Course, the student shall 1.Demonstrate knowledge on fuel energy consumption of families through survey 2.Understand the relevance and functioning of Appropriate Technology, namely janatha refrigerator, Solar Cooker, Biogas Plant 3.Demonstrate the skill of operating present day equipment such as micro oven and induction stove

DEPARTMENT OF ENGLISH

BA PROGRAM WITH ENGLISH

BA PROGRAM OUTCOMES

1. Graduates will have greater awarenessand knowledgein all subject areas, understanding concepts, theories and linked aspects, applying them in respective domains and exploring the future career and entrepreneurial opportunities in specific and allied fields.

2. Graduates are expected to develop effective oral and written communication with the use of appropriate technology to succeed in career presentations and interviews.Using various forms of business communication, supportedby effective use of appropriate modern technology techniques, logical reasoning, articulation of ideas and presentation.

3. Graduates should be able toconceptualize, organize and resolve contemporary problems or issues with a research aptitude gather the relevant data and document the findings.They canapply the perspective of their chosen specialized area of study to develop fully-reasoned opinions on such contemporary issues.

4. Graduates are expected to develop skills on analyzing specific data or problems, apply the relevant analysis, generate alternatives and engage in problem solving in functional or practical areas

5. Graduates are expected to possess social consciousness, identify the contemporary social problems around the neighbourhoodand beyond State and National boundaries, explore the opportunities for social entrepreneurship, involve themselves in social outreach (NSS, NCC and other platforms and NGO's) and have integrity.

6. Graduates are expected to collaborate and lead teams across Departmental boundaries and demonstrate leadership qualities, (Leadership positions in the Student Council, Departmental Associations and Clubs) maximize the usage of diverse skills of team members in the related context, thus catering to harmony within diversity

7. The graduates are to demonstrate a global outlook (in consonance with the Vision and Mission Statement of the College)with the ability to identify aspects of the world at large. They are expected to be familiar with the knowledge, skills and attributes needed to live and work in a diverse world.

8. Training students and making them 'future course ready' 'job ready' and 'employable' through the 'employability component' in all courses. Graduates are prepared to handle jobs in all sectors like Teaching, Industry, NGO, Service Sector, Hospitality, ITeSetc through varied initiatives.

9. Inculcating values for good living in a challenging world through the course in Human Values and Professional Ethics, understanding personal ethics and resolving ethical dilemmas and consequentially through diverse initiatives and platforms and practise them for their own good.

10. Taking up lifelong learning Coursesto equip them to the changing environment and be prepared to take up Master programmes, PG Diplomas, Certificate Courses as well as MOOCs, Online Courses and Self Learning Courses for a better future

SPECIFIC OUTCOMES OF BA PROGRAM WITH JOURNALISM & MASS COMMUNICATION

PSO 1: Gain enormous knowledge by studying various Papers about concepts, theories and principles. The content present in various papers are Introduction to Mass Communication, Introduction to Mass Media and society, Print Journalism, Electronic Journalism, Theories of mass communication, Multi Media Communication and advertising.

PSO 2: Understand the communication, analysis and technical skills needed to analyse a situation and apply conceptual journalism to solve the long term problems of public and society. To Inculcate among the students about past and present scenario of "Freedom of Speech and expressions" (Art 19.1A)

PSO 3: Engage in academic or industry internship or service learning experience to demonstrate relevancy of fundamental and theoretical knowledge of their academic major and to gain career related experiences or community development exposure.

Assessment Methodology

PSO 1: Gain enormous knowledge by studying various Papers about concepts, theories and principles. The content present in various papers are Introduction to Mass Communication, Introduction to Mass Media and society, Print Journalism, Electronic Journalism, Theories of mass communication, Multi Media and application, Advertising.
Direct method of computing PSO 1 attainment is based on the student performance in all assessment instruments namely online and offline - subjective and objective tests for all the courses offered (JMC 1801(4), JMC 3801(4), JMC 5801(3), JMC 2801(4), JMC 4801(4),
JMC 6801(4).

These exams test students‟ learning at knowledge, understanding and application levels in the respective courses. Indirect method of computing PSOs is done through students‟ course exit survey wherein a structured questionnaire is administered to the students and their response is solicited on a 5-point scale. Responses are consolidated and students‟ satisfaction level with reference to course transaction is computed.

COURSE OBJECTIVES AND OUTCOMES

SEM	COURSE CODE (WITH NO OF CREDITS)	COURSE NAME	COURSE OBJECTIVES	COURSE OUTCOMES
I	JMC 1801 (4) INTRODUCTION TO MASS COMMUNICATION	Introduction to Mass Communication	• Know about journalism and its principles • Develop a comprehensive idea about the process of communication and the media organization in the country • Understand the origin and growth of mass media in the world and India in particular	• List and relate to an understanding of the role of journalists and journalism institutions in the world. • Demonstrate how the journalistic approach to problem solving and storytelling can produce locally engaged, globally competent citizens. • Develop an ability to discern quality of information gathered, analyze and interpret it. • Critically examine and analyse the power of words in shaping society's
II	JMC 2801 (4)	Intorduction to Media and Society	• Know the role of the mass media and its limitations • Analyze the role of mass media in portraying gender roles • Understand the types of mass media and the various formats	• Express a critical understanding of the contextual factors that shape the media message in a diverse, globalized media landscape. • Analysing and interpreting various media forms (physical and online) • Undertaking small studies on the impact of media on people • Create a report on the findings and discuss the implications.

III	JMC 3801 (4)	Print Journalizm	To enable the students to o Understand and comprehend the working and technical aspects of Print Journalism o Know what is reporting, interpretation and editing of news o Apply the skills in writing headlines, editing and the different forms of reporting	o Identifying the roles, responsibilities & qualities of of the reporters, Editors and all Press Officials o Analyzing news, features, structure and layout of columns and headlines of news stories o Applying and Creating newspapers (Designing Campus Newspapers in Teams) o Examining and analyzing the importance of letters to the editor, proof reading and responsibilities of proof readers (Proof reading assignments
IV	JMC 4801 (4)	Electronic Journalism	To enable the students to • Know the communication process through the radio and television • Understand the growing field of electronic journalism	Identify and apply technical aspects as well as the creative skills of writing news report for radio and television • Demonstrates news judgment that develops story ideas through observation, reading and paying attention to their environment. • Express ability to research information through the Internet and public documents • Create an Online Newspaper or Newsletter for propagating information
V	JMC 5801 (3)	Theories of Mass Communication	To enable the students to - Know the traditional models of communication which lead to the growth of the modern mass media - Understand the role and dominance of politics in mass media - Analyze the influence of international communication on development and social change	• List the various situations related to the models of communication • Identify from the Newspaper and Electronic Media, various events and the underlying theories of mass communication • Develop a hypothetical model of mass communication based on the existing models • Interpret global news media through the theories of mass communication
V	JMC 5802 (3)	Multimedia Application in JMC		To enable the students to become SKILLED in the usage of – 1. PageMaker – for Exploring highly versatile DTP (Desktop Publishing) 2. Photoshop – for image editing applications and use extensive collection of painting, retouching and special effects tools. 3. FLASH - Moving animation software
V	JMC 5851(2)	Internship Training Report		• Provides hands on understanding of the industry or working environment • Explores professional interests and career paths • Gains technical skills and knowledge not taught in the classroom • Builds networking contacts and references

VI	**JMC 6802 (4)**	**Advertising**	**To enable the students to** **1. Understand the role of advertisers and marketing along with mass media in influencing the audience.** **2. Plan, design and formulate advertising campaigns for the different mass media.** **3. Understand the conception and creating of brand identities.**	**• Appreciate the ways that communication through advertising influences and persuades consumers;** **• Research and prepare a profile of media habits for a given target market** **• Set promotional objectives and identify their relationship with the strategic plan;** **• Explain and illustrate Integrated Marketing Communication decision making and planning** **• Create Advertisement based on the principles (Designing an Ad Campaign for a given product)**

DEPARTMENT OF COMMERCE AND MANAGEMENT
MANAGEMENT STUDIES PROGRAM
MANAGEMENT STUDIES PROGRAM OUTCOMES
1. Graduates will have greater awarenessand knowledgein all subject areas, understanding concepts, theories and linked aspects, applying them in respective domains and exploring the future career and entrepreneurial opportunities in specific and allied fields. **2. Graduates are expected to develop effective oral and written communication with the use of appropriate technology to succeed in career presentations and interviews.Using various forms of business communication, supportedby effective use of appropriate modern technology techniques, logical reasoning, articulation of ideas and presentation.** **3. Graduates should be able toconceptualize, organize and resolve contemporary problems or issues with a research aptitude gather the relevant data and document the findings.They canapply the perspective of their chosen specialized area of study to develop fully-reasoned opinions on such contemporary issues.** **4. Graduates are expected to develop skills on analyzing specific data or problems, apply the relevant analysis, generate alternatives and engage in problem solving in functional or practical areas** **5. Graduates are expected to possess social consciousness, identify the contemporary social problems around the neighbourhoodand beyond State and National boundaries, explore the opportunities for social entrepreneurship, involve themselves in social outreach (NSS, NCC and other platforms and NGO's) and have integrity.** **6. Graduates are expected to collaborate and lead teams across Departmental boundaries and demonstrate leadership qualities, (Leadership positions in the Student Council, Departmental Associations and Clubs) maximize the usage of diverse skills of team members in the related context, thus catering to harmony within diversity** **7. The graduates are to demonstrate a global outlook (in consonance with the Vision and Mission Statement of the College)with the ability to identify aspects of the world at large. They are expected to be familiar with the knowledge, skills and attributes needed to live and work in a diverse world.** **8. Training students and making them 'future course ready' 'job ready' and 'employable' through the 'employability component' in all courses. Graduates are prepared to handle jobs in all sectors like Teaching, Industry, NGO, Service Sector, Hospitality, ITeSetc through varied initiatives.** **9. Inculcating values for good living in a challenging world through the course in Human Values and Professional Ethics, understanding personal ethics and resolving ethical dilemmas and consequentially through diverse initiatives and platforms and practise them for their own good.** **10. Taking up lifelong learning Coursesto equip them to the changing environment and be prepared to take up Master programmes, PG Diplomas, Certificate Courses as well as MOOCs, Online Courses and Self Learning Courses for a**
SPECIFIC OUTCOMES OF MANAGEMENT STUDIES PROGRAM

PSO 1: able to demonstrate the basic knowledge in the core areas of Management studies like _Principles of management, Business environment and ethics, Business communication, Marketing management, Strategic management, human resource management, Organisational behaviour and Advertising management.
PSO 2: able to get acquaint with all the management aspects which will help the students in their career in the organisation by managing all the issues and functions in the organisation as per the job requirement.
PSO 3: able use all their theoretical knowledge and the practical knowledge with their internship programme to improve their managerial skills.

COURSE OBJECTIVES AND OUTCOMES

SEM	COURSE CODE (WITH NO OF CREDITS)	COURSE NAME	COURSE OBJECTIVES	COURSE OUTCOMES
I	MS 1901 (4)	Principles of Management	1. To provide a basis of understanding to the students with reference to working of business organization through the process of management. 2. To acquaint with management process, functions and principles. 3. Student will also get the ideas about new developments in management.	CO1: Awareness regarding the concepts of management. CO2: Decision making which is most crucial will be applied in relation to the procedures and methods. CO3: Practices of an organization, exposure to delegation, decentralization will be possible. CO4: Critical thinking skills will be developed to the utmost and presentation skills will be enhanced . CO5: New trends in organization changes and stress management will bring an entrepreneurial thinking capability among students.
II	MS2901(4)	Business Environment and Ethics	1. make the students understand the concepts of business environment along with social responsibility. 2. To learn organizational ethic theories and sources. 3. To understand the fiscal policy and legal environment of business. 4. To understand global management issues.	CO1: Develop knowledge skills in the areas by better understanding various concepts of business environment CO2: Concepts of fiscal policy will allow students to learn and analyse the changing economic policies of government budgeting and resource allocation CO3: Organizational ethics when conceptually learnt can be applies in practical environment CO4: Students can formulate own solutions by applying concepts of global management in their work culture CO5: Corporate social responsibility for the betterment of society can be executed

III	MS3902(4)	Business Communication	1. To acquaint the students with good communication skills. 2. To make the students aware about the importance of Business communication. 3. To enrich the students with good presentation skills & writing skills. 4. To prepare the students for the Interviews, and Group Discussions.	CO1:Good communication skills gives student confidence which allows them to face our challenging world easily CO2:Adequate presentation skills is an advantage in career development CO3:Effective report writing skills are developed CO4:Interview techniques for good placements in organizations CO5: Technology upgradation related to business communication
IV	MS4901(4)	Marketing Management	1. Demonstrate and understand the nature and importance of marketing 2. Analyze markets and identify appropriate segmentation criteria to discover promising market niches. 3. Develop an effective marketing strategy, including a marketing mix, for a product / service. 4. Demonstrate an awareness of the opportunities and challenges of marketing in global environment.	CO1. Awareness regarding the marketing concepts can be known CO2. Various marketing strategies and product development procedures are known CO3. Identify the various environmental factors affecting the marketing CO4. Develop the skills in marketing and promotional activities CO5. Students are aware of the new aspects developed in the marketing
V	MS5902(4)	Indian Financial Services	1. To understand the Banking and services related to banking 2. To develop a conceptual framework of financial function 3. To acquaint the participants with the tools, types, instruments of financial system in the realm of Indian financial Market	CO1: Develop the knowledge regarding the banking system CO2: Awareness regarding the financial markets in the context of Indian market CO3: Identify the various tools and instruments of financial system CO4: Better investment ideas can be generated CO5: Globalization implications on financial services in context to Indian economy
V	MS5903(4)	Internship Training Report	1. Improves their chances of getting a job more easily later 2. Provides basic and hands on understanding of the industry or business working environment 3. Increases their chances of getting a higher starting salary 4. Explores professional interests and career paths 5. Gains technical skills and knowledge not taught in the classroom	CO1: Building networking contacts and references CO2: Enhances sense of self, independence, and self-confidence CO3: Improves communication, teamwork, problem-solving, and related self-confidence CO4: Improves communication, teamwork, problem solving and related skills

VI	MS-E1-6901(4)	Organizational Behaviour	1. Understand the fundamental principles of Organisational Behavior; 2. Analyze the critical and creative thinking abilities necessary for understanding why. individuals and organizations behave in a particular manner. 3. Apply the principles absorbed to Case studies in organizational behavior	CO1:Identify and develop the concepts of organizational behaviour CO2:Team work is motivated with various concepts of organization CO3: Leadership and motivation concepts are essential for critical thinking CO4:Management of change concepts make students think about the organizations behaviour CO5:Awareness of the organization culture and and climate
VI	MS-E2-6901(4)	International Human Resource Management	1. Provide students with a detailed understanding of how to plan and apply an effective IHRM strategy for an international organization. 2. Develop an in-depth understanding of the changing HR environment within an international workforce, and the implications for managing people and their work. 3. Create a strong awareness of the importance of sensitivity in dealing with a socio culturally diverse international workforce.	CO1. Develop the conceptual framework of the IHRM in a broad perspective CO2. Identify the managerial operative functions with respect to the global organization CO3. Awareness regarding the cross culture in the organizational performance CO4. Discuss the various policies related to IHRM CO5. Gain the knowledge for their career option
VI	MS-A1-6902(4)	Human Resource Management	1. Know and understand the concept, function and principles of Human Resource management. 2. Apply critical thinking abilities in analyzing cases in human resource management issues and challenges in firms.	CO1: contribute to the development, implementation, and evaluation of employee recruitment, selection, and retention of plans and processes. CO2: administer and contribute to the design and evaluation of the performance management program. CO3: develop, implement and evaluate employee orientation, training, and development programs. CO4: facilitate and support effective employee and labour relations in both non-union and union environments. CO5: research and support the development and communication of the organization’s total compensation plan.

VI	MS-A2-6901(4)	Advertising Management	1. Know and understand the nature, functions, kinds and theories of advertising 2. Discuss the strategic considerations involved in advertising and marketing. 3. Analyze the major issues that have affected Indian and Global advertising and the future outlook on advertising. 4. Learn the making of a creative brief and an advertisement. 5. Realize and explore the various career options in Advertising Management.	CO1:Appreciate the ways that communication through advertising influences and persuades consumers; CO2:Discuss the role of the advertising agency and its client relationships; CO3:Identify advertising's place in the communications mix; CO4:Research and prepare a profile of media habits for a given target market; CO5:Set promotional objectives and identify their relationship with the strategic plan;
VI	MS-A3-6901(4)	Project Work	1. To expose the students to industry and business environments with practical exposures in areas related to their area of specialization. 2. To enhance the students' understanding on application of the theoretical knowledge in their area of specialization. 3. To enhance interpersonal, critical thinking, decision making and communication skills of the students.	CO1: Develop competencies in the areas of presentation skills, critical thinking skills and problems solving skills. CO2: Apply theoretical concepts and models in to a practical environment CO3: Formulate viable solutions to practical organizational problems through the internship project.
VI	MS-B1-6901(4)	Service Marketing	1. To develop an understanding of services and service marketing with emphasis on various aspects of service marketing which make it different from goods marketing.	CO1: Identify and apply the knowledge of theory in business practices. CO2:Cconsider the various strategies of service applications. CO3:Discuss the role of various services provided to different industries .
VI	MS-B2-6901(4)	Brand Management	1. To enable the students to acquire skills in Product & Brand Management 2.The development and management of brands is a key marketing activity, central to the rest of the marketing strategy. 3. This module aims to develop learner's knowledge of branding frameworks, strategies and brandings role within business and society.	CO1: Demonstrate knowledge of the nature and processes of branding and brand management. CO2: Evaluate the scope of brand management activity across the overall organisational context and analyse how it relates to other business areas. CO3:Appraise the key issues in managing a brand portfolio and making strategic brand decisions. CO4: Formulate and justify brand development decisions CO5:Analyse and discuss contemporary brand related problems and develop appropriate strategies and initiatives

VI	MS-B3-6901	Project Work in Marketing	1. To enable the students to acquire knowledge about specialized areas in organization. 2. To familiarize the students with distinguished functions carried in the organization.	CO1: Know and remember the concepts in Management Research CO2: Understand the major stages in Research Projects
VI	MS-C1-6901(4)	Technology Management	1. Students will be focused upon the major theoretical and empirical contributions to the field and their implications for practitioners. 2.Experiential work and case studies will be used to assist you in relating the content material to your own experience and practice.	CO1: A working understanding of the concepts and techniques of strategy technology management; CO2: An ability to critically analyse the behaviour or organizations and organisational members in developing, implementing, and managing technology from a strategic perspective; CO3: The capacity to critically evaluate the strategic management of technology within diversified companies
VI	MS-C2-6901	Project Management	1. To understand the concepts of Project Management. 2. To understand the importance of project planning 3. Identify and plan for project risks.	CO1: students will acquire the ability to make links across different areas of knowledge. CO2: Students will acquire the skills to communicate effectively and to present ideas clearly. CO3: Students will acquire collaboration skills through working in a team.
VI	MS-C3-6901	Project Work	1. To expose the students to industry and business environments with practical exposures in areas related to their area of specialization. 2. To enhance the students' understanding on application of the theoretical knowledge in their area of specialization. 3. To enhance interpersonal, critical thinking, decision making and communication skills of the students.	CO1:Develop competencies in the areas of presentation skills, critical thinking skills and problems solving skills. CO2:Apply theoretical concepts and models in to a practical environment CO3:Formulate viable solutions to practical organizational problems through the internship project.

DEPARTMENT OF MATHEMATICS

BSC PROGRAM WITH MATHEMATICS

BSC PROGRAM OUTCOMES

The knowledge intensive and skill-oriented curriculum of BSc programme in the three major modeis designed and deployed in the CBCS pattern at SJCW(A) envisaging the following outcomes

- **Comprehensive domain specific knowledge provides the necessary intellectual competencies to progress to higherlevels of learning and research**
- **Exhaustive laboratory training augments comprehension of theoretical principles and ignites scientific temper**
- **Experiential learning through internships/on the job training/surveys/field studies/live projects etc.ensures problem solving and job skills**
- **Thehard and soft skills acquired in the form ofLSRW/verbal/analytical/numerical/reasoning/programming/coding attributes, contribute to success in National and International level tests for admission and recruitment**
- **Individual and group projects and assignments kindle research aptitude**
- **Autodidactic learning tasks induce critical thinking and lead to optimal utilisation and creation of e resources on the net**
- **The mandatory life skills courses nurture ethical behaviour, social responsibility and environmental consciousness**
- **Leadershiptraining, entrepreneurship education courses hone leadership skills and groom entrepreneurial tendencies fostering future leaders and job providers**
- **Selective perusal ofpersonality developmentcourses and participation in extra andco-curricular activitiesensurephysical andpsychological fitness leading to personal empowerment and responsible citizenship**
- **The holistic BSc programme at SJCW(A), in toto, strengthens the strengths of the learners, weakens their weaknesses, helps them to overcome challenges and creates opportunities for them to evolve into socially responsive members of society.**

SPECIFIC OUTCOMES OF BSC PROGRAM WITH MATHEMATICS

To inculcate the concepts and applications of Differential Equations, Solid Geometry, Abstract Algebra, Real Analysis, Ring Theory and Vector Calculus, Linear Algebra and Numerical Analysis, Integral Transforms, Advanced Numerical Analysis and Special Functions.

- **Be able to apply theoretical / analytical / statistical knowledge gained in various courses of B.Sc to solve numerical problems based on real life situations during practical's and draw meaningful solutions to day to day problems like traffic management.**
- **Be able to access, explore an area to obtain information and use the literature in Mathematics and also able to work as a member of a team.**
- **Be able to integrate knowledge gained in Mathematics to General education courses like Analytical Skills.**

COURSE OBJECTIVES AND OUTCOMES

SEM	COURSE CODE (WITH NO OF CREDITS)	COURSE NAME	COURSE OBJECTIVES	COURSE OUTCOMES

I	M 1301 (3)	DIFFERENTIAL EQUATIONS	To enable the students to – • Analyze the solution of differential equations of the first orderand of the first degree by variables separable, Homogeneous andNon-Homogeneousmethods. • Evaluate a solution of differential equations of the first order and of a degree higher than the first by using methods of solvable for p, x and y. • Compute all the solutions of second and higher order linear differential equations with constant coefficients, linear equations with variable coefficients. • Solve simultaneous linear equations with constant coefficients and total differential equations • Find the solution of First order partial differential equations for some standard types • Apply Laplace transform to solve second order linear differential equation and simultaneous linear differential equations • Compute all the solutions of Higher Order Linear Differential Equations with Constant Coefficients and non-Constant Coefficients	At the end of the course student will • Identify, analyze and learn physical situations which can be described by ordinary differential equations. • Acquire knowledge to find general solution of first order, second order and higher order homogeneous and non-homogeneous differential equations by manual and technology – based methods. • Identify a general method for constructing solutions to non-homogeneous linear constant coefficient's second order equations. • Analyze a variety of differential equations analytically and numerically. • Develop skill to formulate models of natural phenomena using differential Equations.

I	M 1351 (2)	DIFFERENTIAL EQUATIONS(PRACTICAL)	To enable the students to – • Analyze the solution of differential equations of the first orderand of the first degree by variables separable, Homogeneous andNon-Homogeneousmethods. • Evaluate a solution of differential equations of the first order and of a degree higher than the first by using methods of solvable for p, x and y. • Compute all the solutions of second and higher order linear differential equations with constant coefficients, linear equations with variable coefficients. • Solve simultaneous linear equations with constant coefficients and total differential equations • Find the solution of First order partial differential equations for some standard types • Apply Laplace transform to solve second order linear differential equation and simultaneous linear differential equations • Compute all the solutions of Higher Order Linear Differential Equations with Constant Coefficients and non-Constant Coefficients	At the end of the course student will • Apply theoretical / analytical / statistical knowledge gained in various courses of B.Sc to solve numerical problems based on real life situations during practicals and draw meaningful solutions to day to day problems • Analyze real-world problems in fields such as Biology, Chemistry, Economics, Engineering, and Physics, including problems related to population dynamics, mixtures, growth and decay, heating and cooling, electronic circuits, and Newtonian mechanics. • Enabling students to develop a positive attitude towards mathematics as an interesting and valuable subject of study • Identify, analyze and learn physical situations which can be described by ordinary differential equations. • Acquire knowledge to find general solution of first order, second order and higher order homogeneous and non-homogeneous differential equations by manual and technology – based methods. • Identify a general method for constructing solutions to non-homogeneous linear constant coefficient‟s second order equations. • Analyze a variety of differential equations analytically and numerically. • Develop skill to formulate models of natural phenomena using differential Equations.

II	M 2301 (3)	Three Dimensional Analytical Solid Geometry	To enable the students to – • Describe the various form so equation of a plane, straight line, Sphere, Cone and Cylinder • Find the angle between planes, Bisector planes, Perpendicular distance from a point to a plane, • Image of a line on a plane,Intersectionof twolines • Define coplanar lines and illustrate • Compute the angle between a line and aplane, length of perpendicular from a point to a line • Define skew lines and Calculate the Shortest distance between two skew lines	At the end of the course student will • Acquire a level of proficiency in particular in using equation of plane in terms of its intercepts on axis and the equation of the planes through the given point length of the perpendicular from a given point to a given plane • Explore the basic concept of the equation of a line, angle between the line and a plane, and the shortest distance between two lines. • Develop their knowledge and apply the skills in the study of the sphere. • Gain a broader understanding on cones • Use the facts, formulas and techniques learned in this course to prove applications to cylinders. • Give the knowledge of geometry using maxima software • Apply skill in the real world including Computer aided design for construction blue print, the design of assembly systems in manufacturing, nanotechnology and Computer graphics, visual graphs, video game programming and virtual reality creation.

II	M 2351 (2)	Three Dimensional Analytical Solid Geometry(PRACTICAL)	To enable the students to – • Describethevariousformsofequationofaplane, straightline,Sphere,ConeandCylinder • Findtheanglebetweenplanes,Bisectorplanes,Perpendiculardistance from a point to a plane, • Image of a line on a plane,Intersectionof twolines • Definecoplanarlinesandillustrate • Computetheanglebetweenalineandaplane,lengthof perpendicularfromapointtoaline • Defineskewlines and CalculatetheShortestdistancebetweentwoskewlines	At the end of the course student will • Apply theoretical / analytical / statistical knowledge gained in various courses of B.Sc to solve numerical problems based on real life situations during practicals and draw meaningful solutions to day to day problems • Enabling students to develop a positive attitude towards mathematics as an interesting and valuable subject of study • Enhancing students overall development and to equip them with mathematical abilities, problem solving skills, creative talent and power of communication necessary for various kinds of employment. • Problem solving on Three Dimensional Analytical Solid Geometry • Acquire a level of proficiency in particular in using equation of plane in terms of its intercepts on axis and the equation of the planes through the given point length of the perpendicular from a given point to a given plane • Explore the basic concept of the equation of a line, angle between the line and a plane, and the shortest distance between two lines. • Develop their knowledge and apply the skills in the study of the sphere. • gain a broader understanding on cones • Use the facts, formulas and techniques learned in this course to prove applications to cylinders. • Apply skill in the real world including Computer aided design for construction blue print, the design of assembly systems in manufacturing, nanotechnology and Computer graphics, visual graphs, video game programming and virtual reality creation.

III	M 3301(4)	ABSTRACT ALGEBRA	To enable the students to – • Learn the definitions and methods. • Understand the problems, theorems & identities • IllustratetheDivisionandEuclideanAlgorithm • Describethepropertiesofprimenumbers • Definecongruence anddescribethepropertiesofcongruence • understand the concept of binary operations by definition and examples. • determine whether a given binary operation on the given set gives a group structure by applying the axioms. • determine whether a given group is abelian by checking the properties. • describe all elements in a cyclic subgroup by using generators. • understand the importance of algebraic properties with regard to working within various number systems • compute the expression of permutation groups by using permutation multiplication.	At the end of the course student will • Be able to study the properties of sets, and check whether the given set are groups or not and study various theorems which can be applied to study various algebraic structures. • Be able to understand the concept of equivalence relation by applying different examples to the definition • Identify necessary and sufficient conditions for a non-empty subset of a group to become a subgroup and develop skills in solving problems in groups which facilitate and solving of problems in Cosets • Advance their ability to apply the necessary and sufficient conditions studied, to solve the problems in Normal Subgroups and learn the concept of Quotient group • Be able to deduce other homomorphism theorems fromfundamental theorem of Homomorphism and also illustratethe concept of automorphisms and related theorems • Be able to understand the concepts of permutation groups, cyclic groups, finding the number of generators of a cyclic group.

III	M 3351(2)	ABSTRACT ALGEBRA(PRACTICAL)	To enable the students to – • Learn the definitions and methods. • Understand the problems, theorems & identities • IllustratetheDivisionandEuclideanAlgorithm • Describethepropertiesofprimenumbers • Definecongruence anddescribethepropertiesofcongruence • understand the concept of binary operations by definition and examples. • determine whether a given binary operation on the given set gives a group structure by applying the axioms. • determine whether a given group is abelian by checking the properties. • describe all elements in a cyclic subgroup by using generators. • understand the importance of algebraic properties with regard to working within various number systems • compute the expression of permutation groups by using permutation multiplication.	• Apply theoretical / analytical / statistical knowledge gained in various courses of B.Sc to solve numerical problems based on real life situations during practicals and draw meaningful solutions to day to day problems • Enabling students to develop a positive attitude towards mathematics as an interesting and valuable subject of study • Enhancing students overall development and to equip them with mathematical abilities, problem solving skills, creative talent and power of communication necessary for various kinds of employment. • Problem solving on Number Theory and Group Theory • Be able to study the properties of sets, and check whether the given set are groups or not and study various theorems which can be applied to study various algebraic structures. • Be able to understand the concept of equivalence relation by applying different examples to the definition • Identify necessary and sufficient conditions for a non-empty subset of a group to become a subgroup and develop skills in solving problems in groups which facilitate, solving of problems in Cosets • Advance their ability to apply the necessary and sufficient conditions studied, to solve the problems in Normal Subgroups and learn the concept of Quotient group • Be able to deduce other homomorphism theorems fromfundamental theorem of Homomorphism and also illustratethe concept of automorphisms and related theorems

IV	M 4301 (3)	REAL ANALYSIS	To enable the students to – • know and understand the definition and theorems of Real Analysis • apply mathematical concepts and principles to perform numerical and symbolic computations. • prove properties of convergent and divergent sequence. • verify the given sequence in convergent and divergent by using behavior of Monotonic sequence. • prove Cauchy's first limit theorem, Cesaro's theorem, Cauchy's Second limit theorem. • explain subsequences, upper and lower limits of a sequence. • give examples for convergence, divergence and oscillating series. • prove theorems on different test of convergence and divergence of a series of positive terms. • verify the given series is convergent or divergent by using different test and To inculcate knowledge on real numbers and their properties & proofs. • compare with other fields like engineering , physics and other allied sciences.	At the end of the course student will • Be able to gain knowledge and concepts of Real analysis and it's applications • Develop a higher level of mathematical knowledge combined with the ability to o think analytically • Ability to understand the different math concepts and be able to implement them in our everyday problems • Be able to write simple proofs on their own and study bigger theorems • Be able to demonstrate the power to integrate data and ideas of differentiation and integration during a coherent and substantive manner and use acceptable techniques for resolution connected issues and establishing theoretical results • Gain Knowledge of fundamental concepts of real numbers. • Verify the value of the limit of a function at a point using the definition of the limit • Learn to check function is continuous understand the consequences of the intermediate value theorem for continuous functions • Apply the knowledge in higher studies like P.G. and Research.

IV	M 4351 (2)	REAL ANALYSIS(PRACTICAL)	To enable the students to – • know and understand the definition and theorems of Real Analysis • apply mathematical concepts and principles to perform numerical and symbolic computations. • prove properties of convergent and divergent sequence. • verify the given sequence in convergent and divergent by using behavior of Monotonic sequence. • prove Cauchy's first limit theorem, Cesaro's theorem, Cauchy's Second limit theorem. • explain subsequences, upper and lower limits of a sequence. • give examples for convergence, divergence and oscillating series. • prove theorems on different test of convergence and divergence of a series of positive terms. • verify the given series is convergent or divergent by using different test and To inculcate knowledge on real numbers and their properties & proofs. • compare with other fields like engineering , physics and other allied sciences.	At the end of the course student will • Apply theoretical / analytical / statistical knowledge gained in various courses of B.Sc to solve numerical problems based on real life situations during practicals and draw meaningful solutions to day to day problems • Enabling students to develop a positive attitude towards mathematics as an interesting and valuable subject of study • Enhancing students overall development and to equip them with mathematical abilities, problem solving skills, creative talent and power of communication necessary for various kinds of employment. • Problem solving on Real Numbers, Sequences, Series, Continuity, Differentiation, Mean Value Theorems and Riemann Integration • Be able to gain knowledge and concepts of Real analysis and it's applications • Develop a higher level of mathematical knowledge combined with the ability to think analytically • Ability to understand the different math concepts and be able to implement them in our everyday problems • Be able to write simple proofs on their own and study bigger theorems • Be able to demonstrate the power to integrate data and ideas of differentiation and integration during a coherent and substantive manner and use acceptable techniques for resolution connected issues and establishing theoretical results • Apply the knowledge in higher studies like P.G. and Research.

V	M 5301 (3)	Ring Theory &Vector Calculus	To enable the students to • Know the principles of abstract algebra . • Understand the theorems and problems. • Inculcate knowledge on algebraic equations and their relations with properties • Define Homomorphism, Homorphic Image, Elementary Properties of Homomorphism • Define Kernel of a Homomorphism and explain Fundamental theorem of Homomorhphism on Groups and Rings • Define Integral Domains, Division Ring and Fields • Define The characteristic of a ring ,The characteristic of an Integral domain • Define the characteristic of a Field. Sub Rings, Ideals and • Boolean Rings, divisors of zero and cancellation laws Rings • Know and understand the definition and theorems of Vector Calculus. • Apply the theories in every branch of Science and also in commerce.	At the end of the course student will • Acquire basic knowledge in define and recognize the mathematical logic, the mathematical induction, the function and sets concepts of the relations and its properties of the group theory • Develop skills to analyze, improve and outline the logical thinking. Interpret how to know the ring theory using the internet. • Develop skills in designing mathematical models to illustrate, how to search the internet and use software programs to deal with problems • Develop numerical skills in solving the problems involving to evaluate line integrals, surface integrals and volume integrals. Evaluate double and triple integrals in Euclidean, cylindrical and spherical coordinate systems. • Use relevant numerical techniques to determine, and apply, the important quantities associated with vector fields such as the gradient of a scalar, divergence of a vector, curl of a vector, and scalar potential. Evaluate integrals using Green's theorem, Gauss divergence theorem and Stoke's theorem.
V	M 5351 (2)	Ring Theory &Vector Calculus(PRACTICAL)	To enable the students to • Know the principles of abstract algebra . • Understand the theorems and problems. • Inculcate knowledge on algebraic equations and their relations with properties • Define Homomorphism, Homorphic Image, Elementary Properties of Homomorphism • Define Kernel of a Homomorphism and explain Fundamental theorem of Homomorhphism on Groups and Rings • Define Integral Domains, Division Ring and Fields • Define The characteristic of a ring ,The characteristic of an Integral domain • Define the characteristic of a Field. Sub Rings, Ideals and • Boolean Rings, divisors of zero and cancellation laws Rings • Know and understand the definition and theorems of Vector Calculus. • Apply the theories in every branch of Science and also in commerce.	At the end of the course student will • Acquire basic knowledge in define and recognize the mathematical logic, the mathematical induction, the function and sets concepts of the relations and its properties of the group theory • Develop skills to analyze, improve and outline the logical thinking. Interpret how to know the ring theory using the internet. • Develop skills in designing mathematical models to illustrate, how to search the internet and use software programs to deal with problems • Develop numerical skills in solving the problems involving to evaluate line integrals, surface integrals and volume integrals. Evaluate double and triple integrals in Euclidean, cylindrical and spherical coordinate systems. • Use relevant numerical techniques to determine, and apply, the important quantities associated with vector fields such as the gradient of a scalar, divergence of a vector, curl of a vector, and scalar potential. Evaluate integrals using Green's theorem, Gauss divergence theorem and Stoke's theorem.

V	M 5302 (3)	LINEAR ALGEBRA	To enable the students to • Define Vector Space, Quotient space Direct sum, linear span and linear independence, basis and inner product. • Discuss the linear transformations, rank, nullity • Find the characteristic equation, eigen values and eigen vectors of a matrix. • Prove Cayley- Hamilton theorem, Schwartz inequality, Gramschmidtorthogonalisation process. • Solve the system of simultaneous linear equations and be able to apply matrices, systems of equations, regression, and eigenvectors to real world situations. • Know vocabulary, notation, and operations for matrices and vectors. • Solve linear systems of equations using a variety of techniques and to select the best technique for a given system. • Be able to define Linear Transformations and find the find the Domain, Range, Kernel, rank, and nullity of a linear transformation. • Be able to apply vectors, inner products, and linear transformations to real world situations. • Develop lesson plans that demonstrate their ability to explain concepts related to vectors and matrices.	At the end of the course student will • Be able to gain proficiency in solving systems of Linear equations using matrices and demonstrate a working knowledge of algebraic properties of matrices. • Be able to understand Euclidean Vector spaces, their inherent and algebraic structure and the accompanying geometry. • Be able to acquire facility working with general vector spaces, linear transformations, coordinate vectors and the changing of bases. • Be able to develop an algebraic and geometric understanding of eigenvalues and eigenvectors and eigenspaces. • Be able to prove Cayley- Hamilton theorem, Schwartz inequality, Gramschmidtorthogonalisation process • Be able to use mathematical software and calculators to solve a variety of applications in Physical science, Computer science or Economics • Be able to solve linear systems of equations using a variety of techniques and to select the best technique for a given system. • Be able to define Linear Transformations and find the find the domain, range, kernel, rank, and nullity of a linear transformation. • Be able to apply vectors, inner products, and linear transformations to real world situations. • Use computational techniques and algebraic skills essential for the study of systems of Linear equations, matrix algebra, vector spaces, eigenvalues and eigenvectors.Orthogonality and Diagonalization.

V	M 5352 (2)	LINEAR ALGEBRA(PRACTICAL)	To enable the students to • Define Vector Space, Quotient space Direct sum, linear span and linear independence, basis and inner product. • Discuss the linear transformations, rank, nullity • Find the characteristic equation, eigen values and eigen vectors of a matrix. • Prove Cayley- Hamilton theorem, Schwartz inequality, Gramschmidtorthogonalisation process. • Solve the system of simultaneous linear equations and be able to apply matrices, systems of equations, regression, and eigenvectors to real world situations. • Know vocabulary, notation, and operations for matrices and vectors. • Solve linear systems of equations using a variety of techniques and to select the best technique for a given system. • Be able to define Linear Transformations and find the find the Domain, Range, Kernel, rank, and nullity of a linear transformation. • Be able to apply vectors, inner products, and linear transformations to real world situations. • Develop lesson plans that demonstrate their ability to explain concepts related to vectors and matrices.	• Apply theoretical / analytical / statistical knowledge gained in various courses of B.Sc to solve numerical problems based on real life situations during practicals and draw meaningful solutions to day to day problems • Enabling students to develop a positive attitude towards mathematics as an interesting and valuable subject of study • Enhancing students overall development and to equip them with mathematical abilities, problem solving skills, creative talent and power of communication necessary for various kinds of employment. • Problem solving on Vector Spaces, Linear Transformations, Matrices and Inner Product Spaces • Be able to gain proficiency in solving systems of Linear equations using matrices and demonstrate a working knowledge of algebraic properties of matrices. • Be able to understand Euclidean Vector spaces, their inherent and algebraic structure and the accompanying geometry. • Be able to acquire facility working with general vector spaces, linear transformations, coordinate vectors and the changing of bases. • Be able to develop an algebraic and geometric understanding of eigenvalues and eigenvectors. • Be able to prove Cayley- Hamilton theorem, Schwartz inequality, Gramschmidtorthogonalisation process • Be able to solve linear systems of equations using a variety of techniques and to select the best technique for a given system. • Be able to define Linear Transformations and find the find the domain, range, kernel, rank, and nullity of a linear transformation. • Be able to apply vectors, inner products, and linear transformations to real world situations.

VI	M- A1-6301(3)	INTEGRAL TRANSFORMS	To enable the students to • Know and understand the problems and identities • Synthesize the knowledge to formulate conclusions • Solve simultaneous ordinary differential equations and partial differential equations using the Laplace transforms. • Solve the various types of integral equations by using Laplace transforms. • Find the Fourier transforms of sine and cosine transforms • Find the convolution of two functions and relation between Fourier and Laplace transforms.	After successful completion of the course students should be able to: • Laplace transforms is widely used by electronic engineers to solve quickly differential equations occurring in the analysis of electronic circuits. • Simplify calculations in system modeling, one cannot imagine solving digital signal processing problems, without employing Laplace transforms. • In order to get the true form of radioactive decay a Laplace transforms is used. It makes easy to study analytic part of Nuclear physics possible. • Laplace transforms is a veritable tool in virtually all science related fields as it helps in dealing majorly with differential equations arising from these fields. • Fourier transforms useful in the study of solution of partial differential equations to solve initial boundary value problems. • Fourier transforms use in signal and image processing, cell phones. • Fourier transforms resolves function or signals into its mode of vibration. It is used in designing electrical circuits, signal processing, cell phones, signal analysis, image processing and filtering. • Apply the principles in engineering, physics and other Allied Sciences • Apply the theories in every branch of science and also in Commerce and Management Systems.

VI	M-A1-6351(2)	INTEGRAL TRANSFORMS(PRACTICAL)	To enable the students to • Know and understand the problems and identities • Synthesize the knowledge to formulate conclusions • Solve simultaneous ordinary differential equations and partial differential equations using the Laplace transforms. • Solve the various types of integral equations by using Laplace transforms. • Find the Fourier transforms of sine and cosine transforms • Find the convolution of two functions and relation between Fourier and Laplace transforms.	Course Outcomes: After successful completion of the course students should be able to: • Apply theoretical / analytical / statistical knowledge gained in various courses of B.Sc to solve numerical problems based on real life situations during practicals and draw meaningful solutions to day to day problems • Enabling students to develop a positive attitude towards mathematics as an interesting and valuable subject of study • Enhancing students overall development and to equip them with mathematical abilities, problem solving skills, creative talent and power of communication necessary for various kinds of employment. • Problem solving on BasicIntegralCalculus, Ordinary Differential Equations,Application of Laplace Transform to solutions of Differential Equations, Application of Laplace Transforms to Integral Equations and Fourier Transforms • Laplace transforms is widely used by electronic engineers to solve quickly differential equations occurring in the analysis of electronic circuits. • Simplify calculations in system modeling, one cannot imagine solving digital signal processing problems, without employing Laplace transforms. • In order to get the true form of radioactive decay a Laplace transforms is used. It makes easy to study analytic part of Nuclear physics possible. • Laplace transforms is a veritable tool in virtually all science related fields as it helps in dealing majorly with differential equations arising from these fields. • Fourier transforms useful in the study of solution of partial differential equations to solve initial boundary value problems. • Fourier transforms use in signal and image processing, cell phones. • Fourier transforms resolves function or signals into its mode of vibration. It is used in designing electrical circuits, signal processing, cell phones, signal analysis, image processing and filtering. • Apply the principles in engineering, physics and other Allied Sciences and Apply the theories in every branch of science and also in Commerce and Management Systems

VI	M-A2-6301(3)	Advanced Numerical Analysis	To enable the students to • Find the solution of the first order and second order equation with constant coefficient • Find the summation of series finite difference techniques • Find the solution of ordinary differential equation of first order by Euler, Taylor and Runge-Kutta methods • Derive Least – Squares curve fitting procedures, fitting astraight line, nonlinear curve fitting, Curve fitting by a sum of exponentials. • Find the derivatives using Newton's forward difference formula, Newton's backward difference formula, Derivatives using central difference formulae, Stirling's interpolation formula, Newton's divided difference formula, Maximum and minimum values of atabulated function. • Derive Trapozoidal rule, Simpson's 1/3 – rule, Simpson's 3/8 – rule, and Weddle's rules from General Quadrature formula and find the Euler – Maclaurin Formula of summation and The Eulertransformation. • Find the solution of linear systems by using Direct methods, Matrix inversion method, Gaussian elimination methods, Gauss-Jordan Method, Method of factorization, Solution of Tridiagonal Systems.	• Acquire basic knowledge in solving interpolation with equal interval problems by various numerical methods. Estimate the missing terms through interpolation methods. • Develop skills in analyzing the methods of interpolating a given data, properties of interpolation with unequal intervals and derive conclusions, approximate a function using an appropriate numerical method. • Implement numerical methods for a variety of multidisciplinary applications and a variety of numerical algorithms using appropriate technology. • Use relevant numerical techniques for interpolation with equal and unequal intervals by using various central difference formulae and code a numerical method in a modern computer language. • Apply appropriate numerical methods to solve the problem with most accuracy. • Be able to derive Least – Squares curve fitting procedures, fitting a straight line, fitting a parabola, nonlinear curve fitting, Curve fitting by a sum of exponentials. • Be able to find the derivatives using Newton's forward difference formula, Newton's backward difference formula, Derivatives using central difference formulae, Stirling's interpolation formula, Newton's divided difference formula, Maximum and minimum values of a tabulated function. • Be able to derive Trapozoidal rule, Simpson's 1/3 – rule, Simpson's 3/8 – rule, and Weddle's rules from General Quadrature formula and find the Euler – Maclaurin Formula of summation and The Euler transformation. • Be able to find the solution of linear systems by using Direct methods, Matrix inversion method, Gaussian elimination methods, Gauss-Jordan Method, Method of factorization, Solution of Tridiagonal Systems,. • Be able to find the find the solution of ordinary differential equation of first order by Euler, Taylor and Runge-Kutta methods • Compare different methods in numerical analysis with accuracy and efficiency of solution

VI	M-A2-6351(2)	Advanced Numerical Analysis (PRACTICAL)	To enable the students to • Find the solution of the first order and second order equation with constant coefficient • Find the summation of series finite difference techniques • Find the solution of ordinary differential equation of first order by Euler, Taylor and Runge-Kutta methods • Derive Least – Squares curve fitting procedures, fitting a straight line, nonlinear curve fitting, Curve fitting by a sum of exponentials. • Find the derivatives using Newton's forward difference formula, Newton's backward difference formula, Derivatives using central difference formulae, Stirling's interpolation formula, Newton's divided difference formula, Maximum and minimum values of a tabulated function. • Derive Trapozoidal rule, Simpson's 1/3 – rule, Simpson's 3/8 – rule, and Weddle's rules from General Quadrature formula and find the Euler – Maclaurin Formula of summation and The Euler transformation. • Find the solution of linear systems by using Direct methods, Matrix inversion method, Gaussian elimination methods, Gauss-Jordan Method, Method of factorization, Solution of Tridiagonal Systems.	At the end of the course student will • Apply theoretical / analytical / statistical knowledge gained in various courses of B.Sc to solve numerical problems based on real life situations during practicals and draw meaningful solutions to day to day problems • Enabling students to develop a positive attitude towards mathematics as an interesting and valuable subject of study • Enhancing students overall development and to equip them with mathematical abilities, problem solving skills, creative talent and power of communication necessary for various kinds of employment. • Problem solving on Calculus of finite differences, Interpolation with equal and unequal intervals, central interpolation formulae, Numerical differentiation and integration, Linear equations and solution to ODE • Acquire basic knowledge in solving interpolation with equal interval problems by various numerical methods. Estimate the missing terms through interpolation methods. • Develop skills in analyzing the methods of interpolating a given data, properties of interpolation with unequal intervals and derive conclusions, approximate a function using an appropriate numerical method. • Implement numerical methods for a variety of multidisciplinary applications and a variety of numerical algorithms using appropriate technology. • Use relevant numerical techniques for interpolation with equal and unequal intervals by using various central difference formulae and code a numerical method in a modern computer language. • Apply appropriate numerical methods to solve the problem with most accuracy. • Be able to derive Least – Squares curve fitting procedures, fitting a straight line, fitting a parabola, nonlinear curve fitting, Curve fitting by a sum of exponentials. • Be able to find the derivatives using Newton's forward difference formula, Newton's backward difference formula, Derivatives using central difference

VI	M-A3-6301(3)	SPECIAL FUNCTIONS	To enable the students to • DeriveEuler'sIntegrals –Beta andGammaFunctions,ElementaryPropertiesofGamma Functions,Transformation of Gammafunctions • DeriveAnotherformofBeta functions,RelationbetweenBetaandGamma functions, Other transformations, LegendreDuplicationFormula • Define Legendre's equation, Pn(x) and Qn(x) , show that Pn(x) is the coefficient of hnin the expansion in ascending powers of (1-2xh+h2) -1\2 • Derive Laplace definite integral for Pn(x), Orthogonalproperties of Legendre's Polynomials ,Recurrence formulae,Beltrami'sresults, Christoffer'ssummationFormula, Rodrigue's Formula • DeriveLaguerr'sDifferentialEquation,LagurrePolynomials, GeneratingFunction,other formsfor theLaguerrePolynomials(RodriguesFormula). • FindfirstfewLaguerrePolynomials,OrthogonalPropertyoftheLaguerrePolynomials.RecurrenceformulaeforLaguerre Polynomials • DeriveHermiteDifferentialEquation ,HermitePolynomials,GeneratingFunction, Other formsfor theHermitePolynomials • FindfirstfewHermite Polynomials,OrthogonalPropertiesof HermitePolynomials, Recurrence formulae for HermitePolynomials • DeriveBessel'sequation,GeneralSolutionofBessel's equation and DefineofJo(X),RecurrenceFormulaeforJn(X).	•After studying this course, students should be able to: • Use Gamma and Beta functions to evaluate integrals, Beta functions come up in string theory. Gamma function is useful in statistics and in physics. The Gamma function is used in actual computation for approximating statistical values. • Legendre polynomials were introducing in spherical harmonics are an important class of special functions that are closely related to these polynomials. • Laguerre polynomials are found in many important physical problems. • The most important single application of the Laguerre polynomials is in the solution of the schrodinger wave equation for the hydrogen atom. • Hermite polynomials are used to describe the transversal profile, but mainly to analyze the quantum mechanical simple harmonic oscillator. • The main advantage of this methods lies in its easiness. This methods contrasts in simplicity with standard methods based on solving the differential equation using power series, generating function, Rodrigue's formula. • Bessel functions to the theory of heat conduction, which include dynamical system and heat conduction in spherical or cylindrical objects.

VI	M-A3-6351(2)	SPECIAL FUNCTIONS(PRACTICAL)	To enable the students to • DeriveEuler'sIntegrals –Beta andGammaFunctions,ElementaryPropertiesofGamma Functions,Transformation of Gammafunctions • DeriveAnotherformofBeta functions,RelationbetweenBetaandGamma functions, Other transformations, LegendreDuplicationFormula • Define Legendre's equation, Pn(x) and Qn(x) , show that Pn(x) is the coefficient of hnin the expansion in ascending powers of (1-2xh+h2) -1\2 • Derive Laplace definite integral for Pn(x), Orthogonalproperties of Legendre's Polynomials ,Recurrence formulae,Beltrami'sresults, Christoffer'ssummationFormula, Rodrigue's Formula • DeriveLaguerr'sDifferentialEquation,LagurrePolynomials, GeneratingFunction,other formsfor theLaguerrePolynomials(RodriguesFormula). • FindfirstfewLaguerrePolynomials,OrthogonalPropertyoftheLaguerrePolynomial s.RecurrenceformulaeforLaguerre Polynomials • DeriveHermiteDifferentialEquation ,HermitePolynomials,GeneratingFunction, Other formsfor theHermitePolynomials • FindfirstfewHermite Polynomials,OrthogonalPropertiesof HermitePolynomials, Recurrence formulae for HermitePolynomials • DeriveBessel'sequation,GeneralSolutionofBessel's equation and DefineofJo(X),RecurrenceFormulaeforJn(X).	After studying this course, students should be able to: • Apply theoretical / analytical / statistical knowledge gained in various courses of B.Sc to solve numerical problems based on real life situations during practicals and draw meaningful solutions to day to day problems • Enabling students to develop a positive attitude towards mathematics as an interesting and valuable subject of study • Enhancing students overall development and to equip them with mathematical abilities, problem solving skills, creative talent and power of communication necessary for various kinds of employment. • Problem solving onBeta and Gamma Functions, Legendre's Equation, Lagurre Polynomials, Hermite Polynomials and Bessel's Equation • Use Gamma and Beta functions to evaluate integrals, Beta functions come up in string theory. Gamma function is useful in statistics and in physics. The Gamma function is used in actual computation for approximating statistical values. • Legendre polynomials were introducing in spherical harmonics are an important class of special functions that are closely related to these polynomials. • Laguerre polynomials are found in many important physical problems. • The most important single application of the Laguerre polynomials is in the solution of the schrodinger wave equation for the hydrogen atom. • Hermite polynomials are used to describe the transversal profile, but mainly to analyze the quantum mechanical simple harmonic oscillator. • The main advantage of these methods lies in its easiness. This methods contrasts in simplicity with standard methods based on solving the differential equation using power series, generating function, Rodrigue's formula. • Bessel functions to the theory of heat conduction, which include dynamical system and heat conduction in spherical or cylindrical objects.
VI	M-A3-6302(3)	PROJECT WORK	Objectives: • Extensive Survey of Literature • Identification of Topic • Developing research questions and areas • Preparing the Research Design including Sample Design • Publication of papers on related topics	Methodology : • Collection of the Data • Analysis of Data • Generalization and Interpretation • Preparation of the Report or Presentation of Results-Formal write ups of Conclusions reached.

VI	M-B1-6301 (3)	GRAPH THEORY	To enable the students to • Know and understand the problems and identities of Graph Theory • Apply the Principles in engineering, physics and other Allied Sciences • Synthesize the knowledge to formulate conclusions • Analyze and interpret the data using graphs. • Study the properties of trees and connectivity. • Determine whether graphs are Hamiltonian and/ or Eulerian.	At the end of the course student will • Acquire basic knowledge to solve problems using basic graph theory. • Develop skills in analyzing and determining whether graphs are Hamiltonian and/or Eulerian. • Solve problems involving vertex and edge connectivity and solve real world problems using graph theory. • Be able to reproduce the proofs of some fundamental statements on graphs. • Be able to solve new graph problems • Be able to understandthe fundamental definitions and properties of graphs. • Be ability to read and write rigorous mathematical proofs involving graphs. • BeRecognition of the numerous applications of graph theory. • Use a combination of theoretical knowledge and independent mathematical thinking in creative investigation of questions in graph theory.

VI	M-B1-6351 (2)	GRAPH THEORY(PRACTICAL)	To enable the students to • Know and understand the problems and identities of Graph Theory • Apply the Principles in engineering, physics and other Allied Sciences • Synthesize the knowledge to formulate conclusions • Analyze and interpret the data using graphs. • Study the properties of trees and connectivity. • Determine whether graphs are Hamiltonian and/ or Eulerian.	At the end of the course student will • Apply theoretical / analytical / statistical knowledge gained in various courses of B.Sc to solve numerical problems based on real life situations during practicals and draw meaningful solutions to day to day problems • Enabling students to develop a positive attitude towards mathematics as an interesting and valuable subject of study • Enhancing students overall development and to equip them with mathematical abilities, problem solving skills, creative talent and power of communication necessary for various kinds of employment. • Problem solving onGraphs and Sub Graphs, shortest path problem, Sperner's lemma, Trees, Euler tours and Hamilton cycles • Acquire basic knowledge to solve problems using basic graph theory. • Develop skills in analyzing and determining whether graphs are Hamiltonian and/or Eulerian. • Solve problems involving vertex and edge connectivity and solve real world problems using graph theory. • Be able to reproduce the proofs of some fundamental statements on graphs. • Be able to solve new graph problems • Be able to understandthe fundamental definitions and properties of graphs. • Be ability to read and write rigorous mathematical proofs involving graphs. • BeRecognition of the numerous applications of graph theory. • Use a combination of theoretical knowledge and independent mathematical thinking in creative investigation of questions in graph theory.

VI	M-B2-6301(3)	Applied Graph Theory	To enable the students to • Know and understand the problems and identities of Applied Graph Theory • Apply the Principles in engineering, physics and other Allied Sciences • Understand personal assignment problems and optimal assignment problems. • Synthesize the knowledge to formulate conclusions • Picknaturallythe good model when facing a “real-life” problem in the future.	At the end of the course student will • Be able to formulate and prove fundamental theorems on trees, matching’s, connectivity, colorings, plane and Hamiltonian graphs. • Have knowledge on elementary Ramsey theory. • Be able to use graphs as a tool to model real-life problems. • Be matching’s and coverings, Tutte’s theorem on perfect matching’s, Egervary’s algorithm • Be able to know some applications of graphs in natural science, timetabling and computer science. • Be able to use graph theory as a modeling tool.
VI	M-B2-6351(2)	Applied Graph Theory(PRACTICAL)	To enable the students to • Know and understand the problems and identities of Applied Graph Theory • Apply the Principles in engineering, physics and other Allied Sciences • Understand personal assignment problems and optimal assignment problems. • Synthesize the knowledge to formulate conclusions • Pick naturally the good model when facing a “real-life” problem in the future.	At the end of the course student will • Apply theoretical / analytical / statistical knowledge gained in various courses of B.Sc to solve numerical problems based on real life situations during practicals and draw meaningful solutions to day to day problems • Enabling students to develop a positive attitude towards mathematics as an interesting and valuable subject of study • Enhancing students overall development and to equip them with mathematical abilities, problem solving skills, creative talent and power of communication necessary for various kinds of employment. • Problem solving onMathings, Perfect matchings, Edge colorings, Applications of Matchings, The timetabling problem, Determination of Ramsey’s Numbers • Be able to formulate and prove fundamental theorems on trees, matching’s, connectivity, colorings, plane and Hamiltonian graphs. • Have knowledge on elementary Ramsey theory. • Be able to use graphs as a tool to model real-life problems. • Be matching’s and coverings, Tutte’s theorem on perfect matching’s, Egervary’s algorithm • Be able to know some applications of graphs in natural science, timetabling and computer science. • Be able to use graph theory as a modeling tool.

VI	M-B3-6301(3)	FLUID MECHANICS	To enable the students to • Get the foundation in the fundamentals of fluid mechanics. • Know and understand the problems and identities of FluidMechanics. • Practice in the analytical formulation of fluid mechanics problems. • Apply the Principles in engineering, physics and other Allied Sciences. • Synthesize the knowledge to formulate conclusions. • External flow of incompressible and viscous fluids.	After studying this course, students should be able to • Identify how to derive basic equations and know the related assumptions. • Describe the principles of motion for fluids. • Apply the equation of conservation of mass, momentum and energy. • Use Euler's and Bernoulli's equations and the conservation of mass to determine • velocities, pressure and accelerations for incompressible and in viscid fluids. • Study analytical solutions to variety of simplified problems. • Grasp the basic ideas of dimensional flows and fluid flows.
VI	M-B3-6351(2)	FLUID MECHANICS(PRACTICAL)	To enable the students to • Get the foundation in the fundamentals of fluid mechanics. • Know and understand the problems and identities of FluidMechanics. • Practice in the analytical formulation of fluid mechanics problems. • Apply the Principles in engineering, physics and other Allied Sciences. • Synthesize the knowledge to formulate conclusions. • External flow of incompressible and viscous fluids.	After studying this course, students should be able to • Apply theoretical / analytical / statistical knowledge gained in various courses of B.Sc to solve numerical problems based on real life situations during practicals and draw meaningful solutions to day to day problems • Enabling students to develop a positive attitude towards mathematics as an interesting and valuable subject of study • Enhancing students overall development and to equip them with mathematical abilities, problem solving skills, creative talent and power of communication necessary for various kinds of employment. • Problem solving onKinematics of Fluids in Motion, Real fluids and Ideal fluids, Equations of motion of a fluid, Discussion of the case of steady motion under conservative body forces • Identify how to derive basic equations and know the related assumptions. • Describe the principles of motion for fluids. • Apply the equation of conservation of mass, momentum and energy. • Use Euler's and Bernoulli's equations and the conservation of mass to determine • velocities, pressure and accelerations for incompressible and in viscid fluids. • Study analytical solutions to variety of simplified problems. • Grasp the basic ideas of dimensional flows and fluid flows.

VI	M-E1-6301-(3)	NUMERICAL ANALYSIS	To enable the students to • Define Basic concepts of operators Δ , E, ∇ • Define The Calculus of Finite Differences • Find the difference of polynomial and define Interpolation with Equal Intervals • Prove theorems and Solve problems using Newton forward formula and Newton backward formula. • Find the difference of polynomial and define Interpolation with unequal Intervals • Derive Gauss's formula and Stirling formula using Newton forward formula and Newton backward formula • Discuss about Numerical Differentiation and Integration • Find maxima and minima for differential equation • Derive Trapezoidal rule, Simpson's 1/3 ,3/8 rules by using General Quadrature formula	At the end of the course student will • Acquire basic knowledge in solving interpolation with equal interval problems by various numerical methods. Estimate the missing terms through interpolation methods. • Develop skills in analyzing the methods of interpolating a given data, properties of interpolation with unequal intervals and derive conclusions, approximate a function using an appropriate numerical method. • Implement numerical methods for a variety of multidisciplinary applications and a variety of numerical algorithms using appropriate technology. • Use relevant numerical techniques for interpolation with equal and unequal intervals by using various central difference formulae and code a numerical method in a modern computer language. • Apply appropriate numerical methods to solve the problem with most accuracy. • Compare different methods in numerical analysis with accuracy and efficiency of solution

VI	M-E1-6351(2)	NUMERICAL ANALYSIS (PRACTICAL)	To enable the students to • Define Basic concepts of operators Δ , E, ∇ • Define The Calculus of Finite Differences • Find the difference of polynomial and define Interpolation with Equal Intervals • Prove theorems and Solve problems using Newton forward formula and Newton backward formula. • Find the difference of polynomial and define Interpolation with unequal Intervals • Derive Gauss's formula and Stirling formula using Newton forward formula and Newton backward formula • Discuss about Numerical Differentiation and Integration • Find maxima and minima for differential equation • Derive Trapezoidal rule, Simpson's 1/3 ,3/8 rules by using General Quadrature formula	At the end of the course student will • Apply theoretical / analytical / statistical knowledge gained in various courses of B.Sc to solve numerical problems based on real life situations during practicals and draw meaningful solutions to day to day problems • Enabling students to develop a positive attitude towards mathematics as an interesting and valuable subject of study • Enhancing students overall development and to equip them with mathematical abilities, problem solving skills, creative talent and power of communication necessary for various kinds of employment. • Problem solving on Calculus of finite differences, Interpolation with equal and unequal intervals, central interpolation formulae, Numerical differentiation and integration, Transcendental and algebraic equations • Acquire basic knowledge in solving interpolation with equal interval problems by various numerical methods. Estimate the missing terms through interpolation methods. • Develop skills in analyzing the methods of interpolating a given data, properties of interpolation with unequal intervals and derive conclusions, approximate a function using an appropriate numerical method. • Implement numerical methods for a variety of multidisciplinary applications and a variety of numerical algorithms using appropriate technology. • Use relevant numerical techniques for interpolation with equal and unequal intervals by using various central difference formulae and code a numerical method in a modern computer language. • Apply appropriate numerical methods to solve the problem with most accuracy. • Compare different methods in numerical analysis with accuracy and efficiency of solution

VI	**M-E2-6301 (3)**	**LAPLACE TRANSFORMS**	**To enable the students to** **• Know the definition of the Laplace Transform.** **• Calculate the Laplace Transform of basic functions using the definition.** **• Find the Laplace Transform derivatives and anti-derivatives of functions.** **• Compute inverse Laplace Transforms.** **• Learn the definition of the Dirac delta generalized function, understand it as an impulse and solve ODE's with forcing terms involving impulses.**	**After studying this course, students should be able to:** **• Learn the applications of Laplace Transform in engineering analysis.** **• Apply knowledge of basic engineering courses as appropriate to the field of electronics and telecommunication engineering.** **• Learn to use partial fraction and convolution methods in inverse Laplace Transforms.** **• Learn how to use Laplace Transform methods to solve ordinary and partial differential equations.** **• Apply Laplace Transform and its inverse to solve intitial value and other related problems.** **• Solve engineering problems using the principles of solution of differential equations.** **• Find the Laplace transform of a function by definition and by use of table.** **• Able to write piece wise functions using the unit step function.** **• Find transforms using the first and second translation theorems.** **• Solve linear Differential equations with constant coefficients and unit step input functions using the Laplace transforms.**

VI	M-E2-6351 (2)	LAPLACE TRANSFORMS(PRACTICAL)	To enable the students to • Know the definition of the Laplace Transform. • Calculate the Laplace Transform of basic functions using the definition. • Find the Laplace Transform derivatives and anti-derivatives of functions. • Compute inverse Laplace Transforms. • Learn the definition of the Dirac delta generalized function, understand it as an impulse and solve ODE's with forcing terms involving impulses.	After studying this course, students should be able to: • Apply theoretical / analytical / statistical knowledge gained in various courses of B.Sc to solve numerical problems based on real life situations during practicals and draw meaningful solutions to day to day problems • Enabling students to develop a positive attitude towards mathematics as an interesting and valuable subject of study • Enhancing students overall development and to equip them with mathematical abilities, problem solving skills, creative talent and power of communication necessary for various kinds of employment. • Problem solving onLaplace Transform I, Laplace Transform II, Laplace Transform III, Inverse Laplace Transform I, Inverse Laplace Transform II • Learn the applications of Laplace Transform in engineering analysis. • Apply knowledge of basic engineering courses as appropriate to the field of electronics and telecommunication engineering. • Learn to use partial fraction and convolution methods in inverse Laplace Transforms. • Learn how to use Laplace Transform methods to solve ordinary and partial differential equations. • Apply Laplace Transform and its inverse to solve intitial value and other related problems. • Solve engineering problems using the principles of solution of differential equations. • Find the Laplace transform of a function by definition and by use of table. • Able to write piece wise functions using the unit step function. • Find transforms using the first and second translation theorems. • Solve linear Differential equations with constant coefficients and unit step input functions using the Laplace transforms.

DEPARTMENT OF ENGLISH
BA PROGRAM WITH ENGLISH
BA PROGRAM OUTCOMES
1. Graduates will have greater awarenessand knowledgein all subject areas, understanding concepts, theories and linked aspects, applying them in respective domains and exploring the future career and entrepreneurial opportunities in specific and allied fields. **2. Graduates are expected to develop effective oral and written communication with the use of appropriate technology to succeed in career presentations and interviews.Using various forms of business communication, supportedby effective use of appropriate modern technology techniques, logical reasoning, articulation of ideas and presentation.** **3. Graduates should be able toconceptualize, organize and resolve contemporary problems or issues with a research aptitude gather the relevant data and document the findings.They canapply the perspective of their chosen specialized area of study to develop fully-reasoned opinions on such contemporary issues.** **4. Graduates are expected to develop skills on analyzing specific data or problems, apply the relevant analysis, generate alternatives and engage in problem solving in functional or practical areas** **5. Graduates are expected to possess social consciousness, identify the contemporary social problems around the neighbourhoodand beyond State and National boundaries, explore the opportunities for social entrepreneurship, involve themselves in social outreach (NSS, NCC and other platforms and NGO's) and have integrity.** **6. Graduates are expected to collaborate and lead teams across Departmental boundaries and demonstrate leadership qualities, (Leadership positions in the Student Council, Departmental Associations and Clubs) maximize the usage of diverse skills of team members in the related context, thus catering to harmony within diversity** **7. The graduates are to demonstrate a global outlook (in consonance with the Vision and Mission Statement of the College)with the ability to identify aspects of the world at large. They are expected to be familiar with the knowledge, skills and attributes needed to live and work in a diverse world.** **8. Training students and making them 'future course ready' 'job ready' and 'employable' through the 'employability component' in all courses. Graduates are prepared to handle jobs in all sectors like Teaching, Industry, NGO, Service Sector, Hospitality, ITeSetc through varied initiatives.** **9. Inculcating values for good living in a challenging world through the course in Human Values and Professional Ethics, understanding personal ethics and resolving ethical dilemmas and consequentially through diverse initiatives and platforms and practise them for their own good.** **10. Taking up lifelong learning Coursesto equip them to the changing environment and be prepared to take up Master programmes, PG Diplomas, Certificate Courses as well as MOOCs, Online Courses and Self Learning Courses for a**
SPECIFIC OUTCOMES OF BA PROGRAM WITH OFFICE MANAGEMENT

PSO-1: Acquire in depth knowledge (concepts, theories and principles) within various Papers - Management Principles and Practice, Office Organization and Correspondence, Business Accounting, Accounting Software for OM & TALLY, Company Secretarial Practice, Internship Training Report, Multimedia Applications in OM, Advertising Management, and Research Project Work.
PSO 2: Understand the communication, analysis and technological skills needed to analyze a situation (problem and/or opportunity) apply conceptual business foundations to solve practical decision-making problems, both individually and as part of teams and make successful presentations using ICT and their own personal competencies.
PSO 3: Be able to develop critical thinking, scientific attitude, research and thesis writing skills through identifying and accessing literature studies and work on an independent Research Project.
PSO 4: Engage in academic or industry internship or service learning experience to demonstrate relevancy of foundational and theoretical knowledge of their academic major and to gain career related experiences or community development exposure.
PSO 5: An integrated knowledge life coping skills and demonstrated ability to perform as management professionals and leadership positions and will be prepared for continued learning throughout their career.

COURSE OBJECTIVES AND OUTCOMES

SEM	COURSE CODE (WITH NO OF CREDITS)	COURSE NAME	COURSE OBJECTIVES	COURSE OUTCOMES
I	OFF 1401 (4)	Management Principals & Practice	The students will 1. Know and be familiar with the concepts in management 2. Understand their application and relevance in personal and professional situations. 3. Analyse and evaluate managers and leaders to follow their example.	• Describe and predict the role of planning in modern organizations through Working on individual Case Projects (Transform Individual into Small Group Hypothetical Projects) • Find and discuss opportunities to work with and better understand diversity in people and situations (Real tasks of discussing with people from varied socio-economic and cultural backgrounds) • Identify and assess the importance of effective leadership (Group Leaders in Team Assignments & Presentations and various positions in Clubs and Associations in the College) • Use the principles and skills in case analysis of organizations (Skill Development for Workplace effectiveness in Internships) • Prioritise problem-solving strategies and critical thinking in real life situations (Life lessons through transferable skills of Motivation for entrepreneurial situations)

II	OFF 2401 (4)	Office Organisation & Correspondence	The students will be able to – • Know and understand the meaning of various terms used in offices. • See and experience the working of offices through visits to firms. • Apply the aspects of filing and records keeping practically	Identify and recognize the importance of Administrative functions and the key skills required for effective practice in an Office (Skills of Front Office Assistant) CO2: Demonstrate critical thinking when presented with workplace issues and express views articulately (Case Studies and Exercises) CO 3: Create & Design a Layout and a Model based on a scaled version guided by the Principles of Layout using cutouts and miniature items (Kinesthetic skills CO 4: Outline and Identify the practical aspects of an Office through Visit-Observe-Study-Report – a Shadow Enterprise Technique initiated in Teams of 4 – 7 students CO 5: Write Official Letters and
III	OFF 3401 (4)	Business Acountancy	The students will be able to – • Know and understand the meaning of various terms used in accounting and the procedure of accounting in firms. • Analyse the various concepts learnt to solve problems in accounting and statistics. • Apply the various concepts in order to perform higher functions like analysis and interpretation of accounting data	Write and discuss ethical issues related to the Accounting profession CO 2: Compare and Contrast financial statements in accordance with Generally Accepted Accountancy Principles. CO 3: Use and examine critical thinking skills to analyse financial data. CO 4: Assess and construct appropriate judgment derived from knowledge of accounting theory, to financial analysis and decision making in firms.
IV	OFF 4401 (4)	Accounting Software for OM & Tally	• Know the tools and techniques through accounting software • Understand how to use it in different accounting procedures in the firm • Evaluate its relevance in particular situations for greater credibility as per GAAP	• Use accounting and business terminology for accounting purposes • Explore and acquire skills in respect of most sophisticated computerized accounting procedures and practices • Help themselves serve better the vast digital accounting needs of every commercial organization. • Enable even a Non commerce student could in computerized accounting systems as it is user friendly

V	OFF 5401 (4)	Internship Training Report		• Improves their chances of getting a job more easily later • Provides basic and hands on understanding of the industry or business working environment • Increases their chances of getting a higher starting salary • Explores professional interests and career paths • Gains technical skills and knowledge not taught in the classroom • Builds networking contacts and references • Enhances sense of self, independence, and self-confidence • Improves communication, teamwork, problem-solving, and related skills
V	OFF 5402 (3)	Company Secretrial Practice	• Define and identify the terms used in companies to describe the functional aspects. • Understand various procedures followed and how companies manage their	• Analyze the performance of companies through the diverse parameters of class meetings and general meetings • Recognise the law and best practices in key functional matters (for example,
VI	OFF E-1 6401 (3)	Multimedia Application in OM		1. PageMaker – for Exploring highly versatile DTP (Desktop Publishing) 2. Photoshop – for image editing applications and use extensive collection of painting, retouching and special effects tools. 3. FLASH - Moving animation software
VI	OFF E- 2 6402 (3)	E- Commerce	The students will be able to • Be familiar with the e commerce concepts and identify them • Understand how to use it in different procedures in the firm and for personal use • Evaluate its relevance in particular situations for greater credibility	• use e commerce and business terminology, • explain the objective of e payments and related key assumptions and principles. • explore and acquire skills in respect of most sophisticated procedures and practices • help themselves serve better the vast digital needs needs of every commercial organization.
VI	OFF A 1 6401 (3)	A Human Resource Management	To enable the students to • Highlight the importance of HRM in an organization. • Understand the processes and mechanism of managing human resources. • Develop a competitive advantage by using its human resource	1. Recognize and understand the role of Human Resource Management in modern organizations 2. Look for opportunities to work with and better understand diversity in people and situations 3. Realise the need for personal change for the success of the organization. 4. Apply the principles and skills in small and big cases of HRM in organisations 5. Develop as better Human Relations specialists

VI	OFF A 2 6402 (3)	Advertising Management	1. Know and understand the nature, functions, kinds and theories of advertising 2. Discuss the strategic considerations involved in advertising and marketing. 3. Analyze the major issues that have affected Indian and Global advertising and the future outlook on advertising. 4. Learn the making of a creative brief and an advertisement. 5. Realize and explore the various career options in Advertising Management.	• appreciate the ways that communication through advertising influences and persuades consumers; • discuss the role of the advertising agency and its client relationships; • research and prepare a profile of media habits for a given target market (Designing an Ad Campaign for a given product) • set promotional objectives and identify their relationship with the strategic plan; • explain and illustrate Integrated Marketing Communication decision making and planning
VI	OFF A 3 6403 (3)	Project	The project is to provide exposure to various dimensions of corporate working and certain problems faced by them and assist them in problem solving through active research	The student after completing this project would have understood certain problem solving techniques and other issues which would provide a base for their future research and career development The Broad Areas of the Dissertation
VI	OFF B 1 6401(3)	Brand Management	The students will be able to 1. Understand key principles of branding 2. Explain branding concepts and ideas in their own words 3. Examine and conduct the measurement of brand equity and brand performance	• Practically develop a brand, including positioning and communication • Prepare a professional, logical and coherent report in the form of a brand audit • Deliver an oral presentation in a professional, engaging manner • Develop an argument and express themselves clearly in both written and oral communication • Evaluate product brands in the light of awareness of branding guidelines
VI	OFF B 2 6402 (3)	Online Advertising	To enable the students to 1. Know about Online advertising and its various types in the world of e-commerce 2. Understand the advantages of web advertising over traditional advertising. 3. Apply the techniques in keeping with the latest developments in web advertising arena.	• Practically develop An Online brand, including positioning and communication • Develop an argument and express themselves clearly in both written and oral communication • Consider ethical issues in branding in the society • Evaluate the current Online Ads which are used by organizations • Create an Online Advertising campaign (Individual Activity
VI	OFF B 3 6403 (3	Project	The project is to provide exposure to various dimensions of corporate working and certain problems faced by them and assist them in problem solving through active research	The student after completing this project would have understood certain problem solving techniques and other issues which would provide a base for their future research and career development

DEPARTMENT OF PHYSICS

BSC PROGRAM WITH PHYSICS

BSC PROGRAM OUTCOMES

The knowledge intensive and skill-oriented curriculum of BSc programme in the three major modeis designed and deployed in the CBCS pattern at SJCW(A) envisaging the following outcomes

- **Comprehensive domain specific knowledge provides the necessary intellectual competencies to progress to higherlevels of learning and research**
- **Exhaustive laboratory training augments comprehension of theoretical principles and ignites scientific temper**
- **Experiential learning through internships/on the job training/surveys/field studies/live projects etc.ensures problem solving and job skills**
- **Thehard and soft skills acquired in the form ofLSRW/verbal/analytical/numerical/reasoning/programming/coding attributes, contribute to success in National and International level tests for admission and recruitment**
- **Individual and group projects and assignments kindle research aptitude**
- **Autodidactic learning tasks induce critical thinking and lead to optimal utilisation and creation of e resources on the net**
- **The mandatory life skills courses nurture ethical behaviour, social responsibility and environmental consciousness**
- **Leadershiptraining, entrepreneurship education courses hone leadership skills and groom entrepreneurial tendencies fostering future leaders and job providers**
- **Selective perusal ofpersonality developmentcourses and participation in extra andco-curricular activitiesensurephysical andpsychological fitness leading to personal empowerment and responsible citizenship**
- **The holistic BSc programme at SJCW(A), in toto, strengthens the strengths of the learners, weakens their weaknesses, helps them to overcome challenges and creates opportunities for them to evolve into socially responsive members of society**

SPECIFIC OUTCOMES OF BSC PROGRAM WITH PHYSICS

- **Be able to demonstrate basic knowledge in the core areas of Physics (Classical Mechanics, Waves and Acoustics, Optics and Lasers, Thermal Physic, Electricity, Magnetism and Electronics, Modern Physics, and Renewable Energy).**
- **Be versatile in laboratory techniques in using apparatus**

COURSE OBJECTIVES AND OUTCOMES

SEM	COURSE CODE (WITH NO OF CREDITS)	COURSE NAME	COURSE OBJECTIVES	COURSE OUTCOMES
I	PH 1401	CLASSICAL MECHANICS	By successful completion of the course, students will be able to: • Apply mathematical methods in the analysis physical aspects. • Know the importance of minimizing methods in the measurement of errors so as to maintain accuracy in practical observations. • Understand the effect of gravitation on rigid bodies.	• Describe and understand the vibrations of discrete and continuous mechanical systems. • Describe and understand planar and spatial motion of a rigid body. • Describe and understand the motion of a mechanical system. • Students will be able to solve problems using their knowledge and skills.

I	PH 1451	PHYSICS PRACTICAL I A	**By successful completion of the course, students will be able to:** **• To make the students understand better in applying mathematical methods in the analysis of physical aspects.** **• To know the importance of minimizing methods in the measurement of errors so as to maintain accuracy in practical observations.** **• To make the students understand the effect of gravitation on rigid Rotary bodies and to learn Relativistic variation of time and length under different frames of references.**	**• As the experiments are related to the theory and syllabi of respective semester, students will have a much better understanding of the content.** **• Students can estimate experimental difficulties through practical work.** **• They can understand the variation of moment of inertia with the change of axis.**
II	PH 2401	WAVES AND ACOUSTICS	**By successful completion of the course, students will be able to:** **• To compare and analyze the wave motion in different fluids.** **• To make the student learn about acoustics of buildings and auditoria.** **• To enable the students learn about audio and video system.**	**• The students will be able to describe the nature of wave and explain the distinction between wave motion and particle motion.** **• The students will be able to utilize mathematical relationship related to wave characteristics.** **• The students will be able to predict the orientation of the reflected pulse at the boundary between two media.** **• The students will be able to define wave speed and identify the variables which effect the wave speed.**
II	PH 2451	PHYSICS PRACTICAL I B	**By successful completion of the course, students will be able to:** **• To make the students understand better in applying mathematical methods in the analysis of physical aspects.** **• To know the importance of minimizing methods in the measurement of errors so as to maintain accuracy in practical observations.** **• To make the students understand the effect of gravitation on rigid Rotatory bodies and to learn Relativistic variation of time and length under different frames of reference.**	**• As the experiments are related to the theory and syllabi of respective semester, students will have a much better understanding of the content.** **• They can understand the phenomenon of resonance.** **• Students will have a knowledge in handling basic instruments.**
III	PH 3401	OPTICS AND LASERS	**By successful completion of the course, students will be able to:** **• Understand of various phenomena occurring in nature by applying the basic laws in Physics.** **• Become aware of the basics in the latest transmission techniques involved communications.** **• Apply the concepts while appearing for competitive exams leading to Post graduation and others.**	**• Differentiate between the constructive and destructive interference.** **• Combine multiple waves using the super position principle.** **• Differentiate between Fresnel's diffraction and Fraunhofer's diffraction.** **• To study the application of optical fibres in communication technology.**
III	PH 3451	PHYSICS PRACTICAL II A	**By successful completion of the course, students will be able to:** **• Understand the important concepts of Heat and Optics** **• To measure experimentally the physical constants like k, s and verify with the standard value.**	**• As the experiments are related to the theory and syllabi of respective semester, students will have a much better understanding of the content.** **• Students will have exposure to use spectrometer, traveling microscope etc.**

IV	PH 4401	THERMAL PHYSICS	**By successful completion of the course, students will be able to:** **• Understand various physical processes involved in nature.** **• Analyze a physical phenomenon based on physical laws.** **• Apply the concepts and principles to face competitive examinations leading to higher studies and others.**	**• To develop a working knowledge of the laws and methods of thermodynamics.** **• To develop a working knowledge on the laws and methods of elementary statistical mechanics.** **• To define and understand the meaning of specific heat capacity of solids and liquids.** **• To know the concepts of heat exchange, heat capacity, phases of matters, ideal gas law, kinetic theory of gases etc.**
IV	PH 4451	PHYSICS PRACTICAL II B	**By successful completion of the course, students will be able to:** **• To enable the students to understand the important concepts of Heat & Optics** **• To measure experimentally the physical constants like k, s and verify with standard value.**	**•As the experiments are related to the theory and syllabi of respective semester, students will have a much better understanding of the content.** **• Students can have an exposure to use polarimeter, spectrometer etc.** **• They will know to apply radiation correction methods.**
V	PH 5401	ELECTRICITY, MAGNETISM AND ELECTRONICS	**By successful completion of the course, students will be able to:** **• Understand the basic concepts in physics in relation to the effect of charges at rest and motion and combination of electronic and magnetic fields.** **• Understand the working principle of electric devices and analyze electric circuits.** **• To familiarize the students with the fundamental concepts in laws of electricity and magnetism**	**• At the end of the course the student will understand the fundamentals of electric charge and fields, forces among charges (Coulombs law) and chare conservation.** **• To understand the magnetism concepts of inductances and inductors and the theory of magnetic fields and forces.** **• Have an understanding and appreciation for the importance of Maxwell's equations as a mathematical frame work of EM theory.** **• Be familiar with circuit theory and to be able to solve basic electronic circuit problem.**
V	PH 5402	MODERN PHYSICS	**By successful completion of the course, students will be able to:** **• Gain insight into the nucleus of the atom and various concepts principles, and measurements regarding radioactive radiations.** **• Acquire wider knowledge of nuclear structure, nuclear detectors, accelerators and gives a practical outlook regarding nuclear reactors, nuclear power plants and accelerators.** **• Progress to higher studies in nuclear physics.** **• Gain insight into classical and quantum aspects in the behavior of particles and dualistic nature of matter and light.** **• Develop an awareness of spectra of different elements and their fine structures and an analytical study of different spectroscopic observation**	**• To know the concept of quantum theory of light and to recognize the x-ray diffraction and Bragg's law.** **• To have an idea of Thomson and Rutherford atomic model and Bohr's atom model.** **• The student will learn the concept of photoelectric effect, Compton effect, Raman effect.**

V	PH 5452	PHYSICS PRACTICAL III A&B	**By successful completion of the course, students will be able to:** **• Develop the skills of connecting different types of electrical circuits** **• Measure the values of resistance, potential difference and currents in various types of circuits.** **• Understand the basic principles and working of electronic devices.**	**• As the experiments are related to the theory and syllabi of respective semester, students will have a much better understanding of the content.** **• Students can estimate the magnetic field strength due to an electric current.** **• They will know how to use diode as a rectifier and can also find its bandgap.** **• They will study the characteristics of thermistor, transistor, FET and Zener diode.**
V	PH-E1-6401	RENEWABLE ENERGY	**By successful completion of the course, students will be able to:** **• To harness the environment friendly RE sources and to enhance their contribution to the socio-economic development.** **• To create public awareness and involve users/local community along with capacity building in establishing, operating and managing Re projects.** **• To initiate necessary measures in energy conservation as per the guidelines of Bureau of energy efficiency (BEE), government of India.**	**• Apply Engg. Techniques to build solar, wind, tidal geothermal, biofuel, fuel cell, hydrogen and stealing engine.** **• Analyze and evaluate the application of Renewable energy.** **• Will understand the need, importance and scope of non-conventional and alternate energy.** **• Students will demonstrate effective understanding of functioning of power sector.**
VI	PH-E1-6451	PHYSICS PRACTICAL IV	**By successful completion of the course, students will be able to:** **• Student is able to verify the efficiency of solar cooker.** **• Students can practically understand the electrolysis process.** **• They will understand the conversion of one form of energy to another.**	**• As the experiments are related to the theory and syllabi of respective semester, students will have a much better understanding of the content.** **• They can acquaint with the usage of solar cooker in daily life.**
VI	PH-E2-6401	MATERIAL SCIENCE	**By successful completion of the course, students will be able to:** **• Understand the basic concepts in physics in relation to the effect of bonds and defects in a different type of materials.** **• Understand the mechanical behaviour, magnetic and Dielectric properties and its uses in different materials.**	**• In the present scenario the study of material science is the key to nanoscience.** **• Student will learn the magnetic materials and dielectric materials and their applications for the study of nanotechnology.**
VI	PH-E2-6451	PHYSICS PRACTICAL IV	**By successful completion of the course, students will be able to:** **• To understand the electric and magnetic properties by using below experiments.** **• To understand the phase changes in different materials.**	**• As the experiments are related to the theory and syllabi of respective semester, students will have a much better understanding of the content.** **• Student can measure the properties like magnetic susceptibility, dielectric constant etc.**

VI	PH-E3-6401	ANALOG & DIGITAL ELECTRONICS	**By successful completion of the course, students will be able to:** **• Understand electronic systems with a continuously variable signal.** **• Understand basic digital electronic systems.**	**• The study of electronics in combination with the basic sciences has to be studied for easy methodology.** **• The obtained data should be processed using various electronic data processing circuits.**
VI	PH-E3-6451	PHYSICS PRACTICAL IV	**By successful completion of the course, students will be able to:** **• Learn function of basic component's use in linear circuits.** **• Impart how to design digital circuits**	**• As the experiments are related to the theory and syllabi of respective semester, students will have a much better understanding of the content.** **• Students will study the characteristics of FET, MOS FET, LDR and operational amplifier.**
VI	PH-A1-6401	SOLAR, THERMAL & PHOTOVOLTAIC ASPECTS	**By successful completion of the course, students will be able to:** **• To describe the use of solar energy and the various components used in energy production with respect to applications like – heating, cooling, desalination, power generation, drying cooking etc.** **• To understand the importance of renewable energy resources and its utilization for the thermal and electrical energy needs.** **• To learn the basics of solar radiation, solar PV systems and their applications**	**• Students will know the structure of Sun, Solar intensity, solar radiation etc.** **• Describe the features & benefits of PV systems that operate independently of the electric utility grid.** **• Identify key contributions to the development of PV technology.**
VI	PH-A1-6451	PHYSICS PRACTICAL IV A1	**By successful completion of the course, students will be able to:** **• Able to determine the functioning of a solar photovoltaic panel.** **• Able to know the usage of Pyrheliometer.** **• To acquaint with experiments with solar radiation.**	**• As the experiments are related to the theory and syllabi of respective semester, students will have a much better understanding of the content.** **• Students can handle the new instruments like pyrheliometer and pyranometer.**
VI	PH-A2-6401	WIND, HYDRO & OCEAN ENERGIES	**By successful completion of the course, students will be able to:** **•To appreciate the need of wind energy and the various components used in energy generation and to know the classifications.** **• To compare wind, solar, Hydro and Ocean energies, their prospects advantages and limitations.** **• To acquire the knowledge of wave power, tidal power and geothermal principals and applications**	**• Relate how hydroelectric power, geothermal energy, and tidal power contributes to our energy resources.** **• Evaluate wind power's potential for providing energy in the future.** **• Describe principles of operation for wind, ocean & hydro energy conversion devices**
VI	PH-A2-6451	PHYSICS PRACTICAL IV A2	**By successful completion of the course, students will be able to:** **• To be able to know the electric generation from OTT.** **• Able to know the usage of anemometer.** **• Working knowledge with functioning of turbines.**	**• As the experiments are related to the theory and syllabi of respective semester, students will have a much better understanding of the content.** **• Students can handle the new instruments like anemometer.** **• They will have a field exposure of wind and hydro power projects.**

VI	PH-A3-6401	ENERGY STORAGE DEVICES	**By successful completion of the course, students will be able to:** **• Acquire the knowledge of fuel cells, magnetic and electric energy storage systems, principles and applications.** **• To analyze the environmental aspects of renewable energy resources.** **• To learn about thermo-chemical, photo-chemical, Biochemical, Electro-chemical, Fossil fuels and synthetic fuels.**	**• Use of energy storage devices can help to integrate more solar, wind and distributed energy resource.** **• Students will know that energy storage plays one important role in the balancing act, helps to create more flexible and reliable grid system.** **• They will understand the energy storage in plants which convert a tiny amount of light they receive into food energy.**
VI	PH-A3-6451	PHYSICS PRACTICAL IV A3	**By successful completion of the course, students will be able to:** **• Student will be able to know the difference between batteries and fuel cells.** **• They can differentiate between magnetic and electric energy storage system.** **• Student will be able to understand the charging and discharging of a capacitor.**	**• As the experiments are related to the theory and syllabi of respective semester, students will have a much better understanding of the content.** **• They can estimate the efficiency of DC-AC invertor and DC-AC Convertor.** **• They can estimate performance of a fuel cell.**
VI	PH-B1-6401	FUNDAMENTALS OF NANOSCIENCE	**By successful completion of the course, students will be able to:** **• Brief history about Nano materials.** **• Types of the molecules and Classification pieces of matter.** **• To understand the nano-electronics, which leads to realization of technologically critical devices besides presenting an excellent platform for exploring exciting physics.**	**• The student will study and understand about biomaterials, nanomaterials.** **• They can learn the classification of polymer chemistry of polymerization chain polymerization and step polymerization.**
VI	PH-B1-6451	PHYSICS PRACTICAL IV B1	**By successful completion of the course, students will be able to:** **• To make the students understand better in macro and micro particles in the analysis of physical aspects.** **• To understand the formation of nano materials in different materials.** **• To know the importance of minimizing materials size in the development of our daily usage devices.**	**• As the experiments are related to the theory and syllabi of respective semester, students will have a much better understanding of the content.** **• Students study the magnetic separation of nanoparticles and also the processing and development of nanoparticles gas sensors.**
VI	PH-B2-6401	SYNTHESIS & CHARACTERISATION OF NANOMATERIALS	**By successful completion of the course, students will be able to:** **• To know the different synthesis processes for nano materials.** **• To understand the types of materials and applications.** **• To characterize the nano materials by using different techniques.**	**• Students understand the characterization methods like XRD SEM, TEM, AFM and XPS.** **• They also learn about thermal and electronical properties liquid crystals.**

VI	PH-B2-6451	PHYSICS PRACTICAL IV B2	**By successful completion of the course, students will be able to:** **• Students understand the preparation of nano materials by different methods.** **• By using different plots to analysis the bonding between the materials.** **• Measurement of electrical conductivity and temperature variation in semiconductors and its application in nanotechnology.**	**• As the experiments are related to the theory and syllabi of respective semester, students will have a much better understanding of the content.** **• Students learn combustion synthesis process, chemical process, spray pyrolysis method, four probe method etc.**
VI	PH-B3-6401	APPLICATIONS OF NANOMATERIALS AND DEVICES	**By successful completion of the course, students will be able to:** **• To understand the properties of the materials.** **• To know the mechanical and medical applications of the nano materials.** **• To find the band gap of the nano electronics like semiconductor devices**	**• Students can learn nano-biotechnology and application of nanomaterials in the medical field.** **• They study the electronic structure of nano crystals, dynamics of Nano magnets, spintronic devices and applications.**
VI	PH-B3-6451	PHYSICS PRACTICAL IV B3	**By successful completion of the course, students will be able to:** **• To know the types of synthesis processes of nano materials.** **• Using different instruments for measure the size and shape of the nano materials.** **• How to prepare P-type and N- type nano electrical magnetic materials.**	**• As the experiments are related to the theory and syllabi of respective semester, students will have a much better understanding of the content.** **• Students learn using UV visible spectrometer, XRD device.**
VI	PH-C1-6401	INTRODUCTION TO MICROPROCESSORS & MICROCONTROLLERS	**By successful completion of the course, students will be able to:** **• Introduce students with the architecture and operation of typical microprocessors and microcontrollers.** **• Provide strong foundation for designing real world applications using microprocessors and microcontrollers.**	**• Students will be able to understand the advantage of microprocessors and microcontrollers.** **• Students will understand the latest trend in embedded industry.**
VI	PH-C1-6451	PHYSICS PRACTICAL IV C1	**By successful completion of the course, students will be able to:** **• Understand of 8051 Microcontroller concepts, architecture, programming and application of Microcontrollers.** **• Familiarize the students with the programming and interfacing of microprocessors and microcontrollers.**	**• As the experiments are related to the theory and syllabi of respective semester, students will have a much better understanding of the content.** **• Students study the applications of embedded systems and programing.**
VI	PH-C2-6401	COMPUTATIONAL METHODS & PROGRAMMING	**By successful completion of the course, students will be able to:** **• Provides an introduction to the theory of computation and to modern programming techniques.** **• Gain a familiarity with basic numerical methods for problems such as root-finding, interpolation and solving ODEs.**	**• Students will learn computer languages to apply software development.** **• They can learn algorithms and their applications which is useful in IT industry.**

VI	PH-C2-6451	PHYSICS PRACTICAL IVC2	**By successful completion of the course, students will be able to:** **• Understand that for some problems an approximate numerical solution is as good as the exact solution for practical purposes.** **• Understand how to apply these solutions to obtain arbitrary precision.**	**• As the experiments are related to the theory and syllabi of respective semester, students will have a much better understanding of the content.** **• Students will learn various computer programming methods.**
VI	PH-C3-6401	ELECTRONIC INSTRUMENTATION	**By successful completion of the course, students will be able to:** **• As the experiments are related to the theory and syllabi of respective semester, students will have a much better understanding of the content.** **• Students will learn various computer programming methods.**	**• Students will have access with signal generator, frequency counter and digital IC tester for appropriate measurement.** **• They can measure various electrical parameters with accuracy, precision and resolution.**
VI	PH-C3-6451	PHYSICS PRACTICAL IV C3	**By successful completion of the course, students will be able to:** **• Develop skill in designing and conducting experiments related to applications of principles of Physics.** **• To be acquained with multimeter, CRO, universal counter distortion factor meter etc.**	***As the experiments are related to the theory and syllabi of respective semester, students will have a much better understanding of the content.** *** Students will learn wide applications of CRO like voltage, frequency, time period, phase etc.**

DEPARTMENT OF POLITICAL SCIENCE

BA PROGRAM WITH POLITICAL SCIENCE

BA PROGRAM OUTCOMES

1. Graduates will have greater awarenessand knowledgein all subject areas, understanding concepts, theories and linked aspects, applying them in respective domains and exploring the future career and entrepreneurial opportunities in specific and allied fields.

2. Graduates are expected to develop effective oral and written communication with the use of appropriate technology to succeed in career presentations and interviews.Using various forms of business communication, supportedby effective use of appropriate modern technology techniques, logical reasoning, articulation of ideas and presentation.

3. Graduates should be able toconceptualize, organize and resolve contemporary problems or issues with a research aptitude gather the relevant data and document the findings.They canapply the perspective of their chosen specialized area of study to develop fully-reasoned opinions on such contemporary issues.

4. Graduates are expected to develop skills on analyzing specific data or problems, apply the relevant analysis, generate alternatives and engage in problem solving in functional or practical areas

5. Graduates are expected to possess social consciousness, identify the contemporary social problems around the neighbourhoodand beyond State and National boundaries, explore the opportunities for social entrepreneurship, involve themselves in social outreach (NSS, NCC and other platforms and NGO's) and have integrity.

6. Graduates are expected to collaborate and lead teams across Departmental boundaries and demonstrate leadership qualities, (Leadership positions in the Student Council, Departmental Associations and Clubs) maximize the usage of diverse skills of team members in the related context, thus catering to harmony within diversity

7. The graduates are to demonstrate a global outlook (in consonance with the Vision and Mission Statement of the College)with the ability to identify aspects of the world at large. They are expected to be familiar with the knowledge, skills and attributes needed to live and work in a diverse world.

8. Training students and making them 'future course ready' 'job ready' and 'employable' through the 'employability component' in all courses. Graduates are prepared to handle jobs in all sectors like Teaching, Industry, NGO, Service Sector, Hospitality, ITeSetc through varied initiatives.

9. Inculcating values for good living in a challenging world through the course in Human Values and Professional Ethics, understanding personal ethics and resolving ethical dilemmas and consequentially through diverse initiatives and platforms and practise them for their own good.

10. Taking up lifelong learning Coursesto equip them to the changing environment and be prepared to take up Master programmes, PG Diplomas, Certificate Courses as well as MOOCs, Online Courses and Self Learning Courses for

SPECIFIC OUTCOMES OF BA PROGRAM WITH POLITICAL SCIENCE

- **PSO1. Be able to gain basic knowledge in the core areas of political science (Concepts, Theories and Institutions, Political Thought, Administration and Management)**
- **PSO2: Be develop conceptual knowledge on different political theories and institutions**
- **PSO3: Be aware of day to day Political News and Current Affairs related to International, National, State and Regional**
- **PSO4: Develop interest in collecting data through survey on Administrative aspects and submission as project work**

COURSE OBJECTIVES AND OUTCOMES

SEM	COURSE CODE (WITH NO OF CREDITS)	COURSE NAME	COURSE OBJECTIVES	COURSE OUTCOMES
I	POL1501(4)	BASICCONCEPTS OF POLITICALSCIENCE	To enable the students • To become aware of the basic concepts and the scope of the subject. • Understand the subject and utilize it and change them into responsible and committed citizens	• Recognizing Rights and Duties and they will do full justice to whatever job they do. • Examining the meaning and value of the term Nationalism patriotic feelings will be inculcated in the minds of students. • Mould them as responsible citizens by getting knowledge of new terms like state, government, sovereignty, territory, population. • Enlightens the students about their rights and responsibilities and inter connection between them, so that whenever they think and tight about their rights they remember interrelated duty to that right. • As a value based subject political theory will help the students to become more responsible in their work, society and towards their state by changing their outlook towards life.
II	POL 2501(4)	POLITICAL INSTITUTIONS	To enable the student • To be aware of the political Concepts, terms and the scope of the subject • Clear –cut political orientation on various types of government and their function • Acquire political awareness.	Students will • Be able to inculcate the knowledge about constitution which is supreme law of the land and its functioning in different countries. • Be passionately engaged in initial learning with an aim to think differently as agents to new thought • Explaining different forms of governments and their working in various countries they are able to compare and aware of democracy with other forms and benefits of democracy. • Acquire knowledge about legislature, Executive and Judiciary they aware of lawmaking, administration and courts. • Analyze the meaning, kinds of democracy and compare ours with other types and necessary conditions for its working.

III	POL 3501(4)	Indian Constitution and political process	To enable the students to • Understand the institutional orientation with regard to the Indian government • Develop the abilities for competitive examinations • Become responsible citizens.	Students will • Inculcate the knowledge about constitution which is supreme law of the land and its functioning. • Developing among them the proper learning power about the Indian Government and enable them to be responsible citizens with rights and duties. • Analyze and compare the present political scenario in India with proper solutions to problems because past is the basis for present. • Elections in democratic country will teach the value of choosing the correct person in correct place. • To mould their personalities according to the changing situation and enable them to act according to the need of the hour.
IV	POL 4501(4)	Government and Politics of Andhra Pradesh	To enable the student to • Understand the nature and scope of the regional and state politics • Appreciate the changing role of state government in national politics. • Develop Awareness of the importance of State and local Politics in making democracy more effective.	Students will • To inculcate the process and knowledge of the state government in which the students are part and parcel. • Participative democracy is possible when students are able to take part and raise their voice on local problems. • Be motivated by observing the role of parties and elections and apply various methods and try to solve some problems. • Enlightens the methods of the students with contemporary political scenario. • Getting inspiration from local leaders they also learn to face challenges and face situation and tackle problems in society.
V	POL 5501(4)	PRINCIPLS OF PUBLIC ADMINISTRATION	To enable the students to • Understand the concepts and Theories of Public Administration a Subject that has its foundations in day –to -day life. • Include the ability to participate in the administrative process • Develop the skills necessary for the art of administration	Students will • Enriched their minds with the working of the government at various levels and the theoretical background helps them to the practical and try to adjust as rational human beings. • Inculcates the habits of reference in the library, self study, and data collection and internship training. • Bureaucracy and their role in administration motives them (encourages them) for competitive examinations. • Presentation skills they learn and helps them to study the society from gross roots and mix with common people and solve their problems. • Different approaches to the study analyses their outlook and they try to adopt according to the changing needs.

V	POL5502	POLITICAL THOUGHT	To enable the students to • Understand the nature and scope of political thought as it gives a clear visionabout politicallife • Become aware of the basic values in political behavior • Develop an insight into human nature in order to develop the spirit of accommodation and coexistence. • Have a board outlook of life, as rational human beings.	Students will • Concentrated on the values and life of political thinkers from past to the present are able to compare the thoughts and try to adopt only those that suitable to present political scenario. • The thinkers thoughts on state government, people, rulers , it help the students to discriminate between good and bad and they try to analyze them and adopt thenm in their career. • Compare both western and Indian thinkers and try to choose the correct ones. • Inculcate the motive of sacrifice the history of Indian leaders ideas and struggle they faced will help and they try to adopt some values and motivate other people with good ideas. • Inculcate the spirit of ahimsa, satyagraha, through Gandhi ideology.
VI	POL-E1- 6501(4)	PRINCIPLES OF PUBLIC ADMINISTRATION	To enable the students to- 1. Understand the subject that has its foundation in day-to-day life. 2. Develop the ability to participate in the administrative process. 3. Develop the skills necessary for the process of Administration	Students will • Develop for critical evaluation and critical application to day to day working of the government. • Leadership theories and qualities of a good leader encourages them to serve the society with best leadership qualities. • Enable them to be more and more careful in spending the money. • E- Governance helps the students to cope up with modern days which are completely based on E-Governance only and technology use. • The preparation of the budget and its principles enrich their mindset with more perfect thoughts.
VI	POL-E2-6501(4)	INTERNATIONAL RELATIONS AND POLITICS	TO ENABLE THE STUDENT TO • Understand the fundamental principles and concepts of International relations and politics • Develop skills for the present day requirements • Develop Familiarity with Global Scenario	Students will • Acknowledge the evolution, scope and significance of international relations and the rise of sovereign state system. • Be able to world polity as it place improve in the present day globalization. • Make equipped with International relations with new terms and their significance because no state can develop alone. • Be able to different social, political, economic problems involved in maintaining good relations. • Critically analyze the India's bilateral relations with major powers and neighboring countries.

Department of Psychology

B.A Programme with Psychology

B.A Programme Out Comes

Students graduating with a degree in Psychology will know the theories, major concepts and mechanisms, which explain human thought and behavior.
Students graduating with a degree in Psychology will be able to interpret, design, and conduct basic psychological research.
Students should be able to apply basic research methods in psychology, with sensitivity to ethical principles.
Students should be able to compare and contrast theoretical perspectives within psychology and apply them appropriately.
Students should be able to use critical thinking to evaluate and interpret evidence, and to apply psychological concepts, theories, and research findings to individual, social, and cultural issues.
Students will recognize the value of psychology in professional and personal domains.
Students will demonstrate effective written communication.
Students will value empirical evidence, tolerate ambiguity, act ethically, and recognize their role and responsibility as a member of society.
Students will recognize and respect the complexity of sociocultural diversity and individual differences.
Students will be able to recognize and demonstrate the necessary skills for counselling and therapy.
Students will be able to develop a habit of expressing these with advanced oral and written skills and share in national and international platform.

Programme Specific Out comes of B.A programme with Psychology

Be able to demonstrate basic knowledge in the core areas of psychology (general psychology, research methodology, psychopathology, social psychology, child psychology, counseling and guidance, career guidance, practicum in career guidance and counseling)

Be versatile in classical laboratory techniques, use instrumental methods for analysis as well as synthesis and follow standardized procedures and regulations in handling of psychological practical.

Students acquire the skill of applying counseling technique in practical problem like school, marriage, teenage, career etc.

Students acquired the skills to write a case study on behavioral problems.

Course Objectives and OutcomesPsychology

SEM	COURSE CODE (WITH NO OF CREDITS)	COURSE NAME	COURSE OBJECTIVES	COURSE OUTCOMES

I	PSY 1601(4)	General psychology-1	*Learn the fundamental of Psychology. Impact conceptual knowledge *Develop in students an interest in psychology as a field and motivate them to do advanced study in the subject *Understand themselves and others. *Arouse students' intellectual curiosity and build an appreciation of how psychology can increase Understanding of the world around them. *Learn the fundamental of Psychology. Impact conceptual knowledge *Develop in students an interest in psychology as a field and motivate them to do advanced study in the subject *Understand themselves and others. *Arouse students' intellectual curiosity and build an appreciation of how psychology can increase Understanding of the world around them.	*Understand the origins and nature of psychology. *Identify parts and functions of the brain with respect to personality and behaviour. *Explain and apply the processes involved in sensation and perception. *To become familiar with the research methodology used by physiologists. *Display knowledge and application of memory processes and techniques.
I	PSY 1651	GENERAL PSYCHOLOGY PRACTICALS- I	*Study by observation. *Learn by application. *Familiarize the students with some of the principles features of experimental psychology Conduct an experiment	*Gain proficiency in assessment techniques in psychology. *Use scientific reasoning to interpret psychological phenomenon. *Measurement of individual differences. *To enable students to become perceptive, self-reflecting and socially aware. *Display the ability to administer psychometric tests.

II	PSY 2601	General psychology-ll	*To introduce the fundamentals of Psychology. *To impart conceptual knowledge. * To develop in students an interest in Psychology as a field and motivate them to do advanced study in the subject. *To help students to understand themselves and others. *To arouse students intellectual curiosity and build an appreciation of how psychology can increase their understanding of the world around them	*Understand the models of learning and develop the ability to conceptualize and apply this knowledge to behaviour of self and others. *Demonstrate acquisition of knowledge of theories related thought, language and intelligence. *Identify the science behind emotions and their expression and apply their knowledge to self and others. *Indicate conceptual understanding of needs and drives and its association with motivation and application of the same. *Exhibit comprehension of structure and perspectives of personality.
II	PSY 2652	general psychology practicals-ll	Learn by application Learn the procedures of administering psychological tests. Score and evaluate the various tests.	Gain proficiency in assessment techniques in psychology. Use scientific reasoning to interpret psychological phenomenon. Measurement of individual differences. To enable students to become perceptive, self-reflecting and socially aware. Display the ability to administer psychometric tests.
III	PSY 3603	Research methodology and statistics	Demonstrate understanding skills in quantitative and qualitative research. Understand the importance of scientific research. Gain a better understanding and application of statistics in psychological research. Demonstrate a practical understanding in writing a proposal. Understanding ethical issues in research.	Identify and discuss the role and importance of research in social science. Demonstrate their understanding and ability to implement basic and applied research designs. Establish knowledge of the range of analytical, statistical techniques that are used in psychological research. Recognize of psychological research. Awareness of ethical issues involved in psychological testing.

IV	PSY 4601	Psychopathology	*Become acquainted with the concepts, trends, theories and classification according to the new diagnostic system, DSM-IV. *Understand the milestones and trends and the great advances made in the field. *Understand behavior disorders and contribute in their own style to cope with mental disorders.	*Become acquainted with the concepts, trends, and perspectives in psychopathology. *Understand the classification and diagnostic system of DSM 5 *Demonstrate knowledge of etiological factors of disorders. *Illustrate understanding of symptoms of epidemiology of disorders. *Establish comprehension and application of therapeutic modalities for psychopathology.
V	PSY 5601	Social psychology-I	*Develop an awareness of the field of Social Psychology. *Develop a better understanding of both their social environment and its relationship to their behavior. *Become acquainted the students with the different methods of social psychologists. *Become sensitive to the social and cultural forces at work. *Inquire, analyze, and relate the principles to everyday happenings.	*Develop an awareness of nature, emergence and growth of social psychology. *Illustrate the relationship between non verbal communication and social perception and understanding causes of behaviour. *Learn how one forms attitudes and conceptual application of the knowledge to self and others. *Explain the underlying constituents of persuasion and the application of the knowledge in understanding persuasive behaviour. *Have a comprehensive understanding of group and cultural influences on behaviour and social roles
V	PSY 5602	SOCIAL PSYCHOLOGY – II	*Develop a better understanding of both their social environment and its relationship to their behavior. *Be acquainted with the different methods of Social Psychology. *Become sensitive to the social and cultural forces at work. *Inquire, analyze, and relate the principles to everyday happenings.	*Be acquainted with the concept of manifestation and factors underlying aggression. *Understand the nature and aetiology of altruistic behaviour. *Become sensitive to the nature, life and causes of prejudices. *Gain comprehensive knowledge of how interpersonal relationships are formed based on attraction. *Illustrate understanding of how technology and environment influences human behaviour.

VI	PSY 6601	Child psychology	To enable the students to *Understand and appreciate the process of child development. *Understand a wide range of real-life problems. *Become aware of the contemporary ideas and issues in child psychology. *Acquire a current view of the basic research on the principle topics of child psychology.	*Develop a foundational theoretical knowledge of theories relating to child development. *Demonstrate and induct understanding of the influence of the family and social systems on the developmental processes. *Gain acquaintance with the influence of peers and play on the formative years of a child. *Understand the impact the systems of schools exert on the child's development. *Gain awareness in the nature and development of disorders of childhood.
VI	PSY 6601	COUNSELLING AND GUIDANCE	*Acquire simple and comprehensive knowledge of all the important aspects of the field. *Understand the concepts and techniques of counseling. *Develop an awareness of the need for counseling in our country. *Take up counseling as a profession.	*Understanding of counseling as a profession emerged *Have awareness of the required training and skills to pursue counseling as a profession *Acquire comprehensive understanding of the many theoretical approaches to counseling *Gain an exhaustive knowledge of the process of counseling and display the practical application of the same
VI	PSY –B2-6601 (4)	Career Guidance and Counselling	*Acquire simple and comprehensive knowledge of all the important aspects of the field. *Understand the concepts and techniques of counseling. *Develop an awareness of the need for counseling in our country. *Take up counseling as a profession.	*Possess a general understanding of what guidance entails and assumes *Grasp the application of career counseling amongst varied population *Exhibit a command over career counseling in diverse settings and roles attached to each setting *Comprehend the design of career maturity and the implications of career counseling.

VI	PSY 6604 (4)	PRACTICUM IN CAREER GUIDANCE AND COUNSELLING	To enable the students to *Acquire simple and comprehensive knowledge of all the important aspects of the field. *Understand the concepts and techniques of counseling. * Develop an awareness of the need for counseling in our country. * Take up counseling as a profession.	*Possess a general understanding of what guidance entails and assumes * Grasp the application of career counseling amongst varied population *Exhibit a command over career counseling in diverse settings and roles attached to each setting *Comprehend the design of career maturity and the implications of career counseling.
VI	PSY -E2-6601	POSITIVE PSYCHOLOGY	*Understand the power of positive mind set. * To maximize the joys in their lives. * Develop insights into one by awakening their inner strengths and virtues. * Build their abilities to deeper personal relationships.	* Demonstrate understanding of the aim and scope of positive psychology and implications to well-being and flourishing. * Its building positive climate with positive emotions and emotional intelligence. * Integrate and apply core concepts of positive psychology and resiliency factors into their own lives. * Creating awareness on theoretical concepts of love and various types of interpersonal relationships. * Insight of how altruistic behaviour positively impacts our own well-being.
VI	PSY –A1- 6601	INDUSTRIAL PSYCHOLOGY	*Study the applied aspects of Psychology. * Understand the wide range of problems in industry. * Appreciate the usefulness of Psychological knowledge in solving problems in organization.	*Illustrate the purpose of industrial psychology and examine its application to the workplace. * To understand the building blocks of a job and learn a methodology to study jobs. * Begin to think critically about various programmes. * Explains how environmental factors impacts on performance of employees. * Describing impact of stress in work place and its psychological interventions.

VI	PSY-A3- 6601	INTER –GROUP RELATIONS	*Study the applied aspects of Psychology. * Understand the wide range of problems in industry. * Appreciate the usefulness of Psychological knowledge in solving problems in organization.	*Inspect theoretical comparatives regarding interpersonal relations design. * Psychological analysis at different levels of group processes and inters group relations. * Relate identity in the context of relation between groups prejudice, administration & social justice. * Discuss applicability of conflict management strategies.
VI	PSY-A2- 6601	PSCYCHOLOGY AT WORK	*Study the applied aspects of Psychology. * Understand the wide range of problems in industry. * Appreciate the usefulness of Psychological knowledge in solving problems in organization.	* Have awareness of the trajectory of growth of organizational psychology and various critical aspects that challenge it. * Gain a theoretical understanding of motivation and its application in workplace. * Assess communication techniques in organizations and inspect the various barriers that impact it. * Compare early and contemporary approaches to leadership.

DEPARTMENT OF STATISTICS				
BSC PROGRAM WITH STATISTICS				
BSC PROGRAM OUTCOMES				
• Comprehensive domain specific knowledge provides the necessary intellectual competencies to progress to higherlevels of learning and research				
SPECIFIC OUTCOMES OF BSC PROGRAM WITH STATISTICS				
PSO 1: To inculcate the concepts and applications of Descriptive Statistics and probability, Mathematical Expectation, Statistical methods, Statistical interferences, Sampling Techniques and Design of Experiments, Quality and				
COURSE OBJECTIVES AND OUTCOMES				
SEM	COURSE CODE (WITH NO OF CREDITS)	COURSE NAME	COURSE OBJECTIVES	COURSE OUTCOMES
1	ST 1201(3)	DESCRIPTIVE STATISTICS AND PROBABILITY	• Explain the process to collect the statistical data for the survey. • Probability: To find the happening or non-happening of an event. • Describes the concept of discrete and continuous random variable.	• Be able to compute and interpret measures of centre and spread of data and they can • construct and analyse graphical displays to summarize the data. • Be able to measure the Skewness and the Peakedness of the frequency distribution. • Be able to utilize the basic concepts of probability including independence and o conditional probability to calculate, interpret and communicate event probabilities. • Be able to derive the probability density function of transformation of random variables. • Be able to aware of translating the real-world problems into probability model.
2	ST 1251(2)	DESCRIPTIVE STATISTICS AND PROBABILITY	• To find out centrally located value for the data by using graphical method. •To find the Flatness or Peakedness of the frequency curve. • To organise and manage the central tendency and dispersion for the data.	At the end of the course student will • develop problem-solving techniques needed to calculate probabilities accurately • capable of applying selected probability distributions to solve the problems. • attain a clear knowledge of problem-solving techniques to solve real- world events • be able to distinguish the discrete and continuous probability distributions and their characteristics. • have a clear knowledge of applications of both discrete and continuous probability distributions. • be capable of defining a random variable, generate functions to find Expectations

3	ST 2201(3)	MATHEMATICAL EXPECTATION AND PROBABILITY DISTRIBUTION	• To find the expectation of the given values. • Binomial Distribution: Finds the probability of k success will occur in n no. Of attempts. • Geometric –finds the probability that a success will occur for the first time on the nth try. • Normal Distribution: To learn the Characteristics of a typical Normal Curve.	At the end of the course student will • develop problem-solving techniques needed to calculate probabilities accurately • capable of applying selected probability distributions to solve the problems. • attain a clear knowledge of problem-solving techniques to solve real- world events • be able to distinguish the discrete and continuous probability distributions and their characteristics. • have a clear knowledge of applications of both discrete and continuous probability distributions. • be capable of defining a random variable, generate functions to find Expectations
4	ST 2251(2)	MATHEMATICAL EXPECTATION AND PROBABILITY DISTRIBUTION	• To find success or failures of observations by Binomial distribution. • To find the Number of Defectives by Poisson Distribution. • To find out the number of events by Normal distribution of areas and ordinates method.	At the end of the course student will • Define Mathematical Expectation of a random variable. • State and Prove Multiplication theorem of expectations. • Given the properties of variance and co-variance. • Define Moment generating function. • Derive recurrence relation for Moments of Binomial distribution • Obtain Mean and variance through MGF. • Prove that normal distribution as a Limiting case of Binomial distribution. • Describe Poisson distribution n and also obtain meanly variance of Poisson distribution are equal.
5	ST 3201(3)	STATISTICAL METHODS	o To find the relation of numerical data between two or more variables. o To find the association of Qualitative characteristics. o To forecast the future values by using curve fitting.	At the end of the course student will • have a clear sense of how to investigate the strength and direction of a relationship between two variables by collecting measurements by using appropriate statistical techniques • be capable of understanding the concept of regression model and interpret the effect of variables, regression coefficients. • be able to classify the continuous and categorical data and be aware of appropriate techniques to be used for analysing the classified data. • be able to know the construction of curve fitting by using least squares. • be able to the information about the association between the attributes.

6	ST 3251(2)	STATISTICAL METHODS	• To find the association between the two variables. • To find the qualitative relationship between the variables. • To find out the suitable functional relationship between the random variables from the given data in the form y=f(x)	• Define correlation and write the properties of correlation. • Fit a straight line of the form Y=a + bx by using Legendre's principle of least squares • Fit an exponential curve by using principle of least squares • Explain the conditions for consistency of data • Find the relation between association and colligation • Derive the relationships between t and f distributions. • Illustrate the measures of correlation ratio
7	ST 4201(3)	STATISTICAL INFERENCE	o To estimate the unknown parameter value in the population by knowing observation. • To give a statement or assertion about the unknown parameter in the population. o To test whether the unknown parameter value is true (or) not by taking large and small sample sizes. o Non-parametric test explains the testing of hypothesis but not on estimating the parameters.	At the end of the course student will • know the process of hypothesis testing, and will be able to evaluate research and null hypothesis and alternative hypothesis. • be capable of understanding the obtained values, significance, critical region and types of errors. • gain the opportunity to expand their knowledge and skills of statistical concepts and a personal development experience towards the need of statistical data analysis. • have clear knowledge of when to apply large sample test and small sample test • attain both theoretic and practical knowledge of parametric and non-parametric statistics and their assumptions to explore the proper and suitable statistics measurements and indicators to reveal the right reference about a given population.
8	ST 4251 (2)	STATISTICAL INFERENCE	• To test the sample mean coming from the population mean. • To test the sample proportion coming from the population proportion. • To test the chi square for goodness of fit.	At the end of the course student will • CO1: After completion of the course, students will have an idea about types of errors, power function, normal tests, small sample tests, sampling distributions, sequential probability ratio test and non parametric tests. • CO2: From this course, student will be knowing how to calculate errors, power of the given test, finding the best critical region, when and how to use different types of tests , to use the various non parametric tests. • CO3: Through the course, students can identify the best critical region, drawing the proper conclusion of the real life data, using the appropriate test for the given problem, for fitting the best fit for the given data.

9	ST 5201(3)	SAMPLING TECHNIQUES AND DESIGN OF EXPERIMENTS	To enable the students • To estimate values of characteristics of the parent population • To conduct a hypothesis test • To identify bad sampling methods • To understand simple random sample • To obtain the best possible estimates of the population parameter • Analysis of variants: To test difference between two or more means. • To develop an experimentation strategy that maximizes learning using a minimum of resources.	At the end of the course student will • understand the principles underlying sampling as a means of making inferences about a population. • know the difference between randomization theory and model based analysis. • get a clear knowledge of the bias and sampling variability and strategies for reducing them. • be capable of distinguishing the errors as sampling and non-sampling errors and know the preventive steps to avoid them. • learn the knowledge of conducting sampling by using different methods in appropriate situations.
10	ST 5251(2)	SAMPLING TECHNIQUES AND DESIGN OF EXPERIMENTS	To enable the students • To obtain the best possible estimates of the population parameter • Analysis of variants: To test difference between two or more means. • To develop an experimentation strategy that maximizes learning using a minimum of resources	On completion of this course, the students will be able to: • Upon successful completion of the course, students will have the knowledge and skills in design of experiments and sample surveys. • Select and design an appropriate method of data collection for a research project; Apply • basic principles in the design of simple experiments. • Apply statistical survey sampling techniques to design a routine sample survey. • Device and apply suitable estimation procedure to analyze the results of a routine sample survey.
11	ST 5202 (3)	QUALITY AND RELIABILITY	• To improve SQC in industry • To identify potential reliability problems as early as possible • To understand the effect of critical use, design and environmental parameters • Control Chart : To find any special causes of variation as well as to reflect the process improvements that have been made. • Quality: It is used by companies to focus the goals from the quality policy into plans for improvements. • To explain how system reliability can be measured and how reliability growth models can be used for reliability prediction.	At the end of the course student will • able to understand the concepts of quality control chance and assignable causes. • get in-depth knowledge of theoretical and practical aspects of statistical quality control. • able to know the application of quantitative and qualitative tools in real life to improve quality. • understanding of the link between SQC and manufacturing industries.

12	ST 5252 (2)	QUALITY AND RELIABILITY	• To improve SQC in industry • To identify potential reliability problems as early as possible • To understand the effect of critical use, design and environmental parameters • Control Chart: To find any special causes of variation as well as to reflect the process improvements that have been made. • Quality: It is used by companies to focus the goals from the quality policy into plans for improvements. • To explain how system reliability can be measured and how reliability growth models can be used for reliability prediction.	On completion of this course, the students will be able to: o Get in-depth knowledge of theoretical and practical aspects of statistical quality control. o Understanding of the link between SQC and manufacturing industries. • Application of quantitative and qualitative tools in real life to improve quality. • Data or results of analysis visualization and dissemination of quality management processes.
13	ST-E1-6201(3)	APPLIED STATISTICS	• Analysis of time series :To predict the future values of the series. • Index gives a quantitative foundation to qualitative statements like prices are falling or rising. • To find the number of births, marriages and deaths at takes place within the territory.	• At the end of the course student will • CO 1: be able to understand the meaning of the term index number and get accustomed to the use of some widely used index numbers. • CO 2: be familiar with the sources of vital statistics data, how to interpret such data and how to perform basic tests to evaluate them. • CO 3: be capable of using the concepts of consumer, producer and total surplus to explain why market typically leads to efficient outcomes. • CO 4: be able to demonstrate understanding of the concepts of Time Series and its applications in different areas. • CO 5: be able to understand the fundamentals of measurement in official statistics and Reproduction rate.
14	ST-E1-6251(2)	APPLIED STATISTICS	o To find the number of deaths and births in certain place. o To find the cost of the living like prices falling or rising. o To find the seasonal indices by link relatives method. o To find the Mortality and fertility rates.	• On completion of this course, the students will be able to: • After completion of this course, there will be an idea of vital events, • different components of time series, measurement of trend and seasonal indices, • knowledge about Price, Quantity and cost of living index numbers, demand and supply curves. • From this course students will understand how to calculate different birth and death rates, how to measure the trend and seasonal fluctuations by using different methods, how to calculate weighted and unweighted index numbers, how to determine price and quantity in a market. • Through this course, students will be able to analyse the Vital events, how to handle real life data, how to forecasting the time series data, seasonal indices in the data, to calculate different index numbers for the real life data, to know the average expected life of a person, to know the equilibrium price.

15	ST-A1-6201(3)	OPTIMIZATION TECHNIQUES	• To find the optimal solution of an optimization problem • It graphically displays interdependent relationships between groups steps and tasks as they all impact a project. • The two analytic techniques for planning scheduling and controlling of projects	At the end of the course student will • able to formulate a given simplified description of a suitable real world problem as a linear programming model in general, standard and canonical forms. be able to sketch a graphical representation of a two-dimensional linear programming model given. • classify a two-dimensional linear programming model by the type of its solution. • have a clear sense of solving an LPP using graphical, simplex, Big-M, two phase methods. • able to write primal-dual pair to a given Linear Programming Problem.
16	ST-A1-6251(2)	OPTIMIZATION TECHNIQUES	• To find the linear programming problems by Big M method • To draw the network representation of CPM • To find the linear programming problems using dual simplex method.	At the end of the course student will: • At the end of this unit students are able to formulate the Linear Programming Problem (LPP) and its solutions through graphical approach. • On completion of this unit, one can find the mathematical solution to LPP through Simplex method, two phase technique, Big-M method. Identifying the alternative optimum solutions and resolving degeneracy in solving the LPP. • At the end of this unit students are able correlate the connection between two related linear programming problems, where one of them, the primal, is a maximization problem and the other, the dual, is a minimization problem. • At the end of this unit, students are able to integrating and presenting data from multiple activities through arrow diagram and able to identify the project completion time with deterministic and probabilistic time estimates.
17	ST-A2-6201(3)	OPERATION RESEARCH	• To establish theories and algorithms to model and solve the problems. • To assign a number of jobs to an equal number of machines so has to minimize the total cost • To find meaning in the provided data and determine what variations are meaningful and which once occur merely by chance.	• At the end of the course student can • able to learn the solution methods for feasible and optimal solutions. • Find the optimal solution by using MODI method. • Compute the balanced and unbalanced assignment problem. • Solve the unbalanced transportation Problem. • Solve game theory by LLP.
18	ST-A2-6251(2)	OPERATION RESEARCH	• To find the M x N jobs and scheduling • To minimize the total transportation cost by balanced transportation problem. • To minimize the total cost by unbalanced assignment problem. • To solve the game by LPP.	On completion of this course, the students will be able to: • To impart knowledge in concepts and tools of operations research. • Understand the mathematical models used in operations research. • Apply these techniques constructively to make effective business decisions.

19	ST-A3-6201(3)/ST-A3-6251(2)	PROJECT WORK	• To provide an understanding for the graduate business student on statistical concepts. • To make survey on measurements of location and dispersion, probability, probability distributions, sampling, estimation, hypothesis testing, regression, and correlation analysis, multiple regression and business/economic forecasting.	• Motivate in students an intrinsic interest in statistical thinking. • Instill the belief that Statistics is important for scientific research. • Provide a foundation and motivation for exposure to statistical ideas subsequent to the course • Distinguish between different types of data • Interpret examples of methods for summarizing data sets, including common graphical tools (such as box plots, histograms and stem plots) and summary statistics (such as mean, median, mode, variance and IQR) • Assess which methods for summarizing a data set are most appropriate to highlight interesting features of the data • Identify the features that describe a data distribution. • Use an appropriate software tool for data summary and exploratory data analysis

DEPARTMENT OF ZOOLOGY

BSc PROGRAMME WITH PSYCHOLOGY

BSc PROGRAMME OUTCOMES

The knowledge intensive and skill-oriented curriculum of BSc programme in the three major modeis designed and deployed in the CBCS pattern at SJCW (A) envisaging the following outcomes

- **Comprehensive domain specific knowledge provides the necessary intellectual competencies to progress to higherlevels of learning and research**
- **Exhaustive laboratory training augments comprehension of theoretical principles and ignites scientific temper**
- **Experiential learning through internships/on the job training/surveys/field studies/live projects etc.ensures problem solving and job skills**
- **Thehard and soft skills acquired in the form ofLSRW/verbal/analytical/numerical/reasoning/programming/coding attributes, contribute to success in National and International level tests for admission and recruitment**
- **Individual and group projects and assignments kindle research aptitude**
- **Autodidactic learning tasks induce critical thinking and lead to optimal utilisation and creation of e resources on the net**
- **The mandatory life skills courses nurture ethical behaviour, social responsibility and environmental consciousness**
- **Leadershiptraining, entrepreneurship education courses hone leadership skills and groom entrepreneurial tendencies fostering future leaders and job providers**
- **Selective perusal ofpersonality developmentcourses and participation in extra andco-curricular activitiesensurephysical andpsychological fitness leading to personal empowerment and responsible citizenship**
- **The holistic BSc programme at SJCW(A), in toto, strengthens the strengths of the learners, weakens their weaknesses, helps them to overcome challenges and creates opportunities for them to evolve into socially responsive members of society.**

SPECIFIC OUTCOMES OF BSc PROGRAMME WITH ZOOLOGY

- **Be able to demonstrate fundamental knowledge in core areas of zoology (Non-Chordates, Chordates, Cytology, Physiology, Genetics, Ecology, Evolution, Animal Biotechnology, Animal Husbandry, and Wildlife: Conservation, Diversity &Management and Aquaculture).**
- **Gain practical knowledge about classification through specimen observation, conduct laboratory experiments like analysis of Blood groups, Rh factor, Estimation of Hemoglobin, Blood Pressure, Dissolved oxygen etc, using safety and ethical standards.**
- **Be able to integrate knowledge gained in Zoology to General education courses.**
- **Engage in industry internship or gain skills through Hands on Experience in post-harvest technology in fishes to demonstrate relevancy of foundational and theoretical knowledge of their cluster subject and to gain career related experiences and to practice standard safety measures in sea food preservation.**
- **Able to develop critical thinking ,develop scientific attitude through model making and study projects where the learner is able to demonstrate the theoretical knowledge and conceptualize them and also learn to work collaboratively.**

COURSE OBJECTIVES AND OUTCOMES

SEM	COURSE CODE (WITH NO OF CREDITS)	COURSE NAME	COURSE OBJECTIVES	COURSE OUTCOMES

I	Z1501(3)	ANIMAL DIVERSITY-I (PROTOZOA TO HEMICHORDATA)	To enable the students to • Relate the morphological characters according to their systematic position. • List the general characters of the invertebrates. • Explain causes symptoms and prevention of some helminth diseases. • Identify the invertebrate fauna based on their morphological characters. • Appraise the significance and economic importance of vermiculture.	• Recall the basic concepts of systematicsunderlying the organization of invertebrates. • Appraise the importance of larval forms in the studies in understanding the developmental pattern. • Summarize vermiculture and importance of vermicomposting. • Illustrate the process of pearl formation and importance of pearl culture. • Discuss the importance of coral reef, in providing habitat for marine organisms.
I	Z 1551(2)	ANIMAL DIVERSITY-I (PRACTICAL)	• Identify invertebrates based on special identifying characters. • Compare the hierarchial categories and understand their position in classification. • Observe the different organ systems through demo or virtual dissections. • Maintain a neat, labeled record of identified museum specimens.	• Describe and place the invertebrates according to their taxonomic position . • Be versatile in identification of museum specimens. • Reinforce observation and identification skills • Develop insight about the importance of preservation of museum specimens.
II	Z2501(3)	ANIMAL DIVERSITY – II & DEVELOPMENTAL BIOLOGY	To enable the students to • Describe the structural and functional aspects of vertebrate systems. • Define the term migration;explain migrationin fishes and birds and discuss the challenges faced. • Understand the origin and evolutionary relationship among chordates. • List the sequence of early events in animal development (fertilization, cleavage& gastrulation,) • Summarise the process of formation of germ layers.	• Illustrate the unique characters of cephalochordates, Urochordates and fishes. • Relate the ecological role of different groups of vertebrates. • Describe migration in fishes and birds. • Explain the significance and describe the features of fertilization and cleavage in early animal development • Summarise dentition in mammals .
II	Z2551(2)	ANIMAL DIVERSITY – II & DEVELOPMENTAL BIOLOGY (PRACTICAL)	To enable the students to • Identify vertebrates based on special identifying characters. • Compare the hierarchial categories and understand their position in classification. • Observe the different organ systems through demo or virtual dissections. • Neatly maintain records of identified museum specimens.	• Describe and place the vertebrates according to their taxonomic position . • Be versatile in identification of museum specimens. • Reinforceobservation and identification skills. • Develop insight about the importance of preservation of museum specimens. • Outline and correlate the early events in animal embryology (blastula,gastrula etc).

III	Z 3501(3)	CYTOLOGY & PHYSIOLOGY	To enable the students to • Explain the structure and basic components of Prokaryotic & Eukaryotic cells. • Describe the structure of various cell organelles and their role in bodily functions. • Illustrate the basic physiological processes and their importance. • Elucidate the co-ordination and integration of Endocrine system.	• Differentiate between basic structure and functions of cellular components of Prokaryotic and Eukaryotic cells. • Correlate the structure of cell organelles to their functions in eukaryotic cells. • Gain insight on the general physiology of higher Vertebrates. • Gain insight into functioning of various physiological systems including digestive, respiratory, excretory, nervous systems. • Recognise the functional importance of the Endocrine system.
III	Z 3551 (2)	CYTOLOGY & PHYSIOLOGY (PRACTICAL)	To enable the students to • Gain insight on structure of various cell organelles. • Acquire skillin preparation of temporary slides of mitosis. • Develop the basic laboratory skills in performing physiology experiments. • Inculcate collaborative working skills.	• Examine and differentiate types of cells and their structure. • Identify histology slides. • Perform various physiology experiments. • Observe and correlate the experiments and interpret the results. • Build up practical skills required for their future profession in research and teaching fields.
IV	Z 4501(3)	GENETICS, ECOLOGY, EVOLUTION & ZOOGEOGRAPHY	To enable the students to • Describe the fundamentals of heredity process through Mendel's work. • Gain knowledge on genetic variations. • Explain factors of natural ecosystem, various community interactions and population dynamics. • Compare various processes related to origin of life. • Identify Zoogeographical regions with their climatic and faunal peculiarities.	• Gain overview on the basic concepts of inheritance and transmission of traits. • Explain the fundamental principles and laws of genetics. • Compare different ecological interactions and functions. • Appraise different evolutionary processes and changes. • CorrelateZoogeographical regions with their climatic and faunal peculiarities.
IV	Z 4551(2)	GENETICS, ECOLOGY, EVOLUTION & ZOOGEOGRAPHY (PRACTICAL)	To enable the students to • Develop skills on solving gene interactions & inheritance of blood grouping problems. • Correlate different chromosomal abnormalities with genetic syndromes. • Demonstrate experiments on determination of pH, temperature and dissolved oxygen. • Compare homologous and analogous organs. • Observe and locate distribution of fauna at various geographical regions.	• Solve various genetic problems related to sex-linked inheritance and blood grouping. • Identify chromosomal abnormalities by performing Karyotype studies. • Recognize principal fauna of Rocky, Sandy and Muddy shores. • Compare and contrast homologous and analogous organs with reference to their evolutionary origin. • Identify and compare fauna according to the zoogeographical regions. • Map various zoogeographical regions of the world and indicate the faunal peculiarities.

V	Z 5501(3)	ANIMAL BIOTECHNOLOGY	To enable the students to • Acquire knowledge about the techniques of recombinant DNA technology, Animal cell culture and applied aspects of biotechnology. • Appraise the importance of biotechnology in the utilization of microorganisms, cellular components and transgenic animals for beneficial use. • Gain insight of the applications of biotechnology in industries, agriculture & medicines. • Inculcate interest in research. • Comply with the ethical issues concerning biotechnology.	• Acquire basic knowledge about the different tools and techniques of Recombinant DNA technology, Animal Cell Culture and Applied aspects of Animal Biotechnology. • Summarisethe importance of production of monoclonal antibodies and Hybridoma technology. • Gain insight into the gene transfer methods, reproductive technologies and importance of transgenic animals. • Discuss the scope and importance of Biotechnology in industrial applications. • Realize the importance of complying withethical issues in biotechnology.
V	Z 5551(2)	ANIMAL BIOTECHNOLOGY (PRACTICAL)	• Acquire skills in handling and maintaining laboratory equipments. • Recognise the functioning of autoclave and realize the importance of sterilization. • Apply& correlate the workingprinciple of Gel Electrophoresis. • Observe the safety measuresin the laboratory.	• Acquire skills incareful handling of glass ware and maintaining laboratory equipments. • Explain the function of autoclave and importance of sterilization. • Able to summarize the basic principle of Gel Electrophoresis, PCR etc. • Apply standardized procedures using safety measures in the laboratory.
IV	Z 5502 (3)	ANIMAL HUSBANDRY	To enable the students to • Acquire knowledge about the care and management of poultry. • Discuss the feeding, breeding, hatching and rearing of fowls. • Relateand apply the knowledge in designing animal barns with optimal conditions. • Classify and explain the systems of Inbreeding and crossbreeding. • Develop an overviewon the rearing techniques of commercially important species.	• Gain insight on the various aspects of care and management of animals. • Explain the nutritional aspects, methods of feeding, formulating poultry feed, the causes and symptoms of poultry diseases. • Relate the knowledge and apply the suitable techniques involved in design and maintenance of animal barns optimized to specific needs. • Classify and explain the systems of Inbreeding and crossbreeding. • Describe the economic importance of the commercially important poultry and dairy breeds.
IV	Z 5552 (2)	ANIMAL HUSBANDRY (PRACTICAL)	To enable the students to • Identify the different poultry breeds • Examine and remember the anatomy of poultry bird. • Identify cattle breeds and discuss their importance. • Identify the causes and effects of poultry and dairy diseases.	• Able to identify different indigenous and exotic poultry breeds. • Describe the anatomy of poultry bird. • Classify and identify different cattle breeds. • Identify poultry and dairy diseases and their prevention.

VI	Z-A1-6501(3)	PRINCIPLES OF AQUACULTURE	To enable the students to • Analyse the principles of aquaculture practices, their importance and strategies to improve production of aquatic organisms. • Develop insight about Aquaculture and Fisheries. • Identify theoptimal conditions for successful management of carp culture ponds • Summarize the culture of Shrimps, oysters and maintenance of an aquarium.	• Appraise the culture practices, systems and selection of species for aquaculture. • Review and plan the layout, design and construction of a pond using theoretical knowledge. • Summarise the nutritional requirements at different developmental stages and the importance of supplementary feed. • Develop insight into the prestocking, stocking and post stocking management of carp culture ponds. • Relate the knowledge of ornamental fish keeping, in maintaing aquaria.
VI	Z-A1-6551(2)	PRINCIPLES OF AQUACULTURE (PRACTICAL)	To enable the students to • Recognise the importance of fish biometric studies. • Recognise the importance of determing water quality for maintaining culture ponds. • Identify zooplankton, shrimp and fish diseases. • Recognise the commercially important aquatic species.	• Record the fish biometrics. • Identify the Zooplankton, commercially important species based on their external morphology. • Summarize the symptoms associated with fish and shrimp diseasesand suggest measures for prevention. • Acquire skill in determining the PH, dissolved oxygen, salinity etc of pond water samples.
VI	Z-A2-6501(3)	AQUACULTURE MANAGEMENT	To enable the students to • Outline the technique of induced breeding for propagation of species and contributes significantly to the overall aquaculture production. • Realise the importance of maintaining soil &water quality parameters in the management of culture ponds. • Appraise the role of live feeds in shrimp larval nutrition, feed formulation and feeding strategies. • Gain overviewon the importance of genetic improvement methodsfor better fish stocks.	• Summarise the technique of induced breeding,management of water quality, feed quality and disease prevention in carp culture ponds. • Recall the utility the various kinds of fish hatcheries. • Relate the types of feeds, feed formulation and feeding strategies to match the developmental stages of the fish. • Gain insight on the reasons and preventive measures of the diseases of fish and shrimp. • Conductcost benefits analysis andanalyze the fish marketing strategies and identify the most suitable one. • Validate the recent advances in aquaculture thru application of biotechnology.
VI	Z-A2-6551(2)	AQUACULTURE MANAGEMENT (PRACTICAL)	To enable the students to • Recognise the importance of live feeds in larval nutrition. • Assess the nutritional requirements and formulate the diet using standard methods. • Assess the suitability of ponds for aquaculture.	• Identify the live feed organisms. • Formulate the diet according to the age using suitable feed ingredients. • Relate the feeding habit according to the type of alimentary canal. • Demonstrate skill in assessing the suitability for various parameters in culture ponds.

VI	Z-A3-6501 (3)	POSTHARVEST TECHNOLOGY	To enable the students to • Compare & contrast the traditional and advanced methods of fish preservation. • Explain the Rigor mortis changes in fish. • Recognize the quality control andsanitation standardsin maintaining the quality of sea food products. • Identify hazards and suggest suitable manufacturing practices in preventing hazards. • Discuss the principles of HACCP	• Summarize the handling and principles of fish preservation. • Gain insight about the processing and preparation of commercially important products and byproducts of fish. • Discuss the use of seaweeds in disease treatment and preparation of therapeutic drugs. • Establish Good laboratory practices, corrective procedures for sanitation in processing plants. • Recall the principles of HACCP and suggest corrective measures.
VI	Z-A3-6551(2)	POSTHARVEST TECHNOLOGY (PRACTICAL)	To enable the students to • Acquire skill in preparation of value added products of fish and fishery. • Gain hands on experience in fish preservation techniques like salting, drying etc. • Follow safety and hygienic measures in sea food processing plants.	• Indicate proper ways of handling fish with minimal stress and methods of identifyinga fresh fish. • Apply the techniques of fish preservation and be able to follow suitable procedures. •Demonstrate skill in preparation of value added products form fishes. • Evaluate the situation for following safety and hygienic procedures according to National and International standards.
VI	Z-B1-6501(3)	GENERAL SERICULTURE, MULBERRY CULTIVATION AND MANAGEMENT	To enable the students to • Develop an overview on the importance of sericulture. • Summarize the cultivation, maintenance of farm, silkworm rearing and silk reeling. • Identify the diseases and pests of mulberry. • Enhance skills for self-employment in the mulberry rearing and silk rearing.	• Appraise the prospects of sericulture and realize its employment potential. • Acquire skill in selection of mulberry plant, the optimal condition for its cultivation and management. • Identify the diseases and pests of the mulberry plant. • Discuss the types of silkworms and basic techniques of cocoon construction and silk production.

VI	Z-B1-6551(2)	GENERAL SERICULTURE, MULBERRY CULTIVATION AND MANAGEMENT (PRACTICAL)	• Outlineand map the extension of sericulture globally. •Gain insight into the soil analysis and its importance. • Identify the common diseases of mulberry plant.	• Prepare and map the extension of sericulture. •Estimate the moisture and pH content of soil for mulberry cultivation. • Discuss and identify the mulberry diseases and effective treatment for better productivity and quality.
VI	Z-B2-6501(3)	BIOLOGY OF MULBERRY SILK WORM AND SILKWORM REARING TECHNOLOGY	To enable the students to • Describe the morphology of different stages of silkworm. • Explain the anatomy and physiology of Mulberry silkworm. • Apply the knowledge in planning, designing, constructing silkworm rearing houses. • Identify various diseases of silkworm, their prevention, control and management. • Analyse suitable technology for rearing silkworm larvae and using disinfection methods to get healthy cocoons.	• Gain insight into the external and internal morphology of different stages of silkworm. • Discuss and explain the anatomy and physiology of Mulberry silkworm. • Relate the knowledge in planning, designing and constructing silkworm rearing houses. • Identify various diseases of silkworms, their prevention, control and management. • Recognize the disinfection, feedingappliances and methods to get healthy cocoons.
VI	Z-B2-6551(2)	BIOLOGY OF MULBERRY SILK WORM AND SILKWORM REARING TECHNOLOGY (PRACTICAL)	• Summarize morphology of different stages of silkworm. • Examine and observe the different types and systems of larva, pupae of insects and adult. • Identify various diseases of silkworm. • Describe metamorphosis in different insects.	• Explain and discuss the morphology of different stages of silkworm. • Recognize and observe different types and systems of larva, pupae and adult. • Identify and discuss different diseases of silkworm. • Illustrate metamorphosis in different insects.

VI	Z-B3-6501(3)	SILK TECHNOLOGY, SILK MARKETING AND EXTENSION	To enable the students to • Gain insight on the various aspects of Cocoon sorting, preservation and cooking. • Summarise throwing, weaving and chemical processing of silk. • Be familiar with the management strategies of sericulture industry. • Appraisethe challenges in cocoon and yarn marketing.	• Effectively manage small scale sericulture unit. • Develop skill in raw silk testing and grading. • Gain insight on role of co-operative and financing agencies in sericulture management. • Observe the merits and demerits of traditional and regulated markets. • Discuss feedback system and challenges in silk export.
VI	Z-B3-6551(2)	SILK TECHNOLOGY, SILK MARKETING AND EXTENSION (PRACTICAL)	To enable the students to • Identify the various types of cocoons. • Examine types of silk fabrics. • Adopt advanced techniques for better income and productivity.	• Identify high quality cocoons. • Apply improved technologies in silkworm rearing • Setup and effectively manage cocoon production and rearing.
VI	Z-E1-6501 (3)	WILD LIFE: DIVERSITY, CONSERVATION & MANAGEMENT	To enable the students to • Summarise importance of protecting and conserving wild life to maintain ecological balance. • Discuss the threats, causes of depletion of wildlife and relate to the in-situ and ex-situ conservation. • To gain information about Wild life as a source of education, tourism & occupation. • Analyse wildlife offences, management of wildlife crime and poaching and steps taken to preserve our wildlife. • Define sanctuary, protected area, etc and discussmethods of monitoring wildlife populations.	• Develop an overview of the principles of wildlife conservation,management and the different conservation schemes. • Summarise illegal wildlife trade, laws of legislation,organisations promoting wildlife policies. • Discuss different conservation schemes of wildlife. • Review the trends of ecotourism and design the layout of amodern zoo. • List the national parks and bird sanctuaries of Andhra Pradesh and cite the list of endangered species. • Develop empathy towards animals.

VI	Z-E1-6551 (2)	WILD LIFE: DIVERSITY, CONSERVATION & MANAGEMENT (PRACTICAL)	To enable the students to • Acquire skill in identifying and mapping the ecozones of India, National parks and Bird areas. • Familiarise the students to identify horns ,antlers ,pugmarks etc. • Gain knowledge about conservation of endangered animals and suggest methods of conservation. • Understand the criticality of conservation, sustainable use, control of wildlife and its habitats, in order to safeguard sustainable relationships between wildlife and other human interests.	• Develop tactile skills in observation of animals and their behaviour . • Identify horns,antlers,pugmarks. • Identify the major biomes and outline their characteristics. • Suggest measures for protecting endangered species and their role in maintaining the ecological balance. • Develop empathy towards animals.
VI	Z-E1-6502 (3)	IMMUNOLOGY AND CLINICAL APPLICATIONS	To enable the students to • Develop insight into the basic concepts of immunology. • Discuss and describe the working of the immune system and understand the various types of hypersensitivities. • Realize the importance of vaccines and monoclonal antibodies. • Perform various immunological tests. • Discuss the various immunological disorders.	• Recognise the various types of cells and organs of immune system, structure and functions of antigens and antibodies. • Correlate the working of immune system with respect to antibody/B-cell mediated, T-cell mediated, Antigen presentation & Processing and properties and functions of cytokines. • Review the concept of hypersensitivity reactions and analyse the causes for different types of allergy. • Appraise theclinical applications of immunological techniques. • Apply various immunological tests for the diagnosis of immunity related disorders. • Discuss in detail about immunological disorders and organ transplantation.

VI	Z-E1-6552 (2)	IMMUNOLOGY AND CLINICAL APPLICATIONS (PRACTICAL)	To enable the students to • Identify different lymphoid organs. • Describe histology of lymph organs. • Acquire skills in determination of different immunological tests. • Illustrate different techniques of ELISA and immuno-electrophoresis.	• Identify and demonstrate in understanding different lymphoid organs. • Describe the histology of different lymphoid organs. • Acquire skills in performing immunological test like blood group, Rh typing, Blood cell counting, blood sugar, serum proteins, urine analysis etc. • Illustrate the principle of ELISA and immunoelectrophoresis.

DEPARTMENT OF CHEMISTRY

MSC PROGRAM WITH CHEMISTRY

MSC PROGRAM OUTCOMES

The knowledge intensive and skill-oriented curriculum of BSc programme in the three major modeis designed and deployed in the CBCS pattern at SJCW(A) envisaging the following outcomes

After the completion of M.Sc Organic Chemistry Programme, the students will be able to:

PO I: Acquire an advanced level of knowledge in the main areas of chemistry like analytical, inorganic, organic and physical to pursue career in in the pure, interdisciplinary and multidisciplinary areas of chemical sciences.

PO II: Develop analytical thinking and apply the same for the understanding of underlining principles, proposing mechanism and stereochemistry, problem solving, identification of chemical species and arriving to logical conclusion in synthesizing, separating, characterizing chemical compounds

PO III: Cultivate the skills to acquire and use appropriate learning resources including library, e-learning resources, ICT tools to enhance knowledgebase and stay abreast of recent developments, participation in subject orientated and general seminars , with ultimate aim of aptitude towards NET/APSET/GATE & other competitive examinations

PO IV: Motivate the students to acquire curiosity and enthusiasm towards studies of advanced level by providing scientific and skill oriented platform to choose careers in Research, Industry, Pharmacy and Academic Avenues

PO V: Develop the ability to critical thinking and scientific enquiry to handle the Equipment and Chemicals skilfully and masteries the techniques of classical and instrumental analysis of both qualitative and quantitative nature and able to demonstrate to others.

PO VI: Make them aware of environmentally safer and economically viable green techniques both in theory and practical's, like calculate usage of water, fuel, solvents, chemicals and power with focus on pollution check

PO VII: Gain knowledge in classical and instrumental laboratory techniques and be able to use IR, UV, NMR, MASS for characterisation of unknown compounds and perform new experiments, obtain experimental data

SPECIFIC OUTCOMES OF PG PROGRAM WITH CHEMISTRY

- **Be able to demonstrate basic knowledge in the core areas of chemistry (analytical, general, inorganic, organic and physical, pharmaceutical, green chemistry, polymer chemistry etc).**
- **Be versatile in classical laboratory techniques, use instrumental methods for analysis as well as synthesis and follow standardised procedures and regulations in handling and disposal of chemicals.**
- **Be able to access, scout and use the chemical literature and also able to work as a member of a team.**
- **Be able to integrate knowledge gained in Chemistry to current environmental issues.**

COURSE OBJECTIVES AND OUTCOMES

SEM	COURSE CODE (WITH NO OF CREDITS)	COURSE NAME	COURSE OBJECTIVES	COURSE OUTCOMES

I	CH 101	GENERAL CHEMISTRY	The course enables 1) deriving Schrodinger wave equation with higher order mathematics in quantum chemistry and to calculate lowest energies in 1 and 3 dimensions. 2) To determine vibrational and rotational modes of molecules at appropriate frequencies	CO1: Able to describe and interpret microscopic systems of various molecules accurately with selection rules CO2. Able to deduce the concept of electronic structure and molecule dynamics using Schrodinger wave equation. CO3. Able to calculate the zero-point energies of 1dim, 3dim, harmonic oscillators. CO4. Able to determine bonding in molecules such as double bond, triple bond and back bonding. CO5. Able to predict the structure, nature of bonding and electronic transitions in molecules. CO6. Able to apply selection rules for various organic and inorganic molecules.
I	CH 102	INORGANIC CHEMISTRY-I	To enable students to gain insights on selected advanced theories and concepts of inorganic chemistry and apply the knowledge to predict the structure, stability, magnetic susceptibility & spectral properties of transition and inner transition metal complexes.	CO1: Apply VSEPR, Valence Bond and Molecular Orbital theories to deduce the structure and bonding in heteroatomic molecules. CO2: Construct MO diagrams, calculate bond order and correlate with stability and magnetic properties of complex compounds CO3: Prepare, establish the structure and explain the properties of car boranes, metallocarboranes, boron-nitrogen, phosphorous-nitrogen and Sulphur-nitrogen compounds. CO4: Deduce the term symbols and identify the spectroscopic ground states for various configurations CO5: Correlate and explain the spectral and magnetic properties of transition and inner transition metal complexes based on advanced theories on complex compound.
I	CH 103	Organic Chemistry-I	The course aims to correlate the nucleophilic, electrophilic substitution reactivity and stereochemistry of aliphatic molecules and structural and synthetic aspects of heterocyclic molecules and some natural products	Able to 1.Inspect aliphatic electrophilic substitution reactions in molecules with different functional nature 2. Explore the configurations of conformational, optical and geometrical isomers making use of projection formulae 3.Investigate the structure, aromatic nature, chemical activity of heterocyclic compounds 4.Derive the structure of some natural products basing on their chemical reactivity

I	CH 104	PHYSICAL CHEMISTRY -I	• To provide insights to various principles and laws of physical chemistry, utility of specific nature of catalysts in reactions and to predict rate and equilibrium constants	CO1: Able to derive 3rd law of thermodynamics based on Nernst heat theorem and study its implications CO2. Able to calculate rate constant, use of catalyst in a reaction to enhance rate and to identify the intermediate. CO3. Explains the electronic transitions by using Frank-Condon principle and to compare photophysical and photochemical process. CO4. Able to establish small scale industries (entrepreneurship) by the study of micelles. CO5. Can relate the feasibility and energy changes in chemical reactions.
I	CH 106	I. Inorganic Synthesis. II.Semimicro qualitative analysis of six radical mixtures	• To train students in higher order 'analysis' and 'synthesis' skills and facilitate their development as skilful professionals in inorganic qualitative analysis and synthesis.	CO1: Analyse & identify the ions in six radical mixtures at semi micro level CO2: Eliminate the interfering anion also establish the presence of less familiar cations CO3: Synthesise complex compounds and double salts with agilityCO4: Optimally use the consumable and non-consumable laboratory resources without wastage. CO5: Comply with scientific regulations involved in safe handling and disposal of chemicals.
I	CH 106	Preparation of some organic compounds	To be able to synthesize organic compounds adopting techniques like Acetylation, Benzoylation, Nitration, Methylation, Condensation, Bromination , Deamination by upgrading the practical skills of students like handling of equipment and applying classical laboratory techniques	1: Acquire hands on experience on for the handling of Equipment, Glassware , Chemicals and safety measurements 2: Develop the skills like preparation of solutions, crystallization techniques, checking the purity of compounds and collection of pure samples 3: Correlate theoretical knowledge in the various steps of compound preparation 4: Adopt the Techniques like Acetylation, Benzoylation, Nitration, Methylation, Condensation, Bromination, Deamination in the Preparation of Organic compounds 5: Adopt the principles like Beckman’s Rearrangement and Hoffmann’s Rearrangement for preparation of Organic Compounds

I	CH107	PHYSICAL CHEMISTRY	• To train students to perform quantitative analysis of both classical and instrumental determinations , to impart knowledge and required skills in order to enhance placement opportunities in various fields of chemistry.	CO1: Optimal utility of consumable laboratory resources CO2: Deduce the metal-ligand ratio of the complex using partition co-efficient principle. CO3: Interpret the data from experiment, including constructions of appropriate graph and evaluating the error. CO4: Evaluate the C.S.T of phenol-water system to analyse the concept of miscible and immiscible and evaluate the unknown concentration by calibration. CO5: Deducing the equivalent point of the unknown sample to determine the concentration conductometer.
II	CH201	QUANTUM CHEMISTRY-II, SYMMETRY- GROUP THEORY AND ELEMENTS OF COMPUTER PROGRAMMING	The course aims 1) To investigate the time dependent and independent wave functions and to compare one and many electron systems by using various theories in chemical bonding. 2) To predict the symmetry elements and character tables by symmetry operations .3) To construct flow chart and programme through Fortran to solve specific problems in chemistry	CO1. Able to describe the chemical bonding of molecules quantum mechanically. CO2. Compare one electron system and many electron system using various theories and calculating zero-point energies. CO3. Able to visualize the molecules in 3dim and predict the symmetry elements by performing symmetry operations. CO4. Able to predict point groups and to determine character table. CO5. Able to construct flow chart and programme for solving specific problems in chemistry
II	CH 202	INORGANIC CHEMISTRY – II	To enable students to apply their knowledge in 'theories of bonding' and 'reaction kinetics' to predict and establish the 1. structure, bonding and reactivity in metal cluster and organometallic compounds & 2. stability and mechanism of reactions in complex compounds.	CO1: Identify the conditions favourable for the formation of M-M bonds and explain the structure and bonding in metal cluster compounds CO2: Apply the 16 and 18 electron rules to correlate the isoelectronic and isolobal relationship in organometallic compounds CO3: Differentiate between kinetic and thermodynamic stability and identify the factors affecting the stability and reactivity of complexes. CO4: Determine the stability of complexes by applying pH metric and spectrophotometric methods CO5: Correlate and explain the kinetic and mechanistic aspects of D, Id, Ia and A mechanisms for substitution reactions in octahedral and square planar metal complexes.

II	CH 203	ORGANIC CHEMISTRY – II	1. To correlate aromatic nature of benzenoid and non-benzenoid molecules and ions, aromatic nucleophilic reactivity, structure and stability of reaction intermediates and mechanistic aspects of some name and rearrangement reactions 2. To derive structure of organic molecules and some natural products basing on their chemical reactivity, configurational and spectral studies	1.To examine aromaticity of aromatic and non, homo, pseudo aromatic compounds of benzenoid and non-benzenoid nature. 2. Identify and predict the mechanism of some name reactions and rearrangements involving electron deficient carbon, nitrogen and oxygen 3. Select the appropriate reagents to bring required reactions in substrate molecules 4. Employ spectral data (UV, IR, NMR & Mass) to verify functional nature of molecules and derive the structure 5. To inspect structural and synthetic studies of some alkaloids and peptides, proteins and nucleic acids
II	CH-204	PHYSICAL CHEMISTRY-II	• To train students in 'qualitative organic analysis' and equip them with the skill of identifying organic compounds	CO1. Able to determine the EMF of the cell using Nernst law and to eliminate LJP using salt bridge CO2. Able to calculate the reaction rates from current data when the reaction is at equilibrium. CO3.Methodology of diagnosing cancer using ESR CO4. Able to detect number of protons present in organic compound and evaluate coupling constant values in presence of radio frequency and magnetic field. CO5. Able to differentiate between chemical shift and hyperfine splitting.
II	CH- 205	Quantitativ analysis:	To train students in higher order 'analytical skills' involving quantitative estimations involving volumetric and gravimetric methods.	CO1: Perform photochemical reductions after evaluating the feasibility CO2: Determine the concentrations and estimate the quantities via acid-base, red-ox, complexometric and precipitation titrations. CO3: Identify and deploy the most appropriate experimental conditions and indicators CO4: Perform quantitative determinations through gravimetric methods with accuracy and precisionCO5: Comply with scientific regulations involved in safe handling and disposal of chemicals.

II	CH-206	Analysis of Organic Compounds	• To characterise the given organic compound basing on experimental observations, predict the functional nature and derivatise	1: Acquire the skills of testing the solubilities and the regeneration of organic compounds 2: Identify the presence of extra-elements (nitrigen, halogens and sulphur) and unsaturation 3: Characterize the functional nature of given compounds 4: Prepare solid derivatives for the given compound as per the functional group present in it 5: Predict the structure of given compound basing on experimental observations with the correlation of theory knowledge
II	CH-207	PHYSICAL CHEMISTRY PRACTICAL –II	The course aims to measure certain parameters of unknown samples by upgrading the skills in laboratory techniques like operation of the instruments, preparation ,standardisation and estimation of solutions in accordance with the theory based principles	•CO1. Deduce equivalent point of the unknown sample and determine the concentration potentiometrically. CO2. Determine the order of a reaction and rate constant at definite time intervals in presence of catalyst. CO3. Evaluate the partition co-efficient constant by using different solutes and solvents. CO4. Handling the instrument and calibrating it. CO5. Determine the equilibrium constant and estimate the unknown concentration.
III	CH301	ORGANIC REACTION MECHANISM, PERICYCLIC REACTIONS AND PHOTOCHEMISTRY	The course aims to focus on 1.) Advanced mechanistic principals of organic reactions with reference to various types of substitutions to be able to apply to larger of reactions pertaining to natural, synthetic products of organic and allied fields. 2.) Conceptual knowledge on concerted mechanism and integrate symmetry allowed and forbidden products , conditions in electrocyclic, cycloaddition sigmatropic and ene reactions	CO1: To investigate stereochemistry of nucleophilic substitution reactions and anchimeric assistance of various nucleophilic groups CO2: .To inspect aliphatic electrophilic substitution reactions in molecules with different functional nature CO3: .To explore generation and substitution of radicals over various substrates and name reactions involving radicals as intermediates CO4: Apply the con, dis rotator mode of ring opening and closure electrocyclic reactions under thermal and photo conditions, adapts skill in differentiating symmetry allowed and forbidden products, in cycloaddition sigmatropic and ene reactions

III	CH 302	ORGANIC SPECTROSCOPY-I	The course enables to detect, identify and quantify information about atoms and molecules in a minute sample with the help of spectroscopic techniques like UV, NMR, MASS, IR etc.	CO1: Characterize the molecules based on absortion pattern in Electro magnetic radiation CO2: Able to determine analyte concentration based on absorption of light in the UV region of light radiation CO3: Derive the structure of organic molecule in solution using IR and NMR Spectroscopy CO4: Applications of mass spectroscopy for drug testing, discovery , protein identification etc.
III	CH303	ORGANIC SYNTHESIS-I	To conceptualize different processes involved in organic synthesis, asymmetric synthesis and applications of organic polymers.	CO1: Explore ZIEGLAR-NATTA polymerisation for the production of polymers in industries CO2: Able to propose synthesis for eco-friendly products using Diels -Alder reaction CO3: Able to predict to synthesis for various organic compounds which are useful in pharma and polymer industries CO4: To identify the starting material of the product, based on disconnection approach CO5: Develops employability skills which enable students to find jobs in chemistry and related fields
III	CH 304	NATURAL PRODUCTS AND BIOPOLYMERS-I	The course aims to enhance knowledge base on chemistry of medicinal compounds of natural origin and also to study the molecular structure and physiochemical properties of the molecules	CO1: Able to investigate the mechanism of drug action and its relevance in the treatment of different diseases. CO2: Able to conceptualize lead seeking method and lead modification opportunities. CO3: Able to get insights into the processes involved in the design, development and discovery of medicinal compounds. CO4: To appreciate the SAR of some important drug classes. CO5: Able to relate the chemistry of drugs with respect to their pharmacological activity.

III	CH305	MULTI STAGE SYNTHESIS	To train students in varied techniques of organic synthesis and equip them the skills of perform multi stage synthesis of organic compounds with focus on purity and yield	CO1: Apply standardised procedures effectively and synthesize efficiently organic compounds CO2: Achieve effective multi step synthesis of organic compounds CO3: Comply with the regulations involved in safe handling and disposal of chemicals CO4: Helps the students to identify its applications in chemical and pharma industries CO5: Adopt procedures like sulphonation , diazotisation , condensation ,oxidation in various steps of multi stage synthesis
III	CH306	CHROMATOGRAPHY	To train the students in advanced isolation and separation skills to separate organic compounds using TLC, column and paper chromatography with proper orientation on the principles of Chromatography with hands on experience on handling the equipment	CO1: To test the purity of compounds prepared in the laboratory by correlating with standard samples CO2: To predict the solvent systems to run TLC, paper and column chromatography CO3: Skill development and employability skills enable students to find jobs related to chemistry CO4: To analyze the observations and draw the conclusions CO5: To identify and separate the preservatives and additives added in the food items and also in DNA fingerprinting
IV	CH401	ORGANIC REACTION MECHANISMS-II AND ORGANIC PHOTOCHEMISTRY	The emphasis of the course is on 1.) advanced mechanistic principals of organic reactions with reference to addition reactions of carbon-carbon multiple bonds, carbon – hetero atom multiple bonds and various types of rearrangements to be able to apply to large number of chemical changes, pertaining to natural, synthetic products of organic and allied fields. 2.)To integrate knowledge on the electronic transition while irradiation , use of photosensitizes to promote abnormal yields and products and to differentiate the α, β cleavages of ketone, Unusual products of Olefins and electrophilic substitutions and additions reactions of aromatic compounds.	CO1: To examine addition reactions of carbon-carbon multiple bonds, carbon – hetero atom multiple bonds in reference to mechanism, orientation and stereochemistry CO2: To compare mechanistic features of nucleophilic, electrophilic and radical rearrangements and their application to specific examples CO-3: Describe the Jablonski diagram , triplet state promoted by sensitizers in carbonyl compounds, Olefins, aromatic compounds enables significant abnormal products and skillfully apply the symmetry allowed and forbidden orbital operations in electrocyclic, cycloaddition and sigmatropic reaction and differentiate abnormal electrophilic substitutions and additions reactions of aromatic compounds

IV	CH402	ORGANIC SPECTROSCOPY - II	The course aims to investigate structural aspects of optically active chiral media using circular dichroism ,application of ESR in pharmaceutical and agricultural basic research and C13 spectroscopy for identification of carbon skeleton	CO1: Apply CD and ORD to study biological molecules, their structure and interactions with metals and other molecules CO2: Application of principals of ESR spectroscopy for working of Semiconductor materials and identification of biological free radicals for the diagnosis of abnormal tissues CO3: To determine the structure of natural products from the information of UV,IR,NMR and COSY CO4: To describe the interaction of optically active compounds based on circular dichroism and circular bifringence
IV	CH403	ORGANIC SYNTHESIS -II	The course focuses on 1) designing a reverse method to reconstruct the organic molecule which helps students on better approach for the synthesis of organic molecules 2) the role of oregano boranes and silanes to get high yield and better products in organic synthesis	CO1: To Analyse the formation of enantioselective, diastereoselective products using various reagents CO2: To implement better process for the synthesis of target molecule with high yield CO3: To apply silylating agents for the protection of functional groups like alcols, phenols etc CO4: To synthesize variety of organic products like alkenes, halide, alcohols using organo boranes CO5: The synthesis helps the students to perform well in pharma and related industries
IV	CH404	NATURAL PRODUCTS AND BIOPOLYMERS-II	The course aims to enhance knowledge base on chemistry of medicinal compounds of natural origin and also to study the molecular structure and physiochemical properties of the molecules	CO1: Able to describe the protein components of the nucleosome and key modifications to nucleosome components. CO2: To investigate the structure of Cholesterol, an essential structural component of animal cells. CO3: Able to describe the basic structure of Nucleic acids. CO4: Able to correlate the action of Prostaglandin for the treatment of hypertension. CO5: Able to compare and contrast the structure of DNA & RNA.

IV	CH405	MIXTURE ANALYSIS	To train students in the separation of organic mixture, to carry thorough analysis of two separated compounds, identification of the functional groups and preparation of solid derivatives	CO1: To predict the structure of the given compounds correlating experimental observations and theoretical knowledge CO2: Analyse organic compound by developing standardised procedures CO3: Aquire skills needed for the identification of functional groups CO4: Purify as well as ascertain purity through distillation and MP/BP determination CO5: Safely handle and dispose volatilr, corrosive and inflammable substances
IV	CH406	ORGANIC ISOLATIONS AND ESTIMATIONS	Aquire skills of preparing the solutions required for estimations and standardising them	CO1: To estimate the concentration of glucose, aniline and sucrose by titrimetric method CO2: Able to extract caffeine from tea leaves and coffee beans, lycopene from from tomatoes CO3: Purify as well as ascertain purity through distillation and MP/BP determination CO4: Develop skills needed for the jobs related to pharma and chemical industries CO5: Gain experience on handling equipments

DEPARTMENT OF ENGLISH

MA PROGRAM WITH ENGLISH

MA PROGRAM OUTCOMES

- **Inculcate a love for English Language and Literature**
- **Empower students to look at Literature as an institution and appreciate the artistic excellence enshrined in the canon and also the values and concerns that are common to all humanity**
- **Qualify students with the ability to recognise the ideological allegiances of critics and writers from different spaces and examine these ideologies and guide them not only to recognise the different ways in which these ideologies are resisted but also develop skills to express fearlessly their resistance to ideologies**
- **Enable them to familiarise themselves with forms of literary studies other than the traditional and develop a multi focused approach to literature, where concerns of RACE, GENDER, CLASS AND SEXUALITY come to the forefront. Through this kind of study students are enabled not only to appreciate texts written from different spaces but also to develop the skill to understand how values have been conveyed through the interplay of themes in the text and their impact on culture and society.**
- **Foster in them an ability to appreciate literatures coming from countries other their own, understand the landscape and culture of these countries and enable them to cultivate a mindset that accepts and tolerates cultural diversities.**
- **Equip them with best practices to hone the four language skills required for the functional use of language in everyday life, academic study, writing assignments and research papers, career progression and to apply the language in whichever profession they choose to enter.**
- **Strengthen their skills through their study of Research Methodology to demonstrate best practices like integrity in their work places and truthful acknowledgement of sources in research writing.**
- **Prepare them with skills for employability and entrepreneurship in MEDIA, JOURNALISM, TEACHING, PUBLIC RELATIONS, HUMAN RESOURCE DEVELOPMENT, CIVIL SEVICES AND CREATIVE WRITING.**

SPECIFIC OUTCOMES OF MA PROGRAM WITH ENGLISH

PSO 1: Be able to identify, analyse and interpret the critical ideas, values, and themes that appear in literary and cultural texts. They will also be able to identify and understand how values have been conveyed through the interplay of themes in the texts and their impact on culture and society. Be familiar with literary movements and traditions through texts written during those movements in British, American, Indian, European, Australian, Canadian, and Caribbean and Afro-American literatures. Thus the PSO enables them to appreciate texts written in different spaces.

PSO 2: Be able to identify and understand various literary genres through a study of different forms of prose, poetry, drama and fiction with essential reading material in each of these genres. Be able to develop effective reading strategies in multiple contexts, drawing on skills such as close reading, scanning, summarizing and inter-textual analysis.

PSO 3: Be able to write in a variety of genres (academic/ non-academic) and develop skills in multiple writing genres. Be able grasp an outline and an introduction to the History of English Language, its descent, and the changes that it has gone through since 600 A.D to the present century. Communicative Language teaching practices in the classroom. Be able to develop proficiency in inter-personal, interpretive and presentation skills.

COURSE OBJECTIVES AND OUTCOMES

SEM	COURSE CODE (WITH NO OF CREDITS)	COURSE NAME	COURSE OBJECTIVES	COURSE OUTCOMES

1	Core-1	British Poetry	• To communicate the specific message of the poem • To enable students to read poems with correct rhyme and rhythm , and appreciate poetic style. • To understand the various elements that go to make up the poem in order to better appreciate it.	• Identify the various genres of poetry • To discern the various notions of language, appreciate Poetic Diction • Attempt a close analysis of poems, and articulate how it stimulates their thought • Recognize the power of poetry on human emotions & enable them to be writers.
1	Core-2	British Drama	• To introduce students to major movements related to drama, works and dramatists through study of selected texts • To create literary sensibility for appreciation in students and expose them to artistic and innovative use of language by writers. • To enhance literary and linguistic competence of students • To trace the beginning of Drama and theatrical Performances	• Predict the trends & thematic concerns of the dramatists belonging to different ages in the History of English Drama from their past knowledge of a study of the History of English Literature • To infer the socio-cultural/political/economic taboos, ideologies & class-rigidities in British Drama • To instill values and develop human concern in students through exposure to literary texts • Enhances Life-skills, oral communication, problem solving skills, ability to take imitative & create group performances from learning lines & producing life work.
1	Core-3	English Linguistics	• To understand the concept of language as a system of communication • To comprehend the scope of linguistics. • To understand the notion of phonetics and phonetic alphabet. • To be aware of different levels of linguistics analysis.	• To familiarize themselves, through a systematic study of the Elements of Language, with the principles governing their combination and organization. • To promote interest and knowledge about linguistic contexts in which literary texts exist. • Enhances communication skills in particular while dealing with the complexities of meaning and social uses of languages. • Develops analytical and research skills
1	Elective-1	Language Management and Communication Skills	• To understand and apply knowledge of human communication and language processes as they occur across various contexts • To understand and evaluate key theoretical approaches used in the interdisciplinary field of communication. • To develop knowledge, skills, and judgment around human communication that facilitate their ability to work collaboratively with others.	• To apply communication strategies by preparing and participating in class discussions. • Prepare and write messages with the intent of analysing interpersonal relationships. • Will ethically use, document, and integrate sources within a research a paper • Apply Verbal and Non-Verbal Communication Techniques in the Professional Environment

1	Elective-2	Remedial English	• To use basic grammatical structures in short conversations and discussions. • To practice the grammar skills involved in writing sentences and short paragraphs. • To edit their own and their classmates' sentences, and paragraphs	• Reflect on and evaluate proficiency skills; • Promote remediation as a route to understanding primary knowledge of grammar in construction of texts and speech. • Develop fundamental competencies in English language in multilingual classrooms: • Acquire cognitive as well as academic skills transferable across languages, to a second language.
1	Elective-3	British Prose and Fiction	• To study the elements of structure of fiction • To deepen students reading comprehension and understanding • To understand passages through self-reading • To enrich active and passive vocabulary	• Identify and approach Literary texts in terms of genre, gender and canon. • Ability to construct an argument, present an idea, an provide background information on a variety of issues. • Ability to construct an argument, present an idea, an provide background information on a variety of issues. • Students will be inspired to write their own fictional stories
2	Core-1	British Poetry and Drama	• To define key literary terms related to the analysis of poetry. • To explain form as it relates to contemporary poetry & analyze accordingly • To enhance literary and linguistic competence of students • Trace the beginning of Drama and theatrical Performances	• Understand the literary traditions in British poetry and will be able to compare and write about other world literatures. • Discern the various notions of language, appreciate Poetic Diction • Enhances Life-skills, oral communication, problem solving skills, ability to take imitative & create group performances from learning lines & producing life work. • To infer the socio-cultural/political/economic taboos, ideologies & class-rigidities in British Drama
2	Core-2	British Prose and Fiction	• To study the elements of structure of fiction • To deepen students reading comprehension and understanding • To understand passages through self-reading • To enrich active and passive vocabulary	• Identify and approach Literary texts in terms of genre, gender and canon. • Ability to construct an argument, present an idea, an provide background information on a variety of issues. • Ability to construct an argument, present an idea, an provide background information on a variety of issues. • Students will be inspired to write their own fictional stories
2	Elective-1	History and Spread of English Language	• To understand how the current state of the English language has resulted from historical change • To recognize the major stages in the language and important changes in the development of English from a synthetic to an analytic language; • To attain knowledge of the origins of English and its place in respect to other languages of the world;	• Grasp an outline and an introduction to the History of English Language, its descent, and the changes that English Language has gone through since 600 A.D to the present century. • Demonstrate knowledge on important aspects of the subject- vocabulary, grammar, syntax, pronunciation, sound change, etymology, etc. in a simple, clear and methodical way. • Enhance communication skills • Ability to see language as an evolutionary process

2	Elective-2	Teaching of English Language and Literature	• To use language as a vehicle for thought, creativity, reflection, learning, self-expression, analysis and social interaction • To develop the skills involved in listening, speaking, reading, writing, viewing and presenting in a variety of contexts • To develop critical, creative and personal approaches to studying and analyzing literary textx	• Identify delivery methods in multilingual & mixed ability classes • Explore and apply the important methods of Language learning/teaching in a classroom situation. • Ability to grasps the importance of contemporary teaching methodologies. • Applying the skills in their teaching professions.
2	Elective-3	Personality Development and Soft Skills	• Identify the principals of criticism • Interpret the theories that may be required in practical application • To understand the classics in a historical context. • To familiarize with the styles of authors in the major genres of prose and poetry	• Learn how personal values connect to motivation thus serving to benefit teamwork in their life • Give voice to all involved, working to inspire a shared vision for holistic development • Contribute to an inclusive and engaging environment for a community • Show a record of leadership experiences in preparation for future leadership opportunities
3	Core-1	Literary Criticism and New Literatures	• Identify the principals of criticism • Interpret the theories that may be required in practical application • To understand the classics in a historical context.	• To assess the contribution of major critics to literary theories; evaluate and interpret Literary texts in the light of these major Theories & Critical Approaches • To realize the need for Practical Criticism and gain familiarity with the terminology associated with Applied Criticism in order to make a close analysis of literary texts belonging to any genre. • Broaden their horizons by underpinning texts within a socio-political milieu; evaluate and analyses key Classical texts to understand finer nuances of culture
3	Core-2	American Literature and Indian Writing in English	• To identify the roles of gender, race, age, class, ethnicity, wealth, poverty, and geography played in creating American literature. • To understand the issues, conflicts, preoccupations, and themes of the various literatures of America. • To introduce students to major movements and figures of Indian Literature in English through the study of selected literary texts • To create literary awareness and emotional response to the literary texts and implant sense of appreciation	• Attain an Interdisciplinary Exposure through a study of American Drama which inculcates performing arts. • Write clear, focused, coherent essays about literature for an academic audience, using standard English conventions of grammar and style • Reflect upon Discourses of Colonialism, Post colonialism & Decolonization. • Instills human values and inculcate human concerns in the minds of the students
3	Elective-1	English Language Teaching	• To acquaint the students with different theoretical and practical aspects of language teaching. • To acquaint them with different approaches, methods and techniques of teaching English language in their course of study. • To sensitize the students to the major issues in ELLT in the teaching world.	• Identify delivery methods in multilingual & mixed ability classes • Explore and apply the important methods of Language learning/teaching in a classroom situation. • Ability to grasps the importance of contemporary teaching methodologies. • Applying the skills in their teaching professions

3	Elective-2	Women's Writing	• Locate and compile selections from primary and secondary sources relevant to women authors. • Interpret literary works by women at raise their higher order thinking skills • Development of critical analytical skills through the close readings of novels and scholarly articles	• Gain exposure to an area of study which is not generally in the ambit of traditional discourses; examine how social attitudes have shaped perception • Deconstruct texts to discern Gender Hierarchies/Stereotypes so as to interrogate Patriarchal critical assumptions as a mode of wresting power from Women. • Explain and participate in critical and theoretical debates surrounding women's writing at advanced undergraduate level;
3	Elective-3	Colonial Encounters	• Demonstrate in-depth understanding of the nature of encounters between Aborigines and native peoples and colonizers; • Compare and contrast the experiences of colonialism across space and time	• Reflect upon Discourses of Colonialism, Post colonialism • Understand notions of Black Consciousness, Negritude, Black studies, & Apartheid/ Race. • Undertake research using primary and secondary sources and produce articles demonstrating a grasp of historical examination
3	Elective-4	Translation Theory and Practice	• To understand the skills required to become a professional translator and what is meant by translation competence • To have an awareness of what it means to be a professional translator • To undertake an independent research activity	• Evaluate personal language skills and be a good translator in bilingual languages. • Undertake a translation activity a become a professional translator. • Recognize and handle different registers and genres in both the Source and Target Languages of texts for translation • Describe, analyze and explain the nature of translation difficulties both informally in discussion and formally in writing • Recognize translation difficulties and evaluate alternatives for dealing with them
4	Core-1	Literary Criticism: Theory and Practice	• Identify the principals of criticism • Interpret the theories that may be required in practical application • To understand the classics in a historical context. • To familiarize with the styles of authors in the major genres of prose and poetry	• Assess the contribution of major critics to literary theories; evaluate and interpret Literary texts in the light of their understanding of the theories and critical approaches. • Realize the need for Practical Criticism and gain familiarity with the terminology associated with Applied Criticism • Comprehend the importance of a study of Classical Literature, albeit through translated texts, as a prerequisite to an understanding & appreciation of all literatures • Broaden their horizons by underpinning texts within a socio-political milieu; evaluate and analyses key Classical texts to understand finer nuances of culture

4	Core-2	American Literature and Indian Writing in English	• Identify the roles of gender, race, age, class, ethnicity, wealth, poverty, and geography played in creating American literature. • Understand the issues, conflicts, preoccupations, and themes of the various literatures of America. • To introduce students to major movements and figures of Indian Literature in English through the study of selected literary texts • To create literary awareness and emotional response to the literary texts and implant sense of appreciation	• Attain an Interdisciplinary Exposure through a study of American Drama which inculcates performing arts. • Write clear, focused, coherent essays about literature for an academic audience, using standard English conventions of grammar and style • Reflect upon Discourses of Colonialism, Post colonialism & Decolonization. • Instills human values and inculcate human concerns in the minds of the students
4	Eelctive-1	Skills for Employability	• To help students explore their values and career choices through individual skill assessments • To make realistic employment choices and to identify the steps necessary to achieve a goal • To develop and practice self-management skills. • To explore and practice basic communication skills	• Equip themselves with essential intra and inter- personal skills with regard to employability in this competitive world • Develop a correct attitude to employment • To assess and improve personal grooming • To promote safety awareness including rules and procedures on the work site
4	Elective-2	Research Methodology	• To identify the role and importance of research in the social sciences. • To discuss the issues and concepts salient to the research process. • To analyze the complex issues inherent in selecting a research problem, an appropriate research design, and implementing a research project. • To identify and discuss the concepts and procedures of sampling, data collection, analysis and reporting	• Grasping the full meaning of the elemental skills: Collection of material, Outlining, Evaluation of sources, Note-taking, Drafting, Compiling the working Bibliography, & Acknowledging and documenting sources • Equip themselves with research skills so as to engage in close analysis of texts • Explain key research concepts and issues and can apply in their research publications. • Read, comprehend, and explain research articles in their academic discipline.
4	Elective-3	Business Communication Skills and HR Skills	• To understand and demonstrate the use of proper writing techniques that today's technology demands, including anticipating audience reaction, • To speak effectively and with impact • To prepare informal and formal reports in business scenario. • To use career skills that are needed to succeed, working collaboratively, observing business etiquette, and resolving workplace conflicts. • To manage meetings effectively and conduct proper techniques in telephone etiquettes.	• Equip themselves with technology-oriented employability skills. • Understand Net etiquette& optimize the use of technical writing in drafting Reports, Minutes, E-mails • Acquaint them with the paramount principles & hone suitable skills required in Business Correspondence & Technical Communication

DEPARTMENT OF PSYCHOLOGY

M.Sc PROGRAM WITH HOMESCIENCE

M.Sc PROGRAM OUTCOMES (Food and Nutrition)

On completion of the Program of M.Sc. with Foods & Nutrition as a Specialization, it is expected that the students would

a.Acquire an incremental learning of the principles of

•Functioning of the human body and inter relationships under healthy and diseased conditions

•Nutritional epidemiology and its applications for public health

•Food microbiology and role of micro organisms in disease and food processing

•Composition of foods

b.Demonstrate skills acquired in

•Application of statistical techniques in research

•Designing content to communicate through varied media by using computer applications

•Planning and preparation of diets during health and disease

•Sensory evaluation of foods

•Food preservation

c.Be eligible to take up employment in Food Industry, as Diet Counsellors, Project Assistants in Women & Child Development Projects

d.Be qualified to launch career as entrepreneurs in food industry, involved in new product development and evaluation of launched products.

SPECIFIC OUTCOMES OF M.SC PROGRAM WITH HPMESCIENCE

• •Develop the knowledge on role of food and nutrition for the welfare of community. To conduct research in the fields of nutritional studies and interpret the results for the wellbeing of community.

•To gain insight in public health and to assess the nutritional status of community. To take up profession in promoting healthy living in the community.

•To analyse nutrients, food quality and manage disease using diet therapy. To take a profession in fields of dietetics in hospitals. Establish a own clinic as a dietitian.

•To formulate innovative products and develop comprehensive and analytical skills in food industries. Engage in industry internship or gain skills through hands on experience

COURSE OBJECTIVES AND OUTCOMES

SEM	COURSE CODE (WITH NO OF	COURSE NAME	COURSE OBJECTIVES	COURSE OUTCOMES
1	Fn 1.1 (4)	RESEARCH METHODOLOGY AND STATISTICS	•Understand the significance of statistics and research methodology in Home Science research. •Identify the types, tools and methods of research and develop the ability to construct data gathering instruments appropriate to the research design. •Apply the appropriate statistical technique for the measurement of scale and design.	•Application statistics in the field of home science research. •Learning identify problems and compare variables •Able enough to develop research design. •Acquiring skills on data collection and interpretation •Gaining knowledge on basic concepts of theories of probability

1	Fn 1.15 (2)	RESEARCH METHODOLOGY AND STATISTICS PRACTICAL	•Able to develop questionnaire •Learn how to develop a research proposal •Understand plotting of histogram •Learn about distribution of frequency	•APPLYING THEORY PRACTICALLY ON COMPUTERS. •ABLE TO CREATE AND DESIGN WEB PAGE. •APPLYING ALL THE SKILLS IN CONTEXT TO HOME SCIENCE.
1	Fn.!.2 (4)	COMPUTER APPLICATIONS	•Acquire knowledge about computer fundamentals. •Learn and use the applications of MS office •Apply the skills learnt to situations in Home Science.	•Acquire knowledge to prepare invitation and brochure in MS word •Applications of formulas and simple statistical applications for research papers •Creating a PowerPoint presentation using different templates and using clipart •Applying skills in Photoshop for editing and using various layers •Understanding the concept of HTML and creating a web page
1	Fn 1.25 (2)	COMPUTER APPLICATIONS PRACTICAL	•Understand illustration and layers techniques •Able to plot charts and graphs •Gain knowledge on preparation of ppt	•Using illustrator various transformations of objectives and filters are been applied •Design an ID card using Photoshop •Gain knowledge on analysis of data for research papers
1	Fn 1.3 (4)	HUMAN PHYSIOLOGY	•Advance their understanding of some of the relevant issues and topics of human physiology. •Understand the integrated function of all systems and the grounding of nutritional science in Physiology •Understand alterations of structure and function in various organs and systems in disease conditions.	•Learn about human organ systems in details. •Able to distinguish different blood groups with compatibilities. •Acquiring knowledge about breakdown of good inside human body. •Understanding physical milestone like puberty and menstruation.
1	Fn 1.4 (4)	HUMAN NUTRITION	•Provide in – depth knowledge of the physiological and metabolic role of macro and micro nutrients and their importance in human nutrition. •Familiarize with the recent advances in nutrition and apply this knowledge in planning for public health programme. •enable the students to translate the knowledge into practical guidelines for dietary needs of human nutrition at different stages of life.	•Knowledge on standardization of weights. •Learning about deficiency symptoms of nutritionally deficient diseases. •Understanding reference between different nutrients. •Able to calculate energies required for various health conditions. •Skilled to give diet counseling in various diseases condition.
2	Fn 2.1 (4)	COMMUNICATION TECHNOLOGY	•Understand the vital aspects of communication, various Audio and visual media and their use. •Identify the new communication technologies and their use. •Impart skills in preparation and use of communication technologies for various presentations.	•Aware of concept and function of communication. •Able to apply principles of visual design. •Acquired knowledge on animation\graphics using 3D studio. •Understand use of international media. •Knowing basics of multimedia and its uses.
2	Fn 2.15 (2)	COMMUNICATION TECHNOLOGY PRACTICAL	•Understand the concept and techniques for traditional and media system •Learn to prepare slogan, logo, seal of approval and colour effectiveness with the help of computer. •Aquire knowledge on 3D studio max	•Able to design book cover with the help of computer. •To evaluate outdoor and print media system. •Able to design company logo.

2	Fn 2.2 (4)	NUTRITIONAL EPIDEMIOLOGY	•Understand the principles of Epidemiology, nutritional epidemiology and its importance in Community and Public Health. •Be able to design and evaluate studies/nutritional programmes.	•Gains knowledge on various branches and types of epidemiology •able to collect data via various methods •gaining knowledge on assessing and evaluating bio chemical readings and anthropometric measurements •understands the design and plan of nutritional epidemiology study
2	Fn 2.25 (2)	COMMUNITY HEALTH MANAGEMENT	•To Understand the concept of health and health indices popularly used •To realized the health problem of the community and the scientific intervention •To Know the sensitized to management information systems in health	•Survey on lactating and pregnant women and the current feeding practices •Job opportunities to work in PHC. •Evaluation of health services on health system research •Identify the health problems of the community •Analyze the cause and effect of global warming and manmade disaster
2	Fn 2.3 (4)	FOOD SCIENCE & CHEMISTRY	•Provide an understanding of composition of various food stuffs •Familiarize students with changes occurring in various foodstuffs as a result of processing and cooking •Enable students to use the theoretical knowledge in various applications and food preparations	•Acquiring knowledge on various methods of cooking. •Understanding different food groups and their storage measures. •Gaining knowledge about food preservation technique. •Discovering the effects of food additives. •Gaining knowledge about food adulteration and different acts and measures in India.
2	Fn 2.35 (2)	FOOD SCIENCE & CHEMISTRY PRACTICAL	•Understand stages of cookery •Acquire knowledge the role of acids and pectin and use of emulsifiers •Skills on food preservation. •Learn about the various forms of crystallization and dextrinization.	•Practically applying food preservation techniques. •Identifying importance of microbes in food processing. •Knowing sugar cookery- application in preparation of desserts and confectionaries.
2	Fn 2.4 (4)	FOOD MICROBIOLOGY	•Gain deeper knowledge of role of micro-organisms in humans and environment. •Understand the importance of micro-organisms in food spoilage and to learn advanced techniques used in food preservation. •Understand the latest procedures adopted in various food operations to prevent food-borne. Disorders and legal aspects involved in these areas.	•Understanding the concept of sterilization and disinfectant. •Knowing about the microbial analysis and assessment and comparing with indices. •Comprehending importance of microbes in food fermentation. •learning different staining techniques and isolation methods •knowing about factors effecting micro organisms survival and practically applying it
2	Fn 2.45 (2)	FOOD MICROBIOLOGY PRACTICAL	•Understand the various techniques of media preparation •Learn how to focus and identify various staining techniques •Able to isolate microorganism an maintenance of cultures	•Acquiring knowledge on microbial sampling of air, water, sewage. •Able to demonstrate microbial analysis of water, milk, food. •Relating study of various sources of transmission of micro organisms in food.
3	Fn 3.1 (4)	SENSORY EVALUATION	Provide adequate theoretical background and understanding about sensory evaluation of food. •Enable students to use various sensory methods for evaluating variety of foods. •Enable students to analyse and interpret sensory evaluation data.	•Knowing about neural network in sensory perception. •getting acquainted to general testing conditions and selection of test subjects •able to design questioners and evaluate score cards •Comprehending and analyzing the score cards. • Understand consumer acceptability.

3	Fn 3.15 (2)	SENSORY EVALUATION PRACTICAL	•Understand planning sensory experiments •Able to analysis a product development •Knowledge on different rating scales for assessment	•Able to conduct sensory experiment. •Gaining knowledge on product oriented tests. •Analysis and correction of sensory data
3	Fn 3.2 (4)	NUTRITIONAL BIOCHEMISTRY	Understand the mechanisms adopted by the human body for regulation of metabolic pathways •Get an insight into interrelationships between various metabolic pathways •Become proficient for specialization in nutrition •Understand integration of cellular level metabolic events to nutritional disorders and imbalances.	•Gaining depth knowledge on human metabolism. •Understanding principles of bio-chemical methods. •Learning the chemistry of nutrients. •Relating bio-chemistry with nutrition for extensive application
3	Fn 3.25 (2)	NUTRITIONAL BIOCHEMISTRY PRACTICAL	Understand the principles of biochemical methods used for analysis of food and biological samples. •Perform biochemical analysis with accuracy and reproducibility.	•Gaining depth knowledge on human metabolism. •Understanding principles of bio-chemical methods. •Learning the chemistry of nutrients. •Relating bio-chemistry with nutrition for extensive application
3	Fn 3.3 (4)	MATERNAL AND CHILD NUTRITION	Understand physiological changes in pregnancy and lactation. •Get acquainted with growth and development changes from conception till adolescence. •Understand the inter-relationship between nutrition and growth and development during life cycle.	•Knows about long term health outcomes during pregnancy. •having extended knowledge on pregnancy complications •acquiring knowledge on importance and methods of family planning •equipped with preparation of meaningful •Assess growth monitoring of infants.
3	Fn 3.35 (2)	MATERNAL AND CHILD NUTRITION PRACTICAL	•Understand to plan menu plan for different conditions •Awareness on different practices of breastfeeding and supplements and its importance •Knowledge on assessment of different age groups and applications for nutritional benefits	•Knows about food and nutrition related practices in community. •Acquiring knowledge on diets of lactating and pregnant women. •Able to compare homemade weaning foods and commercial formulas.
3	Fn 3.4 (4)	Dietetics	•Understand the Biochemical and Physiological impairments in diseases •Understand the role of Nutrition for good health •Obtain knowledge of dietary factors and dietary management of various diseases •Develop capacity and attitude for taking up dietetics as a profession	•Skilled enough to plan and prepare therapeutic diets. •Understanding metabolic changes in degenerated diseases. •Learns about pre and post operative diets. •Able to plan diets using food exchange list. •Acquiring knowledge about diet counseling according to symptoms of disease.
3	Fn 3.45 (2)	DIETETICS PRACTICAL	•Understand nutritional assessment and plan diets •Aware the different health conditions and calculate the RDA •Knowledge on dietary charts and guidelines for the diseased conditions	•Able to organize the counseling cell and address different disorders. •Can read different case studies and prepare diet. •Able to plan special feeds for critical conditions.

4	Fn 4.1 (4)	CURRENT TRENDS AND ISSUES IN FOODS & NUTRITION	•Knowledge on collection of data in various department like hospital, Anganwadi, Schools •Able to execute the role of dietitian in hospital settings •Knowledge on new initiative in nutrition research	•To create awareness regarding current trends, issues and regarding current trends, •issues and regarding current trends, issues and researches in various aspects of foods •and nutrition. •To debate on various emerging areas of studies and research needs for nutrition.
4	Fn 4.25 (4)	INTERNSHIP	•Learn how to work in hospitals and in different organization •Understand the process in NGOs and administrative settings •Acquires knowledge how to approach for jobs	•Acquire knowledge on different aspects and skills in the hospital setting •Understand the NGOs and administrative public nutrition programs available in our country •Opportunity to work in hospitals as a dietician •Job opportunities in ICDS and government organization

DEPARTMENT OF MATHEMATICS

MSC PROGRAM WITH MATHEMATICS

MSC PROGRAM OUTCOMES

At the end of the programme student will

- **Proficiency in verbal/ analytical / numerical knowledge gained during the program helps the students achieve good score in national level tests like NET/ SET.**
- **The program aims to give the students some theoretical inputs and substantial hands-on experience in knowledge making helps them to success as a teacher/ professor/ lecturer.**
- **On completion of this degree, graduates should have acquired good mathematical knowledge and skill beyond undergraduate level giving enough exposure to go towards research.**
- **Graduate should have acquired the ability to formulate and communicate logically on problems involving mathematics helps to clear competitive exams.**
- **Graduates are expected to be able to take advantage of quantitative and analytic exactitude and promote mathematics in scientific development as well as in general education of society.**
- **Learning through digital classes / ICT learning improves the knowledge in use of technology in teaching effectively making them successful in their profession.**
- **In this program they are required to give classes in an education institution making them experienced in teaching.**
- **The students are involved in peer teaching allowing greater understanding the subject , improving the teaching skills , leadership skills.**
- **Motivate the students to acquire curiosity and enthusiasm towards studies of advanced level and choose careers in Research.**
- **The students gain ability to understand professional importance and ethics of mathematics.**

SPECIFIC OUTCOMES OF MSC PROGRAM WITH MATHEMATICS

At the end of the programme student will

- **Students will be able to create, interpret and analyze graphical representations of data and equations to analyse the solution.**
- **To provide understanding the application of mathematics geographically, in physical sciences and chemical sciences.**
- **To make the students self sufficient to demonstrate proficiency in writing proofs of concepts by applying the underlying unifying structures of mathematics and the relationships between them.**
- **To improve own learning and performance.**

COURSE OBJECTIVES AND OUTCOMES

SEM	COURSE CODE (WITH NO OF CREDITS)	COURSE NAME	COURSE OBJECTIVES	COURSE OUTCOMES

I	M101	ALGEBRA–I	To enable the students to – The course contains two topics in Algebra namely Group theory and Ring theory. The aim of this course is to provide a foundation in the basic concepts in Groups, including G-sets with applications and covers the basic concepts of Rings, illustrated by numerous examples including Prime ideals, Maximal ideals, UFD and PID.	After studying this course, students should be able to: Utilize cayley's theorem to prove certain groups are not simple. Apply Burnside theorem to problems. Apply the isomorphism theorems to describe the relationship between quotients, homomorphism, and sub objects. Applying these to solve problems. Determine the conjugate classes of S_n. Determine the structure of certain groups of given orders by utilizing the three sylow's theorem. Derive a formula for the number of non isomorphic finite abelian groups of a given order. Check the conditions for which the homomorphic image of a ring becomes a field. Obtain a necessary and sufficient condition for R/I to be a field. Determine all maximal ideals in Euclidean rings. Discuss the unique factorization domain for Euclidean rings.
I	M102	REAL ANALYSIS-I	At the end of the course student will The aim of this course is to develop the knowledge in metric spaces and its different aspects, explain the concept of continuity and differentiation of a real-valued function.	After studying this course, students should be able to: • Discuss about open set, closed set, limit point of set, Interior of set, Closure of a set in metric spaces. • Describe existence of limit of functions, continuous function and existence of derivative of real valued functions. • Enumerate the limits of functions, infinite limits and limit at infinity. • Compute derivatives of certain functions. • Explain power series and absolute convergence. • Discuss in detail the Mean value theorem and Taylor's theorem.

I	M103	TOPOLOGY-I	To enable the students to – The aim of this course to introduce the two main topics Metric spaces and Topological spaces, and to provide knowledge about compactness in metric spaces and topological spaces.	After studying this course, students should be able to: Describe metric spaces and topological spaces with standard examples. Discuss the concepts and properties of open set, limit point of a set, closed set, interior of set, closure of a set, boundary point and boundary set in metric spaces and topological spaces. Summarize the concept of convergence of a sequence, Cauchy sequence, completeness and their properties in metric spaces. Explain the concept of continuity and uniform continuity in metric spaces and topological spaces. Extend the Hein –Borel theorem to any finite dimensional Euclidean space R^n. Observe in any metric space, compactness, sequentially compactness and the Bolzano –Weierstrass property are all equivalent to each other. Explain the basic difference between finite, infinite , countable, uncountable sets and their various properties. Describe Partial ordered set and lattices.
I	M104	DEFFERENTIAL EQUATIONS	To enable the students to – The aim of this course is to provide the methods of solution and applications of second order linear equations, solving systems of first order equations, obtain solution of boundary value problems. Utilize Laplace transforms to provide solution for the differential equations with initial conditions.	After studying this course, students should be able to: • Identify, analyze and subsequently solve physical situations whose behavior can be described by Differential equations. • Determine the solution of differential equations with initial and boundary value problems. • Enhance and develop the ability of using the language of mathematics in analyzing the real-world problems of science and engineering. • Recognize and classify second order linear differential equations. • Solve Eigen values, Eigen functions and the vibrating string problems. • Obtain solution of differential equations utilising Laplace transforms. • Solve system of linear equations with constant coefficients. • The end of the course to solve the majority of the problems with no external help.

I	M105	LINEAR ALGEBRA	To enable the students to – The aim of this course is to explain the analysis of characteristic values, triangulable and diagonalizable transformations, and to describe the concepts of canonical forms, bilinear forms, emphasizing canonical forms for symmetric and skew symmetric forms.	After studying this course, students should be able to: • Compute characteristic values and minimal polynomial of linear operator T. • Determine the linear operator T is diagonalizable. • Evaluate Jordon forms and rational forms of linear transformation T. • Discuss cayley Hamilton theorem, primary decomposition theorem and cyclic decomposition theorem. • Obtain the matrix in the standard ordered basis and the rank for bilinear forms.
II	M201	ALGEBRA–II	To enable the students to – The main aim of this course is to expertise students in field theory which includes algebraic extensions, existence and uniqueness of algebraic closure, normal extension, separable extension and Galois extensions.	After studying this course, students should be able to: • Solve polynomial equations utilizing formulas for roots and to obtain the roots of a polynomial equation having degree less than five. • Construct the splitting fields of a polynomial. • Check whether a given element is algebraic over a field and obtain its degree when it is algebraic. • Describe about the fixed field of a group of automorphism of a field K. • Employ Galois Theory to observe necessary and sufficient conditions for a polynomial over a field to be solvable by radicals. • Construct a polynomial of degree 5 that is not solvable by radicals.
II	M202	REAL ANALYSIS-II	To enable the students to – The aim of this course is to impart the knowledge on uniform convergence, Riemann Stieltje's integral with its properties and functions of several variables.	After studying this course, students should be able to: • Expertize about upper and lower Riemann Stieltjes integrals. • Utilize theory of Riemann-Stieltjes integral in solving definite integrals arising in different fields of science and engineering. • Describe the point wise convergence of a sequence of functions defined on a set X and examples. • Explain the concept of functions which are expanded in a power series about a point. • Discuss Stone – Weierstrass theorem, implicit function theorem, inverse function theorem and Rank theorem.

II	M203	TOPOLOGY-II	To enable the students to – The aim of this course to enable students about Separation axioms, Connected spaces and Topological groups.	After studying this course, students should be able to: Describe T_1- space, Hausdorffspace, Normal space, Completely regular space. Discuss and distinguish about Uryshon's lemma and Tietze extension theorem. Sketch the Separation properties using venn diagram. Explain Uryshon metrization theorem. Give examples and counter examples for connected pace, maximal connected space and totally disconnected space. Discuss weierstrass approximation theorem, Real and Complex stone weierstrass theorem.
II	M204	COMPLEX ANALYSIS	The aim of this course is to describe the concept of a power series about a point in complex plane, Analytic functions with its properties, cauchy integral formula and cauchy theorems with their applications, and singularities.	After studying this course, students should be able to: • Obtain a formula to compute the radius of convergence for complex power series. • Utilize the Cauchy –Riemann equations to check whether the function is analytic or not. • Evaluate harmonic conjugate of a harmonic function utilizing Cauchy-Riemann equations. • Discuss about any function having a power series representation is analytic in the radius of convergence and its derivatives have a power series expansion. • Apply Cauchy's integral formula and Cauchy's theorem to compute line integrals. • Give examples for isolated singularity, removable singularity, Pole and essential singularity. • Compute Laurent series of a complex valued function about isolated singular point. • Evaluate Complex integrals using residue theorem.

II	M205	DISCRETE MATHEMATICS	To enable the students to This course introduces the concepts Graph theory and lattice theory , which describes the initial concepts of graph theory, connectivity in graphs, trees, Eulerian and Hamiltonian graphs, and explains Posets, Boolean Algebra and Boolean polynomials with their properties	After studying this course, students should be able to: • Explain Various types of graphs with examples and prove certain elementary results. • Discuss a necessary and sufficient condition a graph is bipartite. • Observe the eccentricity, radius, diameter and centre of the connected graphs (Trees). • Determine whether graphs are Hamiltonian and/or Eulerian. • Utilize J.B.Kruskal's Algorithm, R.C.Prim's Algorithm to obtain minimal spanning trees. • Discuss the concept of lattice ordered set and algebraic lattice same. • Discuss the necessary and sufficient conditions for a lattice L to be distributive (modular). • Determine prime implicants of a given Boolean polynomial. • Utilize Quine-Mc Clusky method to determine minimal form Boolean polynomial and simplify a given Boolean polynomial by Karnaugh Diagram. • Discuss the applications of switching circuits.
III	M301	Functional Analysis	To enable the students to The aim of this course is to explain the concept of Banach Spaces, Hilbert spaces, determinants and the spectrum of an operator.	After studying this course, students should be able to: • Explain the concept of normed, Banach and Hilbert spaces with standard examples and relation between them. • Demonstrate the continuous linear transformations and the Hahn-Banach theorem. • Discuss uniform boundedness theorem, open mapping theorem and closed graph theorem and their applications. • Explain the concept of Projection on Hilbert and Banach spaces. • Summarize orthogonal vectors in a Hilbert space, orthogonal complement of a subset of a Hilbert space, orthonormal set and a complete orthonormal set. • Classify different operators on Hilbert space, which commute with their adjoints. • Describe Spectral theorem and its applications.

III	M302(1)	NUMBER THEORY- I	To enable the students to The aim of this course is to discuss Arithmetical functions, Dirichlet product on functions and describe the characters of finite abelian groups and dirichlet theorems on primes.	After studying this course, students should be able to: • Describe the importance of arithmetical functions, Mobius, Euler Totient, Mangold and divisor functions. • Explain prime number theorem and its equivalent conditions theorems, Abel's identity. • Solve applications of Euler- Fermat theorem, Lagrange's theorem and Polynomial congruences with prime power moduli. • Discuss about the Chinese remainder theorem and applications of the Chinese remainder theorem. • Obtain properties related to above mentioned functions and sums involving Dirichlet characters.
III	M303(1)	LATTICE THEORY-I	To enable the students to The aim of this course is to describe Posets, lattices, complete lattices, distributive and modular lattices.	After studying this course, students should be able to: • Describe about the minimum and maximum conditions. • Discuss about the Jordan-Dedekind chain condition. • Draw the Hasse diagrams of POSETS and LATTICES. • Summarizing the importance of irreducible and prime elements of lattice. • Characterize complete lattices and conditionally complete lattices. • Establish Dedekind's modularity criterion. • Summarize the valuation of lattice, Metric and Quasimetric lattice.
III	M304(1)	COMMUTATIVE ALGEBRA- I	To enable the students to The aim of this course is to explain the concept of modules, operations on modules, model rings of fractions and Notherian rings.	After studying this course, students should be able to: • Comprehensible clarifying of commutative rings and their properties. • Execute a clear and brief illustration of proofs related to Commutative Rings, Modules and Ideals. • Describe tensor properties of modules, exact sequences and flat modules. • Have a clear model about localization of rings at a prime ideal. • Obtain the properties of extended and contracted ideals in ring of fractions.

III	M305	Complex Analysis II	To enable the students to The main of this course is to explain the concept of analytic continuation and harmonic functions with its properties.	After studying this course, students should be able to: • Discuss the three versions of maximum modulus theorem and Schwarz's lemma with its applications. • Explain Hadamard's three circles theorem and Phragmen-lindelof theorem. • Discuss Arzela Ascoli's theorem, Montel's theorem and Hurwitz's theorem. • Describe weierstrass Factorization theorem and utilize it to factorize sinπz and cosπz. • Descibe Runge's theorem, mittag-leffler's theorem and Schwarz Reflection Principle. • Explain the definitions- function element, germ and analytic continuation of a function along a path. • Explain Harmonic function, Mean value property and discuss the first and second versions of Maximum Principle and the minimum principle. • Discuss Harnack's inequality, Harnack's Theorem, Jensen's formula and Poisson-Jensen formula. • Explain rank, genus and order of entire function and discuss Hadmard's Factorization Theorem.
IV	M401	MEASURE AND INTEGRATION	To enable the students to The aim of this course is to impart knowledge on the concept of measurable sets, measurable functions, lebesgue integral and lebesgue L^p spaces.	At the end of the course student will • Analyse measurable sets and lebesgue measure. • Construct lebesgue's measure on the real line and in n-dimensional Euclidean space. • Describe how measures may be used to construct integrals. • Distinguish the relation between differentiation and lebesgue integration. • Discuss littlewood's three principles, Egoroff's theorem, Fatou's lemma and Monotone convergence theorem.

IV	M402(1)	NUMBER THEORY- II	To enable the students to The aim of this course is to explain Periodic Arithmetical functions, Gauss Sums, Quadratic residues, Dirichlet series and Analytic continuation of certain functions.	After studying this course, students should be able to: • Obtain a number of results on functions periodic modulo k and Quadratic residues-Legendre's symbol and its properties. • Expertise on applications of the reciprocity law. • Establish the existence of primitive roots and p for odd primes p. • Discuss the analytic properties of Dirichlet series and the halfplane of absolute convergence of a Dirichlet series. • Prove properties of the gamma function and Hurwitz's formula for •(s, a).
IV	M403(1)	LATTICE THEORY-II	To enable the students to The aim of this course is to explain the concept of Boolean Algebras, Semi-modular lattices, ideals of lattices and Congruence relations.	After studying this course, students should be able to: • Illustrate the class of Boolean algebras and Boolean rings are same. • Describe the concept of linear dependence. • Characterize prime ideals and maximal ideals. • Discuss Boolean algebra is a field of sets. • Discuss the necessary and sufficient condition that the lattice is distributive related with ideals is the kernel of at least one congruence relation
IV	M404(1)	COMMUTATIVE ALGEBRA-II	To enable the students to The aim of this course is to explain integral dependence, chain conditions, Neotherian and Artin rings, Discrete Valuation rings.	After studying this course, students should be able to: • Obtain a number of results on Integral dependence. • Construct the splitting fields of a polynomial. • Construct Finite fields of given number. • Discuss the basic results in the dimension theory for local rings. • Establish important results on Noetherian domains of dimensions zero and Noetherian integral domains of dimension one.

IV	M405	PARTIAL DIFFERENTIAL EQUATIONS	To enable the students to The aim of this course is to provide solutions for first order and second order PDE. Describe the Dirichlet, Neumann problems, Types of string vibrations, wave and Heat conduction problems.	After studying this course, students should be able to: • Discuss the fundamental axioms in mathematics and capability of developing ideas based on them. • Apply specific methodologies, techniques and resources to conduct research and produce innovative results in the area of specialization. • Utilize techniques for solving mathematical models and their real implementation problems. • Nature problem solving skills, thinking creativity through assignments. • Expertise on a wide range of mathematical techniques and application of mathematical methods/tools • in other scientific and engineering domains.

DEPARTMENT OF HOME SCIENCE

M.Sc PROGRAM WITH HOMESCIENCE

M.Sc PROGRAM OUTCOMES (INTERIOR DESIGN AND RESOURCE MANAGEMENT)

On completion of the Program of M.Sc. with Interior Design & Resource Management as a Specialization, it is expected that the students would

a.Acquire an incremental learning of the principles of

•Housing, household equipment

•Residential and Commercial Interior Designing

•Ergonomics and its relevance in life and workspaces

•Management and its application in family and community

b.Demonstrate skills acquired in

•Application of statistical techniques in research

•Designing content to communicate through varied media by using computer applications

•Planning and preparing draft plans for Interiors, including the interior finishes

•Planning and preparing draft plans for Landscaping projects

•Rendering interior plans using AutoCAD and Sketchup from flat drawings to 3D Figures

c.Be eligible to take up employment as Trainee/Apprentice Interior Designers with Architectural Firms

d.Be qualified to launch careers as Product Designers/ Interior Designers/Design Consultants

SPECIFIC OUTCOMES OF M.SC PROGRAM WITH HPMESCIENCE

• •Develop the knowledge on role of food and nutrition for the welfare of community. To conduct research in the fields of nutritional studies and interpret the results for the wellbeing of community.

•To gain insight in public health and to assess the nutritional status of community. To take up profession in promoting healthy living in the community.

•To analyse nutrients, food quality and manage disease using diet therapy. To take a profession in fields of dietetics in hospitals. Establish a own clinic as a dietitian.

•To formulate innovative products and develop comprehensive and analytical skills in food industries. Engage in industry internship or gain skills through hands on experience

COURSE OBJECTIVES AND OUTCOMES

SEM	COURSE CODE (WITH NO OF	COURSE NAME	COURSE OBJECTIVES	COURSE OUTCOMES
1	Idrm 1.1 (4)	RESEARCH METHODOLOGY AND STATISTICS	•Understand the significance of statistics and research methodology in Home Science research. •Identify the types, tools and methods of research and develop the ability to construct data gathering instruments appropriate to the research design. •Apply the appropriate statistical technique for the measurement of scale and design.	•Application statistics in the field of home science research. •Learning identify problems and compare variables •Able enough to develop research design. •Acquiring skills on data collection and interpretation •Gaining knowledge on basic concepts of theories of probability

1	Idrm 1.15 (2)	RESEARCH METHODOLOGY AND STATISTICS PRACTICAL	•Able to develop questionnaire •Learn how to develop a research proposal •Understand plotting of histogram •Learn about distribution of frequency	•APPLYING THEORY PRACTICALLY ON COMPUTERS. •ABLE TO CREATE AND DESIGN WEB PAGE. •APPLYING ALL THE SKILLS IN CONTEXT TO HOME SCIENCE.
1	Idrm 1.2 (4)	COMPUTER APPLICATIONS	•Acquire knowledge about computer fundamentals. •Learn and use the applications of MS office •Apply the skills learnt to situations in Home Science.	•Acquire knowledge to prepare invitation and brochure in MS word •Applications of formulas and simple statistical applications for research papers •Creating a PowerPoint presentation using different templates and using clipart •Applying skills in Photoshop for editing and using various layers •Understanding the concept of HTML and creating a web page
1	Idrm 1.25 (2)	COMPUTER APPLICATIONS PRACTICAL	•Understand illustration and layers techniques •Able to plot charts and graphs •Gain knowledge on preparation of ppt	•Using illustrator various transformations of objectives and filters are been applied •Design an ID card using Photoshop •Gain knowledge on analysis of data for research papers
1	Idrm 1.3 (4)	HOUSING	•Recognize the role of Housing for natural development •Be aware of Housing standards, Legislation and Cost estimation for House construction •To understand recent developments in Household equipment design and technology	•Interpret, examine and reason out of various factors comprising concept of life space and their role in planning buildings •Be sensitive to the principles of house planning and the contributing factors •Examine market trends, merits and demerits of building materials used in construction •Be aware of housing standards, legislation and cost estimation
1	Idrm 1.4 (4)	Household Equipment	•understand the recent developments in household equipment design and technology •study the construction and finishes in various appliances •understand the installation, operating, servicing and replacement of parts of various equipments. •recognise the importance of standards and its benefits.	•Compare various materials used in fabrication of appliances •Appreciate support of organisations in developing and maintaining quality standards •Recognise the brands, cost and services available for various equipment
2	Idrm 2.1 (4)	COMMUNICATION TECHNOLOGY	•Understand the vital aspects of communication, various Audio and visual media and their use. •Identify the new communication technologies and their use. •Impart skills in preparation and use of communication technologies for various presentations.	•Aware of concept and function of communication. •Able to apply principles of visual design. •Acquired knowledge on animation\graphics using 3D studio. •Understand use of international media. •Knowing basics of multimedia and its uses.
2	Idrm 2.15 (2)	COMMUNICATION TECHNOLOGY PRACTICAL	•Understand the concept and techniques for traditional and media system •Learn to prepare slogan, logo, seal of approval and colour effectiveness with the help of computer. •Aquire knowledge on 3D studio max	•Able to design book cover with the help of computer. •To evaluate outdoor and print media system. •Able to design company logo.

2	Idrm 2.2 (4)	LANDSCAPING	•Understand the Landscape designing and its appropriate application. •Become familiar with the various materials related to landscaping.	•Address issues related to care of plants •Identify various Garden components •Apprise concept related to landscaping from interior design point of view •Identify a variety of indoor and outdoor plant species •Acquire the skill of planning landscape layouts for different projects
2	Idrm 2.25 (2)	LANDSCAPING PRACTICAL	1. To impart knowledge and skills to design residential and commercial landscapes. 2. To appreciate beauty/elements/aesthetics of landscape.	•Exhibit creativity in designing landscape layouts •Identify suitable plants for indoor and outdoor potting •Differentiate various types of gardens •Acquire the skill of planning for landscape layouts for different projects
2	Idrm 2.3 (4)	RESIDENTIALINTERIOR DESIGN	•Understand and apply the principles of design and color in interiors •Identify & arrange furniture needed for various living area of a home •Identify & average furnishings for various living area	•Differentiate period styles in furniture •Appreciate role of hard and soft furnishings •Contemplate on furnishings / furniture selection based on use, comfort and cost and ergonomics •Apply the principles of design in interior design, exterior design and flower arrangement.
2	Idrm 2.35 (2)	RESIDENTIALINTERIOR DESIGN PRACTICAL	1. To create awareness about designing space to suit various purposes.	•Practice knowledge gained on application of principles of design in interiors and exteriors •Examine market trends, merits and demerits of Window treatment materials •Read and comprehend furniture arrangements of various rooms and evaluate them •Able to plan budget for furniture and Furnishing requirements of independent house / apartment •Be skilled to plan the interior design layouts for residential projects
2	Idrm 2.4 (4)	ERGONOMICS	•Develop skills of time, energy and effort management •become aware of the role of ergonomics in improving work effectiveness and efficiency •Understand the environmental factors contributing to productivity, safety, control and well-being of individual performing the work.	•Appreciate “humanising design concepts” in buildings and furniture •Relate influence of environmental factors contributing to productivity, safety, control and well- being of individual performing the task •Develop skills in managing time, energy and effort in ways to achieve maximum production •Be able to design ergonomically efficient work places
2	Idrm 2.45 (2)	ERGONOMICS PRACTICAL	1. To enable students to understand the importance of ergonomics in planning workspaces 2.To enble students to manage their time, energy and effort effectively.	•Identify oneself as a worker and analyse work patterns •Understand the connection of work, worker and work environment and their mutual concept •Identify analysis and interpretation to risk of various postures assumed by women during work •Be able to design ergonomically efficient furniture and work places and interiors

3	Idrm 3.1 (4)	THEORY OF MANAGMENT	•To understand the significance of management in the micro and macro level organizations. •To know the conceptual, human and scientific aspects of management function. •To develop the ability to evaluate the management efficiency and effectiveness in the family and other organizations. •To enhance the understanding of the similarities among all areas of management education and research, and dissemination of the professional knowledge, skills and attitude	•Practice work simplification principles and techniques •Cope up successfully with unexpected family crisis •Teach and practice efficient management skills at home and workplace •Apply managerial abilities and values in daily life •Plan and manage family resources efficiently •Be eligible to take up career in managerial positions as an apprentice/trainee
3	Idrm 3.2 (4)	CONSUMER ECONOMICS	•To familiarize the students with the changing economic environment and the rising consumerism. •To develop and understanding of the marketing system and marketing strategies keeping in view the consumers. •To know the techniques of consumer decision making and the aids for wise decision making.	•Study consumer behaviour influences, buying habits and motives •Practice and encourage good personal finance management •Promote and follow wise buying practices •Adapt and withstand changing economic / market conditions •Be eligible to take up career in consumer research/counselling fields
3	Idrm 3.25 (2)	INTERNSHIP/FIELD PLACEMENT PROJECT	To provide an opportunity to students to gain first hand experience	•Gain hands-on experience of the subject learnt in classroom •Adapt to different working conditions •Apply subject knowledge to fieldwork •Be employable with Architects' firms as design apprentice/assistant
3	Idrm 3.3 (4)	COMMERCIAL INTERIOR SPACE DESIGN	•Develop the skill of visualizing and designing spaces of commercial interiors considering the principles of design, anthropometric data and ergonomic criteria. •Understand the criteria for selection of appropriate materials for different surfaces taking into consideration of ergonomic factors, aesthetics and cost.	•Exhibit creativity in arranging / decorating interiors •Visualise futuristic concepts in fields of commercial interior space design •Evaluate the appropriate materials for different surfaces •Appraise thrust and aesthetics sense of design •Be qualified to take up career in commercial interior design field as apprentice/trainee
3	Idrm 3.35 (2)	COMMERCIAL INTERIOR SPACE DESIGN PRACTICAL	To understand the process of designing commercial spaces.	•Design different styles of layout for smaller and bigger commercial areas •Analyse and explain different sectional elevation and perspectives •Appraise concepts related to color schemes and rendering techniques •Be skilled to render commercial design drawings •Be eligible to launch career as designer
3	Idrm 3.4 (4)	COMPUTER AIDED DESIGN	•Understand the power and precision of computer-aided modeling and drafting; •Construct accurate 2D geometry as well as complex 3D shaped and surface object; •Create 2 D representations of 3 D objects as plan view, elevations and sections; •Assemble these drawings in industry-standard plan form and produce plotted hardcopies. •Develop skill of drawing, designing and presentation of interior space with computer. •Develop skill of detailing for execution/drawing	•Create 3D models using AutoCAD •Visualise and explain different styles of interiors using CAD •Apply AutoCAD skills in designing different commercial and residential spaces

3	Idrm 3.45 (2)	COMPUTER AIDED DESIGN PRACTICAL	To enable to create and develop 2D and 3D models for various commercial spaces	•Complete and give realistic output to different interior spaces •Select and apply tools appropriate for creating a 3D model using CAD and Sketchup •Visualise and explain different concepts used for interiors •Students shall be qualified to start an enterprise in field of design •Be skilled to join an architectural firm as a design apprentice/trainee
4	Idrm 4.1 (4)	CURRENT TRENDS AND ISSUES IN INTERIOR DESIGN AND RESOURCE MANAGEMENT	To become familiar with market trends and demands with reference to interior design	•Apply managerial abilities and philosophy in day-to-day life •Exhibit effective management skills •Able to introduce new concept / styles in designing interiors •Explore green and eco-friendly ways of techniques in building construction and designing interiors
4	Idrm 4.25 (4)	INTERNSHIP	To provide an opportunity to students to gain first hand experience	•Gain hands-on experience of the subject learnt in classroom •Adapt to different working conditions •Apply subject knowledge to fieldwork •Be employable with Architects' firms as design apprentice/assistant

DEPARTMENT OF II LANGUAGES

BA / BBA/ BCOM/ BSC PROGRAM WITH FRENCH

BA PROGRAM OUTCOMES

1. Graduates will have greater awarenessand knowledgein all subject areas, understanding concepts, theories and linked aspects, applying them in respective domains and exploring the future career and entrepreneurial opportunities in specific and allied fields.

2. Graduates are expected to develop effective oral and written communication with the use of appropriate technology to succeed in career presentations and interviews.Using various forms of business communication, supportedby effective use of appropriate modern technology techniques, logical reasoning, articulation of ideas and presentation.

3. Graduates should be able toconceptualize, organize and resolve contemporary problems or issues with a research aptitude gather the relevant data and document the findings.They canapply the perspective of their chosen specialized area of study to develop fully-reasoned opinions on such contemporary issues.

4. Graduates are expected to develop skills on analyzing specific data or problems, apply the relevant analysis, generate alternatives and engage in problem solving in functional or practical areas

5. Graduates are expected to possess social consciousness, identify the contemporary social problems around the neighbourhoodand beyond State and National boundaries, explore the opportunities for social entrepreneurship, involve themselves in social outreach (NSS, NCC and other platforms and NGO's) and have integrity.

6. Graduates are expected to collaborate and lead teams across Departmental boundaries and demonstrate leadership qualities, (Leadership positions in the Student Council, Departmental Associations and Clubs) maximize the usage of diverse skills of team members in the related context, thus catering to harmony within diversity

7. The graduates are to demonstrate a global outlook (in consonance with the Vision and Mission Statement of the College)with the ability to identify aspects of the world at large. They are expected to be familiar with the knowledge, skills and attributes needed to live and work in a diverse world.

8. Training students and making them 'future course ready' 'job ready' and 'employable' through the 'employability component' in all courses. Graduates are prepared to handle jobs in all sectors like Teaching, Industry, NGO, Service Sector, Hospitality, ITeSetc through varied initiatives.

9. Inculcating values for good living in a challenging world through the course in Human Values and Professional Ethics, understanding personal ethics and resolving ethical dilemmas and consequentially through diverse initiatives and platforms and practise them for their own good.

10. Taking up lifelong learning Coursesto equip them to the changing environment and be prepared to take up Master programmes, PG Diplomas, Certificate Courses as well as MOOCs, Online Courses and Self Learning Courses for a better future.

OUTCOMES OF BSC PROGRAM

• Comprehensive domain specific knowledge provides the necessary intellectual competencies to progress to higherlevels of learning and research
• Exhaustive laboratory training augments comprehension of theoretical principles and ignites scientific temper
• Experiential learning through internships/on the job training/surveys/field studies/live projects etc.ensures problem solving and job skills
• Thehard and soft skills acquired in the form ofLSRW/verbal/analytical/numerical/reasoning/programming/coding attributes, contribute to success in National and International level tests for admission and recruitment
• Individual and group projects and assignments kindle research aptitude
• Autodidactic learning tasks induce critical thinking and lead to optimal utilisation and creation of e resources on the net
• The mandatory life skills courses nurture ethical behaviour, social responsibility and environmental consciousness
• Leadershiptraining, entrepreneurship education courses hone leadership skills and groom entrepreneurial tendencies fostering future leaders and job providers
• Selective perusal ofpersonality developmentcourses and participation in extra andco-curricular activitiesensurephysical andpsychological fitness leading to personal empowerment and responsible citizenship
• The holistic BSc programme at SJCW(A), in toto, strengthens the strengths of the learners, weakens their weaknesses, helps them to overcome challenges and creates opportunities for them to evolve into socially responsive members of society

COURSE OBJECTIVES AND OUTCOMES

SEM	COURSE CODE (WITH NO OF CREDITS)	COURSE NAME	COURSE OBJECTIVES	COURSE OUTCOMES
I	LF 1004 (3)	French	· To enable the students to learn one of the popular foreign language – FRENCH, which is a living language as it is spoken in many countries. • One learns to love the language as they read and write it. This learning also develops listening and verbal skills of French language and a sense of acceptance and respect for other cultures.	• Introduce oneself. • Become familiar with fundamentals of communication in French. • Use present, past and future tense in sentences. • Practice simple conversations. • beautify the language by using adjectives and possessive adjectives
2	LF 2004(3)	French	• To enable the students to become familiar with the usage of a Foreign Language – FRENCH. • To acquire the written and verbal skills of French Language. • To improve the basic skills of reading and writing in French and develop awareness of French culture.	• Read and recall simple texts. • Awareness of differences in cultures. • Use negative forms. • Improve the ability to express the qualities of a person like “ joyeux” (happy)“ triste”(sad) • Express health conditions.

3	**LF 3004(3)**	**French**	• To enable the students to learn one of the popular foreign language – FRENCH, which is a living language as it is spoken in many countries. • One learns to love the language as they read and write it. • This learning also develops listening and verbal skills of French language and a sense of acceptance and respect for other cultures.	• Compare the system of education in France with Indian system. • Use personal pronouns for free flow of language. • Understanding small stories and anecdotes. • express their tastes and preferences in French language

DEPARTMENT OF II LANGUAGES

BA / BBA/ BCOM/ BSC PROGRAM WITH HINDI

BA PROGRAM OUTCOMES

1. Graduates will have greater awarenessand knowledgein all subject areas, understanding concepts, theories and linked aspects, applying them in respective domains and exploring the future career and entrepreneurial opportunities in specific and allied fields.

2. Graduates are expected to develop effective oral and written communication with the use of appropriate technology to succeed in career presentations and interviews.Using various forms of business communication, supportedby effective use of appropriate modern technology techniques, logical reasoning, articulation of ideas and presentation.

3. Graduates should be able toconceptualize, organize and resolve contemporary problems or issues with a research aptitude gather the relevant data and document the findings.They canapply the perspective of their chosen specialized area of study to develop fully-reasoned opinions on such contemporary issues.

4. Graduates are expected to develop skills on analyzing specific data or problems, apply the relevant analysis, generate alternatives and engage in problem solving in functional or practical areas

5. Graduates are expected to possess social consciousness, identify the contemporary social problems around the neighbourhoodand beyond State and National boundaries, explore the opportunities for social entrepreneurship, involve themselves in social outreach (NSS, NCC and other platforms and NGO's) and have integrity.

6. Graduates are expected to collaborate and lead teams across Departmental boundaries and demonstrate leadership qualities, (Leadership positions in the Student Council, Departmental Associations and Clubs) maximize the usage of diverse skills of team members in the related context, thus catering to harmony within diversity

7. The graduates are to demonstrate a global outlook (in consonance with the Vision and Mission Statement of the College)with the ability to identify aspects of the world at large. They are expected to be familiar with the knowledge, skills and attributes needed to live and work in a diverse world.

8. Training students and making them 'future course ready' 'job ready' and 'employable' through the 'employability component' in all courses. Graduates are prepared to handle jobs in all sectors like Teaching, Industry, NGO, Service Sector, Hospitality, ITeSetc through varied initiatives.

9. Inculcating values for good living in a challenging world through the course in Human Values and Professional Ethics, understanding personal ethics and resolving ethical dilemmas and consequentially through diverse initiatives and platforms and practise them for their own good.

10. Taking up lifelong learning Coursesto equip them to the changing environment and be prepared to take up Master programmes, PG Diplomas, Certificate Courses as well as MOOCs, Online Courses and Self Learning Courses for a better future.

OUTCOMES OF BSC PROGRAM

- **Comprehensive domain specific knowledge provides the necessary intellectual competencies to progress to higherlevels of learning and research**
- **Exhaustive laboratory training augments comprehension of theoretical principles and ignites scientific temper**
- **Experiential learning through internships/on the job training/surveys/field studies/live projects etc.ensures problem solving and job skills**
- **Thehard and soft skills acquired in the form ofLSRW/verbal/analytical/numerical/reasoning/programming/coding attributes, contribute to success in National and International level tests for admission and recruitment**
- **Individual and group projects and assignments kindle research aptitude**
- **Autodidactic learning tasks induce critical thinking and lead to optimal utilisation and creation of e resources on the net**
- **The mandatory life skills courses nurture ethical behaviour, social responsibility and environmental consciousness**
- **Leadershiptraining, entrepreneurship education courses hone leadership skills and groom entrepreneurial tendencies fostering future leaders and job providers**
- **Selective perusal ofpersonality developmentcourses and participation in extra andco-curricular activitiesensurephysical andpsychological fitness leading to personal empowerment and responsible citizenship**
- **The holistic BSc programme at SJCW(A), in toto, strengthens the strengths of the learners, weakens their weaknesses, helps them to overcome challenges and creates opportunities for them to evolve into socially responsive members of society**

COURSE OBJECTIVES AND OUTCOMES

SEM	COURSE CODE (WITH NO OF CREDITS)	COURSE NAME	COURSE OBJECTIVES	COURSE OUTCOMES
I	LH1005(3)	**Hindi**	• acquire the Functional aspects of Hindi Language. • Improve the LSRW skills of Hindi. • focus on different types of Literature. • participate in recitation, elocution and creative writing competitions.	☞ Master the art of communication. ☞ Inculcate values through language learning ☞ Enhance their writing skills, which in the long run will help them in their career with the help of grammar.
2	LH2005(3)	**Hindi**	• inculcate values through ancient poetry. • appreciate the beauty of poetry and fantasy of ancient poets. • provide basic knowledge of origin & development of Hindi Literature. • Perfect their writing skills, which in the long run will help them in their career.	• Understand our rich culture and heritage. • Develop a taste to appreciate works of literature. • Inculcate values through language learning. • develop reading writing and story telling skills .

3	LH3005(3)	**Hindi**	• acquire knowledge about Indian culture, tradition and Heritage. • Focus on different types of Literature and develop creative talents. • Story writing and character sketches.	● Increase their creativity and learning skills. • Evaluate the concept of Hindi from past to present and make the society more united through literature ● Remember the origin & development of Hindi Literature. ● Communicate in Hindi with native speakers effectively in various situations.

DEPARTMENT OF II LANGUAGES

BA / BBA/ BCOM/ BSC PROGRAM WITH SANSKRIT

BA PROGRAM OUTCOMES

1. Graduates will have greater awarenessand knowledgein all subject areas, understanding concepts, theories and linked aspects, applying them in respective domains and exploring the future career and entrepreneurial opportunities in specific and allied fields.

2. Graduates are expected to develop effective oral and written communication with the use of appropriate technology to succeed in career presentations and interviews.Using various forms of business communication, supportedby effective use of appropriate modern technology techniques, logical reasoning, articulation of ideas and presentation.

3. Graduates should be able toconceptualize, organize and resolve contemporary problems or issues with a research aptitude gather the relevant data and document the findings.They canapply the perspective of their chosen specialized area of study to develop fully-reasoned opinions on such contemporary issues.

4. Graduates are expected to develop skills on analyzing specific data or problems, apply the relevant analysis, generate alternatives and engage in problem solving in functional or practical areas

5. Graduates are expected to possess social consciousness, identify the contemporary social problems around the neighbourhoodand beyond State and National boundaries, explore the opportunities for social entrepreneurship, involve themselves in social outreach (NSS, NCC and other platforms and NGO's) and have integrity.

6. Graduates are expected to collaborate and lead teams across Departmental boundaries and demonstrate leadership qualities, (Leadership positions in the Student Council, Departmental Associations and Clubs) maximize the usage of diverse skills of team members in the related context, thus catering to harmony within diversity

7. The graduates are to demonstrate a global outlook (in consonance with the Vision and Mission Statement of the College)with the ability to identify aspects of the world at large. They are expected to be familiar with the knowledge, skills and attributes needed to live and work in a diverse world.

8. Training students and making them 'future course ready' 'job ready' and 'employable' through the 'employability component' in all courses. Graduates are prepared to handle jobs in all sectors like Teaching, Industry, NGO, Service Sector, Hospitality, ITeSetc through varied initiatives.

9. Inculcating values for good living in a challenging world through the course in Human Values and Professional Ethics, understanding personal ethics and resolving ethical dilemmas and consequentially through diverse initiatives and platforms and practise them for their own good.

10. Taking up lifelong learning Coursesto equip them to the changing environment and be prepared to take up Master programmes, PG Diplomas, Certificate Courses as well as MOOCs, Online Courses and Self Learning Courses for a better future.

OUTCOMES OF BSC PROGRAM

- **Comprehensive domain specific knowledge provides the necessary intellectual competencies to progress to higherlevels of learning and research**
- **Exhaustive laboratory training augments comprehension of theoretical principles and ignites scientific temper**
- **Experiential learning through internships/on the job training/surveys/field studies/live projects etc.ensures problem solving and job skills**
- **Thehard and soft skills acquired in the form ofLSRW/verbal/analytical/numerical/reasoning/programming/coding attributes, contribute to success in National and International level tests for admission and recruitment**
- **Individual and group projects and assignments kindle research aptitude**
- **Autodidactic learning tasks induce critical thinking and lead to optimal utilisation and creation of e resources on the net**
- **The mandatory life skills courses nurture ethical behaviour, social responsibility and environmental consciousness**
- **Leadershiptraining, entrepreneurship education courses hone leadership skills and groom entrepreneurial tendencies fostering future leaders and job providers**
- **Selective perusal ofpersonality developmentcourses and participation in extra andco-curricular activitiesensurephysical andpsychological fitness leading to personal empowerment and responsible citizenship**
- **The holistic BSc programme at SJCW(A), in toto, strengthens the strengths of the learners, weakens their weaknesses, helps them to overcome challenges and creates opportunities for them to evolve into socially responsive members of society**

COURSE OBJECTIVES AND OUTCOMES

SEM	COURSE CODE (WITH NO OF CREDITS)	COURSE NAME	COURSE OBJECTIVES	COURSE OUTCOMES
I	LS 1001(3)	Sanskrit	- Acquire the written and verbal skills of Sanskrit Language by study. - Improve reading and skills of reading and writing in Sanskrit. - focus on different types of Literature. - develop the reading habits - develop creative talents	• By learning Sanskrit, Students can read aloud simple example sentences, and chant the weekly verses accurately and joyously. • Recognise and use the grammatical structures to read short texts and to translate basic sentences into and out of Sanskrit. • Conduct simple conversations in Sanskrit on such topics as: common greetings; friends and families; food and drink; and times of day. • easily acquire wide knowledge and be effective in their interpretations
2	LS 2001(3)	Sanskrit	Able to know our Culture and Heritage - Improve their reading and writing habit in Sanskrit. - focus on different types of Literature.	• Gain insights on our rich culture and Heritage. • learn to practice Human Values in day to day life. • Undertake translation tasks effectively. • Evolve to become responsible citizens with social consciousness.

3	**LS 3001(3)**	**Sanskrit**	• Improve the LSRW skills. • Acquire the grammar skills by study. • Develop on Figures of Speech. • To know Ancient and Modern Poetry.	• Enriched communication and grammar skills in Sanskrit. • Know and apply appropriate Figures of Speech. • Capable to involve in group discussion and oral presentation. • Compare and contrast the beauty and value system of Ancient and Modern Poetry. • Imbibe the relevant value system.

DEPARTMENT OF II LANGUAGES

BA / BBA/ BCOM/ BSC PROGRAM WITH TELUGU

BA PROGRAM OUTCOMES

1. Graduates will have greater awarenessand knowledgein all subject areas, understanding concepts, theories and linked aspects, applying them in respective domains and exploring the future career and entrepreneurial opportunities in specific and allied fields.

2. Graduates are expected to develop effective oral and written communication with the use of appropriate technology to succeed in career presentations and interviews.Using various forms of business communication, supportedby effective use of appropriate modern technology techniques, logical reasoning, articulation of ideas and presentation.

3. Graduates should be able toconceptualize, organize and resolve contemporary problems or issues with a research aptitude gather the relevant data and document the findings.They canapply the perspective of their chosen specialized area of study to develop fully-reasoned opinions on such contemporary issues.

4. Graduates are expected to develop skills on analyzing specific data or problems, apply the relevant analysis, generate alternatives and engage in problem solving in functional or practical areas

5. Graduates are expected to possess social consciousness, identify the contemporary social problems around the neighbourhoodand beyond State and National boundaries, explore the opportunities for social entrepreneurship, involve themselves in social outreach (NSS, NCC and other platforms and NGO's) and have integrity.

6. Graduates are expected to collaborate and lead teams across Departmental boundaries and demonstrate leadership qualities, (Leadership positions in the Student Council, Departmental Associations and Clubs) maximize the usage of diverse skills of team members in the related context, thus catering to harmony within diversity

7. The graduates are to demonstrate a global outlook (in consonance with the Vision and Mission Statement of the College)with the ability to identify aspects of the world at large. They are expected to be familiar with the knowledge, skills and attributes needed to live and work in a diverse world.

8. Training students and making them 'future course ready' 'job ready' and 'employable' through the 'employability component' in all courses. Graduates are prepared to handle jobs in all sectors like Teaching, Industry, NGO, Service Sector, Hospitality, ITeSetc through varied initiatives.

9. Inculcating values for good living in a challenging world through the course in Human Values and Professional Ethics, understanding personal ethics and resolving ethical dilemmas and consequentially through diverse initiatives and platforms and practise them for their own good.

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COURSE OBJECTIVES AND OUTCOMES

SEM	COURSE CODE (WITH NO OF CREDITS)	COURSE NAME	COURSE OBJECTIVES	COURSE OUTCOMES
I	LT 1001(3)	Telugu	• hone the written and verbal skills of Telugu Language by study. • acquire knowledge about Andhra culture, Tradition and Heritage. • develop the reading habit to focus on different types of literature. • develop creative talents - Story Writing Description of Fiction and character sketches.	• Generate a close reading of a text: recognize, understand, and explain a text's elements –for example word choice, imagery form etc., • Draw on relevant cultural and historical information to analyze and interpret a literary text and Imbibe ethical values through historical eminent personalities. • Demonstrate familiarity to the students of the old literary traditions including prominent authors, genres, literary movements and styles. • Apply integrative and independent thinking, originality, imagination, experimentation, problem solving / risk taking in thought, expression(or) intellectual engagement. • Analyze the key role of the Eminent Women is Andhra Pradesh who fought for the society and then services rendered for promoting Integrity.

2	**LT 2001(3)**	**Telugu Patrika Rachana Mariyu Vyakarnam**	• hone the written and verbal skills by the study of etymology in Telugu Grammar. • Acquire knowledge about the origin of Journalism in Telugu, early and Modern Journalists. • Develop the reading habit to focus on the content creative talents – News Reporting, Interviews and special news.	• Acquire knowledge about the origin of Journalism in Telugu, early and modern Journalists and help the students to take Journalism as their career opportunity in searching jobs. • Develop the reading habit to focus on the content and develop creative talents like news Reporting, Interviews and special News. • Promote leadership qualities through oration • Participate in discussions by listening to other's perspectives, asking productive questions and articulating original Ideas.
3	**LT 3001(3)**	**Telugu**	• hone the written and verbal skills by the study of Etymology in Telugu Language. • improve the basic skills of reading and writing in Telugu. • acquire knowledge about Andhra culture, Tradition and Heritage. • focus a different type of literature. • develop the reading habits. • develop creative talents - Story Writing, Description on Fiction and character sketch.	• Learning of prose and poetry will mould, the students into an accommodative, broad minded and duty minded citizens with good behavior and character. • Develop love to Indian culture and heritage through Telugu literature. • Focusing of different types of Poetry Trends. • Analyze the evolution of Telugu language change of the meaning (Semantics) changes. • Inculcate creative talents through story Writing, Description on Fiction and character sketches. • Translation is one activity included in the syllabi, through this activity the student thoroughly learn the two languages and through this activity, language learning capacity will improve and also they will get job opportunities anywhere within the state.