



**SRI V.S. SIVALINGAM CHETTIAR GOVERNMENT DEGREE COLLEGE**

**(AUTONOMOUS)**

Sullurpet, Tirupathi District, Andhra Pradesh - 524 121.



## **BA HISTORY MAJOR –PROGRAMME OUTCOMES (POS)**

After completing the BA History Major programme, students will be able to:

### **PO1: Knowledge of History**

Acquire broad knowledge of Indian and World History across different periods, Understand key historical events, personalities, and developments.

### **PO2: Critical Thinking**

Develop the ability to think critically about historical issues. Analyse causes, effects, and significance of events logically.

### **PO3: Research Skills**

Apply basic research methods in History. Collect, evaluate, and interpret historical data from various sources.

### **PO4: Analytical Skills**

Examine historical facts and evidence systematically and form reasoned arguments based on historical data.

### **PO5: Communication Skills**

Express ideas effectively through writing and speaking, Present historical information clearly in essays, assignments, and discussions.

### **PO6: Cultural and Social Awareness**

Understand cultural diversity and social structures, appreciate heritage, traditions, and historical values.

### **PO7: Ethical Values**

Develop respect for different perspectives and cultures. ,Promote values like tolerance, equality, and responsibility.

### **PO8: Problem Solving Ability**

Use historical knowledge to understand present-day issues, apply logical thinking to solve social and cultural problems.

### **PO9: Lifelong Learning**

Develop interest in continuous learning and research, Stay updated with historical knowledge and current developments.

### **PO10: Employability Skill**

Gain skills useful for careers in education, civil services, archaeology, museums, journalism, and research

## **PROGRAMME SPECIFIC OUTCOMES (PSOS)**

### **PSO1: Subject-Specific Knowledge**

Gain in-depth knowledge of Indian History (Ancient, Medieval, Modern ) and World History.  
Understand regional history with special reference to local contexts.

**PSO2: Understanding Historical Sources** Identify and analyse primary and secondary sources such as inscriptions, coins, manuscripts, archives, and literature. Evaluate the authenticity and reliability of historical sources.

### **PSO3: Historical Analysis and Interpretation**

Interpret historical events using different approaches such as political, social, economic, and cultural perspectives. Develop the ability to construct logical historical arguments.

### **PSO4: Research and Methodology**

Apply historical research methods and tools. Conduct basic research projects, fieldwork, and surveys related to history.

### **PSO5: Heritage and Archaeological Awareness**

Understand the importance of heritage conservation and archaeology. Recognize and appreciate monuments, museums, and cultural sites.

### **PSO6: Regional and Local History Application**

Analyse the history of local regions and connect it with broader national and global contexts.  
Develop awareness about local traditions and historical developments.

### **PSO7: Interdisciplinary Approach**

Relate history with other disciplines like political science, sociology, economics, and geography.  
Understand how history influences other fields of study.

### **PSO8: Skill Development**

Develop skills in writing, documentation, critical thinking, and presentation. Use digital tools and resources for historical learning and research.

### **PSO9: Career Orientation**

Prepare for careers in teaching, archaeology, archives, museums, tourism, civil services, and research.

Signature of the Lecturer

Signature of the Principal



## **BA HISTORY MAJOR-COURSE OUTCOMES**

### **SEMESTER-I COURSE 1: INTRODUCTION TO INDIAN HISTORY**

1. Understand the meaning of history and its relation to other social sciences and historical writing.
2. Learn about the origin and evolution of human culture.
3. Know how humans transformed from the Stone Age to the Iron Age.
4. Understand the greatness of the first Indian civilization of the Indus Valley.
5. Learn about the richness of Vedic culture.

### **SEMESTER-I COURSE 2: EARLY INDIA: ENLIGHTENMENT AND STATE FORMATION**

1. Know the philosophies of Indian religions.
2. Learn about the formation of states and their growth.
3. Know the causes of the rise of Magadha and its political history
4. Understand the Mauryans history and Ashoka Dhamma policy
5. Will know the significance of post-Mauryan conditions

### **SEMESTER-II COURSE 3: HISTORY OF EARLY MEDIEVAL INDIA (C.600 -1206 CE)**

1. Understand the political scenario and the achievements of the Gupta rulers and Harshavardhana.
2. Know the Invasions of Arabs and Turks and emergence of regional dynasties.
3. Visualise the contribution of the Pallavas to Indian art and architecture.
4. Get awareness of Cholas local self - Government
5. Know the philosophies of various Bhakti saints.

### **SEMESTER-II COURSE 4: HISTORY OF MEDIEVAL INDIA (C.1206-1707 CE)**

1. Know the Administrative Policies and Reforms of the Delhi Sultanate Kings
2. Understand the nature of mediaeval Indian state.
3. Get knowledge of the emergence of composite culture in India.
4. Learn about the Bhakti Movement and the evolution of composite culture.
5. Know the Marathas and Sikh political history.

### **SEMESTER-III COURSE 5: INDIA UNDER THE EAST INDIA COMPANY (C.1707 -1857 CE)**

1. Identify the true nature of colonial rule and its consequences.
2. Understand the unrest among the people against the company.
3. Identify the true nature of different Governor General's reforms.
4. Find out the various revenue, education, and social reforms.
5. Unearth the concept behind the 1857 revolt and its role in modern Indian history.

#### **SEMESTER-III COURSE 6: HISTORY OF ANDHRA (FROM EARLIEST TIMES TO 17TH CENTURY)**

1. Learn the origin of Telugu word and the significant of megalithic culture.
2. Study the imperial Satavahanas and their successors
3. Understand the dynamics of Andhra society and the origin of Telugu language
4. Knowing the hegemony of different dynasty's
5. Critically examine the conditions of Qutub Shahis and the evolution of Telugu literature

#### **SEMESTER-III COURSE 7: HISTORY OF MODERN WORLD (15TH CENTURY TO 1945 CE)**

1. Know the causes of Geographic Discoveries and new innovations.
2. Assess and appraise the developments in art, literature, and society during the Renaissance and the Reformation period.
3. Know the causes of the Industrial Revolution and the main events of the American and French Revolutions.
4. Learn how Russia's traditional monarchy was replaced with the world's first Communist state.
5. Know how the world wars affected the people and how the UNO played a major role in world Peace

#### **SEMESTER-IV COURSE 8: INDIAN NATIONAL MOVEMENT (C.1857-1947 CE)**

1. Understand the Social Reform movements and its impact on the society.
2. Learn the reforms of British Viceroys, i.e. Rippon, and Curzon.
3. Study the important factors for the growth of Indian nationalism
4. Visualise the idealistic policies of Mahatma Gandhi.
5. Paved the way for obtaining independence

#### **SEMESTER-IV COURSE 9: HISTORY OF MODERN ANDHRA (17<sup>th</sup> CENTURY TO 1956 CE)**

1. Know the advent of Europeans in Andhra and their trading settlement.
2. Learn about British Land Revenue Systems and Revolts against the British
3. Learn about the socio-cultural awakening of Andhra during the 19th and early 20th centuries.
4. Examined the Growth of the Nationalist Movement in Andhra
5. Learn about the incidents that led to the formation of the first Linguistic State in India.

#### **SEMESTER-IV COURSE 10: HISTORY OF CONTEMPORARY WORLD (C.1945 -1991 CE)**

1. Learn about the Course of Cold War and ideological conflicts between the Capitalism and Communalism.
2. To Know the various World Organizations and its Achievements
3. To Know The Suez Crisis-The Cuban Missile Crisis
4. Understanding the Decolonization in Asia and Africa, and the birth of Regional Languages.
5. Knowing the collapse of USSR and Its Impact on the World.

#### **SEMESTER-V COURSE 11: HISTORY OF CONTEMPORARY ANDHRA PRADESH (C.1956-2014 CE)**

1. Analyse the political developments and political awareness of the Andhra people.
2. Learn about the economic reforms and people's impoverishment in Andhra Pradesh.
3. Know the social and cultural changes of Andhra society
4. Assess the different educational and IT reforms and their impacts.
5. Analyse the scientific and technological improvements and their impact on Andhra society

#### **SEMESTER-V COURSE 12 A: TOURISM AND HOSPITALITY MANAGEMENT**

1. Know the basics of tourism and hospitality services.
2. Acquire Tour Guiding, Operating and Soft Skills
3. Inculcate interpersonal and ability skills in the students
4. Understands the spirit of teamwork and different types of services
5. Develop their skills, leadership abilities, and entrepreneurial spirit.

#### **SEMESTER-V COURSE 12 B: MUSEUM STUDIES**

1. Gain Awareness about the History, Context and Concepts of Museums
2. Understand Curatorial Responsibility and Ethics of Collection
3. Classify Museum Objects and Acquire Skills to Manage and Demonstrate them
4. Analyse the Changing Dynamics between Museums and Culture , Job opportunities in this Field
5. Study of selected professional Museums – Regional, National –State/ASI and International Museums

#### **SEMESTER-V COURSE 13 A: CULTURAL TOURISM IN ANDHRA PRADESH**

1. Define tourism and explain its nature, characteristics, and its relevance
2. Differentiate various forms of tourism in the Andhra context.
3. Evaluate the role of institutions like the ASI and APTDC in preserving and promoting tourism.
4. Identify and explain the significance of major heritage sites in Andhra Pradesh.
5. Demonstrate practical understanding through field visits of the students

#### **SEMESTER-V COURSE 13 B: INTRODUCTION TO ARCHAEOLOGY**

1. Learn the scope of Archaeology and its sources.
2. Analyses the branches of Archaeology and their relation to other disciplines.
3. Knowledge of Colonial and Oriental Studies in Indian Archaeolog
4. Analyse the contribution of oriental Archaeologists and their services to Archaeological developments.
5. Know the Important Archaeological Sites in India and their Exploration

**SEMESTER-VI COURSE 14 A: INDIA AFTER INDEPENDENCE (1947-1991)**

1. Know the major changes and developments in contemporary India.
2. Understand the developments in the fields of education, science, and technology.
3. Inculcate the scientific temper among the students.
4. Learn about the new economic reforms in the era of globalization.
5. Know the Indian Foreign Policy and challenges of contemporary India.

**SEMESTER-VI COURSE 14 B: MAKERS OF MODERN INDIA**

1. Learn into some of the political stalwarts and their vision of modern India
2. .Analysing the Contribution of Scientists and great historians who served for Nation.
3. Learn the Andhra Pradesh Great Personalities, who contributed their services to society.
4. Know some of the extraordinary talent persons in their respective fields.
5. Understand some of the makers and their contributions to the culture and service fields

**SEMESTER-VI COURSE 15 A: HISTORY OF SCIENCE AND TECHNOLOGY IN INDIA**

1. Enable the students to understand the origins of Science and Technology from time immemorial.
2. Make students in understanding the scientific temperament of Ancient India
3. Know the achievements of science and technology in Medieval India.
4. Get exposed to the achievements of Modern India.
5. Enable to students to know the achievements in the field of Science, Technology and Medicine of contemporary India.

**SEMESTER-VI COURSE 15 B: INDIAN KNOWLEDGE SYSTEMS**

1. Students will understand India's rich knowledge system.
2. Know the concept and contribution of knowledge and approaches of the Indian Knowledge System.
3. Learn to appreciate the need for and importance of languages in getting to the roots of philosophical concepts.
4. Inculcate the Indian Scientific Knowledge System among the students.
5. Learn the Indian Agriculture Knowledge System.

Signature of the Lecturer

Signature of the Principal

# **SRI VS SIVALINGAM CHETTIAR GOVERNMENT DEGREE COLLEGE(A)SULLURUPETA**

## **B.A. ECONOMICS MAJOR – COURSE OUTCOMES**

### **SEMESTER–I COURSE 1: INTRODUCTION TO ECONOMICS**

1. Understand basic concepts like scarcity, choice, and opportunity cost.
2. Learn the nature and scope of economics (micro & macro).
3. Identify different economic systems and their features.
4. Understand production, consumption, and distribution activities.
5. Develop analytical thinking for real-life economic problems.

### **SEMESTER–I COURSE 2: MICRO ECONOMICS**

1. Understand demand, supply, and market equilibrium.
2. Analyze consumer behavior using utility and indifference curve approaches.
3. Learn production functions and cost concepts.
4. Study market structures: perfect competition, monopoly, monopolistic competition.
5. Evaluate pricing and output decisions of firms.

### **SEMESTER–II COURSE 3: MACRO ECONOMICS**

1. Understand national income concepts and measurement.
2. Analyze consumption, saving, and investment functions.
3. Learn theories of income and employment.
4. Study inflation, deflation, and unemployment.
5. Understand role of monetary and fiscal policy.

### **SEMESTER–II COURSE 4: DEVELOPMENT ECONOMICS**

1. Understand economic growth vs development.
2. Study indicators like HDI, poverty, and inequality.
3. Analyze theories of economic development.
4. Learn role of agriculture, industry, and services.
5. Evaluate government policies for development.

### **SEMESTER–III COURSE 5: MACROECONOMICS (ADVANCED)**

1. Study classical and Keynesian theories in detail.
2. Understand IS-LM model and equilibrium.
3. Analyze business cycles and fluctuations.
4. Learn international trade linkages in macroeconomics.
5. Evaluate macroeconomic stabilization policies.

### **SEMESTER–III COURSE 6: ECONOMIC THOUGHT & POLITICAL ECONOMY**

1. Understand contributions of classical economists (Adam Smith, Ricardo).
2. Learn Marxian economic ideas.
3. Study Keynesian revolution in economics.

4. Analyze evolution of economic thought over time.
5. Understand relationship between economy and politics.

#### **SEMESTER–III COURSE 7: DEVELOPMENT ECONOMICS (ADVANCED)**

1. Study advanced development models (Harrod-Domar, Solow).
2. Analyze human capital and sustainable development.
3. Understand globalization and development issues.
4. Learn role of institutions in development.
5. Evaluate development strategies in India.

#### **SEMESTER–III COURSE 8: PUBLIC ECONOMICS**

1. Understand role of government in economic activities.
2. Study public revenue and taxation systems.
3. Learn public expenditure theories.
4. Analyze fiscal policy and budget.
5. Evaluate welfare economics and public goods.

#### **SEMESTER–IV COURSE 9: INDIA & ANDHRA PRADESH ECONOMY**

1. Understand structure of Indian economy.
2. Analyze agricultural and industrial development in India.
3. Study economic reforms (LPG reforms).
4. Evaluate Andhra Pradesh economy after bifurcation.
5. Understand poverty, unemployment, and welfare programs.

#### **SEMESTER–IV COURSE 10: STATISTICAL METHODS FOR ECONOMICS**

1. Understand basic statistical concepts and data collection.
2. Learn measures of central tendency and dispersion.
3. Study correlation and regression analysis.
4. Analyze index numbers and time series.
5. Apply statistics in economic analysis.

#### **SEMESTER–IV COURSE 11: INTERNATIONAL ECONOMICS**

1. Understand theories of international trade.
2. Analyze balance of payments and exchange rates.
3. Study trade policies and tariffs.
4. Learn role of WTO, IMF, and World Bank.
5. Evaluate globalization and its impact on India.

#### **Semester-V Course 12 Entrepreneurship and MSMEs**

CO1: Understand and explain the basic concepts, types, and theories of entrepreneurship, including women entrepreneurship.

CO2: Apply SCAMPER techniques to generate innovative ideas and prepare simple business plans for rural and urban ventures.

CO3: Analyze and evaluate entrepreneurial opportunities and assess the feasibility of starting enterprises under MSMEs.

CO4: Develop a viable financial and legal plan for establishing a business in India.

CO5: Identify and examine major government schemes and support programs available for startups and MSMEs.

Here are the Course Outcomes (COs) for:

### **SEMESTER-V COURSE 13B: INSURANCE SERVICES**

#### 1. Understand the concept and principles of insurance

Explain the meaning, importance, and fundamental principles of insurance such as utmost good faith, indemnity, insurable interest, and risk sharing. Understand the functioning of insurance service agencies.

#### 2. Knowledge of Life Insurance Products

Understand various life insurance products such as term insurance, endowment plans, whole life policies, and ULIPs. Analyze their features and benefits.

#### 3. Understanding General Insurance

Identify the need for general insurance and different types such as health insurance, motor insurance, fire insurance, and property insurance.

#### 4. Practical and Employability Skills

Demonstrate practical skills required to work in insurance services or to start an insurance agency. Understand marketing, customer handling, and policy documentation.

#### 5. Analytical and Evaluation Skills

Evaluate insurance services through case studies. Understand customer behavior, claim settlement processes, and the role of regulatory and supporting institutions under existing laws.

### **SEMESTER-VI COURSE 14B: RETAIL AND DIGITAL MARKETING**

#### 1. Understanding Retail and Digital Marketing Concepts

Explain the concepts, principles, and scope of retail and digital marketing. Understand the evolution and importance of modern marketing practices.

#### 2. Consumer Behaviour Analysis

Identify and analyze consumer behaviour patterns to promote effective retail marketing strategies. Understand factors influencing buying decisions.

#### 3. Retail Marketing Strategies

Analyse and compare different retail marketing strategies such as pricing, promotion, store layout, and customer relationship management.

#### 4. Application of Digital Marketing Tools

Apply digital marketing tools and techniques such as social media marketing, SEO, email marketing, and online advertising in real or simulated business environments.

#### 5. Evaluation and Decision Making

Evaluate retail and digital marketing models using case studies and real-world examples. Develop decision-making skills for effective marketing management.

### **SEMESTER-VI COURSE 15A: DATA ANALYSIS AND CASE STUDIES**

#### 1. Basic Knowledge of Data Tools

Acquire fundamental knowledge of operating Google Sheets for statistical analysis of economic data. Understand basic functions, formulas, and data handling techniques.

#### 2. Analysis of Agricultural and Rural Data

Analyse data related to Indian agriculture and rural development using Google Sheets to understand trends, patterns, and policy impacts.

**3. Industrial and Infrastructure Data Analysis**

Examine India's industrial and infrastructure data through proper sourcing, organization, and analysis using digital tools like Google Sheets.

**4. Application of Advanced Data Techniques**

Apply advanced Google Sheets tools such as charts, pivot tables, and functions to analyse public finance and external sector data.

**5. Project Work and Field-Based Analysis**

Collect primary data, analyse it, and prepare a mini project report on local economic issues. Develop practical research and reporting skills.

**Signature of the Lecturer**

**Signature of the Principal**

# SRI VS SIVALINGAM CHETTIAR GOVERNMENT DEGREE COLLEGE(A)SULLURUPETA

## B.A. ECONOMICS MAJOR – PROGRAMME OUTCOMES

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### **PO1: Knowledge of Economics**

Acquire comprehensive knowledge of Microeconomics, Macroeconomics, Development Economics, Public Finance, and International Economics. Understand economic concepts, theories, and real-world applications.

### **PO2: Critical Thinking**

Develop the ability to think critically about economic issues. Analyse causes, effects, and policy implications of economic problems logically.

### **PO3: Analytical Skills**

Apply quantitative and qualitative techniques to analyze economic data. Interpret graphs, tables, and statistical results effectively.

### **PO4: Research Skills**

Use basic research methods in economics. Collect, organize, and interpret economic data from various sources.

### **PO5: Problem Solving Ability**

Apply economic reasoning to solve real-life problems such as inflation, unemployment, poverty, and resource allocation.

### **PO6: Communication Skills**

Express economic ideas clearly through writing and presentations. Present data and arguments effectively in academic and professional contexts.

### **PO7: Social and Economic Awareness**

Understand socio-economic issues like inequality, development, sustainability, and public welfare. Develop awareness of national and global economic challenges.

### **PO8: Ethical Values**

Develop ethical responsibility in economic decision-making. Understand issues related to equity, justice, and inclusive growth.

### **PO9: Lifelong Learning**

Develop interest in continuous learning and updating knowledge in economics and related fields.

### **PO10: Employability Skills**

Gain skills useful for careers in banking, civil services, teaching, research, business, and public administration.

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# PROGRAMME SPECIFIC OUTCOMES (PSOs)

**PSO1: Subject-Specific Knowledge**

Gain in-depth knowledge of economic theories and their practical applications in Indian and global contexts.

**PSO2: Data Analysis and Interpretation**

Analyze economic data using statistical tools. Interpret economic trends, reports, and indicators.

**PSO3: Policy Analysis**

Evaluate government policies related to taxation, public expenditure, trade, and development.

**PSO4: Research and Methodology**

Apply economic research methods. Conduct basic surveys, projects, and field studies.

**PSO5: Indian Economy Understanding**

Understand structure, performance, and challenges of the Indian economy and Andhra Pradesh economy.

**PSO6: Global Economic Understanding**

Analyze international trade, globalization, exchange rates, and global economic institutions.

**PSO7: Interdisciplinary Approach**

Relate economics with other disciplines like political science, sociology, geography, and commerce.

**PSO8: Skill Development**

Develop skills in critical thinking, data handling, report writing, and presentation using digital tools.

**PSO9: Career Orientation**

Prepare for careers in banking, finance, civil services, academia, and corporate sectors.

Signature of the Lecturer.

Signature of the Principal



# SRI V.S. SIVALINGAM CHETTIAR GOVERNMENT DEGREE COLLEGE

(AUTONOMOUS)

Sullurpet, Tirupathi District, Andhra Pradesh - 524 121.



## DEPARTMENT OF POLITICAL SCIENCE BA (MINOR)

### PROGRAMME OUTCOMES (POs) POLITICAL SCIENCE BA (MINOR)

**POs:** Understand basic concepts, theories, and institutions of Political Science.

**POs:** Develop critical thinking on political systems and governance.

**POs:** Analyze political issues at local, national, and global levels.

**POs:** Enhance civic responsibility and democratic values.

### PROGRAMME SPECIFIC OUTCOMES (PSOs)

**PSOs:** Gain knowledge of Indian Constitution and political processes.

**PSOs:** Understand structure and functioning of government institutions.

**PSOs:** Analyze contemporary political developments in India.

**PSOs:** Develop awareness of e-governance and local administration.

## **COURSE OUTCOMES (COs) POLITICAL SCIENCE BA (MINOR)**

### **Semester II COURSE 1: INTRODUCTION TO POLITICAL SCIENCE**

**Cos:** Learn nature, importance, and relationship with other social sciences.

**Cos:** Understand the traditional and modern approaches.

**Cos:** Know the origin and evolution of the state.

**Cos:** Comprehend the development of social contract theory.

**Cos:** Understand the birth of modern state.

### **Semester IV COURSE 2: CONCEPTS & IDEOLOGIES OF POLITICAL SCIENCE**

**Cos:** Learn the significance of concepts.

**Cos:** Understand the law and liberty.

**Cos:** Know equality and power and its constituents.

**Cos:** Experience the rights and its theories.

**Cos:** Understanding of political ideologies.

### **Semester V COURSE 3: INDIAN CONSTITUTION**

**Cos:** Know the origin and evolution of the Constitution.

**Cos:** Understand of Constitutional Development of India.

**Cos:** Comprehend the feature of Indian Constitution.

**Cos:** Identify the rights and duties.

**Cos:** Understanding the notion of theory of basic structure.

## **Semester V COURSE 4: INDIAN GOVERNMENT**

**Cos:** Know the President and Parliament of India.

**Cos:** Understand the Prime Minister & Council of Ministers.

**Cos:** Assess the Governor and his role.

**Cos:** Reflect the role of Chief Minister and Council of Ministers.

**Cos:** Judge the role of Judiciary.

## **Semester VI COURSE 5: INDIAN FEDERAL SYSTEM**

**Cos:** Know the importance of Centre – State Relations.

**Cos:** Learn the Indian federal process

**Cos:** Assess the electoral process in India.

**Cos:** Estimate the Panchayat Raj System.

**Cos:** Understand 73rd & 74th Constitutional Amendment Acts.

## **Semester VI COURSE 6: INDIA'S FOREIGN POLICY**

**Cos:** Understands the theoretical framework of foreign policy.

**Cos:** Enables the student to know the role of foreign policy and national interest.

**Cos:** Learns about the origin, principles and basics of Indian foreign policy.

**Cos:** Assess importance of Pancha Sheela agreement between India and China.

**Cos:** Understands the geo-political, geo-strategic determinants and cross-border terrorism in India.

**SRI V.S. SIVALINGAM CHETTIAR GOVERNMENT DEGREE  
COLLEGE(A)**

SULLURPET, TIRUPATI DISTRICT, ANDHRA PRADESH

ACCREDITED BY NAAC WITH A GRADE

**B.Com., C.A Honors, POs ,COs**

**SEMESTER-I**

**COURSE 1: BUSINESS ORGANIZATION AND MANAGEMENT**

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### Course Objectives

This course is designed to:

- Acquire conceptual knowledge of business and the formation of various business organizations;
- Provide insights into mergers, acquisitions, CSR practices and quality management concepts ;
- Develop understanding of key management functions;
- Understand motivation and leadership theories; and
- Understand line and staff relationships and gain insights into the control process.

### Course Outcomes

Upon successful completion of this course, students will be able to:

**CO1:** Identify and differentiate various forms of business organisations including P4 models and franchising systems.

**CO2:** Analyse the impact of business environment factors like mergers, acquisitions, and CSR on organisational sustainability.

**CO3: Demonstrate** knowledge of key managerial functions including planning, delegation, decision-making, and organisational structure.

**CO4:** Apply motivation and leadership theories to workplace scenarios and assess their implications on employee performance.

**CO5:** Develop foundational skills in business analysis using tools such as SWOT, TQM, and quality circles.

## SEMESTER-II

### COURSE 3: FINANCIAL ACCOUNTING I

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#### Course Objectives:

This course is designed to:

- Understand and explain the foundational principles, concepts, and process of accounting, including classification and rules of debit and credit;
- Record and process business transactions through journals, ledgers, subsidiary books, and correct errors through rectification entries;
- Apply and compare different methods of depreciation and amortisation to account for asset value reduction;
- Identify and distinguish between provisions and reserves and apply their treatment in final accounts with suitable adjustments; and
- Prepare accurate final accounts (Trading, Profit & Loss, and Balance Sheet) incorporating necessary adjustments.

#### Course Outcomes:

Upon successful completion of this course, students will be able: to

**CO1:** Understand the basic concepts of financial accounting;

**CO2:** Analyse the accounting process;

**CO3:** Enable the students to understand the various methods of depreciation and its calculation;

**CO4:** Examine the impact of provisions and reserves on profitability of business;

**CO4:** Workout with final accounts and assess the financial position of the concern.

## **SEMESTER-III**

### **COURSE 5: ADVANCED ACCOUNTING**

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#### **Course Objectives:**

The course aims to help learners to acquire conceptual knowledge of Non-Profit Organizations, understand the accounting procedure of single entry system, hire purchase system and partnership accounts.

#### **Course Outcomes:**

At the end of the course, the student will able to;

Understand the concept of Non-profit organizations and its accounting process, Comprehend the concept of single-entry system and preparation of statement of affairs, Familiarize with the legal formalities at the time of dissolution of the firm, Prepare financial statements for partnership firm on dissolution of the firm and Employ critical thinking skills to understand the difference between the dissolution of the firm and dissolution of partnership.

## **SEMESTER-III**

### **COURSE 6: INCOME TAX**

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#### **Course Objectives:**

The objective of this paper is to help students to acquire knowledge and provisions of income tax concepts and various heads of incomes. To impart skills for calculating various incomes and online filling of tax returns.

#### **Course Outcomes:**

At the end of the course, the student will able to;

Acquire the complete knowledge of the tax evasion, tax avoidance and tax planning, Understand the provisions and compute income tax for various sources, Grasp amendments made from time to time in Finance Act, Compute total income and define tax complicacies and structure and Prepare and File IT returns of individual at his own. Employ critical thinking skills to understand the difference between the dissolution of the firm and dissolution of partnership

## **SEMESTER-III**

### **COURSE 2: MONEY, BANKING AND FINANCIAL MARKETS**

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#### **Course Objectives**

1. To analyse the impact of money on some of the economy's key variables such as interest rates, inflation, and the banking industry.
2. To expose students to the theory and functioning of the monetary and financial sectors of the economy.
3. To study the organization, structure and role of financial markets and institutions.
4. To examine interest rates, monetary management and instruments of monetary control.
5. To study the Financial and banking sector reforms and monetary policy with special reference to India.

## **SEMESTER-IV**

### **COURSE 9: CORPORATE ACCOUNTING**

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#### **Learning Objectives:**

This course enables the student to develop awareness about corporate accounting in conformity with the provisions of company act.

#### **Course Outcomes:**

At the end of the course, the student will be able to;  
Understand the Accounting treatment of Share Capital and aware of process of book building, Demonstrate the procedure for issue of bonus shares and buyback of shares, Comprehend the important provisions of Companies Act, 2013 and prepare final accounts of a company with Adjustments, Participate in the preparation of consolidated accounts for a corporate group Understand analysis of complex issues, formulation of well-reasoned arguments and reaching better conclusions and Communicate accounting policy choices with reference to relevant laws and accounting standards.

## SEMESTER-IV

### COURSE 10: COST AND MANAGEMENT ACCOUNTING

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#### Course Objective:

The aim of this course is to expose the students to the basic concepts and the tools used in cost accounting.

#### Course Outcomes:

At the end of the course, the student will be able to;

Understand various costing methods and management techniques, Apply Cost and Management accounting methods for both manufacturing and service industry, Prepare cost sheet, quotations, and tenders to organization for different works, Analyze cost-volume-profit techniques to determine optimal managerial decisions, Compare and contrast the financial statements of firms and interpret the results and Prepare analysis of various special decisions, using relevant management techniques.

## SEMESTER-IV

### COURSE 3: DERIVATIVES & RISK MANAGEMENT

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#### Course Objectives

1. To understand derivatives market
2. To understand derivatives trading in India and regulatory framework.
3. To train the student with required skills for pricing of futures.
4. To train the student with required skills for pricing of options
5. To enable the student to explore hedging strategies to mitigate risk in business operations.

## **SEMESTER-IV**

### **COURSE 4: PORTFOLIO MANAGEMENT**

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#### **Course Objectives**

1. To familiarize students with recent changes and elements of portfolio management
2. To understand the various tools used in the evaluation process of investment avenues.
3. To understand the financial environment.

## **SEMESTER.V**

### **Course 12 : ADVANCED CORPORATE ACCOUNTING**

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#### **Course Objectives**

The course aims to help learners to acquire conceptual knowledge of purchase of business and amalgamation of companies. They able to understand the accounting procedure of liquidation and corporate accounting procedures.

#### **Course Outcomes**

After completing the course, the student shall be able to:

Understand Corporate Accounting environment and record transactions related to Reconstruction of companies operating functions of bank and insurance companies. Analyze the situations of Liquidation and Internal Reconstruction, Acquire skills of Accounting Procedure of Advanced Corporate Accounting Environment.

## **SEMESTER.V**

### **Course 12 : STOCK MARKETS**

---

#### **Course Objectives**

The objective of this paper is to help students to acquire knowledge on concept of Financial Market and ability to understand the terminologies associated with the field of Financial Market and control along with their relevance. To impart awareness on Primary and Secondary Market, stock Exchange, SEBI etc.

#### **Course Outcomes**

By the completion of the course, the students will be able to  
Expose to theory and functions of the Share Market in Financial Sector as job careers and 2. Study the functioning of capital markets and create awareness among the public. Acquire knowledge on operations of Share Market and Research skills and involve in activities of

Mutual Funds and stock market firms. Enhance their skills by practicing in preparation of accounting statements.

## **SEMESTER.V**

### **Course 13 : ADVERTISING & MEDIA PLANNING**

---

#### **Course Objectives**

The objective of this paper is to help students to acquire knowledge on advertising and media planning and to acquire skills in creating and developing advertisements.

#### **Course Outcomes**

At the successful completion of the course students are able to:

Understand the role of advertising in business environment and understand the legal and ethical issues in advertising. Acquire skills in creating and developing advertisements and understand up-to-date advances in the current media industry. Acquire the necessary skills for planning and advertising media campaign.

## **SEMESTER.V**

### **COURSE 5: STOCK MARKET OPERATIONS**

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#### **Course Objectives**

- To make the student understand the Capital Markets' scenario
- To make the student understand the nature and significance of stock markets
- To understand the process of listing of stocks.
- To provide an overview of the Stock Market Indices.
- To impart basics of the commodity and currency markets.

## **SEMESTER.V**

### **COURSE 6: PROJECT MANAGEMENT**

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#### **Course Objectives**

- To enable the student to conduct preliminary screening of project.
- To gain knowledge on conducting the studies of market, technical and operational feasibility of the Project.
- To analyse the financial viability of the project.
- To provide insight into implementation and abandonment of project

## SEMESTER-VII

### GROUP: B: MARKETING AND HUMAN RESOURCE MANAGEMENT

#### SEMESTER VII –SERVICES MARKETING

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#### Course Objectives:

- To develop an understanding of the expectations of customers and know how to translate this knowledge into genuine value for customers.
- To interpret service behavior and service consumption in the light of service-dominant marketing logic and articulate the outcome to service marketing management.

#### Learning Outcomes:

After completing this course, the students will be able to:

1. Understand the unique challenges of services marketing, including the elements of product, price, place, promotion, processes, physical evidence, and people.
2. Design service quality measurements to build customer loyalty and evaluate the effectiveness and efficiency of customer service offerings.
3. Discuss the influences of the multicultural marketplace, business ethics, and socially responsible marketing on services marketing.
4. Differentiate between various customer groups and the service quality expected from them and techniques for pricing various services.
5. Analyze the unique challenges inherent in managing and delivering service excellence at a profit.

## **GROUP: B: MARKETING AND HUMAN RESOURCE MANAGEMENT**

### **SEMESTER VII –RETAIL MARKETING**

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#### **Course Objectives:**

To develop an understanding of the contemporary retail management issues, strategies and trends in retailing.

- To acclimatize with the insights of retailing, key activities and relationships, also to highlight the significance of retailing and its role in the success of modern business houses.

#### **Learning Outcomes:**

After completing this course, the students will be able to:

1. Identify the various principles, practices, and concepts used in retail marketing management.
2. Determine the conceptual and organizational aspects of the retail sector, including strategic planning and management in the retail industry.
3. Examine the implementation of marketing strategy through an analysis of the location opportunities, financial strategy and performance objectives.
4. Analyze how retail managers make informed strategic choices in relation to managing store design, retail form and merchandise plans.
5. Design key elements in planning, managing, and executing the retail marketing mix as they relate to the product, price, distribution, and promotion.

## **GROUP:B:MARKETING AND HUMAN RESOURCE MANAGEMENT SEMESTER VII –SUPPLY CHAIN MANAGEMENT**

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#### **Course Objectives:**

- To understand the strategic role of supply chain management in globalized business environment.
- To understand the role of supply chain management in the cost reduction and offering improved service to the customers.

#### **Learning Outcomes:**

After completing this course, the students will be able to:

1. Develop an understanding of the role of supply chain management in the current business environment.
2. Examine the current supply chain management trends, understand and apply the current supply chain theories, practices and concepts utilizing case problems and problem-based learning situations.
3. Apply computer-based supply chain optimization tools including the use of selected state of the art supply chain software suites currently used in business
4. Develop and utilize critical management skills such as negotiating, working effectively within adverse business environment, ethical decision making and use of information technology
5. Analyze various methods of entry into international markets and international commercial documentation.

**GROUP: B:MARKETING AND HUMAN RESOURCE  
MANAGEMENT  
SEMESTER VII – CONSUMER BEHAVIOUR**

---

**Objectives:**

- To provide an understanding of the concepts of consumer behaviour, buyer decision making, behavioural variables and influence on consumer behaviour.
- To comprehend the social and cultural dimensions of consumer behaviour, factors impacting attitudes and behaviour.

**Course Outcomes:**

1. Understand the concepts consumer behavior and profile of the Indian consumer and their needs.
2. Analyze the consumer Perception, attitude formation and dynamic nature of motivation in the market.
3. Apply the consumer decision making process through the models of consumer behavior.
4. Examine the strategic marketing applications and positioning strategies for existing and new products.
5. Identify the need for marketing ethics towards consumers.

**GROUP: B: MARKETING AND HUMAN RESOURCE  
MANAGEMENT SEMESTER VII – DIGITAL MARKETING**

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**Learning Outcomes:**

- To provide an understanding of the importance of digital marketing and its applications, examine the strategic role of digital marketing processes and tools in designing the overall marketing strategy.
- To explore the challenges of Interactive media, the online market place, challenges of communicating and retention strategies of customers through these media, search engines and the future trends in-digital marketing.

**Course Outcome:**

1. Understand concepts and applications of digital marketing in the globalized market.
2. Identify the different channels of Digital Marketing.
3. Analyze Digital Marketing Action Plan, Budget, writing and implementing marketing plan.
4. Examine the emerging trends in digital marketing and critically assess the use of digital marketing tools like Search Engine Marketing.
5. Understand the different types of Social Media marketing.

**SEMESTER-VIII**  
**GROUP: B: MARKETING AND HUMAN RESOURCE**  
**MANAGEMENT**

**SEMESTER VIII - GLOBAL MARKETING**

---

**Objectives:**

- To expose the students to the global business activities, marketing in international business and global forces transforming the international business in the current scenario.
- To develop a general perspective about managing international marketing activities both in operational as well as strategic context.

**Course Outcomes:**

After completing this course, the students will be able to:

1. Understand aspects of marketing from a global perspective to respond in a better way to international opportunities, environments, and competitive situations.
2. Examine the global and regional influences on marketing of products and services and develop creative market entry strategies in new firm.
3. Design the global oriented marketing strategies which include total product concept, pricing, place and promotion
4. Know the principles of promotion and improve the distribution channel in selecting foreign country market intermediaries and physical distribution of goods.
5. Understand the salient features of EXIMP policy of India, 2015-2020 and the Export Marketing Documentation.

**GROUP B: MARKETING AND HUMAN RESOURCE MANAGEMENT**  
**SEMESTER VIII – ADVERTISING AND SALESMANSHIP**

---

**Learning Outcomes:**

- To familiarize the students with the concepts of Advertising and Sales Management.
- To comprehend the role played by Sales Personnel in effective functioning of distribution channels and enabling them to manage Channel Institutions.

**Course Outcome:**

1. Understand concepts and applications of digital marketing in the globalized market.
2. Identify the different channels of Digital Marketing.
3. Analyze Digital Marketing Action Plan, Budget, writing and implementing marketing plan.
4. Examine the emerging trends in digital marketing and critically assess the use of digital marketing tools like Search Engine Marketing.
5. Understand the different types of Social Media marketing.

## **GROUP:B: MARKETING AND HUMAN RESOURCE MANAGEMENT SEMESTER VIII – CONSUMER PROTECTION**

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### **Objectives:**

- To create and awareness of the agenesis of consumer protection laws in India.
- To know rights of consumers under the consumers protection and exploitation.

### **Course Outcomes:**

After completing this course, the students will be able to:

1. Understand the terms Consumers, Consumerism, Consumer movement.
2. Examine the provisions of the Consumer Protection Act.
3. Know the methods of creating consumer awareness and education.
4. Create awareness about the rights and responsibilities of consumers.
5. Demonstrate an understanding of Consumer Rights and problem associated in realizing these rights.

## **GROUP B: MARKETING AND HUMAN RESOURCE MANAGEMENT SEMESTER VIII – SOCIAL MEDIA MARKETING**

---

### **Learning Outcomes:**

- To know the importance of Social media Platforms in Digital Marketing era.
- To understand, the strategies to effective utilization of various social media platforms for effective marketing.

### **Course Outcome:**

After completing this course, the students will be able to:

1. Understand concepts of social media and emerging trends in social media platforms;
2. Identify the role of Facebook in Digital Marketing space;
3. Examine the role of LinkedIn in Digital Marketing space;
4. Analyze the role of Twitter, Instagram and Snapchat in Digital Marketing space;
5. Know the metrics associated with social media and their evaluation methods;

## **GROUP: B: MARKETING AND HUMAN RESOURCE**

### **MANAGEMENT**

#### **SEMESTER VIII – CUSTOMER RELATIONSHIP MANAGEMENT**

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##### **Objectives:**

- To enable the students understand the technological and human issues relating to implementation of Customer Relationship Management in the organizations.
- To understand the organizational needs, benefits and process of creating long-term value for individual customers.

##### **Course Outcomes:**

After completing this course, the students will be able to:

1. Understand the basic concepts of customer relationship management.
2. Examine marketing aspects in building Customer Relationship Management
3. Develop analytical Customer Relationship Management and Data Mining Tools and Techniques.
4. Understand basics of Sales Force Automation Functionality and Impact of CRM on Marketing Channels.
5. Apply and measure the Effectiveness of the Customer relationship management in e-Business.

**SRI V.S. SIVALINGAM CHETTIAR GOVERNMENT DEGREE  
COLLEGE(A)**

SULLURPET, TIRUPATI DISTRICT, ANDHRA PRADESH

ACCREDITED BY NAAC WITH A GRADE

**I B.COM (BFSI) (AEDP), 2025 – 2026, POs ,COs**

**SEMESTER-I**

**Major Course: Basic Business and Applied Law**

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### Course Objectives

focus on providing students with foundational knowledge of legal principles affecting business, enabling them to understand and apply relevant laws to business transactions, and develop the skills to analyze legal problems, communicate effectively in legal contexts, and recognize ethical considerations in the business environment. ess.

### Course Outcomes

- **Legal Knowledge and Application:** Students will gain an understanding of fundamental business laws, such as contract law, company law, partnership law, intellectual property, and consumer protection
- **Problem-Solving and Analysis:** The ability to analyze legal issues, apply legal principles to business scenarios, and reason through legal problems will be developed.
- **Communication Skills:** Students will learn to communicate effectively, using appropriate legal terminology to discuss and present legal and business concepts
- **Ethical Reasoning:** The course aims to sensitize students to ethical dilemmas in legal and professional contexts, fostering a sense of responsibility and integrity.
- **Understanding the Legal Environment:** Students will develop a comprehensive understanding of the legal environment in which businesses operate.
- **Exposure to Case Law:** Students will be introduced to case law studies, which provide practical examples and insights into the application of business laws.

## SEMESTER-I

### Major Course-Business Economics

---

#### Objectives:

- To understand the basic micro and macro-economic concepts and Theories applicable to business decision-making.
- To appraise the importance of economic approaches in business decision – making

#### Course Outcomes:

After completing the course the student will be able to

- Discuss the nature and scope of business economics
- Distinguish between Microeconomics and macroeconomics.
- Explain Marginal Utility theory
- Analyse the laws of Returns and returns to scale.
- Understand the different cost concepts.
- Establish the relationship between Lon run and Short run Cost curves.
- Enumerate and explain the different stages of the Business cycle.

## Semester -I

### Major Course: BANKING THEORY AND PRACTICE

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#### Learning Outcomes:

- To provide an understanding of the Indian banking system.
- To provide awareness of the day-to-day Banking operations.

#### Course Outcome:

**After completion of the course, the student will able to:**

- Explain the different types of commercial banks.
- Discuss the consequences of Liberalization on Banking Sector.
- Distinguish between Unit Banking and Branch Banking
- Analyse the innovations in Banking Sector.

- Appraise the general and specific relationship between Banker and Customer.
- Explain the different lending processes that are in vogue in a Bank.
- Evaluate the credit creation process
- Explain the provisions relating to Non-Performing assets.
- Discuss the role of banking in the Development of an Economy.

## **SEMESTER-I**

### **SEC 1: Accounts Assistant**

---

#### **Objectives:**

- To introduce and deepen understanding of accounting principles and financial statements.
- To provide advanced skills in payroll accounting and labour law compliance.
- To familiarise students with income tax returns, deductions, and tax compliance.
- To enhance practical applications in financial reporting, analysis, and compliance.
- To develop professional and employability skills necessary for a career in accounting.

#### **Course Outcomes:**

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

- Prepare detailed financial statements, including cash flow and fund flow statements.
- Perform payroll functions, including salary computations, deductions, PF, and ESI.  
Calculate tax liabilities, file income tax returns.
- Apply accounting principles for advanced financial reporting and ratio analysis.
- Demonstrate soft skills and professional ethics for accounting roles

## SEMESTER-II

### Core 4 –: Financial Analysis

---

#### Objectives:

- To determine the firm's earning capacity and how effectively it generates profits from its operations.
- To assess the company's ability to meet its short-term obligations and manage working capital effectively.
- To evaluate the long-term financial viability and stability of the business, specifically its ability to meet long-term debts and financial obligations.
- To understand how efficiently the company utilizes its assets and resources (e.g., inventory turnover, asset turnover ratios) to generate sales.
- To use past performance and current data to predict future earnings, cash flows, and growth prospects for the business.
- To identify potential financial risks (e.g., high debt levels, cash flow issues) and develop strategies to mitigate them effectively.

## SEMESTER-II

### Subject –: Investments – Risk and Returns

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#### Objectives:

- Comprehending the principle that higher potential returns typically involve accepting higher levels of risk, and vice versa.
- Learning to quantify investment uncertainty using various metrics such as standard deviation, beta, and Value at Risk (V at R).
- Understanding how to calculate expected returns and evaluate historical performance using methods like Return on Investment (ROI) and the Capital Asset Pricing Model (CAPM).
- Determining an investor's ability and willingness to assume risk based on factors such as financial goals, time horizon, and individual circumstances.

#### Course Outcome:

- The ability to define return as the potential profit or gain (or loss) from an investment, typically expressed as a percentage of the initial capital invested.
- The capacity to identify and differentiate between various types of investment risks, including:

- The difficulty of selling an investment quickly for cash without incurring a significant loss in value.
- Used to quantify volatility, or how much an investment's returns vary from its average (expected) return.
- The goal of applying the risk and return analysis to construct an optimized investment portfolio that aligns with specific financial objectives while achieving the best possible return for an acceptable level of risk.

## **SEMESTER-II**

### **SEC 2: Subject –: GST ASSISTANT**

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#### **Objectives:**

- To Give insights into the Goods and Services Tax (GST), its structure, and implementation.
- To provide knowledge of taxable events, compliance, and input tax credits.
- Legal and Regulatory Framework:
- To provide awareness of the key legal and regulatory frameworks governing financial services
- To gain insights into penalties, offenses, and inspection procedures under GST.

**Course Outcomes:** Upon successful completion of this course, students will be able to

- Explain the Structure of GST
- Discuss the differences between IGST, CGST, SGST, and UTGST.
- Identify Taxable Events:
- Analyze various GST taxable events, including supply and transactions between distinct persons.
- Manage Tax Records and File Returns
- Prepare and maintain tax records
- File GST returns using current digital tools.
- Accurately calculate and apply the input tax credit in financial transactions

## SEMESTER-II

### Core 6 : Financial Management

---

**Learning Outcomes:** After completion of this course, the student will be able to

- To gain a knowledge on availability of various sources of finance and markets for raising of funds.
- To evaluate the long term and short-term investment decisions
- To Evaluate the financing decisions by using different techniques of valuation.
- To evaluate the dividend Decisions in relation to wealth maximization.

**Course Objective:**

- To understand the role of financial manager in business
- To develop knowledge on various sources of finance.
- To know the significance of time value of money in decision making.
- To develop an ability to make certain important decisions relating to capital budgeting, cost of capital, capital structure, and working capital management for effective utilization of resources.

**SVSSC. GOVT. DEGREE COLLEGE (A), SULLURPET**

**Department of Botany**  
**COs and POs**

**SEMESTER-1**

**COURSE 1 : DIVERSITY OF MICROBES**

**Course Outcomes:** Students at the successful completion of the course will be able to:

- Illustrate the origin of life on Earth and diversity, multiplication and economic value of viruses.
- Deliberate the general characteristics, and economic importance of special groups of bacteria.
- Explain the structure, nutrition, reproduction and significance of eubacteria.
- Evaluate the interactions of soil microbes among themselves and with plants.
- Compile the value and applications of microbes in various fields.

**Semester-1**

**COURSE:2 DIVERSITY OF THALLOPHYTES**

**Course Outcomes:** Students at the successful completion of the course will be able to:

- Compile the general characteristics of algae and their significance in nature.
- Compare and contrast the characteristics of different groups of algae.
- Summarize the important features of fungi and their economic value.
- Distinguish different groups of fungi based on their characteristics.
- Elaborate the features and significance of lichens.

## II Semester

### Course 3: **DIVERSITY OF ARCHEGONIATES**

**Course Outcomes:** Students at the successful completion of the course will be able to:

- Compare and contrast the morphological, anatomical and reproductive features of some Bryophytes.
- Illustrate the morphological, anatomical and reproductive characteristics of some Pteridophytes.
- Infer the evolution of vasculature, heterospory, and seed habit in Pteridophytes.
- Compare and contrast the morphological, anatomical and reproductive features of some Gymnosperms.
- Evaluate the evolutionary trends in Gymnosperms

## II Semester

### Course 4: **ANATOMY AND EMBRYOLOGY OF ANGIOSPERMS,**

**Course Outcomes:** Students at the successful completion of the course will be able to:

- Categorize various tissues and evaluate their role in plants.
- Explain anomalous secondary growth in some plants and justify the value of timber plants.
- Summarize the events in micro-sporogenesis and development of male gametophyte.
- Illustrate the events in mega-sporogenesis and development of female gametophyte.
- Propose the incidents in embryogenesis and structure of seeds in angiosperms

## III Semester

### Course 5: **Vascular Plants (Pteridophytes, Gymnosperms and Taxonomy of Angiosperms)**

1. Infer the evolution of vasculature, heterospory and seed habit in Pteridophytes.
2. Illustrate the general characteristics of Gymnosperms along with their uses
3. Compare and contrast the vegetative and floral characteristics of some angiospermic families
4. Evaluate the economic value of plant species from the families under the study.
5. Defend the utility of evidences from different branches of botany in solving the taxonomic lineages of some species.

### III Semester

#### **Course 6: Plant Pathology and Plant Diseases**

**Course Outcomes:** Students at the successful completion of the course will be able to:

1. Identify major groups of plant pathogens and classify plant diseases.
2. Explain various stages in infection, plant pathogenesis and responsible factors.
3. Elaborate the preventive and control measures for plant diseases.
4. Discuss about some diseases of field crops and their management.
5. Discuss about some diseases of horticultural crops and their management.

### III Semester

#### **Course 7: Plant Breeding**

**Course Outcomes:** Students at the successful completion of the course will be able to:

1. Compare and contrast the methods of reproduction and also pollination mechanisms.
2. Design appropriate pollination method for a given crop plant.
3. Recommend the best possible breeding method for a crop species.
4. Propose the steps for production of hybrid varieties of crop plants.
5. Apply molecular techniques to develop a tailored plant variety.

### III Semester

#### **Course 8: Plant Biotechnology**

**Course Outcomes:** Students at the successful completion of the course will be able to:

1. Explain the scientific techniques and tools used in plant tissue culture laboratories.
2. Appraise the applications of plant tissue culture in agriculture and horticulture sectors.
3. Evaluate the role of transgenic plants in solving certain plant related beneficiary issues.
4. Justify the role of plant biotechnology in bioenergy and phytoremediation.
5. Judge the biosafety and bioethics related to plant biotechnology.

### IV Semester

#### **Course 9: Anatomy and Embryology of Angiosperms**

**Course Outcomes:**

1. Categorize various tissues and evaluate their role in plants.
2. Explain anomalous secondary growth in some plants and justify the value of timber plants.
3. Discuss the events in mega-sporogenesis and development of female gametophyte.
4. Propose the incidents in embryogenesis of an angiospermic plant species.

5. Compile the aspects of developmental and reproductive biology in plants.

#### **IV Semester**

##### **Course 10: Plant Ecology, Biodiversity and Phytogeography**

**Course Outcomes:** On completion of this course students will be able to:

1. Explain the interactions among the biotic and abiotic components in an ecosystem.
2. Summarize the characteristics of a population and a community.
3. Anticipate the environmental problems arising due to climate change.
4. Assess the value of biodiversity and choose appropriate conservation strategy.
5. Make a survey on the distribution of various plant groups in a specified geographical area.

#### **IV Semester**

##### **Course 11: Plant Resources and Utilization**

**Course Outcomes:** Students at the successful completion of the course will be able to:

1. Explain the significance of plants in human nutrition.
2. List out different plant products used by human beings.
3. Evaluate the commercial plant products and their utilization
4. Discuss the uses of medicinal and aromatic plants for human health care.
5. Appraise the importance of timber and non-timber products for value added products

#### **Semester-V**

##### **Course 12: Cell Biology and Genetics**

**Outcomes:** On completion of this course students will be able to:

1. Sketch the ultra-structural aspects of plant cell and its components.
2. Hypothesise the role of chromosomes in inheritance.
3. Justify the role of genes in inheritance of characters by descent.
4. Correlate the functions of the nucleic acid with their structure.
5. Explain the discoveries led to understand the fine structure of a gene.

## V-Semester

### Course13: Plant Physiology and Metabolism

**Outcomes:** On successful completion of this course, the students will be able to:

1. Comprehend the importance of water in plant life and mechanisms for transport of water and solutes in plants.
2. Explain the role of minerals in plant nutrition and their deficiency symptoms.
3. Interpret the role of enzymes in plant metabolism.
4. Hypothesise the light reactions and carbon assimilation processes responsible for synthesis of food in plants.
5. Analyze the biochemical reactions in relation to Nitrogen and lipid metabolisms.
6. Evaluate the physiological factors that regulate growth, development and flowering in plants.

## V Semester

### Course 14 B: Seed Technology

**Outcomes:** Students at the successful completion of the course will be able to:

1. Explain the causes for seed dormancy and methods to break dormancy.
2. Understand critical concepts of seed processing and seed storage procedures.
3. Acquire skills related to various seed testing methods.
4. Identify seed borne pathogens and prescribe methods to control them.
5. Understand the legislations on seed production and procedure of seed certification.

## V Semester

### Course 15 B: Plant Propagation Techniques

**Outcomes:** Students at the successful completion of the course will be able to:

1. Explain various plant propagation structures and their utilization.
2. Understand advantages and disadvantages of vegetative, asexual and sexual plant propagation methods.
3. Assess the benefits of asexual propagation of certain economically valuable plants using apomictics and adventive polyembryony.
4. Demonstrate skills related to vegetative plant propagation techniques such as cuttings, layering, grafting and budding.
5. Apply a specific macro-propagation technique for a given plant species.

## **PROGRAM OUTCOMES**

The students are expected to display the following outcomes after the completion of program

1. **Comprehensive Knowledge**: - Understanding in chosen discipline.
2. **Complex Problem Solving** :- Students should be able to demonstrate the ability to solve the different kinds of problem in real life situations
3. **Critical and Analytical Thinking** :- Students should analyze, evaluate and synthesize the knowledge from various sources.
4. **Creativity** :- Student should able to develop the ability to invent new techniques and solutions to solve problems effectively in unfamiliar situations.
5. **Communication Skills**:- The student should be able to demonstrate confidently the language skills in two or more languages.
6. **Research Ability** :- The student will acquire research temperament through observation, identification of problems and emerge with solutions.
7. **Team work & Leadership Skills** :- Students should effectively work in teams with Co-ordination and manifest leadership skills.
8. **Environment Consciousness and Sustainable Development** :-

Students should able to develop awareness towards environmental issues and contribute in sustainable development.

9. **Responsible Citizenship** :- Students should exhibit moral behavior and have a sense of social and responsibility to build a strong nation and to preserve culture and heritage of the nation.
10. **Technological Aptitude** :- Students Acquire technical knowledge and skills to meet the global needs.
11. **Financial Management and Entrepreneurship skills** :-  
Effective implementation of planning, mobilization and utilization of the financial resources becomes a good entrepreneur.
12. **Physical and Mental Well being** :- Students should practice healthy living habits for harmonious development of physical and mental wellness.

### **PROGRAMME SPECIFIC OUTCOMES (PSO's)**

**PSO1. Ecological principles**:- Analyze and interpret ecological relationships within plant communities and their environments, emphasizing biodiversity and conservation.

**PSO2 .Sustainable practices**:-Evaluate and promote sustainable practices in Agriculture, Horticulture and Natural resource management.

**PSO3.Communication skills**:-Communicate Botanical concepts and research findings effectively through oral and written presentations, discussions etc.

**POS4. Genetic and molecular botany**: Apply principles of genetics and molecular biology to study plant hereditary, variation and biotechnology applications.

**PSO5: Critical Thinking and problems solving**: Employ critical thinking and problem solving skills to address contemporary issues in botany and environment sciences.

**SEMESTER-1,**

**COURSE-1 : Diversity of Microbes**  
**CO – PO MAPPING**

	PO 1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO1	PO12	PO13	PO14	PO15
CO1	3														
CO2			3												
CO3								3							
CO4						2									
CO5														3	
OVERALL	3	-	3	-	-	2	-	3	-	-	-	-	-	3	-
AVERAGE	2.8														

**SEMESTER-1**

**COURSE:2 Diversity of Thallophytes**  
**CO – PO MAPPING**

	PO 1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PO13	PO14
CO1	3													
CO2		3												
CO3						3								
CO4				3										
CO5														
OVERALL	3	3	-	3	-	3	-	-	-	-	-	-	-	-
AVERAGE	3													

**II Semester**

### Course 3: Diversity of Archegoniates

#### CO – PO MAPPING

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PO13	PO14
CO1													3	
CO2	2													
CO3				2										
CO4			3											
CO5														3
OVERALL	2	-	3	2	-	-	-	-	-	-	-	-	3	3
AVERAGE	2.6													

### II Semester

### Course 4: Anatomy and Embryology of Angiosperms

#### CO – PO MAPPING

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PO13	PO14
CO1	3													
CO2													3	
CO3								2						
CO4		2												
CO5						3								
OVERALL	3	2	-	-	-	3	-	2	-	-	-	-	3	-
AVERAGE	2.6													

### III Semester

### Course 5: Vascular Plants

**(Pteridophytes, Gymnosperms and Taxonomy of Angiosperms)**  
**CO – PO MAPPING**

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PO13	PO14	PO18
CO1			3												
CO2	3														
CO3		2													
CO4								2						3	
CO5						3									
OVERALL	3	2	3			3		2						3	
AVERAGE	2.7														

**III Semester**  
**Course 6: Plant Pathology and Plant Diseases**  
**CO – PO MAPPING**

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PO13	PO14
CO1	3													
CO2			3											
CO3				3										
CO4						3								
CO5														3
OVERALL	3	-	3	3	-	3	-	-	-	-	-	-	-	3
AVERAGE	3													

**III Semester**  
**Course 7: Plant Breeding**  
**CO – PO MAPPING**

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PO13	PO14
CO1			2											
CO2				3										
CO3						2								
CO4														
CO5														3
OVERALL	-	-	2	3	-	2	-	-	-	-	-	-	-	3
AVERAGE	2.6													

**III Semester**  
**Course 8: Plant Biotechnology**

**CO – PO MAPPING**

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PO13	PO14	PO15
CO1										3					
CO2														2	
CO3		3													
CO4						3									
CO5				3											
OVERALL	-	3	-	3	-	3	-	-	-	3	-	-	-	2	-
AVERAGE	2.8														

**IV Semester**  
**Course 9: Anatomy and Embryology of Angiosperms**

**CO – PO MAPPING**

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PO13	PO14
CO1			3											
CO2	2													
CO3		2												
CO4								2						
CO5													3	
OVERALL	2	2	3	-	-	-	-	2	-	-	-	-	3	-
AVERAGE	2.4													

**IV Semester**  
**Course 10: Plant Ecology, Biodiversity and Phytogeography**

**CO – PO MAPPING**

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PO13	PO14
CO1			3											
CO2													3	
CO3		3												
CO4				3										
CO5							3							
OVERALL	-	3	3	3	-	-	3	-	-	-	-	-	3	-
AVERAGE	3													

**IV Semester**  
**Course 11: Plant Resources and Utilization**

**CO – PO MAPPING**

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PO13	PO14
CO1			3											
CO2	3													
CO3													2	
CO4														
CO5								2						
OVERALL	3	-	3	-	-	-	-	2	-	-	-	-	2	-
AVERAGE	2.4													

**Semester – V**  
**Course :12. Cell Biology and Genetics**

**CO – PO MAPPING**

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PO13	PO14
CO1	3													
CO2				3										
CO3			3											
CO4						3								
CO5														
OVERALL	3	-	3	3	-	3	-	-	-	-	-	-	-	-
AVERAGE	3													

**SEMESTER-V**  
**COURSE: 13. Plant Physiology and Metabolism**  
**CO – PO MAPPING**

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PO13	PO14
CO1	3													
CO2			3											
CO3		3												
CO4				3										
CO5														
OVERALL	3	3	3	3	-	-	-	-	-	-	-	-	-	-
AVERAGE	3													

**SEMESTER-V**  
**COURSE: 14. Seed Technology**  
**CO – PO MAPPING**

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PO13	PO14
CO1	3													
CO2			3											
CO3		3												
CO4				3										
CO5														
OVERALL	3	3	3	3	-	-	-	-	-	-	-	-	-	-
AVERAGE	3													

**SEMESTER-V**  
**COURSE: 15. Plant Propagation Techniques**  
**CO – PO MAPPING**

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PO13	PO14
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**SRI V.S.SIVALINGAM CHETTIAR GOVERNMENT DEGREE COLLEGE (A)**

**SULLURPETA-TIRUPATHI DISTRICT**

**DEPARTMENT OF ZOOLOGY- POs and Cos**

**PROGRAMME OUTCOMES OF B.SC.(B) ZOOLOGY (MINOR)**

**PO 1: Knowledge of Animal Diversity**

Students gain a comprehensive understanding of the classification, structure, and functions of animals from simple to complex organisms.

**PO 2: Understanding of Biological Processes**

Students learn key concepts such as physiology, genetics, evolution, ecology, and behavior of animals.

**PO 3: Laboratory and Field Skills**

Ability to perform experiments, handle laboratory equipment, conduct dissections, and carry out field studies for data collection and analysis.

**PO 4: Environmental and Conservation Awareness**

Understanding of biodiversity, wildlife conservation, environmental protection, and sustainable use of natural resources.

**PO5 : Research and Analytical Skills**

Development of scientific thinking, problem-solving ability, data interpretation, and basic research skills useful for higher studies and careers in life sciences.

**PROGRAMME SPECIFIC OUTCOMES OF B.SC. (B) ZOOLOGY (MINOR)**

**PS01: Understanding Animal Diversity**

Students will gain comprehensive knowledge of the classification, morphology, and evolutionary relationships of animals from simple to complex forms.

**PS02: Knowledge of Physiology and Biochemistry**

Students will understand the structure and function of animal systems, including digestion, respiration, circulation, and metabolism.

**PS03: Application of Laboratory Techniques**

Students will develop practical skills in microscopy, dissection, specimen preservation, and basic laboratory techniques used in zoological studies.

**PS04: Environmental and Ecological Awareness**

Students will understand ecological principles, biodiversity conservation, wildlife management, and the impact of human activities on ecosystems.

**PS05: Research and Analytical Skills**

Students will be able to analyze biological data, conduct basic research, and apply scientific reasoning to solve problems related to animal sciences.

## SEMESTER-III

### COURSE 1: ANIMAL DIVERSITY-I BIOLOGY OF NON-CHORDATES

- C01:** Describe concept of animal kingdom classification and general characters of Protozoa
- C02:** Classify Porifera and Coelenterate with taxonomic keys
- C03:** Classify Phylum Platy & Nematelminths using examples, parasitic adaptation
- C04:** Describe Phylum Annelida & Arthropoda using examples and economic importance of vermicomposting & economic importance of insects.
- C05:** Describe Mollusca, Echinodermata & Hemichordata with suitable examples in relation to the  
Phylogeny

## SEMESTER-IV

### COURSE 2: ANIMAL DIVERSITY-II BIOLOGY OF CHORDATES

- C01:** Describe general taxonomic rules on animal classification of chordates
- C02:** Classify Protochordata to Mammalia with taxonomic keys
- C03:** Understand Mammals with specific structural adaptations
- C04:** Understand the significance of dentition and evolutionary significance
- C05:** Understand the origin and evolutionary relationship of different phyla from Protochordata to Mammalia.

## SEMESTER-V

### COURSE 3: CELL & MOLECULAR BIOLOGY

The overall course outcome is that the student shall develop deeper understanding of what life is and

how it functions at cellular level. This course will provide students with a deep knowledge in Cell and

molecular biology by the completion of the course the graduate shall be able to –

- C01:** Understand the basic unit of the living organisms and to differentiate the organisms by their  
cell structure.
- C02:** Describe fine structure and function of plasma membrane and different cell organelles of eukaryotic cell.
- C03:** Explain the cell cycle and bioenergetics of the cell
- C04:** Understand the central dogma of molecular biology and flow of genetic information from DNA  
to proteins

**C05:** Understand the gene expression phenomenon and biological importance of biomolecules

## **SEMESTER-V**

### **COURSE 4: GENETICS**

By the completion of the course the graduate should be able to –

**C01:** To understand the history of genetics, gain knowledge basic terminology of genetics

**C02:** To acquire knowledge on interaction of genes, various types of inheritance patterns existing in

animals with reference to non-Mendelian inheritance.

**C03:** To acquire knowledge on chromosomal inheritance

**C04:** Acquiring in-depth knowledge on various aspects of genetics involved in sex determination,

**C05:** Acquiring in-depth knowledge on human karyotyping, pedigree analysis and chromosomal disorders concepts of proteomics and genomics

## **SEMESTER-VI**

### **COURSE 5: ANIMAL PHYSIOLOGY: LIFE SUSTAINING SYSTEMS**

The overall course outcome is that the student shall develop deeper understanding of concepts of

Physiology. This course will provide students with a deep knowledge in physiology by the completion of the course the graduate shall be able to –

**C01:** Understand the physiology of digestion and hormonal control of digestion

**C02:** Develop a comprehensive picture of respiratory physiology

**C03:** Acquire knowledge on the Renal physiology

**C04:** Understand the physiology of Nerve and muscle

**C05:** Understand the physiology of heart

## **SEMESTER-VI**

### **COURSE 6: EVOLUTION AND ZOO GEOGRAPHY**

The overall course outcome is that the student shall develop deeper understanding of what life is

and how it functions at cellular level. This course will provide students with a deep knowledge in Evolution and zoo geography, by the completion of the course the graduate shall be able to –

**C01:** Understand the principles and forces of evolution of life on earth, the process of evolution of new species and apply the same to develop new and advanced varieties of animals

**C02:** Explain the different evidences of evolution

**C03:** Understand the theories of evolution

**C04:** Explain the various tools for evolution

**C05:** Map the distribution of animals according to zoological realms

**SRI V.S.SIVALINGAM CHETTIAR GOVERNMENT DEGREE COLLEGE (A)**  
**SULLURPETA-TIRUPATHI DISTRICT**  
**DEPARTMENT OF MLT - POs and COs**

**PROGRAMME OUTCOMES OF B.VoC (MLT) (MAJOR)**

**PO 1: Fundamental Knowledge in Medical Laboratory Science**

Graduates acquire strong theoretical and practical knowledge in clinical laboratory disciplines such as hematology, microbiology, biochemistry, and pathology.

**PO 2: Technical and Analytical Skills**

Ability to perform laboratory tests accurately, operate modern diagnostic equipment, and analyze results for disease diagnosis and monitoring.

**PO 3: Application of Laboratory Techniques**

Capability to apply standard laboratory procedures and techniques in real clinical settings while maintaining precision and reliability.

**PO 4: Ethics and Professional Responsibility**

Understanding of medical ethics, patient confidentiality, biosafety, and adherence to quality control standards in laboratory practices.

**PO 5: Communication and Teamwork Skills**

Ability to effectively communicate with healthcare professionals and work collaboratively as part of a multidisciplinary healthcare team.

**PROGRAMME SPECIFIC OUTCOMES OF B.VoC (MLT) (MAJOR)**

**PSO1: Clinical Laboratory Skills**

Apply knowledge of clinical laboratory techniques to perform routine and advanced diagnostic tests in hematology, biochemistry, microbiology, and pathology.

**PSO 2: Sample Collection and Handling**

Demonstrate proficiency in proper collection, labeling, transportation, and storage of biological specimens while maintaining quality and safety standards.

**PSO 3: Laboratory Equipment Handling**

Operate, calibrate, and maintain laboratory instruments and equipment accurately,

ensuring reliability of test results.

#### **PSO 4: Quality Control and Safety Measures**

Implement quality assurance protocols and follow biosafety guidelines to ensure accuracy, precision, and safe laboratory practices.

#### **PSO 5: Data Analysis and Reporting**

Analyze laboratory results, interpret findings, and assist healthcare professionals in diagnosis by preparing accurate and timely reports.

### **I-SEMESTER**

#### **Course I- INTRODUCTION TO CLASSICAL BIOLOGY**

**CO 1:** Learn the principles of classification and preservation of biodiversity

**CO 2:** Understand the plant anatomical ,physiological and reproductive processes.

**CO 3:**

Knowledge on animal classification, physiology, embryonic development and their economic importance.

**CO 4:** Outline the cell components, cell processes like cell division, heredity and molecular processes.

**CO 5:**

Comprehend the chemical principles in shaping and driving them from molecules and life processes.

### **I-SEMESTER**

#### **Course:2 – INTRODUCTION TO APPLIED BIOLOGY**

**CO1:** Learn the history, ultrastructure, diversity and importance of microorganisms.

**CO2:** Understand the structure and functions of macromolecules.

**CO3:** Knowledge on biotechnology principles and its applications in food and medicine.

**CO4:** Outline the techniques, tools and their uses in diagnosis and therapy.

**CO5:** Demonstrate the bioinformatics and statistical tools in comprehending the complex biological data.

### **SEMESTER-II**

#### **Course:3 HUMAN ANATOMY-I**

**CO1:** Describe the basic structure and organization of the human body, including cells, tissues, and organ systems.

**CO2:** Explain the anatomy of major body systems such as skeletal, muscular, and nervous systems.

**CO3:** Identify and label different anatomical structures using models, charts, and specimens.

**CO4:** Understand the relationship between structure and function of various organs and systems in the human body.

**CO5:** Apply anatomical knowledge in clinical and laboratory settings relevant to Medical Laboratory Technology (MLT).

## **SEMESTER – II**

### **Course:4 HUMANPHYSIOLOGY-I**

#### **CO1: Understand basic physiological principles**

Explain the fundamental concepts of human physiology and homeostasis in the human body.

#### **CO2: Describe functions of major organ systems**

Demonstrate knowledge of the structure and functions of systems such as the circulatory, respiratory, and nervous systems.

#### **CO3: Explain blood and cardiovascular physiology**

Analyze the composition and functions of blood, cardiac cycle, and regulation of heart rate and blood pressure.

#### **CO4: Interpret respiratory and nervous system functions**

Describe the mechanism of respiration and the role of the nervous system in coordination and control.

#### **CO5: Apply physiological knowledge in laboratory settings**

Perform and interpret basic physiological experiments relevant to medical laboratory technology.

## **SEMESTER-II**

### **Minor Course1: Clinical Laboratory Practices**

**CO1:** Understand the organization, workflow, and safety protocols of a clinical

laboratory, including biosafety and waste management practices.

**CO2:** Perform routine laboratory procedures such as sample collection, handling, processing, and preservation following standard operating procedures (SOPs).

**CO3:** Apply knowledge of quality control and quality assurance to ensure accuracy and reliability of laboratory test results.

**CO4:** Operate and maintain basic laboratory instruments and equipment used in hematology, biochemistry, microbiology, and pathology labs.

**CO5:** Demonstrate proper documentation, reporting, and ethical practices in clinical laboratory settings, including patient confidentiality and data management.

### **SEMESTER III**

#### **MAJOR COURSE 5: HUMAN ANATOMY –II**

**CO1: Understand regional anatomy:**

Describe the structure and organization of major organ systems including cardiovascular, respiratory, digestive, urinary, and reproductive systems.

**CO2: Identify anatomical structures:**

Recognize and label organs, tissues, and body parts through models, charts, and specimens.

**CO3: Explain organ functions and relationships:**

Correlate anatomical structures with their physiological functions and interrelationships between different systems.

**CO4: Demonstrate practical knowledge:**

Perform basic anatomical identification in laboratory settings using specimens, slides, and imaging techniques.

**CO5: Apply anatomical knowledge in clinical context:**

Relate anatomical concepts to clinical conditions, diagnostic procedures, and laboratory practices relevant to Medical Laboratory Technology (MLT).

### **SEMESTER III**

#### **MAJOR COURSE 6 : HUMAN PHYSIOLOGY II**

**CO1: Understand advanced physiological mechanisms**

Explain the functioning of major body systems such as cardiovascular, respiratory,

renal, and endocrine systems.

**CO2: Analyze regulation and homeostasis**

Describe mechanisms of body fluid balance, acid-base balance, and hormonal regulation maintaining homeostasis.

**CO3: Interpret physiological parameters**

Correlate normal and abnormal physiological values (e.g., blood pressure, ECG, lung volumes) with clinical conditions.

**CO4: Apply knowledge in laboratory investigations**

Perform and interpret basic physiological tests relevant to clinical laboratory practice.

**CO5: Develop clinical reasoning skills**

Relate physiological concepts to disease processes and assist in diagnosis and patient monitoring.

**SEMESTER III**

**MAJOR COURSE 7 : FUNDAMENTALS OF BIOCHEMISTRY**

**CO1: Understand basic biochemical concepts**

Students will be able to explain the structure, properties, and functions of major biomolecules such as carbohydrates, proteins, lipids, and nucleic acids.

**CO2: Describe metabolic pathways**

Students will gain knowledge of important metabolic processes including glycolysis, Krebs cycle, and lipid and protein metabolism.

**CO3: Apply enzyme kinetics and functions**

Students will be able to understand enzyme classification, mechanism of action, and factors affecting enzyme activity.

**CO4: Interpret biochemical laboratory tests**

Students will develop skills to understand the principles and clinical significance of common biochemical tests used in diagnosis.

**CO5: Understand clinical relevance of biochemistry**

Students will be able to correlate biochemical changes with disease conditions such as diabetes, liver disorders, and metabolic abnormalities.

## SEMESTER III

### MAJOR COURSE 8: FUNDAMENTALS OF MICROBIOLOGY

**CO1:** Understand basic concepts of microbiology including classification, morphology, and physiology of microorganisms such as bacteria, viruses, fungi, and parasites.

**CO2:** Demonstrate aseptic techniques and sterilization methods used in microbiology laboratories to prevent contamination and ensure safety.

**CO3:** Perform basic microbiological techniques such as staining (Gram staining), culture methods, and microscopic examination of microorganisms.

**CO4:** Identify common pathogenic microorganisms and understand their role in causing human diseases and infections.

**CO5:** Apply knowledge of microbial growth and control including the use of disinfectants, antibiotics, and environmental factors affecting microbial growth.

## SEMESTER III

### MINOR COURSE 2: MEDICAL BACTERIOLOGY AND MYCOLOGY

#### **CO1: Understand Microbial Classification**

Explain the morphology, classification, and characteristics of medically important bacteria and fungi.

#### **CO2: Perform Laboratory Techniques**

Demonstrate skills in specimen collection, staining (Gram staining, fungal staining), culture, and identification of bacterial and fungal pathogens.

#### **CO3: Identify Pathogenic Organisms**

Differentiate between normal flora and pathogenic microorganisms causing bacterial and fungal infections.

#### **CO4: Apply Diagnostic Methods**

Interpret culture results, biochemical tests, and microscopy findings for accurate diagnosis of bacterial and mycological infections.

#### **CO5: Practice Infection Control and Safety**

Apply biosafety guidelines, sterilization techniques, and infection control measures in microbiology laboratories

## **SEMESTER-IV**

### **MAJOR COURSE 9: BIO CHEMICAL METABOLISM**

#### **CO1: Understand metabolic pathways**

Explain the major biochemical pathways of metabolism, including carbohydrate, protein, and lipid metabolism.

#### **CO2: Interpret enzyme functions and regulation**

Describe the role of enzymes in metabolic reactions and analyze mechanisms of enzyme regulation in the human body.

#### **CO3: Analyze energy production processes**

Illustrate processes such as glycolysis, Krebs cycle, and oxidative phosphorylation in cellular energy generation.

#### **CO4: Correlate metabolism with diseases**

Identify metabolic disorders (e.g., diabetes mellitus, inborn errors of metabolism) and relate them to biochemical abnormalities.

#### **CO5: Apply laboratory techniques in metabolism studies**

Perform and interpret biochemical tests used in assessing metabolic functions and disorders in clinical laboratory settings.

## **SEMESTER-IV**

### **MAJOR COURSE 10: CLINICAL MICROBIOLOGY**

**CO1:** Understand the principles of clinical microbiology, including morphology, classification, and identification of microorganisms causing human diseases.

**CO2:** Perform proper collection, transport, and processing of clinical specimens (blood, urine, sputum, stool, etc.) for microbiological analysis.

**CO3:** Apply staining techniques (Gram staining, Ziehl-Neelsen staining) and culture methods for isolation and identification of pathogens.

**CO4:** Conduct antimicrobial susceptibility testing and interpret results to guide appropriate antibiotic therapy.

**CO5:** Demonstrate laboratory safety, sterilization, and infection control practices while handling infectious materials in a clinical laboratory.

## **SEMESTER IV**

## **MAJOR COURSE 11: GENERAL PATHOLOGY**

### **CO1: Understand basic pathological concepts**

Explain the fundamental concepts of disease, including etiology, pathogenesis, and morphological changes in tissues.

### **CO2: Identify cellular adaptations and injury**

Describe and differentiate various cellular adaptations, reversible and irreversible cell injury, necrosis, and apoptosis.

### **CO3: Analyze inflammation and healing processes**

Explain the mechanisms of acute and chronic inflammation, tissue repair, regeneration, and fibrosis.

### **CO4: Classify and interpret hemodynamic disorders**

Understand and interpret pathological conditions such as edema, hemorrhage, thrombosis, embolism, and shock.

### **CO5: Recognize neoplasia and tumor pathology**

Differentiate between benign and malignant tumors, including their characteristics, growth patterns, and basic diagnostic features.

## **SEMESTER IV**

### **MINOR COURSE 3: PARASITOLOGY**

#### **CO1: Understand basic concepts of parasitology**

Students will be able to explain the classification, morphology, life cycles, and host–parasite relationships of medically important parasites.

#### **CO2: Identify common human parasites**

Students will be able to identify protozoa, helminths, and ectoparasites using microscopic examination of clinical samples.

#### **CO3: Perform laboratory diagnostic techniques**

Students will be able to carry out stool examination, blood smear preparation, concentration methods, and staining techniques for detection of parasites.

#### **CO4: Interpret laboratory findings**

Students will be able to analyze and interpret results of parasitological

investigations for accurate diagnosis of parasitic infections.

**CO5: Apply knowledge in prevention and control**

Students will be able to describe modes of transmission, preventive measures, and control strategies for parasitic diseases.

**SEMESTER IV**

**MINOR COURSE:4 HEMATOLOGY AND BLOOD BANKING – I**

**CO1: Understand hematological principles**

Explain the structure and function of blood cells, hematopoiesis, and the physiology of blood and its components.

**CO2: Perform routine hematological tests**

Demonstrate proficiency in laboratory techniques such as hemoglobin estimation, RBC/WBC counts, ESR, hematocrit, and peripheral smear examination.

**CO3:Identify hematological disorders**

Interpret laboratory findings to diagnose conditions like anemia, leukemia, clotting disorders, and other blood-related diseases.

**CO4: Apply blood banking procedures**

Understand blood grouping, cross-matching, component preparation, storage, and safe transfusion practices.

**CO5: Ensure quality control and safety**

Follow standard laboratory protocols, quality assurance measures, and biosafety guidelines in hematology and blood bank laboratories.

**SEMESTER V**

**12A: IMMUNOLOGY**

**CO1:** Understand basic immunological concepts including types of immunity, antigens, antibodies, and the functioning of the immune system.

**CO2:** Explain immune responses such as humoral and cell-mediated immunity, antigen-antibody reactions, and hypersensitivity reactions.

**CO3:** Perform common immunological tests like ELISA, agglutination, precipitation, and rapid diagnostic tests used in clinical laboratories.

**C04:** Interpret immunological test results for diagnosis of infectious diseases, autoimmune disorders, and immunodeficiency conditions.

**C05:** Apply laboratory safety and quality control measures while handling specimens and performing immunological procedures.

## **SEMESTER V**

### **12B: SEROLOGY**

#### **C01: Understand Principles of Serology**

Explain the basic concepts of antigen–antibody reactions and immune response involved in serological testing.

#### **C02: Perform Serological Tests**

Demonstrate proficiency in performing common serological tests such as agglutination, precipitation, ELISA, and rapid diagnostic tests.

#### **C03: Identify Infectious Diseases**

Analyze serological results to aid in the diagnosis of infectious diseases like HIV, hepatitis, dengue, and syphilis.

#### **C04: Handle and Process Specimens**

Apply proper techniques for collection, handling, storage, and processing of blood and serum samples for serological analysis.

#### **C05: Ensure Quality Control and Safety**

Implement laboratory quality control measures and follow biosafety guidelines during serological procedures.

## **SEMESTER V**

### **13A: HISTOPATHOLOGY**

**C01:** Understand tissue processing techniques including fixation, dehydration, clearing, embedding, sectioning, and staining methods used in histopathology.

**C02:** Perform microtomy and staining procedures such as Hematoxylin and Eosin (H&E) staining and special stains for microscopic examination of tissues.

**C03:** Identify normal and pathological tissue structures under the microscope, distinguishing between benign and malignant changes.

**C04:** Demonstrate knowledge of histopathological laboratory safety and quality control, including proper handling of specimens and chemicals.

**C05:** Assist in diagnosis by correlating histological findings with clinical conditions, contributing to accurate disease identification and reporting.

## **SEMESTER V**

### **13B: CYTO PATHOLOGY**

**C01: Understand basic concepts of cytopathology**

Students will be able to explain the principles, scope, and significance of cytopathology in disease diagnosis.

**C02: Perform sample collection and preparation**

Students will acquire skills in proper collection, fixation, staining (e.g., Pap stain), and slide preparation of cytological specimens.

**C03: Identify normal and abnormal cellular features**

Students will be able to differentiate between normal, inflammatory, precancerous, and malignant cells under the microscope.

**C04: Assist in diagnostic cytological procedures**

Students will gain practical knowledge to assist in procedures like fine needle aspiration cytology (FNAC) and exfoliative cytology.

**C05: Maintain laboratory safety and quality control**

Students will understand and apply standard laboratory safety protocols, quality assurance, and documentation practices in cytopathology labs.

## **SEMESTER V**

### **14: CLINICAL BIO CHEMISTRY**

**C01: Understand biochemical principles**

Explain the fundamentals of clinical biochemistry, including metabolism of carbohydrates, proteins, lipids, and enzymes.

**C02: Perform biochemical tests**

Demonstrate the ability to carry out routine biochemical investigations such as blood glucose, urea, creatinine, lipid profile, and liver function tests.

### **CO3: Operate laboratory instruments**

Handle and maintain laboratory equipment like spectrophotometers, autoanalyzers, and centrifuges used in clinical biochemistry labs.

### **CO4: Interpret laboratory results**

Analyze and interpret biochemical test results to assist in the diagnosis and monitoring of diseases such as diabetes, renal disorders, and liver diseases.

### **CO5: Ensure quality control and safety**

Apply quality control measures and follow standard laboratory safety protocols to ensure accuracy and reliability of test results.

## **SEMESTER V**

### **15: PATHOLOGY-II**

**CO1:** Understand basic concepts of pathology including etiology, pathogenesis, and morphological changes associated with diseases.

**CO2:** Identify and differentiate normal and abnormal tissue structures through gross and microscopic examination.

**CO3:** Perform routine pathological laboratory techniques such as tissue processing, staining (e.g., H&E), and slide preparation.

**CO4:** Analyze pathological specimens to assist in the diagnosis of various diseases including inflammatory, neoplastic, and degenerative conditions.

**CO5:** Maintain laboratory safety and quality control standards while handling biological samples and equipment.

## **SEMESTER V**

### **PAPER 5: CLINICAL LABORATORY OPERATIONS & LABORATORY ETHICS**

#### **CO1: Understand Laboratory Operations**

Explain the organization, workflow, and management of clinical laboratory services, including sample collection, processing, and reporting.

#### **CO2: Apply Quality Control Measures**

Implement quality assurance (QA) and quality control (QC) practices to ensure accuracy, reliability, and standardization of laboratory results.

#### **CO3: Demonstrate Laboratory Safety Practices**

Follow biosafety guidelines, infection control measures, and proper handling of hazardous materials in a clinical laboratory setting.

**CO4: Adhere to Professional Ethics**

Apply ethical principles such as patient confidentiality, informed consent, and professional conduct in laboratory practice.

**CO5: Maintain Documentation and Accreditation Standards**

Prepare and manage laboratory records, follow standard operating procedures (SOPs), and comply with accreditation requirements (e.g., NABL guidelines).

**SEMESTER V**

**PAPER 6: ADVANCED BIO CHEMICAL TESTING TECHNIQUES**

**CO1: Understand advanced biochemical principles**

Apply theoretical knowledge of advanced biochemical reactions and analytical methods used in clinical diagnostics.

**CO2: Perform specialized biochemical tests**

Competently carry out advanced investigations such as enzyme assays, hormone analysis, and electrolyte estimation using automated analyzers.

**CO3: Operate and maintain sophisticated instruments**

Demonstrate proficiency in handling advanced laboratory equipment like spectrophotometers, auto analyzers, and immunoassay systems.

**CO4: Interpret and validate test results**

Analyze biochemical test outcomes accurately and correlate findings with clinical conditions for diagnostic significance.

**CO5: Ensure quality control and laboratory safety**

Implement internal and external quality control measures while adhering to biosafety and standard laboratory protocols.

**SRI V.S. SIVALINGAM CHETTIAR GOVERNMENT DEGREE COLLEGE**

**SULLURPETA, TIRUPATI DISTRICT, ANDHRA PRADESH**

**DEPARTMENT OF PHYSICS**

**SEMESTER-1**

**INTRODUCTION TO MATHEMATICAL PHYSICS**

**COURSE OUTCOMES:**

**On successful completion of this course, the students will be able to:**

- **Understand and apply basic mathematical methods used in physics such as algebra, calculus, and differential equations.**
- **Solve physical problems using mathematical techniques, including ordinary and partial differential equations.**
- **Apply vector algebra and vector calculus to analyze physical quantities like force, velocity, and fields.**
- **Use matrices and linear algebra to represent and solve systems of equations in physical applications.**
- **Interpret mathematical results in terms of physical concepts and understand their significance in physics.**
- **Develop problem-solving skills by connecting mathematical methods with real physical systems.**
- **Use series expansions and special functions commonly used in physics to simplify and solve complex problems.**

## **MECHANICS AND PROPERTIES OF MATTER**

### **COURSE OUTCOMES:**

**On successful completion of this course, students will be able to:**

- **Understand the fundamentals of mechanics, including motion, force, work, energy, and momentum, and apply Newton's laws to physical systems.**
- **Analyze different types of motion, such as linear, circular, and rotational motion, using appropriate mathematical and physical principles.**
- **Explain the mechanical properties of matter, including elasticity, stress, strain, and elastic constants.**
- **Describe fluid properties and behavior, including pressure, viscosity, surface tension, and fluid flow.**
- **Apply principles of mechanics and material properties to solve practical and numerical problems in physics and engineering.**
- **Develop problem-solving and analytical skills through the application of theoretical concepts to real-world situations.**

**SEMESTER-II**  
**WAVES AND OPTICS**

**COURSE OUTCOMES:**

On successful completion of this course, the student will be able to:

- Understand the fundamentals of oscillations and waves, including simple harmonic motion (SHM) and different types of wave motion in various media.
- Analyze damped, driven, and coupled harmonic oscillators and explain their behavior using mathematical models and differential equations.
- Apply Fourier series and wave equations to describe wave propagation and understand the significance of electromagnetic waves.
- Explain interference phenomena of light, including experiments such as Young's double-slit experiment, Newton's rings, and interferometers.
- Describe diffraction, polarization, and other optical phenomena using the wave theory of light and apply these concepts to optical instruments.
- Perform experiments and measurements in optics laboratories, such as determining the wavelength of light using Newton's rings or Fresnel biprism .

## HEAT AND THERMODYNAMICS

### COURSE OUTCOMES:

On successful completion of this course, the student will be able to:

- Understand the basic concepts of heat, temperature, and thermal expansion in different materials.
- Apply the principles of heat transfer such as conduction, convection, and radiation to physical systems.
- Explain the laws of thermodynamics and their applications in physical and engineering processes.
- Analyze thermodynamic systems using concepts such as work, heat, internal energy, and entropy.
- Evaluate the efficiency and performance of heat engines, refrigerators, and thermodynamic cycles.

## **SEMESTER-III**

### **OPTICS**

#### **CORSE OUTCOMES:**

**On successful completion of this course, the student will be able to:**

- **Understand the fundamental principles of light and the nature of electromagnetic waves.**
- **Explain the phenomena of interference of light and analyze interference patterns in different optical setups.**
- **Describe diffraction of light and evaluate diffraction patterns produced by single slit, double slit, and diffraction gratings.**
- **Understand the concept of polarization of light and explain methods of producing and analyzing polarized light.**
- **Apply the principles of optics to study optical instruments such as microscopes, telescopes, and spectrometers.**

## HEAT AND THERMODYNAMICS

### COURSE OUTCOMES:

On successful completion of this course, the student will be able to:

- Understand the fundamental principles of light and the nature of electromagnetic waves.
- Explain the phenomena of interference of light and analyze interference patterns in different optical setups.
- Describe diffraction of light and evaluate diffraction patterns produced by single slit, double slit, and diffraction gratings.
- Understand the concept of polarization of light and explain methods of producing and analyzing polarized light.
- Apply the principles of optics to study optical instruments such as microscopes, telescopes, and spectrometers.

## **ELECTRONIC DEVICES AND CIRCUITS**

### **COURSE OUTCOMES:**

**On successful completion of this course, the student will be able to:**

- **Understand semiconductor fundamentals such as energy bands, charge carriers, and the working principles of PN junction diodes.**
- **Analyze the characteristics of semiconductor devices like diodes, Zener diodes, BJTs, and FETs used in electronic circuits.**
- **Explain the operation of rectifiers, filters, and voltage regulators used in power supply circuits.**
- **Design and analyze transistor amplifier circuits including common emitter, common base, and common collector configurations.**
- **Evaluate the performance of electronic circuits using different biasing techniques and small-signal models.**
- **Apply electronic devices in practical circuits such as switching circuits and simple amplifier applications.**

## **ANALOG AND DIGITAL ELECTRONICS**

### **COURSE OUTCOMES:**

**On successful completion of this course, the student will be able to:**

- **Understand the basic concepts of analog and digital electronic components, including diodes, transistors, and logic gates.**
- **Analyze the operation and characteristics of analog circuits such as rectifiers, amplifiers, and transistor circuits.**
- **Explain the working principles of digital electronics, including number systems, Boolean algebra, and logic gates.**
- **Design and analyze combinational and sequential digital circuits like adders, multiplexers, flip-flops, and counters.**
- **Apply analog and digital electronic principles to solve practical circuit problems and basic electronic system design.**

## **SEMESTER-IV**

### **ELECTRICITY AND MAGNETISEM**

#### **COURSE OUTCOMES:**

**On successful completion of this course, the student will be able to:**

- **Understand the basic concepts of electrostatics, including Coulomb's law, electric field, electric potential, and Gauss's law.**
- **Analyze electric potential, capacitance, dielectric materials, and energy stored in electric fields.**
- **Explain magnetic fields produced by electric currents and apply laws such as Biot-Savart law and Ampere's law.**
- **Understand electromagnetic induction, Faraday's law, Lenz's law, and the concept of self and mutual inductance.**
- **Describe Maxwell's equations and explain the fundamentals of electromagnetic waves and their applications.**

## MODERN PHYSICS

### COURSE OUTCOMES:

On successful completion of this course, the student will be able to:

- Explain the limitations of classical physics and describe the origin of modern physics concepts such as quantum theory and relativity.
- Understand and analyze phenomena like photoelectric effect, Compton effect, and wave-particle duality.
- Describe atomic models (Bohr model) and explain atomic spectra and energy levels.
- Understand basic principles of quantum mechanics including wave function, uncertainty principle, and Schrödinger equation.
- Apply quantum concepts to simple systems such as particle in a box, potential wells, and tunneling effects.
- Explain the fundamentals of nuclear physics and elemental particles and their applications.

## INTRODUCTION TO NUCLEAR AND PARTICLE PHYSICS

### COURSE OUTCOMES:

On successful completion of this course, the student will be able to:

- Understand the basic properties of atomic nuclei, nuclear forces, binding energy, and nuclear stability.
- Explain different types of radioactive decay such as alpha, beta, and gamma decay and apply decay laws.
- Describe nuclear reactions, nuclear fission and fusion processes, and their applications in energy production.
- Understand the classification and properties of elementary particles such as leptons, mesons, and baryons.
- Explain fundamental interactions and conservation laws involved in particle physics.
- Gain knowledge particle accelerators of nuclear detectors, and modern and particle physics.

## **SEMESTER-V**

### **APPLICATIONS OF ELECTRICITY AND ELECTRONICS**

#### **COURSE OUTCOMES:**

**On successful completion of this course, the student will be able to:**

- **Explain the fundamental principles of electric and magnetic fields and their practical applications in everyday devices.**
- **Analyze the working principles of electrical components such as capacitors, inductors, transformers, and electric motors.**
- **Apply the concepts of electromagnetic induction and Maxwell's equations to understand electrical machines and power generation systems.**
- **Evaluate the role of electricity and magnetism in modern technologies such as communication systems, medical equipment, and electronic devices.**
- **Design and interpret simple electrical and magnetic circuits used in practical engineering and scientific applications.**
- **Develop problem-solving skills to analyze real-world situations involving electromagnetic phenomena**

## **ELECTRONIC INSTRUMENTATIONS**

### **COURSE OUTCOMES:**

**On successful completion of this course, the student will be able to:**

- **Understand basic concepts of electronic instrumentation, measurement systems, and performance characteristics such as accuracy, precision, sensitivity, and resolution.**
- **Explain the working principles of transducers and sensors used for measuring physical quantities like temperature, pressure, displacement, and flow.**
- **Analyze signal conditioning circuits including amplifiers, filters, and converters used in instrumentation systems.**
- **Describe the operation of measuring instruments such as oscilloscopes, digital voltmeters, and signal generators.**
- **Apply data acquisition techniques and understand analog-to-digital and digital-to-analog conversion in measurement systems.**
- **Design and evaluate basic electronic instrumentation is for practical measurement and control applications.**

## **OPTICAL INSTRUMENTS AND OPTOMETRY**

### **COURSE OUTCOMES:**

**On successful completion of this course, the student will be able to:**

- **Understand the basic principles of optics used in optical instruments and optometric devices.**
- **Explain the construction and working of common optical instruments such as microscopes, telescopes, spectrometers, and optical sensors.**
- **Describe the structure and function of the human eye and understand common vision defects such as myopia, hypermetropia, astigmatism, and presbyopia.**
- **Analyze different optometric techniques used for vision testing and correction of eye defects.**
- **Demonstrate knowledge of corrective lenses and optical devices used in optometry, including spectacles and contact lenses.**
- **Apply optical principles in the design, calibration, and use of optical instruments for scientific and medical applications.**

## **SOLAR ENERGY AND ITS APPLICATIONS**

### **COURSE OUTCOMES:**

**On successful completion of this course, the student will be able to:**

- **Understand the basic concepts of solar radiation, solar energy potential, and the importance of renewable energy resources.**
- **Explain the principles and working of different solar energy technologies such as solar thermal systems and photovoltaic systems.**
- **Analyze the design and performance of solar energy devices including solar collectors, solar cells, and solar panels.**
- **Apply solar energy technologies for various applications such as solar water heating, solar cooking, solar drying, and solar power generation.**
- **Evaluate the advantages, limitations, and economic aspects of solar energy systems for sustainable development.**
- **Develop awareness of recent advancements and practical applications of solar energy in domestic, industrial, and agricultural sectors.**

**SRI V.S.SIVALINGAM CHETTIAR GOVERNMENT DEGREE COLLEGE**

**SULLURPET, TIRUPATI DISTRICT, ANDHRA PRADESH**

## **PROGRAMME OUTCOMES**

On successful completion of the Physics program, students will be able to:

### **PO1 – Fundamental Knowledge of Physics**

Demonstrate a strong understanding of fundamental concepts in physics including mechanics, waves, optics, thermodynamics, electricity, magnetism, electronics, modern physics, and nuclear physics.

### **PO2 – Mathematical and Analytical Skills**

Apply mathematical tools such as calculus, differential equations, vector algebra, and linear algebra to analyze and solve physical problems.

### **PO3 – Scientific Problem Solving**

Identify, formulate, and solve theoretical and practical physics problems using logical reasoning, analytical thinking, and appropriate physical principles.

### **PO4 – Experimental and Laboratory Skills**

Design and perform physics experiments, analyze experimental data, and interpret results using appropriate laboratory techniques and scientific methods.

### **PO5 – Application of Physics in Technology**

Apply principles of physics in the understanding and design of technological systems such as electronic circuits, electrical machines, optical instruments, and renewable energy devices.

### **PO6 – Use of Modern Scientific Tools**

Utilize modern scientific instruments, electronic devices, and computational tools for measurement, data analysis, and scientific investigations.

### **PO7 – Interdisciplinary Knowledge**

Integrate concepts from physics, electronics, mathematics, and engineering to address interdisciplinary scientific and technological problems.

### **PO8 – Environmental and Energy Awareness**

Understand the importance of sustainable energy resources and apply knowledge of renewable energy technologies such as solar energy for environmental sustainability.

### **PO9 – Communication and Scientific Reporting**

Communicate scientific ideas, experimental results, and technical information effectively through written reports, presentations, and discussions.

**PO10 – Lifelong Learning and Professional Development**

Develop the ability for independent learning, critical thinking, and continuous professional development in the fields of physics, technology, and research.

**PO11 – Ethical and Social Responsibility**

Understand the ethical responsibilities of scientists and apply physics knowledge for the benefit of society and technological advancement.

**PO12 – Career and Research Readiness**

Demonstrate preparedness for higher studies, research, teaching, or careers in physics, electronics, instrumentation, renewable energy, and related scientific fields.

SRI V.S.SIVALINGAM CHETTIAR GOVERNMENT DEGREE COLLEGE

SULLURPET, TIRUPATI DISTRICT, ANDHRA PRADESH

## PROGRAM SPECIFIC OUTCOMES (PSOs)

On successful completion of the **Physics Program**, students will be able to:

### **PSO1 – Core Physics Knowledge**

Apply fundamental principles of classical mechanics, thermodynamics, optics, electricity and magnetism, modern physics, and electronics to understand physical phenomena.

### **PSO2 – Experimental and Instrumentation Skills**

Perform physics experiments using laboratory instruments, electronic devices, optical instruments, and measurement systems to analyze physical parameters accurately.

### **PSO3 – Application of Physics in Technology**

Use concepts of electronics, instrumentation, optics, and renewable energy to understand and develop practical applications in modern technology and industry.

### **PSO4 – Research and Analytical Ability**

Use mathematical methods, data analysis, and scientific reasoning to solve complex physical problems and pursue higher studies or research in physics and related fields.

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## COURSE OUTCOME – PROGRAM OUTCOME (CO–PO) MAPPING TABLE

(Scale generally used)

- **3 – High correlation**
  - **2 – Medium correlation**
  - **1 – Low correlation**
  - **– No correlation**
-

# SEMESTER I

## INTRODUCTION TO MATHEMATICAL PHYSICS

**COs PO1 PO2 PO3 PO4 PO5 PO6 PO7 PO8 PO9 PO10**

CO1	3	3	2	-	-	-	1	-	-	1
CO2	2	3	3	-	-	-	1	-	-	1
CO3	3	3	2	-	-	-	1	-	-	-
CO4	2	3	2	-	-	-	1	-	-	-

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## MECHANICS AND PROPERTIES OF MATTER

**COs PO1 PO2 PO3 PO4 PO5 PO6 PO7 PO8 PO9 PO10**

CO1	3	2	3	-	1	-	-	-	-	1
CO2	3	2	3	-	1	-	-	-	-	-
CO3	3	2	2	-	1	-	-	-	-	-
CO4	2	2	3	-	1	-	-	-	-	1

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# SEMESTER II

## WAVES AND OPTICS

**COs PO1 PO2 PO3 PO4 PO5 PO6 PO7 PO8 PO9 PO10**

CO1	3	2	2	1	-	-	-	-	-	-
CO2	3	3	2	1	-	-	-	-	-	-
CO3	2	3	3	1	-	-	-	-	-	-
CO4	3	2	2	1	-	-	-	-	-	-

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## HEAT AND THERMODYNAMICS

**COs PO1 PO2 PO3 PO4 PO5 PO6 PO7 PO8 PO9 PO10**

CO1	3	2	2	-	-	-	-	-	-	-
CO2	3	2	3	-	1	-	-	-	-	-
CO3	3	2	3	-	1	-	-	-	-	-
CO4	2	2	3	-	1	-	-	-	-	-

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# SEMESTER III

## ELECTRONIC DEVICES AND CIRCUITS

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	3	2	2	1	3	2	-	-	-	-
CO2	2	2	3	1	3	2	-	-	-	-
CO3	2	2	3	1	3	2	-	-	-	-
CO4	2	2	3	1	3	2	-	-	-	-

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## ANALOG AND DIGITAL ELECTRONICS

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	2	2	2	1	3	3	-	-	-	-
CO2	2	2	3	1	3	3	-	-	-	-
CO3	2	2	3	1	3	3	-	-	-	-
CO4	2	2	3	1	3	3	-	-	-	-

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# SEMESTER IV

## ELECTRICITY AND MAGNETISM

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	3	2	2	-	2	-	-	-	-	-
CO2	3	2	3	-	2	-	-	-	-	-
CO3	3	2	3	-	2	-	-	-	-	-
CO4	3	2	2	-	2	-	-	-	-	-

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## MODERN PHYSICS

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	3	2	2	-	-	-	-	-	-	-
CO2	3	2	3	-	-	-	-	-	-	-
CO3	3	2	3	-	-	-	-	-	-	-
CO4	2	2	3	-	-	-	-	-	-	-

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# **SEMESTER V**

## **APPLICATIONS OF ELECTRICITY AND ELECTRONICS**

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<b>COs</b>	<b>PO1</b>	<b>PO2</b>	<b>PO3</b>	<b>PO4</b>	<b>PO5</b>	<b>PO6</b>	<b>PO7</b>	<b>PO8</b>	<b>PO9</b>	<b>PO10</b>
CO1	2	2	-	3	2	-	-	-	-	-
CO2	2	3	-	3	2	-	-	-	-	-
CO3	2	3	-	3	2	-	-	-	-	-

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## **ELECTRONIC INSTRUMENTATION**

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<b>COs</b>	<b>PO1</b>	<b>PO2</b>	<b>PO3</b>	<b>PO4</b>	<b>PO5</b>	<b>PO6</b>	<b>PO7</b>	<b>PO8</b>	<b>PO9</b>	<b>PO10</b>
CO1	2	2	2	3	3	-	-	-	-	-
CO2	2	3	2	3	3	-	-	-	-	-
CO3	2	3	2	3	3	-	-	-	-	-

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## **SOLAR ENERGY AND ITS APPLICATIONS**

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<b>COs</b>	<b>PO1</b>	<b>PO2</b>	<b>PO3</b>	<b>PO4</b>	<b>PO5</b>	<b>PO6</b>	<b>PO7</b>	<b>PO8</b>	<b>PO9</b>	<b>PO10</b>
CO1	2	2	-	3	2	-	3	-	-	-
CO2	2	3	-	3	2	-	3	-	-	-
CO3	2	3	-	3	2	-	3	-	-	-

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**SRI V.S.SIVALINGAM CHETTIAR GOVERNMENT DEGREE COLLEGE**

**SULLURPET, TIRUPATI DISTRICT, ANDHRAPRADESH**

**B.Sc., Mathematics, Physics, Chemistry**

**Understand and use atomic and molecular structural concepts to predict chemical characteristics and reactivity.**

**Perform, plan, analyze, and document laboratory experiments using critical thinking and scientific inquiry at a level appropriate for success in a chemistry graduate programme or an entry-level career in the chemical industry,**

**Be able to analyze and use results provided by instrumental chemical studies, as well as understand theoretical ideas of equipment typically employed in most chemistry specialties.**

**Know how to apply biological sciences to apiculture, aquaculture, and agriculture, and how to do it effectively**

**How Study the diversity of Archegoniate as well as plant morphology, taxonomy, and Embryology to gain a better understanding of the origin of life, evolution, and microbiological diversity**

**Research plant metabolism, physiological principles, genetics, and plant breeding strategies and learn about ecological and photo geographic studies**

**Be familiar with the fundamentals of plant tissue culture, biotechnology, and plant diversity.**

**Know the fundamentals of ethnobotany and medicinal botany, as well as pharmacognosy and phytochemistry.**

**Identify and classify the primary groups of life using a phylogenetic framework**

**Perform procedures in the areas of biochemistry, bioinformatics, taxonomy, economic zoology, and ecology according to laboratory standards.**

**Know how to apply biological sciences to apiculture, aquaculture, agriculture, and medicine, and how to do it effectively.**

**Develop expertise in the experimental methodologies and analysis methods suited to their field of biology specialty.**

**Understand and use atomic and molecular structural concepts to predict chemical characteristics and reactivity.**

**Perform, plan, analyse, and document laboratory experiments using critical thinking and scientific inquiry at a level appropriate for success in chemistry graduate programming or an entry-level career in the chemical industry.**

**Be able to analyse and use results provided by instrumental chemical studies, as well as understand theoretical ideas of equipment typically employed in most chemistry specialties**

**Know how to apply biological sciences to apiculture, aquaculture, and agriculture. and how to do it effectively.**



**SRI V.S. SIVALINGAM CHETTIAR GOVERNMENT DEGREE COLLEGE**  
(AUTONOMOUS)

Sullurpet, Tirupathi District, Andhra Pradesh - 524 121.



## **CHEMISTRY MAJOR-COURSE OUTCOMES**

### **SEMESTER-I COURSE 1: GENERAL CHEMISTRY**

1. Describe the electronic configuration of elements and periodic trends.
2. Analyse the formation and properties of ionic and covalent compounds.
3. Apply VSEPR, hybridization, and MOT to predict molecular geometry and bonding.
4. Explain metallic bonding, hydrogen bonding, and intermolecular forces and relate them to physical properties.
5. Explain types of radioactivity, nuclear reactions, and real-life applications.

### **SEMESTER-I COURSE 2: INORGANIC CHEMISTRY**

1. Explain the structures and preparation of key p-block compounds.
2. Classify d- and f-block elements and discuss their properties and oxidation states.
3. Analyze magnetic, catalytic, and color properties of transition metals.
4. Compare and contrast lanthanides and actinides based on electronic configuration.
5. Explain and differentiate various metallurgical processes used in the extraction of metals.

### **SEMESTER-II COURSE 3: ORGANIC CHEMISTRY-I**

1. Study Inductive effect, Mesomeric effect, Hyper conjugation and its applications.
2. Explain the preparation and chemical properties of alkanes, alkenes, alkynes and benzene
3. Analyze and apply Huckel's rule to benzenoid and non-benzenoid aromatic compounds.
4. Differentiate between Markownikoff and Anti-markowni koff addition, Ring activating and deactivating groups.
5. Interpret stereochemical representations and identify chiral molecules.

### **SEMESTER-II COURSE 4: PHYSICAL CHEMISTRY-I**

1. Explain gas laws, ideal and real gases behaviour, and critical phenomena.
2. Describe properties of liquids and classify types and applications of liquid crystals.

3. Derive Bragg's equation and identify types of crystal defects.
4. Apply the phase rule to interpret phase diagrams and systems with eutectic/congruent/incongruent points.
5. Differentiate between types of adsorption and colloidal systems, and evaluate their applications

**Signature of the HOD**

**Signature of the Lecturer**

**Signature of the Principal**



**SRI V.S. SIVALINGAM CHETTIAR GOVERNMENT DEGREE COLLEGE**  
(AUTONOMOUS)

Sullurpet, Tirupathi District, Andhra Pradesh - 524 121.



**PROGRAM OUTCOMES (POs)**

**PO1: Scientific Knowledge**

Understand fundamental concepts of inorganic, organic, and physical chemistry.

**PO2: Analytical Thinking**

Apply logical reasoning and scientific methods to solve chemical problems.

**PO3: Laboratory Skills**

Perform experiments, handle chemicals, and use instruments safely and accurately.

**PO4: Environmental Awareness**

Understand environmental issues like pollution and apply green chemistry principles.

**PO5: Ethics & Safety**

Follow ethical practices and laboratory safety procedures.



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(AUTONOMOUS)

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## **PROGRAM SPECIFIC OUTCOMES (PSOs)**

### **PSO1: Core Chemistry Knowledge**

Apply principles of:

Organic chemistry

Inorganic chemistry

Physical chemistry

to solve scientific problems.

### **PSO2: Experimental & Analytical Skills**

Perform qualitative and quantitative analysis

Conduct experiments using standard and modern techniques

[svagovtcm.ac.in](http://svagovtcm.ac.in)

### **PSO3: Instrumentation Skills**

Use laboratory instruments such as:

pH meter

Colorimeter

Conductometer

### **PSO4: Data Interpretation & Reporting**

Analyze experimental data

Prepare lab reports and scientific documentation

### **PSO5: Industrial & Practical Application**

Apply chemistry knowledge in:

Pharmaceuticals

Agriculture

Chemical industries

### **PSO6: Research & Career Development**

Prepare for higher studies (M.Sc., research)

Develop skills for jobs and competitive exams

## COURSE OUTCOME – PROGRAM OUTCOME (CO–PO)

### MAPPING TABLE

(Scale generally used)

- 3 – High correlation
- 2 – Medium correlation
- 1 – Low correlation • –  
No correlation

### SEMESTER-I

#### COURSE 1 GENERAL CHEMISTRY

COs	PO1	PO2	PO3	PO4	PO5
CO1	3	2	--	--	--
CO2	--	--	2	--	--
CO3	--	3	1	2	--
CO4	3	2	--	1	--
CO5	2	--	3	--	3

#### COURSE 2 : INORGANIC CHEMISTRY

COs	PO1	PO2	PO3	PO4	PO5
CO1	1	1	--	3	--
CO2	3	3	--	--	--
CO3	2	2	1	--	--
CO4	1	1	--	3	--
CO5	1	2	--	2	1

## SEMESTER-II

### COURSE 3 ORGANIC CHEMISTRY

COs	PO1	PO2	PO3	PO4	PO5
CO1	2	--	--	2	--
CO2	3	3	1	3	1
CO3	1	2	--	1	--
CO4	1	2	--	1	--
CO5	2	1	--	3	--

### COURSE 4 PHYSICAL CHEMISTRY

COs	PO1	PO2	PO3	PO4	PO5
CO1	3	3	--	1	--
CO2	2	--	--	1	--
CO3	1	2		3	2
CO4	--	3	3	2	1
CO5	--	3	1	1	--

Signature of the HOD

Signature of the Lecturer

Signature of the Principal

## SEMESTER-I

### COURSE 1: COMPUTER FUNDAMENTALS AND OFFICE AUTOMATION

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#### Course Outcomes

1. At the End of the Course, The Students will be able to **explain different number systems**, the historical evolution of computers, and identify key components in a block diagram.
2. Learners will demonstrate **basic blocks of a computer and fundamental networking knowledge**.
3. Learners will create professional-level documents and **design visually appealing presentations** using word processing software and presentation software.
4. Learners will manipulate data within spreadsheets, apply formulas, and **generate accurate summaries and visualizations**.
5. Learners will apply data modelling techniques to **analyze, organize, and represent data effectively** in various scenarios.

## SEMESTER-I

### COURSE 2: PROBLEM SOLVING USING C

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#### Course Outcomes:

At the end of the course, students will be able to:

1. Understand basic computing concepts, programming paradigms and write structured C programs.
2. Apply control flow statements to solve logical and repetitive tasks in C.
3. Implement arrays and string operations to manage and manipulate data efficiently.
4. Design modular code using functions, recursion, and appropriate parameter passing.
5. Utilize pointers and memory operations for effective data handling. Demonstrate competence in dynamic memory allocation and text file processing

## SEMESTER-II

### COURSE 3: DATA STRUCTURES USING C

---

#### Course Outcomes:

Learners will be able to:

1. Explain algorithm characteristics, time and space complexity, and asymptotic notations with clarity.
2. Implement and analyze different types of linked lists, including insertion, deletion, and traversal operations.
3. Develop stack and queue data structures using arrays and linked lists, and apply them in expression evaluation.
4. Apply efficient searching and sorting algorithms to solve computational problems and evaluate performance trade-offs.
5. Construct and traverse tree and graph structures, using them to solve problems like shortest path and spanning trees.

## SEMESTER-II

### COURSE 4: DIGITAL LOGIC DESIGN

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1. .

#### Course Outcomes

At the end of the course, students will be able to:

1. Apply concepts of number systems to perform radix conversions and binary arithmetic using signed and unsigned formats.
2. Simplify logic functions using Boolean algebra, Karnaugh maps, and universal gates.
3. Design and analyze combinational circuits such as half adders, full adders, and subtractors.
4. Construct advanced combinational logic modules, including multiplexers, demultiplexers, encoders, decoders, and their hierarchical versions. Realize complex Boolean functions using combinations of logic modules.
5. Develop and evaluate sequential circuits such as flip-flops, latches, counters, and shift registers.

## SEMESTER-III

### **COURSE 5: Object Oriented Programming using Java**

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#### Course Outcomes:

Upon successful completion of the course, a student will be able to:

1. Demonstrate knowledge and comprehension of operating system functions.
2. Analyse different process scheduling algorithms and applications). The to manage processes an threads effectively
3. create strategies to prevent, detect, and recover from deadlocks, and design solutions for inter-process communication and synchronization problems.
4. Compareandcontrastdifferentmemoryallocationstrategiesandevaluatetheireffectiveness
5. EvaluatediskschedulingalgorithmswhileimplementingOssecuritymeasures

### **COURSE 6: DATA STRUCTURES USING C**

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#### Course Outcomes:

Upon successful completion of the course, a student will be able to:

1. Understand various Data Structures for data storage and processing.
2. Realize Linked List Data Structure various operations
3. Analyze step by step and develop algorithms to solve real world problems by implementing Stacks, Queues data structures.
4. Understand and implement various searching & sorting techniques.
5. Understand the Non-Linear Data Structures such as Binary Trees and Graph

### **COURSE 7: Computer Organization**

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1. 1. Understand various Data organization for data storage and processing.
2. Realize Linked List Data Structure various operations
3. Analyze step by step and develop algorithms to solve real world problems by implementing Stacks, Queues data structures.
4. Understand and implement various searching & sorting techniques.

## **COURSE 8: Operating System**

### **Course Outcomes:**

Upon successful completion of the course, a student will be able to:

1. Demonstrate knowledge and comprehension of operating system functions.
6. Analyse different process scheduling algorithms and applications). The to manage processes an threads effectively
7. create strategies to prevent, detect, and recover from deadlocks, and design solutions for inter-process communication and synchronization problems.
8. Compareandcontrastdiferentmemoryallocationstrategiesandevaluatetheeffectiveness
9. EvaluatediskschedulingalgorithmswhileimplementingOssecuritymeasures

## **COURSE-9: DATABASE MANAGEMENT SYSTEM**

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### **Course Outcomes:**

1. An ability to apply Knowledge of computing and mathematics in Computer Science &Engineering. They will analyse a problem, identify and define the computing requirements appropriate to its solution.
2. An ability to design, implement and evaluate a computer-based system to meet desired needs with appropriate societal considerations.
3. They will have knowledge on to conduct investigations, interpret data and provide conclusions in investigating complex problems related to Computer Science & Engineering.
4. An ability to engage in continuing professional development and lifelong learning.

## **SEMESTER-IV**

## **COURSE-10: Object Oriented Software Engineering**

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### **Course outcomes**

1. Understand and apply the fundamental principles of Object-Oriented Programming (OOP) concepts and Unified Modelling Language (UML) basics 'in the development of software solutions.
2. Analyze and specify software requirements, develop use cases and scenarios, apply object. oriented analysis and design (OOAD) principles.
3. Familiar with the concept's test-&even development (TDD) and its practical implementation.
4. Analyse and Evaluate Software Maintenance and Evolution Strategies 5. Apply Advanced Object- Oriented Software Engineering Concepts.

## SEMESTER-IV

### **COURSE-11: Data Communication and Computer Networks**

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#### Course Outcomes

Upon successful completion of the course, a student will be able to:

1. Understand and apply network applications, hardware, software, and reference models for network communication.
2. Design and analyse data link layer protocols, multiple access protocols, and wireless LAN technologies.
3. Design routing algorithms, congestion control algorithms, and evaluate network layer protocols for internetworking.
4. Analyse transport service, transport protocols, and evaluate UDP and TCP in the internet.
5. Understand and evaluate application layer protocols, including DNS, email, WWW, and network management protocols.

## SEMESTER-V

### **Web Interface Designing Technologies**

---

#### **Course Outcomes:**

On successful completion of the course, students will be able to

1. Understand and appreciate the web architecture and services along with its basic building blocks
2. Gain knowledge about various components of a website related to aesthetics
3. Demonstrate skills regarding creation of a static website and addition of dynamic behavior to a website
4. Get experience on making user-interactive web pages.
5. Learn how to install word press and gain the knowledge of installing various plugins to use in their websites.

## SEMESTER-V

### Course 13: Web Applications Development using PHP & MYSQL

---

#### Course Outcomes:

On successful completion of the course, students will be able to

1. Write simple programs in PHP.
2. Understand how to use regular expressions, handle exceptions, and validate data using PHP.
3. Apply In-Built functions and Create User defined functions in PHP programming.
4. Write PHP scripts to handle HTML forms. 5. Know how to use PHP with a MySQL database and can write database driven web pages

## V Semester

### Course 14 A: Internet of Things

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#### Course Outcomes:

On successful completion of the course, students will be able to

1. Understand various concepts, terminologies and applications of IoT
2. Learn how to build IoT devices with development boards
3. Understand various Wireless protocols for IoT
4. Learn how to use various sensors and actuators & develop IoT solutions using Arduino
5. Develop and Connect IoT with Cloud Platforms. Course Outcomes:

## V Semester

### Course 15 A: IoT Applications Development and Programming

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#### Course Outcomes:

On successful completion of the course, students will be able to

1. Understand the Basic Concepts of Internet of Things
2. Learn various Sensors and their associative protocols
3. Learn the Single Board Computers for development of IoT
4. Build the IoT devices with the Node-RED without Complex coding
5. Develop various IoT real-time application.

## SEMESTER-I

### COURSE 2: Fundamentals of Information Technology & Office

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#### **Course Outcomes**

1. Understand foundational computing concepts including number systems, evolution of computers, and architectural components.
2. Explore basic computer organization and network fundamentals, recognizing device functions, system types, and internet components.
3. Demonstrate proficiency in word processing and presentation tools, applying formatting techniques and design elements for professional outputs.
4. Develop competency in spreadsheet operations, employing formulas, charts, and data-handling techniques.
5. Apply advanced data modelling and productivity features to analyse and visualize data efficiently using modern tools.

Course Outcomes:

## SEMESTER-II

### COURSE 4: E-COMMERCE AND WEB APPLICATION DEVELOPMENT

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#### **Course outcome**

1. Understand the evolution, types, and models of e-commerce, including technical, legal, and ethical frameworks. Explore web design technologies and content management systems relevant to e-commerce platforms.
2. Apply online marketing principles, SEO techniques, and e-payment systems with attention to logistics and risk arrangement.
3. Design interactive and responsive websites using HTML5, CSS3, and client-side scripting with JavaScript.
4. Develop and customize CMS-based interfaces using the Bootstrap framework and responsive design principles

SEMESTER-III  
**COURSE-8: Digital Marketing**

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**Course Outcomes:**

Use digital media for the creation of products and services and relate Search Engines in the digital marketing ecosystem. Use Search Engine Marketing for advertisements and know the Social Media platforms like Face book, Twitter, YouTube & LinkedIn for Marketing. Outline email Marketing and strategy to craft email marketing campaign.

SEMESTER-IV  
**COURSE-II: DATABASE MANAGEMENT SYSTEM WITH ORACLE**

---

**Learning Outcomes:**

An ability to apply Knowledge of computing and mathematics in Computer Science & Engineering. They will analyze a problem, identify and define the computing requirements appropriate to its solution. An ability to design, implement and evaluate a computer-based system to meet desired needs with appropriate societal considerations. The will have knowledge on to conduct investigations, interpret data and provide conclusions in investigating complex problems related to Computer Science & Engineering. An ability to engage in continuing professional development and life long learning

SEMESTER-V  
CYBERLAW

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**Learning Outcomes:**

1. Upon successful completion of the course, the students will be able to
2. Develop an understanding of cybercrimes and various legal perspectives involved. . .
3. Develop a security model to handle mobile, wireless devices and related security issues of an organization.
4. Use the cybercrime tools and methods in solving real world problems.

**SEMESTER-III  
INFORMATION AND COMMUNICATION TECHNOLOGY**

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**Course Outcomes:**

After completion of the course, student will be able to:

1. Understand the literature of social networks and their properties.
2. Explain which network is suitable for whom.
3. Develop skills to use various social networking sites like Twitter, Flickr, etc.
4. Learn a few GoI digital initiatives in higher education.
5. Apply skills to use online forums, docs, spreadsheets, etc. for communication, collaboration, and research.
6. Get acquainted with internet threats and security mechanisms

**Cyber Security**

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**Course Outcomes::**

5. Upon successful completion of the course, the students will be able to
6. Develop an understanding of cybercrimes and various legal perspectives involved. . .
7. Develop a security model to handle mobile, wireless devices and related security issues of an organization.
8. Use the cybercrime tools and methods in solving real world problems.

**SEMESTER-I**  
**COURSE 1: AI FUNDAMENTALS**

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**Course Outcomes:**

Students will be able to

1. Describe the different subfields and their roles in AI applications.
2. Analyze the benefits and limitations of AI in diverse domains
3. Evaluate AI systems in terms of inclusivity, privacy, and robustness.
4. Describe Generative AI and emerging technologies like ChatGPT.
5. Apply prompt engineering concepts to various real-world use cases.

**SEMESTER-II**  
**COURSE 1: APPLICATIONS OF ARTIFICIAL INTELLIGENCE**

---

**Course Outcomes**

On successful completion of this course, students will be able to:

1. Explain the AI ecosystem (hardware, cloud, and edge devices) in relation to physical sciences applications.
2. Identify scientific data types and public repositories relevant to physics, chemistry, mathematics, and earth sciences.
3. Describe the process of preparing and managing scientific data pipelines.
4. Illustrate the role of AI in solving real-world scientific challenges in physics, chemistry, mathematics, and earth sciences.
5. Analyze ethical, environmental, and societal impacts of AI-driven scientific applications.

**Program Outcomes (POs)**

**PO1: Computational Knowledge**

Apply knowledge of mathematics, programming, and computing fundamentals to solve real-world problems.

**PO2: Problem Analysis**

Identify, analyze, and define computing problems using logical and analytical thinking.

**PO3: Design & Development of Solutions**

Design and develop efficient software systems, applications, or algorithms to meet specific needs.

**PO4: Modern Tool Usage**

Use modern tools, technologies, and platforms such as programming languages, databases, and software frameworks.

**PO5: Understanding of Computing Systems**

Understand the structure and functioning of computer systems, networks, and operating systems.

**PO6: Ethics and Professional Responsibility**

Apply ethical principles and professional responsibilities in computing practices, including data privacy and security.

**PO7: Communication Skills**

Communicate effectively through reports, presentations, and technical documentation.

**PO8: Teamwork and Collaboration**

Work effectively as an individual and as a member or leader in diverse teams.

**PO9: Lifelong Learning**

Recognize the need for continuous learning to adapt to emerging technologies and innovations.

**PO10: Project Management**

Apply knowledge of project management principles in software development and IT projects.

**PO11: Environment and Sustainability**

Understand the impact of computing solutions on society and environment, promoting sustainable practices.

**PO12: Innovation and Entrepreneurship**

Develop innovative solutions and understand entrepreneurial opportunities in IT and software industries.

**PROGRAMME SPECIFIC OUTCOMES (PSO's)**

**PSO1: Programming and Problem Solving Skills**

Students will be able to design, develop, and implement computer programs using appropriate programming languages to solve real-world problems efficiently.

**PSO2: Software Development and Database Management**

Students will gain the ability to develop software applications and manage databases using modern tools, technologies, and database systems.

**PSO3: System and Network Knowledge**

Students will understand the working of computer systems, operating systems, and computer networks to manage and troubleshoot technical issues.

**PSO4: Web and Application Development**

Students will be able to design and develop web applications and software solutions using current web technologies and frameworks.

**PSO5: Emerging Technologies**

Students will acquire knowledge in emerging areas such as Artificial Intelligence,

Data Science, Cloud Computing, and Cyber Security.

**PSO6: Professional and Ethical Practices**

Students will apply ethical principles, teamwork, and communication skills in professional IT environments.

**SRI V.S.SIVALINGAM CHETTIAR GOVERNMENT DEGREE COLLEGE (A)**

**SULLURPETA-TIRUPATHI DISTRICT**

**DEPARTMENT OF MATHEMATICS- POs and COs**

**PROGRAMME OUTCOMES OF B.SC. MATHEMATICS (MINOR)**

**PO1: Strong Analytical Skills:**

Develops critical thinking and problem solving abilities, which are valuable in various fields.

**PO2: Foundation for Advanced Studies:**

B.Sc. in Mathematics serves as a special foundation for further studies in Mathematics, Computer Science or related fields.

**PO3: High demand for Mathematicians:**

Many industries seek individuals with strong mathematical skills leading to good job prospects and competitive salaries.

**PO4: Research Opportunities:**

B. Sc. Mathematics graduates can engage in research, contributing to advancements in Technology, Science and Mathematics

**PO5: Diverse Career Opportunities:**

Mathematics graduates can pursue careers in the fields of data analysis, education and engineering, science and technology.

**PROGRAMME SPECIFIC OUTCOMES OF B.SC. MATHEMATICS MINOR)**

**PSO1:** Learn to solve Differential equations and to evaluate Orthogonal Trajectories

**PSO2:** Attain the Knowledge of Group Theory and its wide applications.

**PSO3:** Learn Ring Theory and its applications

**PSO4:** Study of Real Analysis and its applications in Solid geometry and various fields

**PSO5:** Learn Linear Algebra which is a foundation to quantum technology

**PSO6:** Learn Vector Calculus –Multiple Integrals and Integral Transformations

## **COURSE OUTCOMES OF B.SC. MATHEMATICS MINOR)**

### **SEMESTER II-COURSE 1: DIFFERENTIAL EQUATIONS**

- CO1:** Solve exact differential equations, linear equations, Bernoulli's equations, and equations reducible to exact form using integrating factors.
- CO2:** Analyze and solve first-order differential equations that are solvable for  $p$ ,  $x$ , and  $y$ , including Clairaut's equations
- CO3:** Solve homogeneous and non-homogeneous linear differential equations of higher order with constant coefficients using operator methods
- CO4:** Compute particular integrals for non-homogeneous equations when the right-hand side is a polynomial, exponential, or trigonometric function
- CO5:** Solve non-homogeneous differential equations using the method of variation of parameters and other applicable techniques

### **SEMESTER III-COURSE 2: GROUP THEORY:**

- CO1:** Acquire the basic knowledge and structure of groups.
- CO2:** Get the significance of the notation of a subgroup and cosets.
- CO3:** Understand the concept of normal subgroups and properties of normal subgroups.
- CO4:** study the homomorphisms and isomorphisms with applications
- CO5:** Understand the properties of permutation groups.

### **SEMESTER IV-COURSE 3: RING THEORY**

- CO1:** Acquire the basic knowledge of rings, fields and integral domains.
- CO2:** Get the knowledge of subrings and ideals.
- CO3:** Construct composition tables for finite quotient rings
- CO4:** Study the homomorphism and isomorphism with applications.
- CO5:** Get the idea of division algorithm of polynomials over a field.

#### **SEMESTER IV-COURSE-4: INTRODUCTION TO REAL ANALYSIS**

**CO1:** Get clear idea about the real numbers and real valued functions.

**CO2:** Obtain the skills of analyzing the concepts and applying appropriate methods for testing convergence of a sequence/series

**CO3:** Test the continuity, differentiability and Riemann Integration of a function.

**CO4:** Know the geometrical interpretation of mean value theorems.

**CO5:** Know about the fundamental theorem of integral calculus.

#### **SEMESTER V- COURSE-5: LINEAR ALGEBRA**

**CO1:** Understand the concepts of Vector Spaces, Subspaces

**CO2:** Understand the concepts of Basis, Dimension and their properties.

**CO3:** Understand the concepts of Linear Transformation, Rank and Nullity and properties

**CO4:** Able to find Eigen Values and Eigen Vectors and to find the inverse of a matrix by using Cayley-Hamilton Theorem without using routine methods.

**CO5:** Learn the properties of Inner Product spaces and Orthogonality of Vectors

#### **SEMESTER V-COURSE-6: VECTOR CALCULUS**

**CO1:** Learn multiple integrals as a natural extension of definite integral to a function of two Variables in case of double integrals and three variables in case of triple integrals.

**CO2:** Able to find surface area by using double integral and volume by using triple integral

**CO3:** Learn the concepts of Gradient, Divergence, curl and vector identities

**CO4:** Able to evaluate Line Integral, Surface Integral and Volume Integral

**CO5:** Understand the relations between the Line Integral, surface integral, volume integral and integral transformations with the help of Green's theorem, Gauss theorem and Stokes theorem

## **GENERAL ENGLISH –COURSE OUTCOMES**

### **SEMESTER-I COURSE 1: ENGLISH BRIDGE-I: LIFE SKILLS**

#### **Course Outcomes**

1. Interpret and appreciate literary texts with reference to social, emotional, and ecological concerns.
2. Apply foundational grammar elements accurately in spoken and written English
3. .Demonstrate improved reading comprehension and vocabulary acquisition.
4. Engage in meaningful communication using functional expressions and phonetic clarity.
5. Exhibit awareness of self, society, and the world through reflective and descriptive writing

### **SEMESTER-II COURSE 2: ENGLISH BRIDGE-II: COMMUNICATE AND CONNECT**

#### Course Outcomes (COs):

1. Demonstrate improved communication etiquette through readings on civility and motivation.
2. Employ skimming, scanning, and note-making strategies in academic and workplace writing.
3. Display awareness of societal values and professional conduct through literature.
4. Draft structured texts like reports, agendas, and notices with clarity.
5. Integrate vocabulary and grammar in writing and speaking activities effectively

### **SEMESTER-III COURSE 3: ENGLISH BRIDGE-III: GLOBAL FUTURE**

#### Course Outcomes

1. Students will be able to interpret and respond to literary texts.
2. Students will demonstrate proficiency in writing formal and informal letters, CVs, and emails.
3. Students will be capable of participating in interviews and group discussions.
4. Students will reflect on personal and professional strengths through SWOC analysis and

# **SRI V.S.SIVALINGAM CHETTIAR GOVERNMENT DEGREE COLLEGE**

**SULLURPET, TIRUPATI DISTRICT, ANDHRA PRADESH**

## **DEPARTMENT OF HINDI**

### **COURSE OUTCOMES, PROGRAM OUTCOMES & PSO's**

#### **General Hindi – I**

1) Prose, Short Stories and Grammar 2) Poetry, History of Hindi literature and Grammar

By the end of the course during the First semester, with 4 hours a week and 3 credits a Semester, students will be able to

- ▶ Develops the skills of Hindi language
- ▶ Expands the knowledge of vocabulary
- ▶ Analyze and apply critical thinking skills with reference to society
- ▶ Understand similarities between languages
- ▶ Analyze and know the modern Hindi prose and its critics
- ▶ Appreciate modern Hindi short stories
- ▶ Acquire grammar skills
- ▶ Practices drafting personal letters

## General Hindi – II

1) Prose, Short Stories and Grammar 2) Poetry, History of Hindi literature and grammar

By the end of the course during the Second semester, with 4 hours a week and 3 credits a Semester, students will be able to

- providing
- quality education
- able to become a good officers , Research scholars, teachers, and artists.
- As the prescribed syllabus is Skill based students get proficiency in all skills like speaking, writing, understanding, and expressing.
- Appreciate Hindi Essays, Short Stories
- Acquire and demonstrate the advanced skills of letter writing.
- 1.Improvement in Translations skills
- 2.Raise Moral Values
- 3.Improvement in Grammatical Skill
- 4.Improvement in Communication skills in Hindi

ఎస్ వి ఎస్ ఎస్ సి ప్రభుత్వ డిగ్రీ కళాశాల(స్వయంప్రతిపత్తి), సూళ్లూరుపేట.

తిరుపతి జిల్లా, ఆంధ్రప్రదేశ్.

## తెలుగు శాఖ

### SEMESTER-1- COURSE 1: సాహితీ వసంతం

#### అభ్యసన లక్ష్యాలు

- 1 తెలుగు సాహిత్యం యొక్క ప్రాచీనతను, విశిష్టతను గుర్తించడం కవిబ్రహ్మ తిక్కన కాలంనాటి భాషా, సంస్కృతులను పరిచయం చేయడం
2. తెలుగుసాహిత్యంలోని శతకప్రక్రియ వైశిష్ట్యం తెలుసుకోడం, సామాజిక అంశాలను తెలియజేయడం
3. జాషువా రచనాశైలి వైశిష్ట్యాన్ని తెలియజేయడం, సమాజం పట్ల అవగాహన పెంపొందింపజేయడం
4. ఆధునిక వచనకవిత్వపాఠాలద్వారా ప్రక్రియా వైశిష్ట్యాన్ని, సామాజిక ఇతివృత్తాలనూ పరిచయం చేయడం
5. కథాసాహిత్యాన్ని పరిచయం చేయడం, ఆధునిక కథా రచనలద్వారా సామాజిక వైవిధ్యాన్ని అర్థం చేసుకోడం
6. ఆ పద్యరచనలలోని వ్యాకరణాంశాలను అధ్యయనం చేయడం,
- 7 వ్యాకరణాంశాల ద్వారా భాషాసామర్థ్యాన్ని పెంపొందింపజేయడం.

#### అభ్యసన ఫలితాలు

1. భాషాభివృద్ధి: ప్రాచీన, ఆధునిక తెలుగు పదజాలంపై పట్టు సాధిస్తారు.
2. సాహిత్య విమర్శ: పద్యం లేదా గద్యం లోని అంతర్ధాన్ని, అలంకారాలను విశ్లేషించగలరు.
3. నైతిక స్పృహ: సాహిత్యం బోధించే మానవీయ విలువలను, సామాజిక బాధ్యతను అర్థం చేసుకుంటారు.
4. వ్యక్తికరణ: సుజనాత్మక ఆలోచనలతో సొంతంగా వ్యాసాలు లేదా కవితలు రాసే సామర్థ్యం పొందుతారు.
5. సంస్కృతి: తెలుగు సాహితీ వైభవాన్ని, కవుల విశిష్టతను గుర్తించి గౌరవిస్తారు.

## SEMENTER-11

### COURSE 2: సాహితీ కుసుమాలు

#### అభ్యసన లక్ష్యాలు

1. ప్రాచీన తెలుగు సాహిత్యంలో ప్రసిద్ధమైన పురాణప్రక్రియ విశిష్టతను, తెలుగువారి జీవనవిధానంలో భా కథామాధుర్యాన్ని తెలుసుకుంటారు. తెలుగుల పుణ్యపేటి అయిన పోతన రచనాశైలిని, తెలుగుభాషాకా అవగతం చేసుకుంటారు.
2. తెలుగు కావ్యప్రక్రియా సౌందర్యాన్ని, కంకంటి పాపరాజు కవితావైశిష్ట్యాన్ని, రామాయణ రామణీయకత తెలుసుకుంటారు.
3. తెలుగులో నవలాప్రక్రియను గురించి, ప్రసిద్ధ నవలా రచయిత అయిన కేశవరెడ్డి రచనాశిల్ప విశేషా
4. తెలుగులో నాటక ప్రక్రియ గురించి, జనరంజకమైన గురజాడవారి కన్యాశుల్క నాటక వైశిష్ట్యాన్ని ఆ చేసుకుంటారు.
5. తెలుగువారి తరతరాల జానపద కళారూపాల ప్రాధాన్యాన్ని తెలుసుకుంటారు.
6. తెలుగులో ప్రసిద్ధమైన ఛందస్సు, అలంకారాల విశేషాలు తెలుసుకుంటారు.

#### అభ్యసన ఫలితాలు

ఈ కోర్సు విజయవంతంగా ముగించాక, విద్యార్థులు క్రింది అభ్యసన ఫలితాలను పొందగలరు.

1. భక్తితత్వాన్ని తెలుసుకుంటారు. పోతన రచనాశైలిని, తెలుగుభాషాభివ్యక్తి సౌందర్యాన్ని అవగతం చేసుకుంటారు.
2. తెలుగు కావ్యప్రక్రియా సౌందర్యాన్ని, కంకంటి పాపరాజు కవితావైశిష్ట్యాన్ని, రామాయణకావ్యంలోని కరుణరసాత్మక సన్నివేశ చిత్రణను అర్థం చేసుకుంటారు.
3. ఆత్మవిశ్వాసాన్ని పెంపొందించుకుంటారు. జీవకారుణ్యభావనలను గ్రహిస్తారు.
4. విద్యావ్యస్థలో ఎదురయ్యే సవాళ్ళను, మార్పులను, విద్యార్థుల వ్యక్తిగత వైవిధ్యాలనూ తెలుసుకుంటారు.
5. తెలుగువారి తరతరాల జానపద కళారూపాల ప్రాధాన్యాన్ని తెలుసుకుంటారు.
6. తెలుగులో ప్రసిద్ధమైన ఛందస్సు, అలంకారాల విశేషాలు తెలుసుకుంటారు.