TARA GOVT. DEGREE COLLEGE (A) SANGAREDDY

DEPARTMENT OF PUBLIC ADMINISTRATION

Faculty : B.A.

Programme : EPP EM (Economics, Political Science and Public Administration)

EPP TM (Economics, Political Science and Public Administration)

HPP EM (History, Political Science and Public Administration)

HPP EM (History, Political Science and Public Administration)

HPE EM (History, Public Administration and Economics)

HPE EM (History, Public Administration and Economics)

Course : FIRST YEAR SEMESTER – I

Basics of Public Administration

FIRST YEAR SEMESTER –II

Development Dynamics and Emerging Trends

SECOND YEAR SEMESTER –III

Union Administration

SECOND YEAR SEMESTER –IV

State Administration and Emerging Issues

THIRD YEAR SEMESTER –V

Human Resources Management or

Rural Governance

Indian Constitution and Administration GE

THIRD YEAR SEMESTER –VI

Financial and Material Resources Management or

Urban Governance

Good Governance GE

Course Outcomes:

FIRST YEAR SEMESTER – I : Paper 1 : Basics of Public Administration - 5 CREDITS

CO1: To understand the meaning nature, scope, evolution and importance of public administration.

CO2: To Understand the Public Administration relationship with other social sciences

CO3: To understand the oriental approach and classical theories of public administration

CO4: To understand the Human Relations and Behavioral Approaches

CO5: To understand the Social Justice Approaches

SEMESTER-II, PAPER 2 (Development Dynamics and Emerging trends) 5 CREDITS

CO1: To understand the Comparative and Development Administration

CO2: To understand the emerging trends, New Public Administration

CO3: To understand the concepts of Market Theories and New Public Management

CO4: To understand the Public Policy and Governance

CO5: To understand the Globalization and Public Administration

SEMESTER-III, PAPER 3 (Union Administration) 5 CREDITS

CO1: To understand the historical evolution of the Indian Administration and the constitutional framework.

CO2: To understand Union Administration : Structure and Processes

CO3: To understand Centre-State Administrative Relations

CO4: To understand Constitutional and Other National Bodies

CO5: To understand Public Enterprises in India

SEMESTER –IV, Paper 4 (State Administration and Emerging Issues) 5 Credits

CO1: To understand State Administration: Structure and Processes

CO2: To understand the State Administrative Mechanisms

CO3: To understand the Emerging Issues and Administrative Reforms

CO4: To understand the Technology and Integrity in Government

CO5: To understand the Control over Administration

SEMESTER-V, PAPER 5 (Human Resource Management) 5 CREDITS

CO1: To Understand the Nature, Scope and significance of Human Resource Management

CO2: To understand the concepts and principles of Office Management

CO3: To understand Human Resource Development and Capacity Building Strategies

CO4: To understand the redressal of Employee Grievances, Outsourcing and Consultancies

SEMESTER-V, Indian Constitution and Administration (GE) - 4 CREDITS

CO1: To understand the Nature of the Constitution Salient features – Preamble

CO2: To understand the Centre – State Relations

CO3: To understand the State Government, role of Governor, Chief Minister and Council of Ministers

CO4: To understand the Accountability and Legislative, Executive and Judicial control

CO5: To understand Social and Welfare Administration in India

SEMESTER-V, PAPER 6 (A Rural Local Governance) 5 CREDITS

CO1: To understanding the evolution of local organizations and democratic decentralization.

CO2: To understand the 73rd Constitutional Amendment Act

CO3: To understand the Panchayat Raj patterns and functions

CO4: To understand and analyzing the Rural Development strategies and programs

SEMESTER-VI, PAPER 7 (Financial and Material Resource Management) 5 CREDITS

CO1: To understand the Meaning, Nature, Scope and Importance of Financial Management

CO2: To understand the concept and principles of Budget

CO3: To understand the functioning of Finance Ministry

CO4: To understand the Concepts of Material Management and Inventory Control

EMESTER-VI, PAPER 8 (Urban local governance) 5 CREDITS

CO1: To understand the evolution of Urban Local bodies

CO2: To understand and analyzing the rural development Strategies, issues and Finances.

CO3: To understand the urban development authorities and the services and welfare measures in Urban areas

CO4: To understand the role of District Planning committee and Special Agencies for urban development.

B.A GEOGRAPHY

Course Outcomes

Semester – I

Paper - I: **Elements of Geomorphology**

COURSE OBJECTIVES:

While studying the **Elements of Geomorphology**, the student shall be able to:

- To familiarize the students with the need for understanding of geomorphology with reference to certain fundamental concepts.
- To identify process component of geomorphology is segmented into the internal and external processes of landscape evolution.
- To find out selected applications of geomorphology to societal requirements and quality of environment are dealt with.

COURSE OUTCOMES:

After completion of the **Elements of Geomorphology**, the student will be able to:

- Familiarize the students with the need for understanding of geomorphology with reference to certain fundamental concepts.
- Process component of geomorphology is segmented into the internal and external processes of landscape evolution.
- Finally, a few selected applications of geomorphology to societal requirements and quality of environment are dealt with.

Semester – II

Paper - II: **Climatology and Oceanography**

COURSE OBJECTIVES:

While studying the **Climatology and Oceanography**, the student shall be able to:

- To understand the concept of climatology and its relation to Metrology
- To understand the atmospheric circulations and Meteorological Hazards and Disasters
- Understand in details with application, if applicable, relief of the ocean floor

COURSE OUTCOMES:

After completion of the **Climatology and Oceanography**, the student will be able to:

- Understanding the basic concept of climatology and its relation to Metrology
- Understanding the atmospheric circulations and Meteorological Hazards and Disasters
- Understanding the concepts of oceanography and oceanic water movement.

Semester – III

Paper – III: **Human Geography**

COURSE OBJECTIVES:

- Learn the details of human geography importance, human activities and interaction between man and environment.
- Deliberate in details with examples races of mankind's
- Specify the details of cultural realms, population growth and demographic transition study
- Understand in details of human migration causes and consequences, human settlements and urbanization study

COURSE OUTCOMES:

- Understanding human activities and interaction between man and environment.
- Understanding the races of mankind and their characteristics
- Understanding the details of cultural realms, population growth and demographic transition
- Understanding human migration causes and consequences, human settlements and urbanization

Semester – III

Skill Enhancement Course (SEC – 2): Travel and Tourism

COURSE OBJECTIVES:

- familiarize students with the basic concepts of travel and tourism
- give an insight into how travel and tourism evolved over a period of time and reached the modern stage.
- enhance the knowledge of students in various areas related to tourism and how it affects the destination.
- explore the selected issues that currently influence the tourism industry both locally and globally.

LEARNING OUTCOMES:

- understand fundamentals of tourism from the management, marketing and financial perspectives.

- understand the concepts of travel and tourism, the framework of the system, types and form of tourism as well as the impacts of tourism.
- describe the different types tourism resources of India, their importance in tourism and management.

Paper - IV: **Economic Geography**

COURSE OBJECTIVES:

- Understand in details with application of concepts, patterns of development
- Learn in details the characteristics of primary activities
- Understand in details with applications of the mineral and power resources.
- Study of the factors for location of industries on steel, cotton, textile and ICT.
- Study of world transportation and trade patterns and transport.

COURSE OUTCOMES:

- Understanding the concepts, patterns of development
- Learning the characteristics of primary activities
- Understanding the mineral and power resources.
- Learning the factors for location of industries on steel, cotton, textile and ICT.
- Understanding world transportation and trade patterns and transport.

SEC - 4: **Remote Sensing and GPS**

COURSE OBJECTIVES:

While studying the **Remote Sensing**, the student shall be able to:

• To understand the various platforms and Characteristics

• To understand the characteristics of EMR and its interaction with atmosphere and earth surface

• To understand about the applications of remote sensing and GPS

COURSE OUTCOMES:

After completion of the **Remote Sensing**, the student will be able to:

• Understanding the various platforms and Characteristics

• Understanding the EMR interaction with atmosphere and earth surface features.

• Understanding about the GPS.

Paper – V: (A) PRINCIPLES OF REMOTE SENSING

COURSE OBJECTIVES:

- Learn in details the concepts of aerial photography and satellite remote sensing, the interaction of electromagnetic radiation with atmospheric and terrestrial features;

- Identify remote sensing platforms, study the orbital characteristics and types of sensors;
- Critically examine the characteristics of spatial, spectral, radiometric and temporal resolution of remotely sensed data;
- Understand in details the remote sensing products, growth and development of remote sensing in India.

COURSE OUTCOMES:

- Learning the concepts of aerial photography and satellite remote sensing, the interaction of electromagnetic radiation with atmospheric and terrestrial features;
- Understanding remote sensing platforms, study the orbital characteristics and types of sensors;
- Understanding the characteristics of spatial, spectral, radiometric and temporal resolution of remotely sensed data;
- Learning details of remote sensing products, growth and development of remote sensing in India.

Paper – V: (B) GEOGRAPHY OF INDIA

COURSE OBJECTIVES:

While studying the **Geography of India**, the student shall be able to:

- To introduces the students the diverse physiographic, climate and landscape of India
- To learn about the resource like minerals, water, vegetation, ecosystem
- Identify the classification and characteristics of Population density and distribution
- To help students to get knowledge on economic, social and cultural setup of this country

COURSE OUTCOMES:

After completion of the **Geography of India**, the student will be able to:

- Introducing the students, the diverse physiographic, climate and landscape of India
- Learning about the resource like minerals, water, vegetation, ecosystem
- Helping the students to get knowledge on economic, social and cultural setup of this country
- Specify the characteristics of Transportation modes

Paper – VI: (A) GEOGRAPHIC INFORMATION SYSTEM (GIS)

Course outcomes:

- Understand in details what is GIS; the functions and components of GIS, study of spatial and non-spatial data;
- understand how data is stored in computer and applications of Global Positioning System (GPS);
- Learn in details of spatial analysis of measurements, buffering and modeling surfaces etc.

- Understand in details with applications, integration of RS and GIS.

SEMESTER-I

Understanding Political Theory

course out come

This course gives knowledge about the meaning of political theory ,its evolution and nature such as empirical and positive .It enables the student to understand the origin of the state its evolution by analysing various theories and can estimate the challenges to the present sovereign state system. Political institutions and their functions and the relationship between the individual and state can be understood and an individual can become a good citizen and can participate in government affairs in a better way and acquire leadership qualities by this knowledge.

CO1: It explains about the various theories for the origin of the state and analyses the concept of authority and its allocation.

CO2: One can assess the challenges of the sovereign state and can Evaluate the theory of liberalism, nationalism and multiculturalism

CO3: It elaborates about the political institutions. Explains about various organs of government legislature, executive, judiciary their composition ,types and functions which enables to know about the different governments existing in the world and their way of functioning.

CO4: Explains political party meaning, types, the way of functioning and the significance of political parties

CO5: Explains the role of pressure groups and describes the types of pressure groups. Gives an understanding on the role of mass media and political theory enables the student to think critically about the political institutions developed over a period of time by studying different approaches, concepts related to the relationship between the individual and state can be analysed.

Semester -II

WESTERN POLITICAL THOUGHT(DSC)

CO1: The course gives an introduction to Political Thought processes and Theory making in the West.

CO2: From the Greek Political thinkers to down the ages including Utilitarian's, this course introduces the student to the richness and variations in the political perceptions of Western Thinkers.

CO3: It provides a foundation to students of Political Science in familiarizing themselves to the Thought & Theory of Western Philosophy.

CO4: It particularly focuses on the evolution of idea and institution of State in the West.

CO5: It covers ancient, medieval and early modern thinkers

SEMESTER-III

INDIAN POLITICAL THOUGHT (DSC)

CO1: Tracing the evolution of Indian political thought from ancient India to modern India.

CO2: The course gives an introduction to Political Thought processes and Theory making in India. From the ancient Political thinkers to down the modern political thinkers in India.

CO3: this course introduces the student to the richness and variations in the political perceptions of Indian Thinkers.

CO4: It provides a foundation to students of Political Science in familiarizing themselves to the Thought & Theory of Indian Philosophy.

CO5: It particularly focuses on the relationship between the state and society in ancient India. and evolution of ideas on society and state . It covers ancient, medieval and modern thinkers .which gives the knowledge for the student to understand the Indian state and society from past to the present.

SEMESTER-IV

GOVERNMENT AND POLITICS IN INDIA

CO1: This course Introduces the Indian Constitution with a focus on the evolution ,the role of the Constituent Assembly and the essence of the Preamble.

CO2: it gives the knowledge about the nature of Indian Federalism with focus on Union-State Relations. Critically analyses the important institutions of the Indian Union: the Executive: President; Prime Minister, Council of Ministers; Governor, Chief Minister and Council of Ministers; The legislature: Rajya Sabha, Lok Sabha, Speaker, Committee System, State Legislature, The Judiciary: Supreme Court and the High Courts: composition and functions- Judicial Activism.

CO3: explains the Indian Party system – its development and looking at the ideology of dominant national parties

CO4: Evaluates the role of various forces on Indian politics: religion; language; caste; tribe; regionalism; business; working class and peasants

CO5: gives knowledge about the Electoral Process in India with focus on the Election Commission: Composition, Functions and Role

SEMESTER -V

INTERNATIONAL RELATIONS (DSE)

CO1: Explains the scope and subject matter of International Relations as an autonomous academic discipline.

CO2: one can explore Approaches and methods to study the discipline through Political realism, Pluralism and Worlds system’s Model.

CO3: Explains about colonialism causes and the process of decolonisation. Describes the Cold War phases and understanding the post-cold War era.

CO4: Examines the issues of Underdevelopment, Terrorism, Regionalism and Integration that characterizes the Post second world war order.

CO5: Studies the features of Indian foreign policy and its relationship with USA and China. This course gives knowledge about world affairs in a very systematic way.

Vth Semester- Generic Elective

POLITICS OF DEVELOPMENT

CO1: The purpose of this module is to examine the effects of political factors on economic development in India. It aims to familiarise students with various theories of economic development, specifically the role of the state and government intervention in development.

CO2: It will thereby enable students to acquire a nuanced and empirically grounded perspective on the reasons for wide variations in economic development.

CO3: Acquire a basis for critical and independent analysis of issues of governance and power in the post-colonial world Planning, Mixed Economy, Socialistic Pattern of Society Sectors of Development: Industry, Agriculture, Irrigation enhance their knowledge about theories of how power and governance is related to problems of development in the post-colonial world.

CO4: Acquire a basis for critical and independent analysis of issues of governance and power in the post-colonial world Planning, Mixed Economy, Socialistic Pattern of Society Sectors of Development: Industry, Agriculture, Irrigation. Be able to recall and compare the major theories and concepts of power and governance

CO5: Be able to understand Issues of Development in the Post-Economic Reforms period Economic Reforms: Liberalisation, Privatisation, Globalisation, Development and Displacement, Development and Environment

Semester VI

GLOBAL POLITICS (DSE)

CO1: It allows students to develop an understanding of the local, national, international and global dimensions of political activity, as well as allowing them the opportunity to explore political issues affecting their own lives.

CO2: Global politics draws on a variety of disciplines in the social sciences and humanities.

CO3: It helps students to understand abstract political concepts such as Power , Elements of Power , Balance of Power ,Growing importance of Soft Power ,Security, Collective Security, Bipolarity , Multipolarity, Unipolarity by grounding them in real world examples and case studies.

CO4: Developing international mindedness and an awareness of multiple perspectives is at the heart of this course.

CO5: It encourages dialogue and debate, nurturing the capacity to interpret competing and contestable claims.

Semester-VI

CONTEMPORARY POLITICAL THEORY

This course will examine the main theoretical voices in contemporary political thought-specifically ideas and beliefs. Its goal is to introduce students to the major political belief systems,or political ideologies,that have shaped the world.It will examine a range of these ideologies in order to understand what they believe,what they want to accomplish,and what their strengths and weaknesses are.By studying these different ideologies,and comparing them to one another,the course intends to help students clarify and better understand own political ideology and how it shapes your view of the world

CO1: Explain the essential elements of all the Contemporary political theoretical traditions

CO2: Understand and identify key concepts in political thought from a historical perspective;

CO3: Apply gained knowledge of contemporary political thought on the real politics of today.

CO4: Use the critical and analytical skills in assessing main sources in political thought.

CO5: Assess the main works of leading political thought thinkers.

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Tara Government College Sangareddy (A)

Department of History

Paper I

History of India

(from earliest times to 700 CE)

Course Outcomes:

- Learn the Characteristics of Pre-Historic age.
- Learn in depth of development of Urbanization.
- Learn about Ancient administration and Culture.
- Understand the Art and Architectural development.

Paper II

History of India from

(700-1526CE)

Course Outcomes:

- Understand Rajput Society and Culture.
- Learn of depth invasions of Arabs and Turkish rulers and it's effects on Indian Culture.
- Learn about formation of local ruling dynasty in Southern part like Kakatiyas.
- Learn about Vijayanagara empire and their culture.

Paper III

(History of India from 1526-1857 CE)

Course Outcomes:

- Understand Mughal administration.
- Learn in depth of rise of Regional powers.
- Learn in depth of European powers.
- Understand Colonialism, Mercantilism.

Paper IV
(History of India 1858 to 1964 CE)

Course outcomes:

- Learn about East India company rule.
- Learn about social religion reforms movement
- Understand in depth of nationalism
- Understand about revolutionary movement.
- Learn in depth about India after independence.

Paper V

History of modern World

(From 1453 CE to 1964 CE)

Program outcomes:

- Understand about Renaissance and its impact.
- Learn in that about revolutionary movements.
- Learn about World wars, importance of league of nation and United Nation organization.

Paper VI

History and Culture of Telangana

(From earliest time to 2014 CE)

Program outcomes:

- Understand pre-study of Telangana and administration of Satavahana.
- Learn in depth about foundation Asaf Jahi dynasty and their rule.
- Understand Social, Culture and Political awakening in Telangana.
- Learn in depth about separate Telangana movement.

TARA GOVT. COLLEGE, SANGAREDDY (A)
BA Economics- Course Outcomes (Cos)

BA Economics - Course Outcomes

SEMESTER-I

Micro Economics- Course Outcome:

CO 1. To learn the basic foundation of Micro Economics.

CO 2. To enable the students to study about the basic theories of consumer behaviour, law of demand, production, cost and revenue functions.

CO 3. To appreciate the nature, scope and change in Paradigms of Economics.

CO 4. To acquaint knowledge about the nature of various economies i.e., Capitalist, Socialistic and Mixed economies.

CO 5. To understand the market mechanism

SEMESTER-II

Macro Economics - Course Outcome:

CO 1. To make the students to know about the nature and the methods of macroeconomics.

CO 2. To study about the nature and importance of some Macro Economic variables.

CO 3. To get knowledge about equilibrium of the economy

CO 4. To understand the determinants of consumption pattern

CO 5. To appreciate the role of the government in economic activities

SEMESTRER-III

Statistics for Economics - Course Outcome:

CO 1. To study the nature scope, uses and limitations of statistics.

CO 2. To enable the students of Economics to know the various sources of data collection.

CO 3. To make the students to learn the basic and elementary tools in statistics such as averages dispersion etc.

CO 4. To make students to know the use of statistical tools in research

CO 5. To understand the data collection and its analysis process

SEMESTER-IV

Indian Economy - Course Outcome:

CO 1. To provide knowledge and to enable students to understand the basic characteristics of Indian economy, issues and measures.

CO 2. To understand the structure and progress of world economy

CO 3. To make students to get knowledge about reforms in various sectors in the economy

CO 4. To understand socio-economic problems and find out innovative solutions for them

CO 5. To analyze the growth of the economy and sectors contribution

SEMESTER-V

Agriculture Economics - Course Outcome:

CO 1. To understand the sector role in country's GDP and employment generation

CO 2. To enable the students to know the significant of form management techniques, Agricultural policies, credit and market structure

CO 3. To understand the cropping pattern in the country

CO 4. To make students to well known about reasons of rural credit and its consequences in India

CO 5. To analyze the problems encountered by farmers and to find out solutions

SEMESTER-V

Economics of Environment - Course Outcome:

CO 1. To impart the students about the significance of Environment

CO 2. To make the students to understand the link between Economics, Environment and Economic development

CO 3. To make the students to know the global environmental issues

CO 4. To understand the sustainable development issues and measures for it

CO 5. To enable the students to understand about environmental degradation in India and alternative resource utilization

SEMESTER-V GE- Telangana Economy - Course Outcome:

1. To know the features of Telangana Economy.
2. To compare the Telangana Economy with other states in terms of HDI

SEMESTER-VI

International Economics - Course Outcome:

CO 1. To enable the students to understand the basic premises of international Trade with reference to India.

CO 2. To make students well known about international trade relations of India with rest of the world

CO 3. To understand the theories of international trade

CO 4. To aware the students about trade cycles and their effects on world economies

CO 5. To acquaint knowledge about innovative measures for economic hindrances in various countries

SEMESTER-VI

Development Economics - Course Outcome:

CO 1. To enable the students to study about the basic concepts of growth and developments, factors which influencing it.

CO 2. To understand the features of developing economies and know about demographic features

CO 3. To study the classical, Neo-classical, Keynesian and Post Keynesian Theories of growth and development Models.

CO 4. To understand the development models of developed and developing countries

SEMESTER-VI

Industrial Economics - Course Outcome:

CO 1. To impart knowledge about the basic premises of industrial Economics and its relevance to industrial development.

CO 2. To know about theories of Industrial location

CO 3. To understand the industrial unrest and reasons and measures

CO 4. To impart knowledge about industrial policies of the country

CO 5. To know the industrial progress of India

SEMESTER-VI

Financial Economics - Course Outcome:

CO 1. To offer higher level treatment of public finance with social goods, market failures.

CO 2. To know about Higher level theories of public expenditure, taxation and Indian tax structure

CO 3. To impart knowledge about financial relations between state and central governments

CO 4. To understand the financial institutions in India

SEMESTER-III SEC-I Computer Application in Economics - Course Outcome:

CO 1. To make the students to understand the basic concepts used in computer and its applications to Economics.

CO 2. To understand the relation between Economics and Computer Application

SEMESTER-III SEC-II Rural Development - Course Outcome:

CO 1. To make the student to know the basic concepts of rural developments factors influencing it –social, political, institutional etc.

CO 2. To enable the students to study the theories of Development.

SEMESTER-IV SEC- IV Entrepreneurship Development - Course Outcome:

CO 1. To make the students to understand the entrepreneurship and become self-employed.

CO 2. To motivate the students to generate business ideas for starting small business.

TARA GOVT. COLLEGE, SANGAREDDY (A)
Programme and Course Outcomes of M.A Economics

M.A Economics - Program Outcomes:
The purview of Economics is widespread and it flanks almost every field related to human beings:

1. The introduction, development and advancement of new subjects associated with economics and their analytical applications interpret many unknown behaviours of human beings.
2. By the introduction of the conditions of rationality in the areas of Consumption, Production and distribution, it tries to nurture rational thinking.
3. The students of Economics can go for higher studies in the fields of Economics, Business Administration and Computer Application after attaining post-graduation in economics.
4. The subject matter of M.A Economics programme covers the fields of Demography, Agriculture, Industry, Planning and Development, Environmental Economics, Development Economics, Econometrics/Quantitative Techniques, Banking, Financial Markets, Public Finance, International Trade and the functioning of international organisations such as IBRD (World Bank), International Monetary Fund, International Development Association, etc.
5. Since these are the main subject content of State Level and National Level competitive examinations, banking service, railway service examinations and other competitive examinations, the students of Economics can easily crack such examinations and can become successful in getting employment opportunities.
6. Completion of PG Degree in Economics with good knowledge open up research opportunities in the national level premier Educational Institutes like IITs, IISc, Delhi School of Economics, BITs Pilani, etc.
7. The real understanding of the subject content of M.A. Economics help in the character building of students and makes them responsible citizens. They are exposed to national and international problems and hence they will have a thorough understanding of national and international economic events.
8. To important knowledge equivalence skills, social skills, ability of decision making as innovative thinking with a local, regional national and global concerned to understand and respect unity in diversity and national diversity as identity of India in the world.

SEMISTER -I

Micro Economics - Course Outcomes:

CO 1. On successful completion of the course, a student will be able to develop a sound understanding of the core microeconomic concepts that economists use to understand the process of decision-making by an economic agent(s).

CO 2. The student should be able to apply mathematical tools and techniques to study behaviour of economic agents.

CO 3. The students will be able to identify strategic behaviour of economic agents and formulate them in a game theoretic framework.

CO 4. They will be able to identify and analyze strategic interactions and explain negotiation and exchange between economic agents in game theory models.

CO 5. The students will be able to compute the outcome of normal form games, mixed strategy and sequentialgames.

Macro Economics - Course Outcomes :

CO 1. Get an overview of the major developments in macroeconomic theory,with particular emphasis on the policy prescriptions of the earlier macroeconomic schools ofthought.

CO 2. Develop an understanding of the interrelationships among the various macroeconomic variables and the way they impact upon the working of the economy as a whole, thereby determining the course of the economy.

CO 3. Gain in depth knowledge about Keynesian vs Monetarist policy formulations as well as the theoretical justifications of such policies, together with the effectiveness of alternative policies with respect to the policy goals.

CO 4. Get acquainted with disequilibrium transactions and quasi equilibrium situations in general disequilibrium macro- models.

CO 5. The course prepares the students with a theoretical base on the evolution of money and deeper insights into the utility of money in different macroeconomic frameworks.

Quantitative Methods – I - Course Outcomes:

CO 1. To impart knowledge about preliminary mathematical concepts specially related to real valued, Concave, quasi concave andcontinuous functions
CO 2. To understand concept of matrices with some properties e.g semi definite
CO 3. To know about basic concepts of set theories specially convex, hyper planes, half spaces, separating and supporting hyper planes
CO 4. To understand static optimization and its related concepts
CO 5 To acquaint knowledge on the Concepts of comparative statics

Agricultural Economics – Course Outcomes:

CO 1. To learn about the structure and characteristics of the agricultural sector in less developed countries like India.
CO 2. To understand the various constraints specific to lessdeveloped agriculture.
CO 3. To have an exposure to theories regarding the operation of various institutions within the agricultural sector of LDCs.
CO 4. To understand the marketing and pricing policy in agriculture sector.
CO 5. To develop an understanding of the manifold obstacles to agricultural development, and the policies adopted to overcome them, with particular emphasis on the Indian agricultural scenario.

Environmental Economics – Course Outcomes:

CO 1. To apply the theoryin resource use decision of forestry, fishery and water management

CO 2. The studentswill be able to use bio-economic models to study problems in fisheries under various property rights regimes.

CO 3. The students will be able to estimate the rotation period of scientific forestry bothfor single and multi-period forestry

CO 4. To understand the strategic behaviour of stakeholders in a local institution determines the outcome in forestand water management.

CO 5. To get knowledge about Sustainable development and its elements.

SEMISTER –II

Micro Economics – Course Outcomes:

CO 1. To introduce the student with advanced modern microeconomic theory.

CO 2. The students will be able to address economic issues related to uncertainty and risk in decision-making.

CO 3. The students will learn to understand how in the real world market contractual settings are characterized by conflict of interests as well as asymmetry of information among the individuals involved.

CO 4. the students will develop an understanding of how negotiations made under asymmetric information conditions and how the sub-optimality problem can be addressed in economics.

CO 5. To impart knowledge about pricing strategies in various markets.

Macro Economics – Course Outcomes:

CO 1. To understand some later developments in macroeconomic theory, like Real Business Cycle Hypothesis vs. New Keynesian Economics

CO 2. To gain insight into the alternative policy prescriptions of these two schools of thought.

CO 3. To understand about the basics of open economy

CO 4. To develop knowledge and understanding of theory and concepts of financial market system

CO 5. To explore Information Asymmetry in debt and credit markets as a category of analysis strengthening the student'sknowledge on debt and credit market structures

QuantitativeMethods – II - Course Outcomes:

CO 1. To understand basic concepts of differential equation, stability theory andphase diagram

CO 2. To know about basic elements related to application of dynamicoptimization

CO 3. To understand the Concept of game theory and Calculation of optimal control theory

CO 4. To deal with different types of transversality condition

CO 5. Application of autonomous optimal control problems in realeconomic scenario

Agricultural Economics – II - Course Outcomes:

CO 1. To understanding of the role of agriculture in economicdevelopment

CO 2. To gather knowledge about several celebrated models ofagricultural development

CO 3. To generate awareness about the relationship betweentechnical change and peasant agriculture

CO 4. To understanding the various aspects of agricultural price policy in developing countries

CO 5. To know about institutional and non-institutional financial sources for agriculture sector

Environmental Economics – II – Course Outcomes:

CO 1. Todevelop economic perspectives on modern environmental issues and to apply economic theory

CO 2. The students will be able to learn that economic objectives are not necessarily in conflict with environmental goals

CO 3. To learn about markets mechanisms can be useful to improve environmental quality.

CO 4. The student will be able to place environmental problems inan economic framework

SEMISTER-III

Economics of Growth and Development - Course Outcomes:

CO 1. To understanding the basic facts of economic growth.

CO 2. To understand the relationship between growth and development.

CO 3. To know about familiarity with the wide-ranging policy issues and theoriesin growth economics.

CO 4. To understand the Keynesian Analysis of economic growthwith a comparison tosome other growth models.

CO 5. To impart knowledge about literature on neo-classicalgrowth models and empirics.

International Economics - Course Outcomes:

CO 1. To impart knowledge on the concepts related to foreign exchange market and exchange rate

CO 2. To understand various theories related to exchange rate determination

CO 3. To know about various concepts related to balance of payments of a nation

CO 4. To understand impacts of expansionary and contractionary fiscal policyand monetary on trade balance

CO 5 to know the effects of protectionist policy on trade balance and Impacts of all these policies on real exchange rate

Public Economics - Course Outcomes:

CO 1. To develop an understanding of various aspects public choicetheory

CO 2. To get familiarity with the different aspects of fiscal federalism

CO 3. To Acquaint with the technique of cost-benefit analysis for project appraisal

CO 4. To understand various aspects of fiscal policy and debtmanagement

Basic Econometrics –I – Course Outcomes:

CO 1. To get knowledge on concepts of data (cross section, time series, pooled ,paneldata)

CO 2. To know about Classification of data from measurement perspective (ratioscale, ordinal, interval, nominal)

CO 3. To understand the concept of population, sample

CO 4. To know the sampling procedures

CO 5. To know the concept of distribution (t, chi square, F, etc.), Concept of error term and Concepts of correlation and regression

Telangana Economy – Course Outcomes:

CO 1. To know the features of Telangana Economy.

CO 2. To compare the Telangana Economy with other states in terms of HDI.

SEMISTER –IV

Indian Economy – Course Outcomes:

CO 1. To provide knowledge and to enable students to understand the basic characteristics of Indian economy, issues and measures.

CO 2. To understand the sectoral contribution to GDP

CO 3. To know about Planning strategies in various plans and its achievements

CO 4. To understand the socio-economic problems encountered in the country

CO 5. To review the overall development of the economy

International Economics- Course Outcomes

CO 1. To know the concepts related to foreign exchange market and exchangerate

CO 2. To understand various theories related to exchange rate determination

CO 3. To get knowledge on various concepts related to balance of payments of a nation

CO 4. To know the impacts of expansionary and contractionary fiscal policyand monetary on trade balance

Co 5. To understand effects of protectionist policy on trade balance

Public Economics-II - Course Outcomes:

CO 1. To Develop an understanding of various aspects public choicetheory

CO 2. To get familiarity with the different aspects of fiscal federalism

CO 3. To acquaint with the technique of cost-benefit analysis for project appraisal

CO 4. To understand various aspects of fiscal policy and debt management

Econometrics – II – Course Outcomes:

CO 1. To know the concepts of Heteroscedasticity & Multicollinearity

CO 2. To understand various tests to understandthe presence of Heteroscedasticity and multicollinearity

CO 3. To know possible remedial measures to overcome such problems

CO 4. To understand possible remedial measures in case of errors in dependentvariables or in independent variable

CO 5. To get knowledge about concepts about the Analysis of Variance or (ANOVA)

Telangana Economy-II -Course Outcomes:

CO 1. To know the features of Telangana Economy.

CO 2. To compare the Telangana Economy with other states in terms of HDI

TARA GOVERNMENT COLLEGE SANGAREDDY (A)
DEPARTMENT OF JOURNALISM & MASS COMMUNICATION
(MOOCS)

PROGRAM SPECIFIC OUTCOMES:

(After completion of BA Journalism Students will)

PSO 1 : The students will learn and apply employable skills in industries/corporate houses related to media.

PSO 2 : Students will become professional journalists with ethical standards

PSO 3: Students will acquire skills pertain to report writing, editing, communications, new stories, advertising, RJs, News anchoring.

PSO 4: Students understand the socio-political issues and communicate properly to the society as journalists.

Chairman BoS & HoD
Dept.of Mass Communication & Journalism
Tara Government College (A)
Sangareddy

B.A Journalism & Mass Communication (MOOCS)

Semester I , Paper I
Introduction to Communication and Journalism

COURSE OUTCOMES:

CO 1 : Students understand and apply the concepts of communication.

CO 2 : Students will acquaint themselves with modes of communication.

CO 3 : Students will know the theories of communication.

CO 4 : Students will understand the basics of Journalism.

CO 5 : Students will explain types of Journalism.

B.A Journalism & Mass Communication (MOOCS)
Semester II , Paper II
Mass Media in India

COURSE OUTCOMES:

CO 1 : Students will understand the historical evolution of India.

CO 2 : Students understand the importance of Radio and its contribution to journalism in India.

CO 3: Students will understand the role of the cinema in India media.

CO 4: Comprehend the role of broadcast media.

CO 5: Students understand the historical significance of modern era media.

Chairman BoS & HoD
Dept.of Mass Communication & Journalism
Tara Government College (A)
Sangareddy

B.A Journalism & Mass Communication (MOOCS)
Semester III , Paper III
Reporting and Editing for Print Media

COURSE OUTCOMES:

CO 1: Students will identify and differentiate dimensions of news.

CO 2: Students comprehend types of reports.

CO 3: Students will learn and apply organizational setup.

CO 4: Students learn the skill of editing reports and news.

CO 5: Students explain and analyze legalization of news media.

B.A Journalism & Mass Communication (MOOCS)
Semester IV, Paper IV
Broadcast and New Media Journalism

COURSE OUTCOMES:

CO 1 : Students acquire know-how and comprehend broadcast media.

CO 2 : Students learn know-how of radio production.

CO 3 : Students understand and apply the news media radio.

CO 4: Students understand and apply the television journalism.

CO 5 : Students work for new media journalism..

Chairman BoS & HoD
Dept.of Mass Communication & Journalism
Tara Government College (A)

BACHELOR OF BUSINESS ADMINISTRATION

COURSE OUTCOMES

I SEM

Principles of management

1. The main objective of management is to secure maximum output with minimum effort.
2. They should be consistent with the organizationalpolicies and procedures.
3. Objectives promote motivation empowerment of employers.

Principles of marketing

1. To introduce the marketing concept and how we identify, understand and satisfy the needs of customer andmarkets.
2. To analyze company and competitors and to introduce marketing strategy to increase awareness of strategic and tactical decisions behind today's top performing brands.

BUSINESS ECONOMICS

1. Students understand the basics of Managerial Economics.

2. Explanation on the different types of organizations is informed Determine the role of Public Sector developments in India

II SEM

BUSINESS STATISTICS

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

1. Predict values of strategic variables using regression and correlation analysis.
2. Understand basic statistical concepts such as statistical collection, statistical series, tabular and graphical representation of data.
3. Calculate measures of central tendency, dispersion and asymmetry
4. Interpret the meaning of the calculated statistical indicators.
5. Choose a statistical method for solving practical problems.
6. Express the fundamentals of Statistics.

ORGANIZATION BEHAVIOUR

1. To know the overview of organization.
2. To study planning procedure.
3. To identify the organizational structure and forms.
4. To familiarize with communication motivation and leadership towards directing.

To analyze the process of controlling

FINANCIAL ACCOUNTING

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

1. 1 Describe the role of accounting information and its limitations.
2. Develop the skill of recording financial transactions and preparation of reports in accordance with GAAP
3. Acquire conceptual knowledge of basics of accounting. Develop the skill of recording financial transactions and preparation of reports in accordance with GAAP.
4. Equip with the knowledge of accounting process and preparation of final accounts of sole trader
5. Identify and analyze the reasons for the difference between cash book and pass book balances
6. Recognize circumstances providing for increased exposure to errors and frauds.

II SEM

FINANCIAL MANAGEMENT

1. To develop knowledge about business Finance and Accounting and Management
2. To make students aware about the challenges and opportunities of Financial Management

HUMAN RESOURCES MANAGEMENT

1. To know the basic of human resources management .
2. To analysis human resources planning .
3. To familiarize recruitment and selection procedures .
4. To study the trains methods and career development plan .

To know the methods of wage and salary administration – compensation plans

II SEM

BUSINESS LAW

Upon successful completion of Business Law the student will be able to:

1. Demonstrate, understand and communicate all the Legal Terminology of Business.
2. Understanding Development of Business Law in India
3. Outline Essentials of a valid Contract and agreements expressly declared to be void
4. Wagering Agreements from Contingent contracts and classify different modes of Discharge.
5. Acquire knowledge about Sale of Goods Act 1930 and Consumer Protection Act 1986
6. Explain Intellectuals Property Rights , Information Technology Act & Environmental Protection Act

MARKETING RESEARCH

1. To know the modern marketing concepts and evaluation
2. To study the consumer behavior
3. To analyze the product and price
4. To analyze the promotion mix
5. To explore the place mix and strategies decisions

UG –COURSE OUTCOMES

DEPARTMENT OF COMMERCE

B.COM

SEM -I

FINANCIAL ACCOUNTING – I

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

1 Describe the role of accounting information and its limitations.

2. Develop the skill of recording financial transactions and preparation of reports in accordance with GAAP

3. Acquire conceptual knowledge of basics of accounting. Develop the skill of recording financial transactions and preparation of reports in accordance with GAAP.

4. Equip with the knowledge of accounting process and preparation of final accounts of sole trader

5. Identify and analyze the reasons for the difference between cash book and pass book balances

6. Recognize circumstances providing for increased exposure to errors and frauds.

BUSINESS ORGANIZATION AND MANAGEMENT

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

1. Explain the functioning of Stock Exchanges & Mutual funds.

2. Understand the scope of Business, and its importance.

3. Identify various vital documents of a company

4. Analyze different forms of business organizations

5. Learn various sources Industrial Financial resources

6. Describe the Social Responsibility and Ethics of Business

SEM -II

FINANCIAL ACCOUNTING – II

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

1. Prepare Receipts & Payment Account, Income & Expenditure Account and Balance Sheet for Non Profit Organization
2. Determine the ascertainment of profit under Single Entry system.
3. Appreciate the need for negotiable instruments and procedure of accounting for them
4. Evaluate the concept of Consignment and learn its accounting treatment
5. Understand the meaning and features of Non-Profit Organizations
6. Distinguish Joint Venture and Partnership and to learn the methods of maintaining records under Joint Venture.

BUSINESS LAW .

Upon successful completion of Business Law the student will be able to:

1. Demonstrate, understand and communicate all the Legal Terminology of Business.
2. Understanding Development of Business Law in India
3. Outline Essentials of a valid Contract and agreements expressly declared to be void
4. Wagering Agreements from Contingent contracts and classify different modes of Discharge.
5. Acquire knowledge about Sale of Goods Act 1930 and Consumer Protection Act 1986
6. Explain Intellectuals Property Rights , Information Technology Act & Environmental Protection Act

SEM-III

ADVANCED ACCOUNTING

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

1. Understand the need and methods of valuation of shares and goodwill.
2. Prepare financial statements for partnership firm on dissolution of the firm.
3. Evaluate the different ways for a company to raise finances from public
4. Prepare financial accounts for partnership firms in different situations .
5. Apply the New Companies Act provisions regarding Company accounts.
6. Understand Profits prior to incorporation of a Company.

BUSINESS STATISTICS-I

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

1. Predict values of strategic variables using regression and correlation analysis.
2. Understand basic statistical concepts such as statistical collection, statistical series, tabular and graphical representation of data.
3. Calculate measures of central tendency, dispersion and asymmetry
4. Interpret the meaning of the calculated statistical indicators.
5. Choose a statistical method for solving practical problems.
6. Express the fundamentals of Statistics.

SEM-IV

INCOME TAX

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

1. Apply the conceptual and legal knowledge about Income Tax provisions.
2. Computation of Income from different heads with reference to an Individual Assessee.
3. Identify intra and inter head set of losses and carry forward of losses
4. Understand clubbing of income and the term aggregation of income
5. Identify various deductions under section u/s80 C to 80 U
6. Assessing income, calculate tax liability and file E-returns

BUSINESS STATISTICS –II

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

1. Describe the various techniques of Advanced Statistics in the field of commerce.
2. Select appropriate statistical techniques for summarizing and displaying business data.
3. Analyze and draw inferences from business data using appropriate statistical methods
4. Interpret and communicate the results of a statistical analysis in the context of a business problem
5. Understand and use simple forecasting techniques.
6. Understand the concept of Index Numbers, Probability and theoretical distribution

SEM-V

COST ACCOUNTING

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

1. Imbibe conceptual knowledge of cost accounting.
2. Select the costs according to their impact on business
3. Differentiate methods of schedule costs per unit of production and calculating stock consumption.
4. Identify the specifics of different costing methods and interpret the impact of the selected costs method
5. Apply cost accounting methods to evaluate and project business performance
6. Demonstrate mastery of costing systems, cost management systems, budgeting systems and performance measurement system.

COMPUTERISED ACCOUNTING

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

1. Acquire the knowledge of computer software.
2. Understand the limitations of manual accounting and advantages of computerized accounting.
3. Integrate technical skills with financial accounting procedures.
4. Explain the process of maintaining inventory and day-to-day transactions in Tally accounting software.
5. Manage account receivables and payables in ERP.
6. Able to generate MIS reports.

SEM-VI

COST CONTROL AND MANAGEMENT ACCOUNTING.

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

1. Learn various techniques of marginal costing.
2. Examine the use of budgets in business organizations. Prepare and plan the budget planning for each unit or activity of the firm.
3. Understand the use of standard costs in manufacturing and apply variance analysis concepts.
4. Explain the concept and importance of management accounting for businesses
5. Apply different techniques of managerial accounting information in business decisions making.

THEORY AND PRACTICE OF GST.

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

1. Know the various provisions of GST Act 2017.
2. Practice various provisions of GST in Tally ERP 9.1.
3. Learn and compare various tax rates for goods and services under GST .
4. Practice the advance entries and adjustments relating to various transactions.
5. Generate the various reports and upload in the GST portal .

COURSE OUTCOMES

List of Courses Offered by Dept. of Computer Sciences & Application

Semester	B.Sc.	B.Com.	B.A.
I	Programming in C	Fundamental of IT	Programming in C
II	Programming in C++	Programming with C and C++	Programming in C++
III	Data Structures	RDBMS	RDBMS
IV	Data Base Management System	Web Technology	Multimedia Systems
V	Programming in Java	e-commerce	Programming in Java
VI	Web Technology	Cyber Security	Web Technology

B.Sc. COMPUTER SCIENCE COURSES

I YEAR

SEMESTER I: PROGRAMMING IN C

Course Outcomes:

Learners could able to:

- Determine when computational methods and computers would be beneficial.
- Identify and abstract the programming work involved in a computational challenge.
- Write pseudo-code and apply the concepts acquired to the programming challenges.
- Based on the problem's needs, select the appropriate data representation formats.
- Choose the proper programming construct for the job by comparing and contrasting the various programming constructs.
- On a computer, write the software, edit it, compile it, debug it, correct it, recompile it, and run it.
- Identify tasks where the numerical concepts learnt may be applied and use them to develop programmes, allowing computers to solve the task successfully.

SEMESTER II: PROGRAMMING IN C++

Course Outcomes:

Learners could able to:

- Take note of the difference between the top-down and bottom-up methods.
- Give an example of an object-oriented programming strategy using C++.
- Apply object-oriented programming principles.
- Using C++, demonstrate how to manipulate data files.
- Virtual and pure virtual functions can be used in difficult programming settings.

II YEAR

SEMESTER III: DATA STRUCTURES USING C++

Course Outcomes:

Learners could able to:

- Establish a system for classifying the many distinct types of data structures that are used in computer systems.
- Investigate and put into practice several methods of searching and sorting
- Incorporate a variety of linear and non-linear data structures

- Use the right data structures to solve specific issues.
- Examine how difficult it is to perform simple operations on algorithms and data structures in terms of their time and space complexity.

SEMESTER IV: DATABASE MANAGEMENT SYSTEM

Course Outcomes:

Learners could able to:

- Describe the main elements of relational database management systems
- Relational database design, relational algebra and SQL are some of the fundamental ideas that will be covered in this course.
- Simple database application situations can be represented using ER models.
- Assemble an RDBMS, populate it with relevant data, and write SQL queries to access it.
- Normalize the database to improve the design.
- Basic database storage structures and access strategies, including as file and page organisations, indexing algorithms such as B-trees, and hashing, are well-known.

III YEAR

SEMESTER V: PROGRAMMING IN JAVA

Course Outcomes:

Learners could able to:

- use the syntax and semantics of Java programming language and the basic principles of OOP after completing the course.
- Create reusable applications by combining inheritance, polymorphism, interfaces, and packages.
- Use the concepts of multithreading and exception handling to create error-free and fast programming.
- Create real-world-like GUI and web-based apps that are driven by events.

SEMESTER VI: WEB TECHNOLOGIES

Course Outcomes:

- By using JavaScript and DHTML, students can create a dynamic web page.
- In this course, students will learn how to write an XML document that is well-formed and valid.

- This course will teach students how to link a Java application with a SQL database and conduct actions on the database table (insert, update, and delete). Form data supplied from the client is processed and stored in a database using the server-side Java application known as Servlet.
- To save data sent from a client form, students will be able to construct a server-side Java programme known as a JSP.

B. Com. COMPUTER APLLICATIONS COURSES

I YEAR

SEMESTER I: FUNDAMENTALS OF INFORMATION TECHNOLOGY

Course Outcomes:

- Determine when computational methods and computers would be beneficial.
- Identify and abstract the fundamental work involved in a computational challenge.
- Design the various documents and concepts with help of system applications and external applications.
- Based on the problem's needs, select the appropriate data representation formats.
- On a computer, write the software, edit it, compile it, debug it, correct it, recompile it, and run it.
- Identify tasks where the numerical concepts learnt may be applied and use them to develop programmes, allowing computers to solve the task successfully.
- By using MS-OFFICE, every user should maintain any task into formally.

SEMESTER II: PROGRAMMING WITH C & C++

Course Outcomes:

- Take note of the difference between the top-down and bottom-up methods.
- Give an example of an object-oriented programming strategy using C++.
- Apply object-oriented programming principles.
- Using C++, demonstrate how to manipulate data files.
- Virtual and pure virtual functions can be used in difficult programming settings.
- Choose the proper programming construct for the job by comparing and contrasting the various programming constructs.
- On a computer, write the software, edit it, compile it, debug it, correct it, recompile it, and run it.
- Identify tasks where the numerical concepts learnt may be applied and use them to develop programmes, allowing computers to solve the task successfully.

II YEAR

SEMESTER III: RELATIONAL DATABASE MANAGEMENT SYSTEMS

Course Outcomes:

Learners should be able to:

- Describe the main elements of relational database management systems
- Relational database design, relational algebra and SQL are some of the fundamental ideas that will be covered in this course.
- Simple database application situations can be represented using ER models.
- Assemble an RDBMS, populate it with relevant data, and write SQL queries to access it.
- Normalize the database to improve the design.
- Basic database storage structures and access strategies, including as file and page organizations, indexing algorithms such as B-trees, and hashing, are well-known.

SEMESTER IV: WEB TECHNOLOGY

Course Outcomes:

- By using JavaScript and DHTML, students can create a dynamic web page.
- In this course, students will learn how to write an XML document that is well-formed and valid.
- This course will teach students how to link a Java application with a SQL database and conduct actions on the database table (insert, update, and delete). Form data supplied from the client is processed and stored in a database using the server-side Java application known as Servlet.
- To save data sent from a client form, students will be able to construct a server-side Java programme known as a JSP.

III YEAR

SEMESTER V: ELECTRONIC COMMERCE

Course Outcomes:

- Analyze the impact of E-commerce on business models and strategy.
- Describe the major types of E-commerce.
- Explain the process that should be followed in building an E-commerce presence.
- Identify the key security threats in the E-commerce environment.
- Describe how procurement and supply chains relate to B2B E-commerce.

SEMESTER VI: CYBER SECURITY

Course Outcomes:

- Analyze and resolve security issues in networks and computer systems to secure an IT infrastructure.

- Design, develop, test and evaluate secure software. Develop policies and procedures to manage enterprise security risks.
- To protect the data from hackers through security applications.

B.A. COMPUTER APLLICATIONS COURSES

I YEAR

SEMESTER I: PROGRAMMING IN C

Course Outcomes:

- Determine when computational methods and computers would be beneficial.
- Identify and abstract the programming work involved in a computational challenge.
- Write pseudo-code and apply the concepts acquired to the programming challenges.
- Based on the problem's needs, select the appropriate data representation formats.
- Choose the proper programming construct for the job by comparing and contrasting the various programming constructs.
- On a computer, write the software, edit it, compile it, debug it, correct it, recompile it, and run it.
- Identify tasks where the numerical concepts learnt may be applied and use them to develop programmes, allowing computers to solve the task successfully.

SEMESTER II: PROGRAMMING IN C++

Course Outcomes:

- Take note of the difference between the top-down and bottom-up methods.
- Give an example of an object-oriented programming strategy using C++.
- Apply object-oriented programming principles.
- Using C++, demonstrate how to manipulate data files.
- Virtual and pure virtual functions can be used in difficult programming settings.

II YEAR

SEMESTER III: RELATIONAL DATABASE MANAGEMENT SYSTEMS

Course Outcomes:

Learners should be able to:

- Describe the main elements of relational database management systems
- Relational database design, relational algebra and SQL are some of the fundamental ideas that will be covered in this course.
- Simple database application situations can be represented using ER models.
- Assemble an RDBMS, populate it with relevant data, and write SQL queries to access it.
- Normalize the database to improve the design.

- Basic database storage structures and access strategies, including as file and page organizations, indexing algorithms such as B-trees, and hashing, are well-known.

SEMESTER IV: MULTIMEDIA SYSTEMS

Course Outcomes:

Learners should be able to:

- Describe the main elements of Multimedia Systems
- Describe the Text data into physically or visually and sense of hearing
- Describe the various data elements into effectively by using internet.
- Apply the multimedia into different sectors like business, Schools, Colleges and public places. And prepare the audio and video visuals depend on their own knowledge.

III YEAR

SEMESTER V: PROGRAMMING IN JAVA

Course Outcomes:

- The students will be able to use the syntax and semantics of Java programming language and the basic principles of OOP after completing the course.
- Create reusable applications by combining inheritance, polymorphism, interfaces, and packages.
- The concepts of multithreading and exception handling can be used to create error-free and fast programming.
- Create real-world-like GUI and web-based apps that are driven by events.

SEMESTER IV: WEB TECHNOLOGY

Course Outcomes:

- By using JavaScript and DHTML, students can create a dynamic web page.
- In this course, students will learn how to write an XML document that is well-formed and valid.
- This course will teach students how to link a Java application with a SQL database and conduct actions on the database table (insert, update, and delete). Form data supplied from the client is processed and stored in a database using the server-side Java application known as Servlet.
- To save data sent from a client form, students will be able to construct a server-side Java programme known as a JSP.

B.Sc. DATA SCIENCE COURSE

I YEAR

SEMESTER I: Fundamentals of Information Technology

Course Outcome:

- Identify the components of a computer and their functions.
- Understand the concept of networking, LAN, Internet, and working of www.
- Understand the notion of problem-solving using computer by programming
- Understand the notion of Software Project and the Process of software development

SEMESTER II: Problem Solving and Python Programming

Course Outcomes:

- Develop algorithmic solutions to simple computational problems.
- Develop and execute simple Python programs.
- Develop simple Python programs for solving problems.
- Structure a Python program into functions.
- Represent compound data using Python lists, tuples, dictionaries.
- Read and write data from/to files in Python Programs.

II YEAR

SEMESTER III: Data Engineering with Python

Course Outcomes:

- Learners should be able to:
- At the end of the course the student will be able to:
- Handle different types of files and work with text data
- Use regular expression operations
- Use relational databases via SQL
- Use tabular numeric data
- Use the data structures: data series and frames
- Use PyPlot for visualization

SEMESTER IV: Machine Learning

Course Outcomes:

- At the end of the course the student will be able to understand
- Basics of Machine Learning and its limitations

- Machine Learning Algorithms: supervised, unsupervised, bio-inspired
- Probabilistic Modeling and Association Rule Mining

III YEAR

SEMESTER V: Natural Language Processing

Course Outcomes:

- At the end of the course the student will be able to
- Write Python programs to manipulate and analyze language data
- Understand key concepts from NLP and linguistics to describe and analyze language
- Understand the data structures and algorithms that are used in NLP
- Classify texts using machine learning and deep learning

SEMESTER IV: NoSQL Data Bases

Course Outcomes:

- At the end of the course the student will be able to
- Understand the need for NoSQL databases and their characteristics
- Understand the concepts of NoSQL databases
- Implement the concepts of NoSQL databases using four example databases: Redis for key-value databases, MongoDB for document databases, Cassandra for column-family databases, and Neo4J for graph databases.

DEPARTMENT OF HINDI	
SEMESTER-1: PAPER 1 (GadyaDarpan Katha sindhu)- 4 CREDITS	
CO1	To make students understand the value of literature.
CO2	Help students develop good reading writing comprehending skills
CO3	To make them learn life skills and human values and ethics through good essays and prose lessons.
CO4	The stories collected in this paper make the student understand the relation of society with women, culture, family concepts in our country.
CO5	To familiarize the students with the various elements/aspects of Prose
SEMESTER-2: PAPER 2 (GadyaDarpan Katha sindhu)- 4 CREDITS	
CO1	Enabling the students to develop grammar skills
CO2	To Enable the students to understand the value of life ,good deedsandstart looking at the world with a total positive and humanistic approach.
CO3	Apply the language in our daily life activities.
CO4	Understanding the various genres of Prose via essay, sketch, travel description and autobiography.
CO5	Understanding the Hindi stories with reference to characters,storline,economical political and social state of life.
SEMESTER-3: PAPER 3 (Kavya nidhi Hindi sahitya	

ka itihaas) - 3 CREDITS	
CO1	Enabling the students to enjoy good poetry and understand the rich heritage of Hindi literature.
CO2	Developing creative literary skills in students.
CO3	Understand Doha and follow the ethics insisted by the poets which inculcate moral values.
CO4	Introducing the trends of "Adikaal" and importance of sidh,Nath,Jain,Boudh,Rasoand laukik sahitya.
CO5	Understanding the introduction and different trends of "Bhakti Kaal". Describing the cults of Santh Kavya,Sufi Kavya,Ram Kavyaand Krish Kavya.
SEMESTER-4: PAPER 4(Kavya nidhi Hindi sahitya ka itihaas)- 3 CREDITS	
CO1	To make students understand the importance of old and new literature and the vital role played by literature in moulding ones personality.
CO2	To make students develop good translation and communication skills to face challenges of today's competitive world.
CO3	Describing the introduction and different trends of "Ritikal" and also the literary trends of Riti Badh,Riti Sidh and Riti mukth Kavya
CO4	Understanding the features of Chayavad Prayogvad,Pragativad,Nair Kavitha,samkaleen kavitha,along with the leading poets.
CO5	Describing the development of writing of prose during the pre and pro Independence.
	SEMESTER 5 -3 CREDITS
CO1	To make the students understand the important role of Hindi language as Global language ,importance of translation.

CO2	To make the students understand various aspects of language asampark Bhasha link language and official Language, RajBhasha and RashtraBhasha.
CO3	Identify the details of the Hindi language family.
CO4	Understanding the meaning,concept and importance of Functional language.
	SEMESTER 6- 3 CREDITS
CO1	To make the students know how and type of role is played in various social media platforms and employability skills to be developed
CO2	Studying The role of translation in change in multilingual society and imparting Cultural intellectual respect.
CO3	Understanding the meaning, concept and importance of Journalism Understanding the role of translation in journalism.
CO4	Studying The different phases Hindi me sthrivadi sahitya,Dalit sahithya,Adivasi Sahithya,Alpsankyak sahithy.

DEPARTMENT OF TELUGU – ML TELUGU COURSE OUTCOMES	
SEMESTER-1: PAPER 1 (ప్రాణహిత)- 4 CREDITS	
CO1	సంప్రదాలు సాహిత్యం పట్ల మక్కువ కలిగించడంలో పాటు నైతిక విలువలను, (మానవీయ సంబంధాలను) నెలకొల్పడం.
CO2	ఆధునిక కవిత్యం పట్ల అభిరుచిని కలిగించడంతోపాటు రాజు ఆచరించవలసిన ధర్మాలు, మానవీయ విలువలను పేర్కొనడం.
CO3	నాటక ప్రక్రియ పరిచం, భరతుని గొప్పదనాన్ని, ధర్మతత్పరతను సోదర ప్రేమ ధర్మాభిలాషను వివరించడం
CO4	నివేదికా రచన వ్యాస రచన మెళకువల పరిచయం
SEMESTER-2: PAPER 2 (ప్రాణహిత)- 4 CREDITS	
CO1	ప్రబంధ ప్రక్రియ, క్షేత్ర మహాత్మ్యల పరిచయం
CO2	పోతన జీవిత చరిత్ర, బౌద్ధ ధర్మాల పరిచయం
CO3	వ్యాస ప్రక్రియ పరిచయం, తెలుగు భాషపై ఉర్దూ ప్రభావం, గురువుల గొప్పదనాన్ని, ఆదర్శాలను, ఆదరణను గుర్తు చేసుకోవడం, ఆధునిక కవిత ధోరణులలో భావుకతను వివరించడం.
CO4	లేఖా రచన, కవిత్వా రచనలోని మెళకువలను వివరించడం
SEMESTER-3: PAPER 3 (తెలుగు సాహిత్య చరిత్ర- ప్రాచీనయుగం) - 4 CREDITS	

CO1	ప్రాచీన సాహిత్య చరిత్ర అధ్యయన ప్రయోజనాలు
CO2	శివకవి యుగం, కావ్యయుగాల పరిచయం
CO3	ప్రబంధ యుగ పరిచయం.
CO4	పదకవులు, శతక కవుల పరిచయం. ప్రముఖ తెలుగు సాహిత్య చరిత్ర- ఆధునిక యుగం
SEMESTER-4: PAPER 4(తెలుగు సాహిత్య చరిత్ర- ఆధునిక యుగం)- 4 CREDITS	
CO1	ఆధునిక – ప్రముఖ కవుల పరిచయం.
CO2	నవల – ప్రముఖు నవలా రచయితల పరిచయం
CO3	కథ -ప్రముఖ కధారచయితల పరిచయం
CO4	నాటకం - నాటక ప్రముఖ కధా రచయితల పరిచయం
SEMESTER-5: PAPER 5(వ్యాకరణం – ఛందస్సు – అలంకారణం)- 4 CREDITS	
CO1	బాలవ్యాకరణం సంజ్ఞ ,సమాస,సంధి, పరిచ్ఛేదాల పరిచయం
CO2	ప్రౌఢ వ్యాకరణం – వాక్య పరిచ్ఛేద పరిచయం
CO3	దశవిధయతులు, షడ్విధ ప్రాసల పరిచయం.
CO4	శబ్ద,అర్థాలంకారాల పరిచయం.

SEMESTER-5: PAPER 6 (ప్రాచీన సాహిత్యం - విమర్శ)- 4 CREDITS	
CO1	కావ్య నిర్వచనాలు.
CO2	కావ్య ప్రయోజనాలు - కార్యహేతువులు - కావ్యాత్మ
CO3	రస సిద్ధంతం - నిర్వచనం.
CO4	శబ్ద వృత్తులు.

SEMESTER-6: PAPER 7(తెలుగు భాషాచరిత్ర)- 4 CREDITS	
CO1	ఆంధ్రము, తెనుగు, తెలుగు - వ్యుత్పత్తి-వ్యాప్తి, ద్రావిడ భాషలలో తెలుగు స్థానం
CO2	మాండలిక విజ్ఞానం
CO3	ధ్వని పరిణామం - అర్థ విపరిణామం
CO4	అన్య దేశ్యాలు- ఆదాన ప్రదానాలు

SEMESTER-6: PAPER 8(ఆధునిక సాహిత్య విమర్శ)- 4 CREDITS	
CO1	ఆధునిక విమర్శ నిర్వచనం - విమర్శ లక్షణాలు భేదాలు
CO2	కథానిక లక్షణాలు
CO3	వ్యావ స్వరూపం
CO4	నవలా లక్షణాలు

DEPARTMENT OF TELUGU	
SEMESTER-1: PAPER 1 (Sahiti Manjeera)- 4 CREDITS	
CO1	Students can enjoy all the essays and improves literary skills
,	Students can learn all the grammar skills
t	Differentiate the methods of old and modern poetry thoughts.
CO4	Understand the culture of oldØ society and comparison with modern trends.
SEMESTER-2: PAPER 2 (Sahiti Manjeera)- 4 CREDITS	
CO1	Students will be able to improve comprehensive skills as well as advanced grammar skills
CO2	Students can understand the values of literature
CO3	Differentiate the methods of old and modern poetry thoughts.
CO4	Understand the culture of old society and comparison with modern trends
SEMESTER-3: PAPER 3 (Sahiti Kinnera) - 4 CREDITS	
CO1	The anthology contains selected literary pieces offering glimpses of life and world from different perspectives
CO2	Students will be able to make use ofØ grammar skills when they face competitive exams
CO3	Differentiate the methods of old and modern poetry thoughts.
CO4	Understand the culture of old society and comparison with modern trends

SEMESTER-4: PAPER 4(Sahiti Kinnera)- 4 CREDITS	
CO1	Students will be able to improve human values by following the given anthology.
CO2	Students can improve prosody and grammar skills
CO3	Differentiate the methods of old and modern poetry thoughts.
CO4	Understand the culture of old society and comparison with modern trends.
SEMESTER-5: PAPER 5 (Sahiti Dundubhi) - 3 CREDITS	
CO1	Understands structural elements in literary genres such as poem, song, textual poetry, short poetry forms - mini poetry, haiku, naany, ghazal, rubai. Discover the depths of these genres.
CO2	Understands the literary genre of Essay. This knowledge of Essay genre will helps to become great essay writers to excel in the future.
CO3	Adopts a culture of study. Awareness of Literary study benefits, foreword, book review, folklore and makes them good creators. Makes Literary creators in these genres.
SEMESTER-6 : PAPER 6 (Sahiti Dundubhi) - 3 CREDIT6	
CO1	Literary genres such as drama, novel, short story, biography, the art of discourse etc. are the impetus for the all-round personality development of the student.
CO2	This course explains about news, news writing, news structure, news article, interview, translation etc. and will help to become a good news reporter. Extensive employment opportunities can be found in the field of journalism.
CO3	Awareness of project, study, hypothesis, reports will help to excel in research, sustain and get many employment opportunities.

TARA GOVERNMENT COLLEGE

SANGAREDDY-T.S (A U T O N O M O U S)

DEPARTMENT OF ENGLISH

Course Structure under the Reorganized CBCS

Subject: **General English (First Language)**

B.A/B.Sc/B.Com/B.B.A and other UG Courses

Course Structure
Credits, Syllabus and Instructional Hours

Semester	Number of credits	Number of units	Instruction hours per week
I	4	4	4
II	4	4	4
III	3	3	3
IV	3	3	3
V	3	3	3
VI	3	3	3
Total	**20**	**20**	**20**

Course Objectives

The 20-credit, six-semester course seeks to enhance the English language skills of undergraduate Students by

- Strengthening their grammar and vocabulary
- Improving their reading and writing skills
- Enhancing their listening and speaking skills
- Imparting to them important life skills and human values
- Encouraging them to think creatively and critically
- Exposing them to a variety of content-rich texts
- Expanding their emotional intelligence
- Developing gender sensitivity among them.
- Improving their Literary values
- Improving their Communication skills

Course Outcomes

On successful completion of the 20-credit, six-semester course, an undergraduate student will be able to

• Read, understand, and interpret a variety of written English texts
• Undertake guided and extended writing using appropriate vocabulary and correct grammar
• Listen with comprehension and speak with confidence in both formal and informal contexts with reasonable fluency and acceptable pronunciation
• Become employable with requisite professional skills, ethics and values.

Department of English

Subject: Optional English

B.A (MODERN LANGUAGE- ENGLISH)

Course Outcomes

The -credit, six-semester course seeks to enhance the English language & literary skills of undergraduate students and after the successfully completion of the course the students will be

- Introduced to English literature
- Appreciate English Literature
- Strengthening their grammar and vocabulary
- Improve their reading and writing skills
- Enhance their listening and speaking skills
- Imparting to them important life skills and human values
- Encouraging them to think creatively and critically
- Exposing them to a variety of content-rich texts
- Expanding their emotional intelligence
- Developing gender sensitivity among them.
- Read, understand and interpret a variety of written texts
- Become employable with requisite professional skills, ethics and values

TARA GOVERNMENT COLLEGE (A), SANGAREDDY

DEPARTMENT OF BOTANY

UG-Course Outcomes

I Sem-Microbial Diversity and Lower Plants

On completion of the course students are able to

1. To gain knowledge about microbial biodiversity
2. Understand the diversity and life cycle patterns of algae, fungi, bryophytes and pteridophytes.
3. To know about the various plant diseases and their control measures.
4. To explore economic importance of algae and fungi.
5. To know the evolution of sporophytes of bryophyte and stelar evolution in pteridophytes.

II Sem-Gymnosperms, Taxonomy of Angiosperms and Ecology

On completion of the course students are able to

1. To gain the knowledge about the life cycles and the economic importance of gymnosperms.
2. To understand about the geological time scale.
3. To understand about the diversity of the plants, their description, identification, nomenclature and their classification including recent advances in the field of plant taxonomy.
4. To understand the ecological relationships between the plants and their environments.
5. To compare the ecological adaptations of hydrophytes, mesophytes and xerophytes.

III Sem- Plant Anatomy and Embryology

On completion of the course students are able to

1. To gain knowledge of plant cells, tissues and tissue systems and their functions.
2. To identify and compare the differences in the anomalous secondary growth of dicots and monocots.
3. To understand the structure of anther, ovule and pollen grains.
4. To gain knowledge about the micro And mega sporogenensis.
5. To understand and gain knowledge about the economic importance of wood.

IV Sem- Cell Biology, Genetics and Plant Physiology

On completion of the course students are able to

1. To understand and describe the organization, structure and functions of a cell and cell organells.
2. To know about the significance of meiosis.
3. To have knowledge of the nature and functions of genes and the processes of inheritance.
4. T o understand the various physiological processes in plants.
5. To explain the role of nutrients and the phytohormones in the growth and development of plant.

V Sem-Biodiversity and Conservation

On completion of the course students are able to

1. To understand the role that biodiversity plays in conservation science.
2. To understand the current threats to the biodiversity.
3. To understand the role and the principles of operation of different types of protected areas.
4. To develop a deeper concern for the biodiversity and its conservation.
5. To understand the role of plants in human welfare.

VI Sem-Tissue Culture and Biotechnology

On completion of the course students are able to

1. The students will learn about the concepts, tools and the techniques related to the *in vitro* propagation of the plants.
2. The students will have the scientific understanding of the subject and also have the good knowledge of application of recombinant DNA technology.
3. To know about the gene cloning and the cloning vectors.
4. To explain the construction of c DNA library and their applications.
5. To compare the pros and cons of the transgenic plants on the environment.

TARA GOVERNMENT COLLEGE SANGAREDDY

(AUTONOMOUS)

Department of Microbiology

Course Outcomes

Paper I – General Microbiology

1. Students have developed a good knowledge of Definition and cope, History of Microbiology and contributions of prominent scientists in this field
2. Students will be acquainted with different types of Microscopy, Staining methods to study different bacterial structures.
3. Students will learn Different classification systems i.e. place of microbes in the living world, characteristics of different groups of microorganisms
4. Students will understand the structure of bacterial cell and variant components of bacterial cell. Structures of TMV, HIV viruses etc.

Paper II- Microbial Diversity

1. Students will be familiar with the basic concepts and elements of Biodiversity and conservation. The basic concepts of classification and taxonomy of living organisms including Bergys Manual of Determinative Bacteriology.
2. Understand General characteristics of eubacteria, Microbial richness with reference to the Archaea bacteria and extremophiles, Gram negatives and Gram positives.
3. Familiar with eukaryotic microbial diversity like Algae, Fungi and Protozoa.
4. Students will learn Microbial Ecosystems in terms of microbial interactions, cultivated and uncultivated microorganisms, and Micro biome for sustainable agro ecosystems.

Paper III- Food & Environmental Microbiology

1. Students will develop understanding about fermented foods- Health aspects, processing and fermentation, types of microorganisms in milk, microbial products of milk etc.
2. Microbial spoilage of foods, food preservation methods, food quality, Methods of quality assessment of foods.
3. Microorganisms in air and water, water pollution, water borne pathogenic microorganisms, Aerobic and anaerobic sewage treatment.
4. Student will be conversant with soil properties and soil microorganisms, methods of enumeration of soil microorganisms, Microbial plant interactions, Microbial biodegradation and carbon, Nitrogen cycles.

Paper IV- Medical Microbiology & Immunology

1. Students will understand basic concepts of Normal flora of human body, Host pathogen interactions some of the air borne and food borne & contact diseases.
2. Students will develop thorough understanding of food and water borne viral infections like Polio myelitis, Insect borne and zoonotic infections.
3. The main concepts of Defense role of Immune system of the host and basic components and mechanisms involved in immune system with relation to the pathogenic microorganisms.
4. Understanding the immunological disorders like Hypersensitivity and auto immune disorders and different Ag- Ab reactions.

Paper V- Molecular biology & Microbial Genetics

1. Students will be familiar with the concepts of fundamentals of Genetics like Mendalian Laws, DNA structure, DNA and RNA as genetic material, replication of DNA etc.
2. The concepts of Mutations. Physical and chemical mutagens, DNA damage & repair mechanisms ,various gene transfer methods are learned
3. Students will know concepts of gene, types of RNA, transcription in Prokaryotes, genetic code, regulation of gene
4. Students will learn Genetic engineering, gene cloning methods, Genomic and cDNA libraries and applications of Recombinant DNA technology& Genetic engineering.

Paper VI- Pharmaceutical Microbiology

1. Acquired detailed knowledge of history of chemotherapy, Paul Ehrlich contributions, drug action in microbes, and development of synthetic drugs.
2. Types of antibiotics and classification, non medical uses of antibiotics, Principles of chemotherapy.
3. The phenomenon of drug resistance, mode of action of important drugs.
4. Microbiological assays for growth promoting substances, drug sensitivity testing methods and assays for antibiotic assays.

DEPARTMENT OF BIOTECHNOLOGY

COURSE OUTCOMES OF BIOTECHNOLOGY

BS 104: CELL BIOLOGY AND GENETICS

CO1 - Student will be able to acquire comprehensive knowledge of Cell Science.

CO2 – Student will be able to learn the basic concepts of cell biology, spanning from cell structure, function of prokaryotic and eukaryotic cell.

CO3 – Student will be able to describe the cell Cycle; Compare & contrast mitosis and meiosis.

CO4 – Better understanding the concept of genes and their behaviour, experiments to determine Mendel`s law.

BS 204: BIOLOGICAL CHEMISTRY AND MICROBIOLOGY

CO1 – Gain fundamental knowledge in biochemistry – different types of biomolecules – classification and its importance.

CO2 – Better understanding of cellular processes and their role in living systems.

CO3 – Understand the fundamentals of microbiology, identify microorganisms using modern techniques and concept of culturing microorganisms.

CO4 – Understanding microbial diversity; physiology & nutrition.

BS 305: MOLECULAR BIOLOGY AND RECOMBINANT DNA TECHNOLOGY

CO1 – Learn the scope and importance of molecular biology.

CO2 – Understand the process of Central dogma spanning from Replication, Transcription and translation.

CO3 - Gain sufficient knowledge on gene manipulation and gene regulation through operon concept.

CO4- Understand the concept of gene Cloning and tools and enzymes used in r – DNA technology.

BS 405: BIOINFORMATICS AND BIOSTATISTICS

CO1 – Theory and practical knowledge on the Bioinformatics web portals, biological databases

CO2 -Gain working knowledge on the computational tools to perform sequence alignment for the elucidation of phylogenetic relationships.

CO3 – Understand the statistics concepts, theories and formulae

CO4 – To carry out statistical applications in the analysis of biological data.

BS 504: PLANT BIOTECHNOLOGY

CO1 – Understanding the fundamentals of plant tissue culture, such as Cellular totipotency, organogenesis, somatic embryogenesis.

CO2 – Understanding the concept of micropropagation, protoplast isolation, anther and pollen culture.

CO3 – Gain knowledge on the production of transgenic plants for crop improvement.

CO4 – Understanding the role of plant tissue culture in agriculture, horticulture and forestry.

BS 604: ENVIRONMENTAL BIOTECHNOLOGY

CO 1 – Understanding the concept of biotechnology in pollution management.

CO2 – Practical application of environment technology for the production of biofuels.

CO3 – Basic understanding about waste water treatment thru aerobic and anaerobic method.

CO4 – Basic knowledge in understanding the role of microorganisms and plants in solving environmental issues.

DEPARTMENT OF ZOOLOGY

M.Sc. Zoology Course outcomes

Course Outcomes

SEMESTER-I

Paper-1 Structural Biology

CO1: Classification, Structure and function of Carbohydrates, Lipids, DNA and RNA is understood by the students.
CO2: Knowledge of enzyme functionality, metabolism, catabolism and metabolic disorders of biomolecules is gained by the students.
CO3: Students learn about the permeability, communication and signaling of cell membrane.
CO4: Concepts of Replication, Repair mechanism of DNA and Protein synthesis is imparted to the students.

Paper-II Environmental and Conservative Biology

CO1: Understand concept of Ecosystem types, Population dynamics and growth curves.
CO2: Inorganic pollution, its Impact and Eutrophication is understood.
CO3: Students gain knowledge of Biogeography regions of India & Classification of different Habitats.
CO4: Environmental impact assessment, Conservation movements in India and legislations With reference to environment is known.

Paper-III Immunology

CO1: Types of Immunity and cells involved in immunity is studied.
CO2: Antigens, Antibodies, Monoclonal antibodies and complement system is known.
CO3: Hypersensitivity and complement system is understood.
CO4: Concepts of Transplantation, Immunity to infection & Tumor immunology is gained by the students.

Paper-IV Advances in Taxonomy and Functional Anatomy of Invertebrates

CO1: Basic concepts & Types of Taxonomy and ICZN is understood.
CO2: Imparts knowledge of Invertebrates from phylum Cnidaria to Mollusca & host parasite Relationship to students.
CO3: Significance of Larval forms belonging to Crustacea and Echinodermata is learnt.
CO4: Knowledge of various minor phyla is imparted to the students.

SEMESTER – II

Paper-I Tools, Techniques and Biostatistics

CO1: Tools and techniques used in Biological research.
CO2: Techniques related to imaging of Biological molecules and separation of molecules.
CO3: Knowledge of Diagnostic techniques.
CO4: Various methods used in Biostatistics.

Paper-II Animal Physiology

CO1: Knowledge of Physiology of Digestion, Respiration & Circulation.
CO2: Students gain knowledge with regard to physiology of Osmoregulation, Kidneys and Temperature regulation.
CO3: Students understand the functional mechanisms of muscles, nerves and receptors.
CO4: Role played by Invertebrate and Vertebrate hormones is understood.

Paper-III Molecular Genetics and Developmental Biology

CO1: Concepts of Inheritance and genetic disorders is understood,
CO2: DNA technology, vectors, cloning strategies, hybridization techniques are known to the students.
CO3: Sequence of events and process related to the development of organism is known.
CO4: Development of organs during formation of organism is understood.

Paper-IV Evolution and Functional Anatomy of Vertebrates

CO1: The course helps students to learn different theories of evolution, isolating mechanisms, speciation and evolution of Man.
CO2: Students gain knowledge of evolution of different Vertebrates.
CO3: Anatomy of Vertebrate skeletal, Digestive and respiratory systems are known to students.
CO4: Physiology of Excretory system, Nervous system in vertebrates is understood. Knowledge of Amniotic egg, fertilization, placenta is gained by students.

Semester-III

Paper-I Systems Biology

CO1: Knowledge of Concepts of systems biology.
CO2: Students understand mammalian biological clocks, metabolic cycles, pest management and bioremediation.
CO3: Different predictive models, modelling tools will be understood.
CO4: students learn application of system biology and application of nanoparticles in biological system.

Paper-II Research Methodology

CO1: Various methods of sampling, Data collection and experimental design useful for the Research is understood by the student.
CO2: Students understand the use of computers in statistics and present the research findings in scientific way.
CO3: Knowledge of different types of inferential tools used in research is imparted to the students.

CO4: Students gain knowledge of writing research paper, project works. Knowledge of copyright, patent, laboratory safety, animal ethics is gained.

Paper-III Comparative Animal Physiology- I

CO1: Course helps students to understand various physiological process related to digestion and nutrition.
CO2: knowledge of gaseous exchange, respiratory pigments and adaptation of animals at different pressure with respect to respiration is gained by the students.
CO3: In depth knowledge of osmoregulation, excretory mechanisms and temperature regulation is known by the students.
CO4: Students understand fatty liver, electrolyte imbalance, heat stroke chronic obstructive pulmonary disease is done by studying the course.

Paper-IV Endocrinology

CO1: Basic concepts of Hormones is understood.
CO2: Different hormones produced in Invertebrates and Vertebrates is known.
CO3: Knowledge of synthesis and action of hormones is gained in the course.
CO4: Students learn role of hormones in reproduction.

Semester – IV

Paper-I Animal Biotechnology

CO1: Concepts of Biotechnology and application in improvement of livestock is understood.
CO2: Usage of various techniques and methods related to cell and tissues culture is learnt.
CO3: Knowledge of production of Transgenic animals, genetically engineered animal cell is imparted to the students.
CO4: Various applications of biotechnology in medicine, environment, pest control and Aquaculture is learnt by the students.

Paper-II Fish Biology

CO1: Students learn general characters and classification of fishes.
CO2: Students understand concepts related to locomotion, feeding, osmoregulation and migration of fishes.
CO3: Skeletal, Digestive, Respiratory, Circulatory and Excretory systems of fishes are learnt.
CO4: The knowledge of Nervous system, Endocrine system, Reproductive system and

development of fishes is gained by the students.

Paper-III Comparative Animal Physiology-II

CO1: Physiology of various receptors in animal body, Physiology of nervous system and integration of nervous system with behavior of animals is known by the students.
CO2: Mechanisms of movement and structures related to movement is understood.
CO3: Knowledge of structure of heart of different animals and circulation process in animals is gained in the course.
CO4: Hormones in relation to growth and development and biological rhythms is learnt in the course.

Paper-IV Project

CO1: Knowledge gained by the students from studying Research methodology paper in semester-III helps the students to do further research.
CO2: Formation of hypothesis for research, experimental design, analysis of results will be learnt by the student.
CO3: Students will be able to present the research findings in a systematic way for paper Presentation.
CO4: Students will be able to publish their research findings in Journals.

DEPARTMENT OF ZOOLOGY

Course Outcomes

Course	Outcome
Animal Diversity-Invertebrates	➢ Students will learn about the General Characters and classification of various Invertebrate Phyla. Structure and functional biology of various animals belong to Invertebrates will be known. ➢ The basic knowledge of parasitology, vectors, host-parasite interactions is given to the students. ➢ Life cycles of various parasites are understood. ➢ Students will learn Pathology, Symptoms, diagnosis and treatment of helminth parasites.
Animal Diversity-Vertebrates	➢ Students will learn about the General Characters, Classification, structure, function and biology of Vertebrates. ➢ Parental care in Amphibia, Poisonous and non-poisonous snake's differences, Migration and Flight adaptation in Birds, Dentition and Aquatic adaptation in Mammals.
Animal Physiology and Animal Behaviour	➢ Functionality of various system of the body will be understood. ➢ Physiology of Digestion, Respiration, Circulation, Excretion, Muscles, Nerves is understood. ➢ Structure and function of Heart. Irregularities of Heart beat and blood clotting mechanism is known. ➢ Endocrinology and functions of various hormones produced in the body is understood. ➢ The knowledge of Learning and Imprinting with respect to behaviour of animals is imparted to the students. ➢ Different patterns of behaviour and cooperative behaviour is understood.
Cell Biology, Genetic and Developmental Biology	➢ Students will learn about the structure and function of various cell organelles. ➢ Transport across cell membrane will be learnt. ➢ Knowledge about genetic material-gene, chromosome is imparted to the students. ➢ Cell division and types is understood ➢ Structure of genetic material-DNA, RNA. ➢ Knowledge about replication, transcription, translation and gene regulation is given to the students. ➢ Students will learn about the fundamental of genetics, mendelian and non mendelian inheritance. ➢ Sex determination and types in different animals. ➢ Sex linked inheritance. Study of inheritance of Haemophilia, Colour blindness, Sickle cell anaemia. ➢ Hormonal and environmental influence on the sex determination of animals. ➢ Mutations in animals.

	➢ Syndromes in humans due to malfunction of cell division apparatus during cell division. ➢ Inborn errors of metabolism in humans
Immunology and Biotechnology	➢ Students will know about the structure and function of Immune cells, Natural and acquired immunity. ➢ Structure of antigens, antibodies. Function of antibodies. ➢ Antigen-antibody interactions. ➢ Hypersensitivity reactions. ➢ Immunodeficiency diseases ➢ AIDS ➢ Plasmids, Cosmids. ➢ Transgenic animals ➢ Stem cells and applications
Ecology, Zoogeography and Evolution	➢ Students will understand various features and aspects of ecology. ➢ Types of pollution and influence on health. ➢ Biogeochemical cycles. ➢ Changes in the habitat- Hydrosere, Xerosere. ➢ Distribution of animals in different continents. ➢ Different theories of Evolution, Concept of Origin of species. ➢ Evidences of Evolution. ➢ Types of speciation. ➢ Natural selection.
Project work	➢ Students will know the basics of research. Review of literature, experimental design, Analysis of the result

COURSE OUTCOMES (COs)

DEPARTMENT OF CHEMISTRY

B.Sc. (CHEMISTRY)

COURSE OUTCOMES (COs)

SEMESTER-I

PAPER-I

CO1: Able to understand the concepts of chemical bonding and chemical and structural aspects of representative compounds Group-13, 14 and15.

CO2: Able to answer structural impact on properties of organic compounds and specific reactions of alicyclic and aromatic compounds.

CO3: Student will have strong foundation in the concepts of atomic structure, gaseous state, liquid state and solutions.

CO4: Student can able to perform salt analysis to detect anionic and cationic parts and also understand structural aspects like isomerism, conformational analysis and Crystallography.

SEMESTER-II

PAPER-II

CO1: Able to understand the concepts of chemical bonding and chemical and structural aspects of oxides, interhalogens, polyhalides and student can able to analyze the concepts behind the peculiarity of d-block elements.

CO2: Able to describe preparation, specific chemical reactions and identification tests of Halogen compounds, hydroxyl compounds, ethers and carbonyl compounds.

CO3: Student will have fundamental knowledge in the concepts of Electrochemistry and their applications and also able to calculate EMF of simple Electrochemical cells.

CO4: Student can able to perform volumetric, gravimetric and water analysis of given sample and also have knowledge of specific properties of dilute solutions and Colligative properties.

SEMESTER-III

PAPER-III

CO1: Students can be able to analyze the concepts behind the peculiarity of f-block elements. Students can be able to understand the basic concepts of coordination complexes like nomenclature, coordination number, EAN and isomerism. Students should also have basic knowledge of structural aspects of metal carbonyls and organometallics.

CO2: Able to describe preparation, specific chemical reactions, synthetic applications and identification tests of carboxylic acids, nitrohydrocarbons, amines and cyanides and isocyanides.

CO3: Students will have fundamental knowledgeof thermodynamic and their applications with chemical transitions with special focus on numerical and derivatives.

CO4: Students can be able to analyze and evaluate the analytical data based on basic statistical operations.Students should also have basic knowledge of Phase rule and fundamental synthetic applications of carbanions.

SEMESTER-IV

PAPER-IV

CO1: Able to understand the advanced concepts of coordination complexes along with CFT and HSAB theories and also the applications of coordination complexes. Students should also have basic knowledge of role of essential elements in biological processes.

CO2: Able to describe Synthesis, inter-conversion, specific chemical reactions, structural aspects and identification tests of carbohydrates, amino acids and heterocyclic compounds.

CO3: Student will have core knowledge in the concepts of Chemical kinetics and their applications with specific examples. Student will have the basic concepts and mechanisms involved in photochemical changes.

CO4: Student will have core knowledge of theories of bonding in metal complexes, advanced synthetic applications of cabanions and basic concepts of chemistry beverages.

SEMESTER-V

PAPER-V

CO1: Student can understand the basic conceptsof Rotational, IR and Electronic spectroscopy and apply them in determination of bonding aspects of simple molecules.

CO2: Student will have the knowledge of principles and conceptsof 1H-NMR spectroscopy and Mass spectrometry for the determination of structural, molecular and isotopic aspects of simple molecules.

CO3: Student will able to understand concepts, techniques and applications of solvent extraction and chromatographic methods like TLC and PC.

CO4: Student should have basic knowledge of principles and techniques involved in CC, IEC, GC and HPLC along with their applications in chemical analysis.

SEMESTER-VI

PAPER-VI

CO1: Able to understand the basic terminology involved in the medicinal chemistry.

CO2: Student will have core knowledge of Enzymes and Receptors in Medicinal chemistry.

CO3: Student can able to depict the synthesis of selected drugs using organic synthetic strategies and understand their therapeutic actions.

CO4: Student will able to understand the physiological role of hormones, neurotransmitters and Drugs acting on specific metabolic and neural targets along with their synthesis. Students will also have basic knowledge of concepts involved in drug analysis.

ADVANCED CHEMISTRY (SPECIAL PAPER)

CO1: Studentscould able to understand the reaction mechanisms in complex compounds, apply the knowledge of symmetry operations to identify symmetry elements various chemical molecules and can apprehend the properties of non aqueous solvents.

CO2: Student gain the ability to design the synthesis of given organic molecules in economical and environmental friendly ways with definite stereochemistry.

CO3: Student get ample knowledge on polymers, types, preparation properties and their importance and role in human life and the need for biodegradation.

CO4: Student learn the fundamentals of electro analytical techniques and could able to apply the knowledge for quantitative analysis of any given substance in the provided sample.

M.Sc. (ORGANIC CHEMISTRY)

PROGRAMME OUTCOMES (POs):

On successful completion of this Programme, students will have the ability to:

PO1: Think critically and analyze chemical problems and issues with rational mind set.

PO2: Should have practical and theoretical knowledge of chemical science which will be applicable at Industrial as well as academic facilities with time to time self up-gradation in the field of research and innovations.

PO3: Work effectively and safely in a laboratory by applying green concepts to reuse, reduce and recycle the materials for sustainable and eco-friendly approaches.

PO4: Work in teams as well as independently with strategic action plan to assess and resolve targets in the allocated projects by apply modern methods of analysis to chemical systems in a laboratory environs.

PROGRAMME SPECIFIC OUTCOMES (PSOs):

PSO1: Should have strong core knowledge of basics of Organic synthesis for industrial, academic and scientific knowledge transfer paradigms.

PSO2: Should able to design and synthesize novel organic molecular scaffolds in the view of Pharma-based opportunities at regional as well as global level.

PSO3: Laboratory safety and sustainability should be riveted for personal and organizational assurance and quality maintenance.

PSO4: Can be able to bring the knowledge of different discipline of chemistry to analyze and illustrate the given synthetic scheme.

COURSE OUTCOMES (COs)

SEMESTER-I

PAPER-I-CH 101 (INORGANIC CHEMISTRY)

CO1: Student will have strong foundation in the Molecular symmetry and can able to understand symmetry operations of different molecules.

CO2: Student will have sufficient intelligence to analyze bonding in metal complexes.

CO3: Student will have depth knowledge about factors and conditions affecting Metal-complex formation.

CO4: Understand the concept of Metal-Ligand Bonding aspects of diatomic molecules.

PAPER-II-CH 102 (ORGANIC CHEMISTRY)

CO1: Student will have essential knowledge in the Stereochemistry and can able to understand its impact in reaction mechanism.

CO2: Student will have core idea about reaction mechanism to develop synthetic strategies.

CO3: Understand the concepts of conformational analysis and can able to apply them in analysis of acyclic systems.

CO4: Have the core idea about synthesis and chemical properties of Heterocyclic compounds and Natural products with structural importance.

PAPER-III-CH 103 (PHYSICAL CHEMISTRY)

CO1: Student will have core knowledgeof thermodynamical aspects in system transitions and reactions.

CO2: Student can understand the concept and definitions of Electrochemical aspects and will able to calculate EMF and other calculations pertaining to the Electrochemical cells.

CO3: Have the basic idea about the concepts and mathematical derivations of quantum mechanics along with the application of Quantum mechanical operations in chemistry.

CO4: Describe and apply concepts and theories of chemical kineticin structural and chemical transformations.

PAPER-IV-CH 104 (ANALYTICAL TECHNIQUES AND SPECTROSCOPY-I)

CO1: Student will able to understand concepts, procedures and applications of chromatographic techniques of GC and HPLC.

CO2: Student can understand the concept of 1H-NMR spectroscopy and apply them in structural evaluation of molecules along with assessment of reaction mechanism.

CO3: Have the basic idea about the concepts and applications of Ratational and Vibrational spectroscopy for structural elucidations of chemical entities.

CO4: Understand the concepts of Electronic spectroscopy and can able to apply them in analysis of Bonding and structural analysis of molecular structures.

SEMESTER-II

PAPER-I-CH 201 (INORGANIC CHEMISTRY)

CO1: Students can able to understand the types and factors affecting reaction mechanism of transition metal complexes in octahedral and square planar complexes with a special interest on Redox reactions.

CO2: Student will have core idea on Bonding in metal complexes with respect to their energy gradients.

CO3: Student will have theconcept and theories of factors affecting the Metal-Bonding formation in Metal carbonyls in order to obtain structural information.

CO4: Have the concurrent information about the structural and Metal-ligand bonding aspects of Bio-coordinated species.

PAPER-II-CH 202 (ORGANIC CHEMISTRY)

CO1: In depth knowledge about organic reaction mechanism with a special focus on nuceophilic aromatic substitutions, NGP and Electrophilic substitutions to understand and design synthetic reactions.

CO2: Student can understand the concept and terms involved inPericyclic reactions and will able to assess the molecular orbital and energy level changes.

CO3: Have the basic knowledge of the different types photochemical reactions along with the Energy transitions and selection rules for feasible photochemical reactions.

CO4: Understand the role of reactive intermediates involved in rearrangement reactions.

PAPER-III-CH 203 (PHYSICAL CHEMISTRY)

CO1: Understand the concepts of advance thermodynamics and their statistical aspects with related to chemical changes.

CO2: Student can develop the idea of mechanisms involved in photochemical changes.

CO3: Develop proficiency in numeracy and derivative frameworks which underlies with of Quantum chemistry.

CO4: Understand the base level structural arrangements of solid state chemistry with the help of modern theories.

PAPER-IV-CH 204 (ANALYTICAL TECHNIQUES AND SPECTROSCOPY-II)

CO1: Studentswill understand terms and concepts of advanced electro and thermal analytical techniques and their applications in modern chemical analysis.

CO2: Encompass achieved advanced knowledge about the NMR spectroscopyand their applications in organic chemistry to elucidate the structure of the organic compounds.

CO3: Student can understand the concept of Mass-spectrometry and apply them chemical analysis of samples of synthetic and biological origin.

CO4: Understand the concepts of Photoelectron and ESR and can be able to apply them in analysis of chemical moieties with specific properties.

SEMESTER-III

PAPER-I-CH-301 (SYNTHETIC REAGENTS, ADVANCED NMR, CONFORMATIONAL ANALYSIS AND ORD)

CO1: Students will have concurrent knowledge of synthetic reagents to design synthetic strategies.

CO2: Student will have deep focus on various synthetic reagents to develop multifunctional organic frameworks.

CO3: Student will have profound concepts of 13-C-NMR and 2D NMR spectroscopy to illustrate structural aspects of complex molecules.

CO4: Have the extensive proficiency about the Conformational aspects and ORD.

PAPER-III-CH 302 (MODERN ORGANIC SYNTHESIS)

CO1: Students will able to understand and design asymmetric synthetic strategies to design aimed organic molecular frameworks by using advance techniques of Asymmetric synthesis.

CO2: N Students will have deep knowledge of synthetic strategies to design synthetic protocols for complex molecular scaffolds using valid techniques like Retro-synthesis.

CO3: Student will have advanced and contemporary efficiency in organic synthetic reactions to apply them in strategic scheme development.

CO4: Students should have updated knowledge of newer techniques and concepts of organic synthesis for multi-step novel composites.

PAPER-III-CH 303 (BIOORGANIC CHEMISTRY)

CO1: Students will have core knowledge of synthetic, biological and structural aspects of specific carbohydrates.

CO2: Students will have extensive proficiency in structural and synthetic concepts of Nucleic acids and Lipids.

CO3: Student will be able to understand structural, synthetic and physiological importance of proteins and enzymes.

CO4: Student will be able to understand structural, synthetic and physiological importance of Vitamins and Co-enzymes.

PAPER-III-CH 304 (GREEN CHEMISTRY)

CO1: Students will have fundamental concepts of green synthetic procedures for sustainable for developing eco-friendly synthetic protocols.

CO2: Students will have deep concepts and able understand the alternative approach of Green chemistry in modern organic synthesis.

CO3: Student will be able to understand the applications of Nanotechnology in designing versatile Organic nanomaterials and their usage in organic synthesis for benign synthetic strategies.

CO4: Student will understand advance concepts of supramolecular chemistry and able to apply them in synthetic strategies.

SEMESTER-IV

PAPER-I-CH 401 (DRUG DESIGN AND DRUG DISCOVERY)

CO1: Understand the concepts and principles of drug design and discovery.

CO2: Students will have the good command over the Lead modification and they will able to analyze the SAR of specific drugs.

CO3: Develop proficiency in QSAR studies and able to understand the concepts of computer aided drug design.

CO4: Understand the principles and applications of Combinatorial synthesis in bioorganic molecular synthesis like polypeptides.

PAPER-II-CH 402 (DRUG SYNTHESIS AND MECHANISM OF ACTION)

CO1: Able to describe the drug synthesis and their mode of action of certain drugs which acts on metabolic process, cell wall and specific enzymes.

CO2: Able to describe the drug synthesis and their mode of action of certain drugs which acts on genetic material and immune system.

CO3: Able to describe the drug synthesis and their mode of action of certain drugs which acts on receptors and ion channels.

CO4: Student will have core knowledge of synthesis of chiral drugs.

PAPER-III-CH 403 (ADVANCED HETEROCYCLIC CHEMISTRY)

CO1: Students will have good understanding on synthesis and structural aspects of Non-aromaticheterocyclis and aromaticity.

CO2: Students will able to describe the synthesis and can elaborate structural features of Five and Six membered heterocyclics possessing TWO hetero atoms.

CO3: Student will be able to understand the synthetic and structural aspects of Heterocyclis havingmore than two hetero atoms.

CO4: Student can able to describe the synthesis and conformational analysis of larger ringheterocyclics and other specified heterocyclics.

PAPER-IV-CH 404 (ADVANCED NATURAL PRODUCTS)

CO1: Students will able to describe biosynthetic pathways of natural products.

CO2: Students will able to determine the basic natural products.

CO3: Students will able to determine the complex natural products.

CO4: Student can able to describe the synthesis of total stereo selective synthesis of naturalproducts.

Department of Mathematics

TARA Government College (A), Sangareddy
M.Sc. Mathematics

Course Outcomes

SEM 1-Paper 1-Abstract Algebra

CO1: This course is combination of basic group theory and advanced group theory and gives proper understanding of groups.

CO2: This course deals with Group, symmetric group, Syllow's theorem and more such interesting topics

CO3: After learning this subject students are prepared for basic Algebra.

CO4: This course is beginning of algebra

CO5: With this course students are prepared to learn about higher mathematics, like prepared to learn about Ring theory and field theory ,Galois theory etc.

SEM 1-Paper 2-Mathematical analysis

CO1: Describe the fundamental properties of the real numbers that underpin the formal development of real analysis;

CO2: Demonstrate an understanding of the theory of sequences and series, continuity, differentiation and integration;

CO3: Demonstrate skills in constructing rigorous mathematical arguments;

CO4: Apply the theory in the course to solve a variety of problems at an appropriate level of difficulty;

CO5: Demonstrate skills in communicating mathematics.

SEM 1-Paper 3- Ordinary and partial differential equations

CO1: Apply the fundamental concepts of Ordinary Differential Equations and Partial Differential Equations and the basic numerical methods for their resolution.

CO2: Solve the problems choosing the most suitable method.

CO3: Understand the difficulty of solving problems analytically and the need to use numerical approximations for their resolution.

CO4: Use computational tools to solve problems and applications of Ordinary Differential Equations and Partial Differential Equations.

CO5: Formulate and solve differential equation problems in the field of Industrial Organization Engineering.

SEM 1-Paper 4-Elementary Number Theory

CO1: Explain the concepts of divisibility, prime number, congruence and number theorems.
CO2: Demonstrate knowledge and understanding of topics including, but not limited to divisibility, prime numbers, congruences, quadratic reciprocity, Diophantine equations.
CO3: Learn methods and techniques used in number theory.
CO 4: Write programs/functions to compute number theoretic functions.
CO 5: Use mathematical induction and other types of proof writing.

SEM 1-Paper 5- Discrete Mathematics

CO 1. Students completing this course will be able to express a logic sentence in terms of predicates, quantifiers, and logical connectives.
CO 2. Students completing this course will be able to apply the rules of inference and methods of proof including direct and indirect proof forms, proof by contradiction, and mathematical induction.
CO 3. Students completing this course will be able to use tree and graph algorithms to solve problems.
CO 4. Students completing this course will be able to evaluate Boolean functions and simplify expressions using the properties of Boolean algebra.

SEM 2-Paper 1-Galois Theory

CO 1. Understand the main ideas of Galois theory.
CO 2. Compute Galois groups for fairly simple field extensions, including cyclotomic extensions.
CO 3. Compute Galois groups for fairly simple polynomials.
CO 4. Use the Galois correspondence to solve problems about the structure of fields.

SEM 2-Paper 2- Lebesgue Measure and Integration

CO 1.Understand the construction and properties of Lebesgue measure, including the notion and properties of null set;

CO 2. Understand the construction of the Lebesgue integral and know its key properties;

CO 3. Compute Lebesgue integrals using the Fundamental Theorem of Calculus, Monotone and Dominated Convergence Theorems.

SEM 2-Paper 3 –Complex Analysis

CO 1. Demonstrate understanding of the basic concepts underlying complex analysis.

CO 2. Demonstrate familiarity with a range of examples of these concepts.

CO 3. Prove basic results in complex analysis.

CO 4. Apply the methods of complex analysis to evaluate definite integrals and infinite series.

SEM 2-Paper 4-Topology

CO 1: Demonstrate an understanding of the concepts of metric spaces and topological spaces, and their role in mathematics.

CO 2: Demonstrate familiarity with a range of examples of these structures.

CO 3: Prove basic results about completeness, compactness, connectedness and convergence within these structures.

CO 4: Use the Banach fixed point theorem to demonstrate the existence and uniqueness of solutions to differential equations.

SEM 2-Paper 5 –Theory of differential equations

CO 1. Understand the qualitative nature of ODE, solution of BVP, stability of criteria of autonomous systems.

CO 2. More precisely, students will learn how to do stability analysis of the systems which arise in different areas of science

CO 3.Students will able to solve the problems using multiple approaches and will learn to classify ODEs.

CO 4. Students will demonstrate an understanding of the theory of ODEs and will work with a variety of applications of ODE.

SEM 3-Paper 1- Functional Analysis

CO 1. They can work with different distance metrics and normed spaces.

CO 2. They will understand the general properties of linear operators and their dependencies on the type of functional spaces

CO 3. They will be familiar with the natural embedding concepts and understand how it works in conjugate spaces.

SEM 3-Paper 2 – General Measure Theory

CO 1.Remember algebra of sets, open and closed sets of real numbers.

CO 2. Understand and analyze outer measure and measurable sets.

CO 3. Understand and analyze convergence in measure.

SEM 3-Paper 3- Linear Algebra

CO 1. Understand the basic ideas of vector algebra: linear dependence and independence and spanning

CO 2. Understand linear transformations, matrix and vectorspace.

CO 3. Able to find eigen values, eigen vectors, diagonal matrix etc.

SEM 3-Paper 4- Operation Research

CO 1. Identify and develop operational research models from the verbal description of the real system.

CO 2. Understand the mathematical tools that are needed to solve optimisation problems.

CO 3. Use mathematical software to solve the proposed models.

CO 4. Develop a report that describes the model and the solving technique, analyse the results and propose recommendations in language understandable to the decision-making processes in Management Engineering.

SEM 3-Paper 5 – Numerical Analysis

CO 1. Locate and use information to numerically solve problems. This will be assessed through homework, class quizzes and tests, and a final exam .

CO 2. Work effectively with others to complete homework and class assignments. This will be assessed through graded assignments and class discussions.

CO 3. Demonstrate ability to think critically by analyzing a practical problem and understanding the mathematical basis of the problem. . This will be assessed through class assignments, tests and a final exam.

SEM 4-Paper 1- Inegral equations and Calculus of variations

CO 1. Able to recognize difference between Volterra and Fredholm Integral Equations, First kind and Second kind, Homogeneous and inhomogeneous etc.

CO 2. They apply different methods to solve Integral Equations.

CO 3. Students will have much better and deeper understanding of the fundamental concepts of the space of admissible variations and concepts of a weak and a strong relative minimum of an integral.

SEM 4-Paper 2 – Elementary operator theory

CO 1. Prove the continuity of concrete linear operators between topological vector spaces.

CO 2. Given a linear operator, understand whether or not it is compact.

CO 3. Find the essential spectra of linear operators.

SEM 4-Paper 3 – Analytic Number Theory

CO 1. The student masters the basic concepts of analytic number theory, including selected arithmetic and multiplicative functions.

CO 2. The students knows both the additive and the multiplicative definition of the Riemanns zeta function,

CO 3. The student has an overview of and can formulate the central results and open problems of the subject, including the prime number theorem

SEM 4-Paper 4 – Integral Transforms

CO 1. Know about piecewise continuous functions, Dirac delta function, Laplace transforms and its properties.

CO 2. Solve ordinary differential equations using Laplace transforms.

CO 3. Learn Fourier series, Bessel's inequality, term by term differentiation and integration of Fourier series.

CO 4. Apply the concepts of the course in real life problems.

SEM 4-Paper 5 - Advanced Operation Research

CO 1. It aims at introducing the students to some operational research methods that are used in the systems approach to Engineering and Management.

CO 2. It provides them with the requisite tools for the mathematical representation of particular emphasizing the roles of uncertainty and risk

CO 3. Cultivate an ability to analyze the structure of and mathematically model various complex system occurring in industrial Applications.

TARA GOVERNMENT COLLEGE (A) SANGAREDDY

COURSES AND THEIR OUTCOMES

DEPARTMENT OF MATHEMATICS

SEMESTER-1:COURSE(DIFFERENTIAL CALCULUS)-5 CREDITS

CO1: The course is aimed at exposing the students to some basic notations in differential calculus.

CO2: Students can visualize the two variable functions and able to find the partial derivatives of two variable functions

CO3: Students will learn how to apply concepts of maxima and minima of functions of two variables in real life

CO4: Students can understand the concepts of curvature, evolutes and involutes and able to find the same for Various popular curves.

CO5: Students can find the lengths of various curves and Volumes and Surfaces of Revolution

SEMESTER-2:COURSE(DIFFERENTIAL EQUATIONS)-5 CREDITS

CO1 The main aim of this course is to introduce the students to the techniques of solving differential equations and to train to apply their skills in solving some of the problems of engineering and science.

CO2 After learning the course the students will be equipped with the various tools to solve few types of differential equations that arise in several branches of science.

CO3 Students will be able to solve Differential Equations of first order and first degree.

CO4 Students can find integrating factors to make certain kinds of Differential Equations exact and thereby solve the equations.

CO5 Students will be able to solve Differential Equations first order but not of first degree.

CO6 Students can formulate mathematical models in the form of ordinary differential equations to suggest possible solutions of the day to day problems like Growth and Decay, Dynamics of Tumour Growth, Radioactivity and Carbon Dating, Compound Interest and Orthogonal Trajectories arising in physical, chemical and biological disciplines.

CO7 Students will be able to solve Higher order Linear Differential Equations

CO8 Students can form and solve Partial Differential Equations

SEMESTER-3: COURSE(REAL ANALYSIS) - 5 CREDITS

CO1 The course is aimed at exposing the students to the foundations of analysis which will be useful in Understanding various physical phenomena

CO2 After the completion of the course students will be in a position to appreciate beauty and applicability of the course

CO3 Students can recognize bounded, convergent, divergent, Cauchy and monotonic sequences and can calculate their limit superior, limit inferior and the limits of convergent sequences.

CO4 Students can apply the ratio, root, alternating series and limit comparison tests for convergence and absolute convergence of an infinite series of real numbers and able to find the sum of infinite terms of some convergent series.

CO5 Students can identify Continuous and Uniformly Continuous Functions

CO6 Students can understand the properties of Continuous Functions

CO7 Students can find the limits of functions

CO8 Students can understand Basic Properties of the Derivatives

CO9 Students can understand the Mean Value Theorem, L'Hospital Rule and Taylor's Theorem and their applications.

CO10 Students can understand the concept of Riemann Integration.

CO11 Students can understand the Properties of Riemann Integral.

CO12 Students can understand the applications of the fundamental theorems of integration.

SEMESTER-4: COURSE(ABSTRACT ALGEBRA) -5 CREDITS

CO 1 The course is aimed at exposing the students to learn some basic algebraic structures like groups, rings etc.

CO2 On successful completion of the course students will be able to recognize algebraic structures that arise in matrix algebra, linear algebra and will be able to apply the skills learnt in understanding various such subjects.

CO3 Students can understand the concept of algebraic structures Groups, Subgroups and identify Groups, Subgroups.

CO4 Link the fundamental concepts of groups and symmetries of geometrical objects.

CO5 Students can Classify Subgroups and Cyclic Groups

CO6 Students can understand Permutation Groups and Properties of Permutations

CO7 Students can understand the notions of cosets, normal subgroups, and factor groups.

CO8 Students can analyze consequences of Lagrange's theorem.

CO9 Learn about structure preserving maps between groups and their consequences.

CO10 Students can understand the concepts of Rings, Integral Domains, Ideals, Factor Rings, Prime Ideals, Maximal Ideals and Ring Homomorphisms

CO11 Students will learn important applications of groups like check digit systems which is applied in bank Notes serial numbers.

CO12 Students can able to understand Modular arithmetic, which is vital in cryptography.

SEMESTER-5: COURSE(LINEAR ALGEBRA)- 5 CREDITS

CO1 Students can understand the concepts of vector spaces, subspaces, bases, dimension and their properties, Coordinate Systems which play key role in digitalization.

CO2 Students can find the solution space of homogeneous equations using Null space

CO3 Students can map Vector Spaces through order preserving linear transformations.

CO4 Students can find the rank of matrices, which has many applications in solving system of equations

CO5 Students can understand the relation between Coordinates when basis are changed.

CO6 Students can find Eigenvalues and Eigenvectors of matrices, which has many applications

CO7 Students can understand the Diagonalization process, which reduces huge computing tasks and has Applications in real time calculations.

CO8 Students can learn properties of inner product spaces and determine orthogonality in inner product Space.

CO9 Students can realize the power of matrices and their role in digitalization.

SEMESTER-5: COURSE (INTEGRAL CALCULUS)-4 CREDITS

CO1 Students will be able to use various techniques of evaluating multiple integrals.

CO2 Students will be able to find the Double Integrals over a Rectangle

CO3 Students will be able to find the Double Integrals over General Regions in the Plane

CO4 Students will be able to apply the concepts in finding areas and volumes of some solids.

CO5 Students will be able to find the Integrals over a Box

CO6 Students will be able to find the Integrals over Elementary Regions in Space

CO7 Students will learn evaluation of multiple integrals by changing variables

DSE-VI(A)SEMESTER-6: COURSE(NUMERICAL ANALYSIS) -5 CREDITS

CO1 Students will be able to find the solutions of all algebraic and transcendental equations in one variable with desired accuracy using various methods.

CO2 Students will be able to convert the data in to polynomials using various methods.

CO3 Students will be able to interpolate the data with in the given intervals.

CO4 Students will be able to understand various methods of Numerical Differentiation

CO5 Students will be able to understand various methods of Numerical Integration

CO6 Students can apply various numerical methods to get results in numerical form which are useful in real life problems.

DSE-VI(B)SEMESTER-6: COURSE(INTEGRAL TRANSFORMS) -5 CREDITS

CO1 In this course, Students learn various methods to find the Laplace transform of a function.

CO2 Students will learn various methods to find inverse Laplace transforms.

CO3 Students will get to know the application of Laplace transform in solving ordinary and partial differential Equations.

DSE-VI(C)SEMESTER-5,COURSE(ANALYTICAL SOLID GEOMETRY),5 CREDITS

CO1 Students learn to describe some of the surfaces by using analytical geometry.

CO2 Students understand the beautiful interplay between algebra and geometry.

CO3 Students can understand and visualize three dimensional objects like plane ,sphere, cone, Cylinder and conicoids. Students can do solutions for problems involving these shapes.

SEC-IV-SEMESTER-IV,COURSE(VECTOR CALCULUS-2 CREDITS

CO1 Concepts like gradient, divergence, curl and their physical relevance will be taught

CO1 Students can realize the way vector calculus is used to addresses some of the problems of physics

CO2 Students can evaluate Line integrals

CO3 Students can evaluate Surface integrals

CO4 Students can evaluate Volume integrals

CO5 Students can find Gradient of a scalar field
CO6 Students can find Divergence of a vector field
CO7 Students can find curl of a vector field
CO8 Students can understand the concepts of rotational and irrotational vectors, which have importance in meteorological centers.

SEC-I-SEMESTER-I(THEORY OF EQUATIONS) -2 CREDITS

CO1 Students can use various tools to solve quadratic, cubic, biquadratic and quintic equations.
CO2 Students can able to identify the number of possible positive, negative roots of a polynomial equation using Descartes Rule of Signs.
CO3 Students can learn the relation between roots and coefficients of a polynomial equation
CO4 Students can understand the symmetric functions of roots

SEC-II-SEMESTER-III(LOGIC AND SETS) -2 CREDITS

CO1 Students learn some concepts of set theory and logic
CO2 Students are able to learn truth tables
CO3 Student will get knowledge on axiomatic approach of probability
CO4 With the laws learned in this , student can do proof of theorems in scientifical manner
CO5 Main out come of the course is students appreciates its importance in the development of computer science.

SEC-III-SEMESTER-IV(NUMBER THEORY) -2 CREDITS

CO1 Students will be exposed to some of the important theorems like Fermat's theorem, Euler's theorem and they can apply these theorems in doing some problems in number theory
CO2 Students will learn What is Goldbach conjecture and Mobius inversion formula
CO3 Students can understand Basic properties of Congruences and can apply these properties to solve problems like when divided by then what will be the remainder?
CO4 Students will learn about phi function and its importance.
CO5 Student can apply the knowledge acquired to solve divisor problems

GENERIC ELECTIVE-V-A (BASIC MATHEMATICS)-4 CREDITS

CO1 By learning this course, students can understand the basic concepts of cartesian coordinate system like distance formula, section formula, centroid of a triangle and area of a triangles
CO2 Students will learn about straight lines in analytical form and formulas related to them
CO3 Students can understand about matrices and different types of matrices
CO4 Students will learn invertibility of matrices and they can find inverse of given matrices using determinant and adjoint
CO5 Students can solve system of linear equations which arising in real time situation. Knowledge gained here is helpful in writing computer program in solving systems.

GENERIC ELECTIVE-V-A (MATHEMATICS OF FINANCE AND INSURANCE)-4 CREDITS

CO1 Students can do analysis of demand and supply using system of linear equations

CO2 Students can understand how to draw the graphs of quadratic functions and they can use these graphs to analyze economic parameters.

CO3 Student will get the knowledge how the exponential, logarithmic functions arise in production of goods.

CO4 Apart from learning matrices students get the knowledge of solving linear equations which arise in economics

CO5 Students will learn new concept like Difference equations

OPTIONAL (MATHEMATICAL MODELLING)-4 CREDITS

CO1 The focus will be on those mathematical techniques that are applicable models involving differential equations

CO2 Student can understand population growth models, microbial growth and radioactive decay models Through differential equations.

CO3 Students will learn different types heat transfers and laws involved in heat transfers, like Fourier's law of heat conduction

CO4 Students can understand influenza outbreaks models' and prey predator models

CO5 This course will give a knowledge how partial differential equations can be used to study heat conduction in objects.

CO6 This course will impart knowledge of lake pollution models.

Course outcomes - BSc Physics

1.Mechanics	✓ To obtain the knowledge and understanding of Newton laws and their to the rockets and artificial satellites. ✓ To understand Einstein Theory of Relativity and its application to atomic bomb.
2.Waves and Optics	✓ To provide better understanding of the light properties such as reflection,refraction , interference ,diffraction and polarization ✓ To provide a good foundation of optics with a sound knowledge of the behavior of light
3.Thermal Physics	✓ To provide the good understanding of behavior of a gas ✓ To provide intuitive understanding of the entropy, heat engines and the properties of the radiation

5.Modern physics	✓ To provide basic understanding of quantum mechanics and its applications to atoms ,molecules and nuclei.
4.Electronics	✓ To provide basic knowledge of electrical equipment such as resistors, conductors ,diodes and their applications in rectifiers, amplifiers and oscillators etc.
6.Nano science	✓ To provide the basic knowledge of nano materials such as its size, electrical and magnetic properties and their preparation techniques.

TARA GOVT DEGREE & P.G COLLEGE SANAREDDY

COURSES AND THEIR OUTCOMES

DEPARTMENT OF STATISTICS

Semester-1:Course(Descriptive Statistics and Probability)-4 Credits

CO1 Translate real world problems into probability models

CO2 The Students will be equipped with the Application of Random variables in Real time problems

CO3 Students will be able to draw the descriptive statistics for the data and interpret the data with the appropriate graphs.

Semester-2:Course(Probability Distributions)-4 Credits

CO1 Derive various descriptive statistics and verify the existence of reproductive property of distribution using generating functions, their limitations and advantages of continuous distributions

CO2 Understand the importance and application of normal distribution.

CO3 Distinguish between discrete and continuous distribution.

Semester-3:Course(Statistical methods and theory of Estimation)-5 Credits

CO1 The course is aimed at exposing the students to learn the various statistical methods and estimation of parameters in distribution theory

CO2 Establish the linear relationship between the two variables by using scatter plots and other correlation methods

CO3 Acquire the ability to engage in independent and lifelong learning in the broadest context of socio economic and technological changes

Semester-4:Course(Statistical inference)-4 Credits

CO1 The purpose of this paper is to draw the inference to the population parameters based on sample tests

CO2 Practical exposure to the small sample test , chi-square and non-parametric tests by using MS-EXCEL

CO3 Recognize the need for and have to ability to engage in independent, lifelong learning and adapt to technological changes to be globally competent

DSC-2E Semester-5: Course(Sampling theory, time series, index number and demand analysis)-3 Credits

CO1 Perform a sample survey, understand the errors in sample design , apply the necessary sampling technique based on the objective

CO2 The utility of index numbers are to provide a value useful for comparing magnitudes of related variables to each other and to measure the changes in this magnitude over time

CO3 Understand the time series data, compute and eliminate trend component using different methods and calculate seasonal indices by various methods

DSC-2E Paper-VI(A) Semester-5: Course(Statistical Quality Control and the reliability)—3 Credits

CO1 Students will be able to apply the control charts for variables and attributes to the problem to ensure that the production process is under control or not

CO2 To arrive on the decision regarding the sample size while implementing acceptance sampling plans

CO3 Understand the concept of natural tolerance limits, specification limits, process capability index and modifying control charts

DSC-2F Paper-VII Semester-6: Course(Design of experiments, vital statistics, official statistics, business forecasting

CO1 To make students understand the function of important statistical organizations like NSSO and CSO

CO2 Students are taught different measures of fertility , mortality and population growth.

CO3 Know the Functioning of various statistical organisations

DSC-2F Semester -6 Course(Operations Research)- 3 Credits

CO1 Students are taught how to find the optimum sequence to a given job sequencing problem

CO2 Students will be able to find optimum solution to a given linear programming problem using various methods.

CO3 Students are taught how to find the optimum sequence to a given job sequence problem.

Generic Elective – GE – 1Basic Statistics – 1 – 2 credits

CO1: The primary reason for teaching probability is to provide students with understanding and to develop their critical thinking about the role of probability in their lives and in mathematics.

CO2: Probaability is widely used in all sectors in daily life like sports, weather reports, blood samples , predicting the sex of the baby in the womb, congenital disabilities, statics and many.

CO3: Measures of central tendency or averages give us one value for the distribution and this vale represents the entire distribution.

SEC – 4 : Statistical Techniques in Data Mining – 2 Credits

CO1: The main objective of learning methods is prediction and description.

CO2:Datamining is used to explore increasingly large databases and to improve market segmentation

CO3: The main objective of data mining is to identify patterns,trends.